DECISION-MAKING AND STRATEGIC PLANNING
IN A PUBLIC RESEARCH ORGANISATION: THE CASE OF FIOCRUZ

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VALDIR S. ERMIDA

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ABBREVIATIONS

BCG  Bacillus Calmette-Guérin (vaccine against Tuberculosis)
CAN  Conselho Administrativo Nacional / National Advisory Board
CDTS Centro de Desenvolvimento Tecnológico em Saúde / Centre of Technological Research
CGIAR Consultive Group International Agriculture Research
CNAM Conservatoire National des Arts et Métiers / National Conservatory of Arts and Crafts
CNRS Centre National de la Recherche Scientifique / National Centre for Scientific Research
CRIS Centro de Relações Internacionais em Saúde / Centre for International Relations in Health
DPD Departamento de Pesquisa e Desenvolvimento / Research and Development Department
DTT Departamento de Transferência Tecnológica / Technology Transfer Department
EIHCC Economic Industrial Health Care Complex
EMBRAPA Empresa Brasileira de Agropecuária / Brazilian Agricultural Research Corporation
EU European Union
HALDE Haute Autorité de Lutte contre les Discriminations et pour L’égalité / French Equal Opportunities and Anti-Discrimination Commission
FIOCRUZ Fundação Oswaldo Cruz / Oswaldo Cruz Foundation
GDP Gross Domestic Product
GESTEC Coordenação de Gestão Tecnológica / Coordination of Technological Management
HIV Human Immunodeficiency Virus
IANPHI The International Association of National Public Health Institutes
IOC Instituto Oswaldo Cruz / Oswaldo Cruz Institute
IRI Independent Research Institute
MBA Master of Business Administration
MOC Mission-Oriented Centre
MPG Max-Planck-Gesellschaft Zur Förderung der Wissenschaften e. V. / Max Planck Society for the Promotion of Science
NHS National Health Service
<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
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<tbody>
<tr>
<td>NPM</td>
<td>New Public Management</td>
</tr>
<tr>
<td>PCR</td>
<td>Public Research Centre and Council</td>
</tr>
<tr>
<td>PDTIS</td>
<td>Programa de Desenvolvimento Tecnológico em Insumos para a Saúde / Programme of Technological Development in Health Inputs</td>
</tr>
<tr>
<td>PDTSP</td>
<td>Programa de Desenvolvimento Tecnológico para a Saúde Pública / Programme of Technological Development for the Public Health</td>
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<tr>
<td>PRO</td>
<td>Public Research Organisation</td>
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<td>PSR</td>
<td>Public Sector Research</td>
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<td>OCM</td>
<td>Organisational Change Management</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
</tr>
<tr>
<td>RTO</td>
<td>Research and Technology Organisation</td>
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<tr>
<td>SEFAR</td>
<td>Serviço de Equivalência e Farmacocinética / Equivalence and Pharmacokinetics Service</td>
</tr>
<tr>
<td>SGI</td>
<td>Secretaria de Gestão e Desenvolvimento Institucional / Strategic Management and Institutional Development</td>
</tr>
<tr>
<td>SNE</td>
<td>Secretaria de Negócios / Secretariat for Business</td>
</tr>
<tr>
<td>SNPA</td>
<td>Sistema Nacional de Pesquisa Agropecuária / National Agricultural Research System</td>
</tr>
<tr>
<td>SIM</td>
<td>Secretariat of Intelligence and Macro Strategy</td>
</tr>
<tr>
<td>SMC</td>
<td>Strategy Management Committee</td>
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<tr>
<td>SME</td>
<td>Small and Medium-Sized Enterprises</td>
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<tr>
<td>SO</td>
<td>Social Organisation</td>
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<tr>
<td>STD / AIDS</td>
<td>Sexually Transmitted Diseases / Acquired Immunodeficiency Syndrome</td>
</tr>
<tr>
<td>STI</td>
<td>Science, Technology and Innovation</td>
</tr>
<tr>
<td>SUS</td>
<td>Sistema Único de Saúde (Brazilian National Unified Health System)</td>
</tr>
<tr>
<td>TRIPS</td>
<td>Trade-Related Aspects of Intellectual Property Rights</td>
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<td>UK</td>
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<td>US</td>
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<td>USA</td>
<td>United States of America</td>
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<td>WHO</td>
<td>World Health Organisation</td>
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ABSTRACT

This study was drawn to investigate an unusual form of “industrial democracy”, in Fiocruz, the Brazilian public research organisation in the health field, linked to the Ministry of Health. It is a single case study research making use of two contrasting cases: Embrapa and Pasteur Institute. The former is the Brazilian public research organisation in the agriculture field, similar to Fiocruz in space; and the latter is the French public research organisation for health, similar to Fiocruz in the field. The investigation works with the triangulation of methods approach, combining the analysis of quantitative and qualitative methods aiming at an in-depth analysis of the decision-making and the strategic planning processes of these research-led organisations. For this purpose, two exclusive tools were created and applied to their management boards and key actors. The first tool, an online questionnaire, was applied to the management boards; the second tool, a face-to-face interview, was made with the key actors. The findings were examined considering the literature, whose results supported the analysis of the context of each organisation and their strategic plans. This “second triangulation” revealed an original approach to industrial democracy by Fiocruz, based on a concept postulated by Arouca, which underpinned the creation of SUS, the Brazilian National Unified Health System: “Democracy is health”. It represents a paradigm shift in the way the health concept is addressed, by adding a political dimension to it, which includes the citizenship, the free self-determination, the capacity of mastering the future. This unique approach to industrial democracy underpins the decision-making and the strategic planning of Fiocruz, revealing that it is, in fact, a new type of public research organisation; thus, questioning the validity of the existing framework concerning such entities.
DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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“If one does not know to which port one is sailing, 
No wind is favourable.”

Seneca
DEDICATION

To Beatriz and Alice
Always

To my parents, Bárbara (in memoriam) and Valdir
To my brothers, Neuto and Márcio
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SECTION 1: INTRODUCTION TO THE THESIS

1.1. Motivation of the Research

The motivation underlying this research is based on an event that took place in 2010 at the Oswaldo Cruz Foundation (Fiocruz). The Foundation, which was established in 1900 in Rio de Janeiro, is the major Brazilian public research organisation in the health field, linked to the Ministry of Health.

The event concerned a proposal by the top management team to change the legal status of Fiocruz from being a public foundation to a public company. The managers expected to overcome bureaucratic processes attached to the juridical status of “public foundation” and acquire more agility in the administration, including getting funding, buying inputs and contracting people.

The proposal triggered large tensions across the organisation between the workers and the managers, resulting in wide-ranging and passionate debates, which lasted three years, aimed at generating common understanding about the meaning of the proposed changes for the future of the organisation.

The need to create common understanding arises from the fact that in Fiocruz the most important decisions are made through a highly participative process. It is the community1 that ultimately decides the course of the institution.

1.2. Aims of the Research

This research aims to investigate strategic decision-making in a Public Research Organisation (PRO). More precisely it is intended to explore how far a PRO in the health field, characterised by having a highly participative decision-making process, can make effective strategic decisions. Furthermore, in this context, the thesis will also examine the role of long-term analysis (Foresight) in supporting decision-making and organisational change2.

---

1 The term “community” in this study, when referred to Fiocruz, means the community of workers. It is not a community in a broader sense.

2 The terms “long-term analysis” and “Foresight” may seem to be applied indiscriminately and to be synonyms in this study, what is not totally wrong. However, both “long-term analysis” and “long-term planning” are used mostly in a “generic”, or rather a “conceptual” approach; whereas “Foresight”, refers preferably to an applied long-term planning theory, the day-to-day setting.

Likewise, it is noteworthy to highlight that “Foresight”, in this thesis, refers to “Technology Foresight” (English School), as we will see further, not to “La Prospective” (French School). This distinction needs to be made because, in Portuguese, there might be some confusion with these words. The Portuguese word both for “foresight” and “prospective” is “prospectiva” but since “prospective” and “prospectiva” are homophones, the latter may be sometimes regarded as a synonym to “La Prospective” in a Brazilian context, where the French School exerts a strong influence, but it is not.
The challenges facing Fiocruz include, for instance, dealing with the burden of chronic disease (typical of more developed nations) such as diabetes and cancer, added to the emerging and re-emerging diseases (characteristic of emerging nations), like the recent Zika epidemics in 2016, whose epicentre was in Brazil and has now spread to 22 countries.

1.3. Contribution the Thesis Will Make to the Literature

Over the years, and especially in the final decades of the 20th century, the socio-economic and technological transformation has led many governments to reformulate their policies for Public Sector Research (PSR) (Senker, 2000).

The economic crisis at the end of the century resulted in various forms of government intervention, with different emphasis in several countries, and the role of research centres was reviewed in several of them (Sanz-Menéndez and Cruz-Castro, 2003).

As a whole, the public research centres began to focus more and more on the market, with researchers increasingly working with applied research and consulting, rather than basic research. It was the case, for instance, of Australia (Liyanage and Mitchell, 1993), Canada (Smith, 2000), France (Larédo, 2001) and Germany (Meyer-Krahmer, 2001). In the UK, many research organisations were privatised, but most of these failed to become commercially successful (Boden et al., 2004). In Spain, hybrid organisations were created, with public initiative but having a private nonprofit legal status (Cruz-Castro et al., 2012). In the USA, the changes were weak and had little effect in the status quo of the organisations (Bozeman and Dietz., 2001).

Changes happened in several research organisations across different countries, in several forms. The literature, however, although pointing to the transformations the organisations have undergone as a reflection of the changes in policies, so far has done little to explore how those transformations occurred within them, i.e., the organisational change processes and the correlate decision-making processes triggered by the demands coming from outside the organisation. In other words, the literature does not open the “black box” in terms of investigating how the management bodies and the workforces reacted and acted to implement the required changes.

It is as if changes were an “automatic response”. A demand, on one side, “touching” the organisations (policy demands) and, on the other hand, outcomes related to performance, outputs, management, and so on. What happens in-between is the black box. Figure 1 illustrates this.
The way those changes occurred, with the possible tensions and pressures that arise within the organisations, are not well explored, especially regarding governance and decision-making process.

The Fiocruz experience, however, is rather unusual and offers a singular opportunity for investigation, for opening the black box of governance and decision-making; hence, filling a gap in the PRO literature: This is the contribution this thesis will make, from an analysis triggered by organisational change processes in a Brazilian PRO in the health field: Fiocruz, as illustrated in Figure 2.

1.4. Justification of the Level at Which the Thesis Works

The governance and decision-making structure in Fiocruz is very unusual. It is far more participatory and collegial than is common in most PROs and most organisations of its size. It is a model whose particularity is even unusual as compared to much of the Universities and resembles mainly that of some trade unions and political parties.

The organisation refers to its style of governance and decision-making as “democratic managerial administration” (Fiocruz, 2000). It is a model that brings the decisions and
decision-making processes into sharp relief; thus, providing inputs for the black box openness intended in this research.

The alignment of various interests within this PRO is liable to be more marked and visible than is often the case. Therefore, it becomes a privileged opportunity for research due to its uniqueness, which offers peculiar characteristics for investigation and contribution to knowledge.

1.5. Research Questions

Fiocruz has challenges of all kinds. It is a complex organisation, with more than 10,000 employees, and with units spread across different regions of a big country. Its multiplicity, therefore, becomes a coordination challenge as well, concerning building consensus on themes that may define its everyday life and future.

To deal with such complexity, the organisation keeps constantly working on the improvement of its management as to assure that the decisions are legitimate, proper and efficient. The concern with it can be evidenced by the VI Internal Congress of the organisation, in 2010, which became a landmark due to the launching of the first strategic plan based on a long-term analysis – “The Plan Brazil 2022”. Following this perspective, the same Congress set the creation of a Centre for Strategic Studies, which is expected, among other objectives, to undertake Foresight studies in strategic areas as to guide both the reflection on the health agenda and institutional strategic planning based on the enhancement of the existing bodies in the organisation (Fiocruz, 2010).

Therefore, considering the unique governance characteristics of this PRO and the proposal of long-term analysis to improve its strategic planning, the research will answer the following questions:

1. What is the role of collective decision-making in the formulation of strategic planning in a research-led organisation with the complexity of Fiocruz?
2. How does this relate to the long-term planning structures created to support decision-making in this organisation?
SECTION 2: LITERATURE REVIEW

2.1. Introduction

To answer the research questions, this thesis will develop arguments drawing on the literature concerned with public sector research (PSR), strategic management, organisational change management, and democracy.

PSR literature is a significant body of research because it will contextualise the environment in which Fiocruz, the core site of this research project, is embedded as a PRO. Locating the PhD thesis within this body of literature is, therefore, an important first step.

Decision-making and strategic management literature then aim to underpin the analysis and the understanding of the decision-making processes existent in Fiocruz. The application of this literature in the thesis is mainly concerned with strategic planning; hence, this specific literature has been chosen to approach the subject.

Likewise, inasmuch as the motivation for this thesis comes from an interest in a proposal of organisational change linked to decision-making, the literature concerning organisational change management is mandatory for inclusion in this review, particularly the subject resistance to change, because certain decisions may trigger more or less resistance, more or fewer debates in Fiocruz.

Finally, this review will include a Section discussing democracy in organisations – this is the management model used in Fiocruz, distinguishing this organisation from others and contributing to its unique position.

Figure 3 presents the literature review map, helping to visualise the relationship between the literature, and the literature and the research.

The figure resembles the one of an atom. The nucleus of the literature concerns PSR, strategic management and organisational change. The black box to be opened is at the intersection between PRO and organisational change, i.e., how changes occur within a PRO, a theme little explored in the literature.

As one opens the black box, it leads to the research questions, and they are at the intersection of the nucleus: PROs, strategic management, and organisational change. To answer them, however, it is necessary to explore the intersection between organisational change and strategic management, and the intersection between PRO and strategic management. These two intersections represent the particular model of decision-making in Fiocruz: Democracy.
The decision-making is located in the intersection between strategic management and organisational change, meaning that changes in Fiocruz are related to decisions that are made using the processes provided by strategic management (strategic planning). In the intersection between strategic management and PRO, is located democracy, which distinguishes the organisation under investigation.

In this sense, making use of the visual similarity with an atom, “democracy” and “decision-making” are surrounding the nucleus like “electrons” and, as such, defining the “element” Fiocruz, differentiating this PRO from the other ones.

Figure 3 - Literature review map
2.2. Public Sector Research (PSR)

2.2.1. Overview of the PSR Field

Public services are regarded as the most knowledge-intensive sectors, contributing to the quality of life, welfare and overall economic performance (Thénint and Miles, 2013).

The PSR field is referred to institutions “for which the major source of funds is public; which are in public ownership or control (or have converted to private ownership since 1980); and which aim to disseminate their research. It also covers the organisations of officially recognised charities or foundations which raise the majority of their funds from the general public, and whose main activity is research” (Senker, 2000, p. 395).

Originally there were three main sectors in the PSR (Senker, 2000):
- Universities, engaged in the frontiers of knowledge;
- Non-university research organisations or institutes, engaged in general or specific functions; and
- Government laboratories, aimed at supporting policy formation and implementation.

Those roles, however, converged when governments emphasised the promotion of economic growth; innovation and technology transfer in the final decades of the 20th century due to socioeconomic and technological transformation (Senker, 2000).

That was a moment when budgets were squeezed; with concerns about the efficiency and efficacy of the State and a widely shared belief that practices from the private sector management could be applied to the benefit of the public sector. It has become known by the generic term “New Public Management” (NPM), and the governance of science was not immune to it (Boden et al., 2004; Cox et al., 2001).

The government’s role itself, as an operator and user of laboratories, was questioned. It was asked, for instance, what should be their role, where should lie the delineations between the university system and the private sector, and how far should privatisation be on the political agenda for the government (Cox et al., 2001).

Innovation systems analysts pointed to a failure to rapidly translate discoveries into innovations, especially in EU countries, and ascribed it to weak links between public research and industry (Larédo and Mustar, 2004).

Political pressures were then put on public research to increase the collaboration with firms and external objects for the production of applied research and transfer technology (Coccia and
Rolfo, 2008; Larédo and Mustar, 2004). The public intervention was made considering three main foci: Technological programmes; support for SMEs; and public-sector research (Larédo and Mustar, 2004).

In the face of all that, changes were made aiming at the increasing resources, including private funding, and bringing the academic researchers closer to the economy and the society, as well as at better organisation, through the promotion for the establishment of centres of excellence or of mixed research units (Larédo and Mustar, 2001).

Although not displaying a pattern of prevalent means of reorganisation, there are five common dimensions to the processes of reorganisations, regardless of the subject and thematic field, and country (Salles-Filho et al., 2001):

1. Diversification of sources and mechanisms of research funding.
2. Redefinition of the actors, their spaces and their roles.
3. Interaction and coordination between the actors.
4. Understanding of sectoral and disciplinary dynamics.
5. Reconciliation of public commitment and new contractual relations with the State.

The NPM viewpoint reached Brazil as well. In the ‘90s, the government proposed an administrative reform, materialised through the launching of the “Master Plan for the Reform of the State Apparatus” (Brasil, 1995), which was made under the NPM approach, generating a means of reorganisation, in Fiocruz, of the fifth dimension.

That was a moment in which public administration was under “suspicion” for its “inefficiency”, blamed for the “crisis of the State” and the economic crisis of the ‘80s. The redefinition of the role of the State was the plan in the ‘90s, and the target was to overcome the bureaucratic and patrimonialistic administration, seen as a focus of corruption, towards an efficient, managerial one (Brasil, 1995). Inspired by some of the OECD countries, mainly the UK, the public organisations underwent a massive privatisation process (Pereira, 2014).

In reality, the master plan was not the first initiative, although the most comprehensive one. Earlier in 1990, the government had launched the “National Privatisation Program” (“L8031,” n.d.). Later, in 1997, this law was replaced by a new one (“L9491,” n.d.), shaped according to the master plan, i.e., reinforcing that the “reform of the state apparatus” was mostly a privatisation program.
Differently from the UK, in Brazil the privatisation did not reach directly the public research organisations, which were to be converted into the legal status of “social organisations” (SOs), a new entity suggested by the master plan. The SO is a non-profit, non-state public organisation, under the State budget. The proposal focused on the considered non-exclusive State services, including hospitals, Universities, schools, research centres and museums. It was conceived to operate under “management contracts” and was expected to generate decentralisation and more flexibility (Brasil, 1995).

Despite being non-profit, the SOs have been seen as a means of outsourcing, and a disguised sort of privatisation (Andreazzi and Bravo, 2014; Contreiras and Matta, 2015). Although not generating profits directly, they generate revenues, surplus, expansion, and concentration of power (Contreiras and Matta, 2015); hence, they are not considered by most of the public health professionals as the best means for the administration of essential public services like hospitals.

Nonetheless, some public research organisations started operating as SOs, working via “management contracts”. The timing and the managerial movements tend to be much more agile in them (dos Santos Ribeiro et al., 2015).

Perhaps due to the failed experience of privatising the research centres in the UK, as most of them were not commercially successful (Boden et al., 2004; Boden at al., 2001), in Brazil the privatisation, and outsourcing, focused not on the research centres initially, but on large companies (privatisation) and health services (outsourcing).

In the beginning, the focus was mainly on the Brazilian profitable public-owned companies, such as Vale do Rio Doce, the world's largest company in the iron ore market by then (“SEC Info - BHP Billiton Ltd - ‘6-K’ for 5/31/00,” n.d.).

The “case” of Vale do Rio Doce, in particular, was emblematic and this is because it showed a clear contradiction regarding the motives triggering privatisation (“inefficiency of the state”). The workers of other public companies were concerned about their future, and it was not different in Fiocruz.
2.2.2. Public Research Organisations

Public research organisations (PROs) are an umbrella concept referring to a diverse and heterogeneous group of research centres that share a majority of public funding or ownership (Arnold et al., 1998; OECD, 2011; Sanz-Menéndez and Cruz-Castro, 2003).

Involved in research and development (R&D), but distinct from higher education institutions, PROs are a lesser known entity (Arnold et al., 1998; Georghiou et al., 2003). They occupy an intermediary position between public and private organisations regarding outputs, governance, ownership, and operate at the boundary of science and non-science (Gulbrandsen, 2011).

Likewise, PROs can be regarded as “hybrids”, as they are the result of public initiatives and are under government control, but usually at the same time have a private non-profit legal status (Cruz-Castro et al., 2012).

A comprehensive classification of PROs, based on international studies, considers four major groups, although these characteristics are not exhaustive and some organisations do not necessarily fit in only one type (OECD, 2011):

1. Mission-Oriented Centres (MOCs): Owned or run by government departments at the national or sub-national levels for undertaking research in specific topics or fields aimed at supporting policy-making.

2. Public Research Centres and Councils (PRCs): They are overarching institutes and undertake basic and applied research in different fields. These tend to be large and to consume a significant amount of the national R&D capabilities.

3. Research Technology Organisations (RTOs): Although the government owns most of them, the link with the public sector is not as strong as for the other two categories. They are frequently semi-public and non-profit, aiming at the development and transfer of science and technology to the private sector and society.

4. Independent Research Institutes (IRIs): Although these count on the high public support and public representatives in their governance structures, they are sometimes known as “semi-public”, as different sources may fund them, and work on the boundaries of the public and private sectors. They undertake both basic and applied research, but their research is driven by “issues” or “problems” to be explored and solved; not just “fields”.
Some examples of PROs are the National Centre for Scientific Research (CNRS), in France; Max Planck Society (MPG) in Germany; Riken, in Japan; and Fiocruz, in Brazil.

That classification, however, is not static, since an organisation may be dedicated to fundamental research but perform some degree of applied research; furthermore, a mission-oriented institution, e.g., may not be focused exclusively on conducting applied research (Larédo and Mustar, 2004; OECD, 2011).

2.3. **Organisational Change Management (OCM)**

2.3.1. **Overview of the OCM Field**

Change management is “the process of continually renewing an organisation’s direction, structure, and capabilities to serve the ever-changing needs of external and internal customers” (Moran and Brightman, 2000).

The literature about organisational change is broad. There is a broad range of descriptions of models, approaches, and others, with confusing and contradictory theories (Burnes, 2009; Iles and Sutherland, 2001). Many of them are well grounded in theory and practices, whilst others seem to be disconnected from either theory or reality (Burnes, 2009).

Nevertheless, a comprehensive review of organisational change proposed five elements to define the scope of such theory (Dunphy, 1996):

1. A basic metaphor: Often unconsciously held, concerns the nature of the organisation.
2. An analytical framework or diagnostic model: To understand the organisational change process.
3. An ideal model of an effectively functioning organisation: Suggestions for change and values to be used in evaluating the success of the modification intervention (survival, growth, workforce, satisfaction, and others).
4. An intervention theory: Specifies when, where, and how to intervene as to move the organisation closer to the ideal.
5. A definition of the role of change agent.

A classic model of change process was presented by Lewin (1947):

1. Unfreezing: This is when the individual or group becomes aware of the need of changing.
2. Changing: A diagnosis is made, and new models of behaviour are explored and tested.
3. Refreezing: The new behaviour is applied, evaluated and, if reinforcing, adopted.
Lewin’s model was adopted by other authors and has become a reference for organisational change (Bamford and Forrester, 2003). Named as the “planned approach” by that author, it refers to changes the organisation undergoes consciously and intentionally (Marrow, 1977).

2.3.2. Organisational Change Approaches

The literature concerning the OCM is very close, or parallel, to the strategic management one – basically regarding the opposition between the planned approach vs emergent approach, which will be detailed further, on Section 2.4 – although the central authors of each do not quote one another, indicating some independence between them.

The opposition mentioned is related to the criticism that Lewin’s model was subject to. This criticism originated what became known as “emergent approach”. It is an approach that refers to changes which happen unintentionally, so fast and unpredictable that it cannot be managed from the top (Barnard and Stoll, 2010). The supporters of this approach, however, seem to agree mostly concerning their opposition to the planned approach rather than on a particular alternative (Bamford and Forrester, 2003).

The opposition between planned vs emergent change, however, considers that “organisation-level change is not fixed or linear in nature but contains an important emergent element change” (Iles and Sutherland, 2001, p. 14).

For some authors, the organisations move from transformation to transformation, with only brief periods of stability. Transformation, thus, would be a continuous process, rather than episodic (Porras and Silvers, 1991).

Episodic change is “an occasional interruption or divergence from equilibrium. It tends to be dramatic, and it is driven externally. It is seen as a failure of the organisation to adapt its deep structure to a changing environment” (Weick and Quinn, 1999, p. 366). It happens when organisations are in periods of divergence. The change then is episodic, discontinuous and intentional. It can be pushed either by external factors or internal ones (Weick and Quinn, 1999).

Continuous change, in turn, “is a pattern of endless modifications in work processes and social practice. It is driven by organisational instability and alert reactions to daily contingencies. Numerous small accommodations cumulate and amplify” (Weick and Quinn, 1999, p. 366). The idea is: Small adjustments are continuously created across units and have the potential to cumulate and create substantial change (Weick and Quinn, 1999). The rationale underpinning
continuous change is that organisation’s environment is always changing in a fast, radical and unpredictable way. Therefore, only by continuous change and adaptation, will they be able to keep aligned with their environment and survive (Burnes, 2009).

Understanding the differences between both approaches helps the reflection upon developments and evolution of organisations vis-à-vis their long-term targets. Although few of them are able to decide for themselves which perspective to adopt, they can make use of many principles of the continuous change by generating flexibility to deal with issues they encounter in the everyday organisational life (Iles and Sutherland, 2001).

Another perspective on organisational change presents three different processes – developmental, transitional and transformational – Figure 4:

1. Developmental Change: It is the change that enhances or corrects existing aspects of an organisation, often focusing on the improvement of skill or process, leading to better performance over time (Iles and Sutherland, 2001; Marshak, 1993).

2. Transitional Change: Involves a move from one state condition to another (Marshak, 1993). It is a systematic study and design of an organisation’s strategy and supporting structures, followed by the formal planning, implementation, and monitoring of the changes required (Ackerman, 1982). Its foundations are in the work of Lewin’s three stages process: Unfreezing, changing and refreezing (Iles and Sutherland, 2001).

3. Transformational Change: Modification from one state of being to an entirely different one (Marshak, 1993). It means a total shift in the premises made by the organisation and its members and may lead to an entirely different organisation concerning structure, processes, culture and strategy. As a result, it may become an organisation that operates in the developmental change mode (Iles and Sutherland, 2001).

These perspectives will help characterise the types of changes observed in the organisations, as we will see further.
2.3.3. Resistance to Organisational Change

One important issue in the organisation change field is related to resistance. It is “a tri-dimensional (negative) attitude towards change, which includes affective, behavioural, and cognitive components” (Oreg, 2006, p. 76).

The affective dimension is in respect of one’s feelings about the change; the cognitive dimension involves the thoughts about the change; and the behavioural one regards the actions, or intentions to act, in response to changes. These three components are connected; and the behaviour will reflect a mix of the affective and cognitive aspects (Oreg, 2006).

The efforts to change, however, most of the time face critical issues and may take longer than expected or desired, and the most common reasons for people to resist to change are (Kotter and Schlesinger, 2008):

1. Parochial self-interest: This is when people think only of themselves, thinking they will lose something of value. People think exclusively in their interests and not the organisation as a whole.

2. Misunderstanding and lack of trust: This is when people do not understand the results of the change, seeing it as something that will cost them more than gaining. It is due to lack of trust between the one that is proposing changes and the employees.
3. Different assessments: When the change is assessed differently, between people and the managers or those proposing changes. They perceive the change will have more costs than benefits not only for them but the organisation as a whole.

4. Low tolerance for change: When the change requires people to develop new skills and behaviour too quickly; hence, they fear they will not be able to do that in time.

Bovey & Hede (2001) highlighted the role of unconscious factors underpinning resistance to change, regarding fields such as psychodynamics and psychoanalysis, and make a distinction between two sorts of defence: Adaptive and maladaptive.

The adaptive is related to humour and anticipation, whereas the maladaptive one regards denial, dissociation, isolation of affect, projection and acting out. Individuals inclined to use maladaptive defences are more likely to resist organisational change. On the other hand, individuals with a tendency to unconsciously adopt adaptive defences were less liable to resist organisational change (Bovey and Hede, 2001).

Oreg (2006), in turn, pointed that, like personality aspects, environment plays a major role in resistance. Trust in management, particularly, as well as the manner and the atmosphere in which change is implemented, play a dominant role. One other relevant finding of the author is related to information, i.e., information itself is not enough to tackle with resistance, but the content and the manner information is communicated likely to influence change acceptance.

Nevertheless, if there is resistance to change within the organisations and reasons for this, there are ways to deal with resistance once it manifests. Kotter & Schlesinger listed six manners (2008):

1. Education and communication: The most common ways to overcome resistance. Communicating the reasons and ideas helps people see the need and the logic for the change, especially when employees do not have enough information about the implications of changes. It can be a good tactic since it may conquer employees to help implement the change but may be time-consuming if lots of people are involved.

2. Participation and involvement: If initiators manage to include resistant people in the design and implementation of the change, they can prevent resistance. People feel more committed to the change, but there is a risk of an improper design of the change, as well as time-consuming, particularly if it is an immediate change.
3. Facilitation and support: It includes providing both training in new skills and emotional support, and is most helpful when fear is the underpinning resistance. Although relatively an easy way to defuse major resistance, can be time-consuming, expensive, and still fail.

4. Negotiation and agreement: Offers incentives to active and potential resisters. Usually, appropriate when someone perceives to be losing out because of change but shows off relevant power to resist. Like the previous one, it is relatively an easy way to defuse major resistance and can also be expensive. In any case, has the potential to expose managers to the possibility of blackmail.

5. Manipulation and cooptation: Some managers try to influence others through selected information and structured events. It includes coopting people by giving them an important role in the design or implementation of the changes. Can be relatively inexpensive and uncomplicated to gain support. In any case, people may respond negatively if they notice that they are being deceived or induced not to resist.

6. Explicit and implicit coercion: Managers can also cope with the resistance by using coercion, and forcing people to accept a change through threats like the loss of jobs, opportunities for promotions, firing or transferring. It is a risky process, as people resent forced change. It is applied in situations where the speed is crucial, and changes are not popular.

Likewise, there are issues related to the efficacy of changes, and about 70% of the programmes for changing do not manage to achieve their purposes (Balogun and Hailey, 2008). This rate, however, is much probably associated with problems in gathering evidence about the efficacy of programmes rather than expressing a failure in managing changes (Iles and Sutherland, 2001).
2.4. Strategic Management

2.4.1. The Strategic Management Field

The strategic management field finds its origins in the birth of the mass production era, which is rooted in the Industrial Revolution and deeply linked to “change” as a philosophy or ethos of organisational success. In turn, the word “challenge” is also seen here as inextricably linked to change philosophy in this context. As firms must adapt themselves to new circumstances, whether the macro-environment of an industrial world or the micro-cultures of local political landscapes, they implement changes in administration to face the challenges triggered by changes in technologies.

In the first hundred years since the first Industrial Revolution, there were three sequential phases of problems encountered by managers: a. The creation of the modern firms; b. The mass production technology; and c. The development of mass marketing. In the second half of the 20th century, new challenges emerged: a. The revival of entrepreneurship; b. Increased global competition; and c. Societal involvement determining how the firms should be run, as well as their roles in the post-industrial society (Ansoff and McDonnell, 1990).

That was a period when the challenges companies faced were becoming more and more complex, ranging from issues related to the creation of the modern firm (economic pressures) to the external environment (social issues). All these demanded the enterprises adapt their internal processes to deal with the challenges of a new and fast changing world. The management systems, therefore, needed to evolve. Ansoff and Macdonnell (1990) grouped four stages of evolution:

1. Management by control of performance: For when the change was slow, applied post-change.
2. Management by extrapolation: When the change was fast, and it was possible to plan for the future by extrapolation of the past.
3. Management by anticipation: In this stage, the changes were fast and permeated by discontinuities, but slow enough as to engage into anticipative action and responses from organisations.
4. Management through flexible/rapid response: Significant challenges are too fast to permit anticipative action.
The necessity to respond to environmental discontinuities (e.g. technological change) in the second half of the 20th century brought the concept of strategy to the attention of managers (Ansoff and McDonnell, 1990).

Strategy is a concept which comes from the military field, and dates back to the antiquity, both in the east and in the west (Ansoff, 1965; Evered, 1983; Mintzberg et al., 2003). The word itself – strategos – is Greek and means a general commanding an army. A board of 10 generals set to coordinate the actions of their armies was called strategia (Evered, 1983).

In the management field, we see this goal-orientated, military etymology has a far reach, with one classic conceptualisation made by Chandler:

“Strategy can be defined as the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals.”

Chandler, 1962, p. 13

That author’s definition links the establishment of new goals and objectives to the necessity of enlarging the activities and resources of the enterprise. Therefore, corresponding structures such as new plants and offices, adding new personnel, and so on, may be created (or reformed), as to adequately reflect these new demands. Strategy and structure are two sides of the same coin in Chandler’s book, although the latter comes after the first.

One other important aspect in Chandler’s definition, and essential for this research, is the link with long-term goals and objectives. The long-term aspect, however, is barely explored in his book, which is focused mostly on exploring the parallelism between structures and strategies. The long-term analysis, in this sense, is taken for granted, so that it is possible to summarise Chandler’s definition of strategy as a synonym of long-term planning, which in turn determines the decision-making at present, e.g., concerning structures. Hence, it is the long-term analysis that will define the courses of action, including those concerned with the structures, activities and resources.

The field, however, is an area with a diversity of definitions. Mintzberg made a comprehensive analysis of it, and identified five main uses of the concept of strategy, which can be summarised in what he named as the five Ps – Plan, Ploy, Pattern, Position and Perspective (Mintzberg et al., 2009, 2003):
1. As a plan, it is a consciously intended action or guideline and has two primary aspects: a. The strategy is developed before the action to which it applies; and b. It is made purposefully. Also, the strategy can be general or specific.

2. As a ploy, it is a “subset” of the strategy as a plan when it is specific and is used with the deliberated intention to outwit a competitor.

3. As a pattern, it is regarded as a stream of actions, which are consistent in behaviour over time, whether intended or not. The pattern, in this sense, may be developed in the absence of, or despite, intentions.

4. As a position, strategy means the locus of the organisation, referring to mediation between the internal and external contexts, as to distinguish it in the external environment.

5. As a perspective, it goes further than the definition as a position, by looking inside the organisation regarding a deep-rooted perception of the world. This perception is collective, shared by the members as what makes the difference of the organisation when compared to other ones.

Considering the uses mapped by Mintzberg, in the case of Fiocruz the concept of strategy can be regarded as a plan, a position and a perspective. It is a plan because it is a consciously intended movement. It is a position because, as a consciously intended movement, it aims to set or rather reinforce the locus of the organisation continually and, as such, this locus is shared by (the majority of) its members.

Similarly to the concept of strategy, the strategic management theory also comprises a wide variety of meanings and a vast literature. Nag et al. (2007) published a review which illustrates this diversity of concepts within the field (Table 1).
As the review was based exclusively on journal articles, the authors recognised those definitions were illustrative, and hence should not be considered the most influential or most recognised. Nonetheless, they managed to yield what they call an “implicit definition” from a systematic analysis of 447 articles from boundary-spanning fields – such as Sociology, Economics, Marketing and Management –, which can be summarised as “the major intended and emergent initiatives taken by the managers on behalf of the owners, involving utilisation of resources to enhance the performance of firms in their external environments” (Nag et al., 2007, pp. 942-943).

That implicit definition, in turn, is quite similar to the proposal of Ansoff and MacDonell, who stated: “Strategic management is a systematic approach to a major and increasingly important responsibility of general management: to position and relate the firm to its environment in a way which will assure its continued success and make it secure from surprises” (Ansoff and McDonnell, 1990, p. xv).

The similarity here clearly demonstrates the topicality of the latter, but rather than searching for a “pure” or consensual concept in such a diverse field, it is the tacit agreement – evidenced by Nag et al.’s “management” definition – that underlies both concepts and acts as a brokering
core linking the different actors of the field, underpinning the success of strategic management as it is.

That said, it is Ansoff and MacDonnell’s definition, underpinned by the “implicit definition” yielded by Nat et al., that will guide this thesis.

2.4.2. Strategic Decision-Making

Similarly to the field in which it is embedded, decision-making definition comprises a broad range of concepts. According to March, it is a process of making choices from among alternatives (March, 1994). Carrol and Johnson went a little further and defined decision-making as a process by which a person, a group, or organisation identifies a choice or judgement to be made, gathers and evaluates information about alternatives, and selects from among them (Carroll and Johnson, 1990).

Mintzberg et al. (1976, p. 246), at first defined decision: “A specific commitment to action”. Then they described the decision process: A “set of actions and dynamic factors that begin with the identification of a stimulus for action and ends with the specific commitment to action”.

Strategic decisions, in turn, are:

“(…) primarily concerned with external, rather than internal, problems of the firm and specifically with selection of the product-mix which the firm will produce and the markets to which it will sell.”

Ansoff, 1965, p. 5

The decision-making process has three different levels: Top management; b. Middle management; c. Lower management. The time span of decisions ranges from long-term in the top level to short term in the lower level (Gore et al., 1992). In a brief review, the authors mapped the works of Simon (1960), Drucker et al. (1967) and Ansoff (1969) making a parallel between them and locating them in those three levels.

In Simon, there are two groups of decisions: Programmed and non-programmed. The programmed ones are found in the middle and lower levels, whereas the non-programmed are at the top level. The latter are related to repetitive and routine decisions which can be easily mapped on a diagram or computer, and the first are very complex, and hence cannot be mapped like the programmed ones, requiring a customised and unique solution given its complexity and novelty (Gore et al., 1992; Simon, 1960).
Drucker’s proposal is similar to Simon’s, naming the categories as generic and unique. The generic ones are similar to Simon’s programmed categories, dealing with routines, cause-effect relationships, and having clear criteria to make the decisions. The unique decisions in Drucker are analogous to the non-programmed categories, characterised by novelty, incomplete information and uncertainty, thus requiring creativity and judgement (Drucker et al., 1967; Gore et al., 1992).

Ansoff’s model is more sophisticated and embracing, classifying decisions in a. Strategic; b. Administrative; and c. Operating (Ansoff, 1969). Strategic decisions are parallel to Simon’s non-programmed categories and Drucker’s unique categories. These are about long-term plans, with clear objectives, and are made by the top decision makers in an organisation (Ansoff, 1969; Gore et al., 1992).

Simon’s programmed decisions and Drucker’s generic decisions are both related to administrative decisions (middle management) and operating decisions (lower management) in Ansoff (Gore et al., 1992). Operational decisions are under rules, methods and procedures, whereas the administrative ones are about control, motivation and organisational systems (Ansoff, 1969; Gore et al., 1992). Table 2 is a comparison to help locate each of the authors.

The levels of management shown, although clearly defined, are not static, but flexible. Mintzberg, in this sense, distinguishes strategic decisions between deliberate and emergent. The former ones are intentional, made in the top level of management and some of them, for different reasons, are not always fulfilled – these are called unrealised strategies. The latter are unintentional and may arise from both the lower or top levels, and acquire a pattern not explicitly intended (Mintzberg, 2000; Mintzberg et al., 2009, 2003).
The deliberate strategic decisions are plans and look ahead, guiding the future. The emergent decisions look at past behaviour over time. Both deliberate and emergent strategies can be realised. The latter may be a result of learning from past mistakes, the spontaneous convergence of actions between the operators, the development of independent new ideas, the precedents set by individuals, and so on (Gore et al., 1992; Mintzberg, 2000; Mintzberg et al., 2009; Mintzberg and McHugh, 1985). In summary, reality does not always see strategic decisions fitting into a pre-established model.

Figure 5 shows that both emergent and deliberate strategies may become realised or not. Emergent strategies, however, are not intended. As they acquire a standard, they may be incorporated and, thus, realised. Intended strategies, in the other hand, are deliberated and, depending on unexpected circumstances, may not be realised.

### Table 2 - Gore’s comparison between the models of Ansoff, Simon and Drucker

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<thead>
<tr>
<th>Time span of decisions</th>
<th>Level</th>
<th>Ansoff</th>
<th>Simon</th>
<th>Drucker</th>
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<td>Long-term</td>
<td>Top Management</td>
<td>Strategic Decisions</td>
<td>Non-Programmed Decisions</td>
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Source: Gore et al., 1992
The processes through which strategic decisions are made vary. Mintzberg has conducted a comprehensive review of them and identified ten schools (Mintzberg et al., 2009):

1. **Design School**: It is the most influential view, and sees strategy as a match between the capacities of the organisation, considering its strengths and weaknesses, and the possibilities of the environment regarding threats and opportunities. This school follows Chandler’s statement in which the structure comes after the strategy.

2. **Planning School**: Known as strategic planning, this school has gained popularity mainly between management education, big business and governments. It is characterised by formality in its procedure, training and analysis. The main tool is the SWOT analysis, which is used to set the objectives of the organisation. An operating plan and a budget back these. “Scenario planning” is another tool recently added to this school, as well as other tools like “real options” and “strategic control”.

3. **Positioning School**: This school follows both the design and the planning schools, but emphasises the strategies that can defend the organisation against the competitors. In this sense, it is a more pragmatic school since it is focused on gaining advantages in the competitive marketplace.

4. **Entrepreneurial School**: Different from the previous schools, which rely on methods and formality, the entrepreneurial school is focused exclusively on the leader of the organisation. The formal processes and approaches give place to intuition, judgement,
wisdom, experience, and insight. The central concept is “vision”, which works as an inspiration of what shall be done.

5. Cognitive School: This school is about the mind of the manager concerning human cognition. The strategists are self-taught, developing knowledge based on their experiences. It is a circular movement; experience teaches knowledge, which will determine actions, which will determine experience. It has two aspects: The first one processes an objective vision, in which the world is scanned in terms of what it is; the second point is subjective, and here strategy is an interpretation of the world.

6. Learning School: In this school, the strategy is formed from the moment in which people learn about a situation and how organisations can deal with this new learning. This learning hence may become a behaviour pattern. Paraphrasing the quote “learning-by-doing”, this school is rather “strategizing-by-learning”.

7. Power School: Here power and politics are used to influence strategy changes in the organisation. The power to utilise can be legitimate or not, and may include clandestine subversion, which, in turn, may include cooperative alliances designed to promote the same goals.

8. Cultural School: It is the reverse of the power school. Whereas that school relies on politics and power, the cultural approach relies on the influence of culture to keep strategic stability, and this may occur in order to resist to changes. The culture here is associated with the common beliefs, traditions, and habits of the members of the organisation.

9. Environmental School: In this school, the environment is the main actor, and the organisation is passive, spending most of its time reacting to the influences of the external context.

10. Configuration School: This is the school that recognises the possibility to integrate all the other nine schools. It has two sides: Configuration, which means the description of the organisation and its context; and transformation, expressing the strategy-making process. The first refers to the relative stability of the organisation, whilst the latter relates to changes that sometimes happen, guiding the organisation to a new configuration.
It is the Planning School the one of interest for this research, firstly because it is the main planning perspective applied in Fiocruz over the years, but also because of the recent adding, as observed, by scenario planning techniques.

2.4.2.1. Foresight

The afore mentioned adding of scenario planning techniques to the Planning School, in fact, has not been only a matter of one or another technique, but the adoption of Foresight by large R&D corporations. Foresight, in this case, can be defined as:

“a systematic, participatory, prospective and policy-oriented process which, with the support of environmental and horizon scanning approaches, is aimed to actively engage key stakeholders into a wide range of activities ‘anticipating, recommending and transforming’ (ART) ‘technological, economic, environmental, political, social and ethical” (TEEPSE) futures.”

Popper, in: Ravetz et al., 2011, p. 9

It involves five elements (Gavigan et al., 2001, p. 4):

1. Structured anticipation and projections of long-term social, economic and technological developments and needs.
2. Interactive and participative methods of exploratory debate, analysis and study, involving a wide variety of stakeholders, are also characteristic of Foresight (as opposed to many traditional futures studies that tend to be the preserve of experts).
3. These interactive approaches involve forging new social networks. Emphasis on the networking role varies across Foresight programmes. It is often taken to be equally, if not more, important than the more formal products such as reports and lists of action points.
4. The formal products of Foresight go beyond the presentation of scenarios, and beyond the preparation of plans. The most important is the elaboration of a guiding strategic vision, to which there can be a shared sense of commitment (to which the networking processes can be helpful).
5. This shared vision is not a utopia. There should be explicit recognition and explication of the implications for the present day decisions and actions.

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Fiocruz planning has been strongly influence by Carlos Matus Situational Strategic Planning (Huertas, 1996; Matus, 1991, 1987).
Underpinning these, there are five rationales (Miles et al., 2008):

1. Directing or prioritising investment in STI.
2. Building new networks and linkages around a shared vision.
3. Extending the breadth of knowledge and visions in relation to the future.
4. Bringing new actors into the strategic debate.
5. Improving policy-making and strategy formation in areas where science and innovation play a significant role.

The long-term planning has integrated the decision-making at all managerial levels, considered a core activity for the strategy formulation of the company. It is the “third generation of Foresight”, as stated by Reger (2001). This author distinguishes three generations of Foresight:

- First generation: Covers from the ‘60s to the beginning ‘70s and characterised by the development of specific indicators for planning. It was considered an isolated task within the organisation.
- Second generation: Covering from the beginning of the ‘70s to the beginning of the ‘90s, was characterised by the development of specific indicators for Foresight. More sophisticated planning methods for R&D corporations increased the demand for anticipating trends.
- Third generation: From the beginning of the ‘90s until today, represents the integration of technology Foresight in the strategic management of the large R&D corporations.

Figure 6 gives a more detailed overview of these three generations.
Miles and Keenan (2002) made a further contribution and called the Foresight which emerged during the ‘90s “Fully-Fledged Foresight”, which means that Foresight extends beyond the boundaries of a single organisation, including therefore a variety of stakeholders, and can be described as the combination of three elements (Miles, 2008):

1. Prospective studies of long-term opportunities and alternatives: Involve traditional forecasting efforts to explore future dynamics, with standard extrapolative and normative approaches, such as scenario analysis.
2. Participatory networking: Involves interaction of wider ranges of stakeholders and experts envisioning the future.
3. Policy orientation: Adopts a longer-term perspective in the form of strategic planning, allowing flexibility and preparedness to deal with uncertainty, disruptive events and innovations.
2.5. Democracy in Organisations

2.5.1. The Concept of Democracy

The concept of democracy is based on Aristotle and Tocqueville. The term itself was raised by Aristotle, who yielded six forms of rule: Royalty (one person rules in the common interest); tyranny (a ‘deviation’ of royalty - one person rules in his private interests); aristocracy (proper rule by the few); oligarchy (a ‘deviation’ of aristocracy); ‘polity’ (proper rule of the many); and democracy (deviation of polity) (Cunningham, 2002).

The government, for Aristotle, might be exercised either by one person, by a few individuals or by many people. In each case, such rule may be exercised properly or improperly. By proper (or ‘right’) rule he meant when the government is undertaken for the common good while improper rule aims to serve private interests, whether of the one, the few, or the many themselves. For Tocqueville, democracy was conceived as a rule by the people. It was a necessity for equality of condition concerning access not only to voting but economic advantages and culturally, i.e., in anti-aristocratic attitudes (Cunningham, 2002).

One well-known statement tries to summarise the concept: “Government of the people, by the people, for the people”. It is mistakenly assigned to Abraham Lincoln, but the author was the theologian John Wycliffe and referred to the Bible (Hannan, n.d.).

There are two basic patterns of democracy: Majoritarianism and consensus. It is a “contrast” that rises when pointing who will do the governing and to whose interests the government should be responsive when people are in disagreement (Lijphart, 2012).

Majoritarianism says that the majority of the people decide, concentrating power in the hands of a bare majority, whereas consensus considers as many people as possible, thus trying to share, disperse and limit power in a variety of ways. In the case of the latter, the majority is regarded as the minimum expected, i.e., it seeks to maximise the size of the majorities (Lijphart, 2012).

The classical formulation of democracy regards five types of political regime. Three main types are (Democratization / edited by David Potter ... [et al.], 1997):

1. Liberal democracy.
2. Partial democracy.
3. Authoritarianism.
Other two “subtypes” are:

4. Direct democracy.
5. Participatory democracy.

- Liberal democracy: Binding rules and policy decisions are not made by the whole community, but accountable representatives. The accountability is guaranteed by free, fair and competitive elections, in which every adult has the right to vote and to stand for elective office.

- Partial democracy: Supposed to be a “mix” of political regimes. The accountability of government to citizens is somehow qualified. Military and other non-elected establishments within the state “cushion” the effects of elections, compromising the authority of the elected government. The elections are made as to assure that only certain candidates can be elected. The impact of opposition, when there is opposition, is not enough to change the status quo. There are restrictions related to freedom of expression and access to alternative information. If there are independent associations or organisations critical of the state, they are carefully monitored by the state.

- Authoritarianism: The society is regulated and directed by people not accountable to citizens. With no competitive elections, there is no citizenship, i.e., citizens are denied the right to criticise officials, government, regime, socioeconomic order, and prevailing ideology. The security forces of the State can be used to punish those who criticise. There is no transparency in the affairs of the State and no alternative sources of information. There is no allowance for the development of independent associations or organisations critical of the state. When it happens, they are suppressed.

- Participatory democracy: Extends and deepens liberal democracy by involving the civil society, and the majority of people, in political life, i.e., democratic accountability is extended beyond government and the state to economic enterprises, the workplace, local communities and the household.

- Direct democracy: Local communities have control and administer important affairs, which directly affect their lives. They also elect representatives to larger units of administration and control which, in turn, elect representatives to national institutions.

The classical formulation of democracy hereby summarised raise some concerns, particularly on one of the three most important types of political regime listed: Partial democracy. The description of this type seems to take for granted that elections themselves would be enough to guarantee or, so to say, to give a “flavour” of democracy when in fact there is no democracy,
given that the elections are used to assure that only certain candidates can be elected. Moreover, restrictions on freedom of expression and access to alternative information, as well as the monitoring of collectives which are critical of the state, cannot be regarded as democracy at all, even partially.

Such regime is, in fact, a step forward towards a perfected and improved authoritarianism, in which the citizens are led to believe they live in a democratic environment when they do not. In fact, that should be understood as “disguised authoritarianism”, instead of partial democracy.

There is a democracy only when there is no restriction on freedom of expression, complete access to all kinds of information – alternative or not – and freedom to meet, either for criticising the government or not. These are the basis for the citizens to discuss and confront different ideas to set up their opinions and choose their representatives consciously, not subject to manipulations to keep certain candidates in power.

This distinction made here is crucial to understand Fiocruz, where the workforce distinguishes itself by participating in the central decisions; hence, demanding transparent information from the top managers to underpin the debates. It is a culture deeply rooted in the organisation, consequently, any movement that may be regarded as a “partial democracy”, or rather a “disguised authoritarianism” is likely to trigger massive resistance.

The Brazilian history, in the Appendix, is a good example of a “disguised authoritarianism”.

2.5.2. Democracy in Organisations

In respect of the use of democracy in organisations, two main concepts deal with it: Corporate Democracy and Industrial Democracy.

Corporate Democracy is a concept related to companies in the stock market. It refers basically to the process in which shareholders: a. Initiate and vote changes in the corporate governance, including choosing or replacing their direction boards; and b. Initiate and vote upon corporate decisions (Bebchuk, 2005; Deane, 2005; Easterbrook and Fischel, 1983).

In 1980, a bill proposed to the US Congress contained a broader meaning. It intended “to develop a system of self-governance for large corporations that increases the participation of shareholders and directors in company decision-making, that better informs stockholders and affected communities of the economic and social impact of corporate activities, that better protects the rights of employees, that establishes public policy responsibilities of directors,
officers, and managing agents of corporations, and that provides penalties for violations of those responsibilities” (96th Congress H.R. 7010, 1980).

It aimed at weakening the powers of management “autocracy” so that corporations would be more socially responsible (Poole, 1980). That bill somehow expressed three meanings the concept had acquired as a recommendation for the companies to become more democratic: a. For increasing the role of government (as a watchdog or having public officials on boards of directors); b. For allowing the citizen or public participation in the managing of its affairs (via public interest directors and the like); and c. For encouraging or designating the involvement of the shareholders (Freeman and Reed, 1983).

Despite the attempts, corporations do not, as a whole, spread the power beyond the shareholders and direction boards, by allowing, e.g., employees to take part in the decision-making process. The participation of the latter comes from another concept, somehow similar to that one: Industrial democracy, which has been recently called also as “organisational democracy” (Weber et al., 2009).

The idea of including employees in such processes seems to have been first launched in 1876, by Proudhon & Langlois. The authors stated that industry leaders and instructors should be chosen from the labourers by the labourers themselves (Proudhon and Langlois, 1876). The idea was linked to the new-born industry, and the term was launched in 1897, by Webb & Webb in the book named “Industrial Democracy”, in which the authors analysed trade unions, i.e., it is linked to the labour movement, to the left-wing ideology.

The book, however, does not specifically conceptualise the term, but takes for granted the principle “government of the people, by the people, for the people”. The authors use it in a twofold way: a. Linked to administrative efficiency and popular control; b. As a method of collective bargaining (Webb and Webb, 1897).

In 1922, Korsch adopted the term in a broader sense, from workshop participation over collective bargaining to co-determination in the regional and national economy. For this German author, this co-determination would be a transition towards socialism (Müller-Jentsch, 2008). Clegg, in 1960, stated that industrial democracy must provide the rights and safeguard the interests of industrial workers (Clegg, 1960).

Poole (1986a) defined it as the exercise of power by workers or their representatives at their workplace, in parallel to changes and distributions of authority. For Hammer (1998) it is linked
to the structures and institutional mechanisms that support the workers or their representatives to influence the decisions made at their workplace.

Dachler and Wilpert (1978) outlined four theories underlying participation:

1. Democratic theory: Participatory democracy is a value in itself.
2. Socialist theory: People can become economically liberated by participating in the production process, and ultimately control it.
3. Human growth and development: Related to personality growth, development of individual potential and efficiency, and mental health within the organisation.
4. Productivity and efficiency: The primary or unique focus is productivity and efficiency.

Several studies have been conducted over the years, and a group was created exclusively to make investigations about industrial democracy: The Industrial Democracy in Europe (IDE) International Research Group. This group had made a landmark study at the end of the ‘70s in 11 European countries, plus Israel, and found a real potential for changes in the power relations within the organisations (IDE International Research Group, 1981). The second study was a follow-up to the first one, and the authors found that the changes did not happen as much as expected. The authors noticed that industrial democracy was mostly observed in places where formal structures and legislation guaranteed the participation, rather than in those places where participation depended exclusively on market bargain (IDE International Research Group, 1993).

Poole et al. (2001) identified three main approaches to understanding the historical movement in industrial democracy:

1. Evolutionary approach: As the name suggests, means a long-term advance regarding legislation, technology, human resources techniques and the changing values of a more educated workforce.
2. Focus on cycles: Argues about the discontinuity of the evolutionary approach, that there are evolutionary periods followed by the decay or abandonment.
3. Favourable conjuncture: This is underpinned by factors that, given a certain historical moment, help to explain the emergence of industrial democracy.

Another study was conducted in 1971, which identified the way decisions are made concerning participation or control and established a continuum over six alternatives (Heller, 1971):
1. No information: When the employees do not have any detail about the decision made.
2. Information: Detailed information is available.
3. Opportunities to give advice: The superior explains the problem and asks advice before making decisions.
4. Advice is taken into consideration: This is referred to number three, in situations when the choice reflects the information given.
5. Joint decision-making: Both the superior and subordinate instances analyse the problem together and make the final decision, which is supposed to be shared equally.
6. Complete control: When final decisions are made by the workforce, and the participation of the top management is only in exceptional circumstances.

One more investigation was made in three countries aiming at identifying types of decisions, classified them as strategic, tactical and operational, which represent the different levels of the organisation (Drenth et al., 1979):

- Strategic decisions: These are referred to the long-term (more than six months from the first discussions until implementation) and do not often occur (less than once a year). They are made mostly at the top level of the organisation.
- Tactical decisions: Referred to the medium-term (two to three months), with a low-to-medium frequency (three to five times per year). These decisions are located between the highest and lowest organisational levels.
- Operational decisions: These are related to the day-to-day life, to the short-term (about one month) and, as such, have a high-frequency (more than five times per year). They are located at the lower organisational levels.

These categories, in fact, were observed earlier in the comparison of the works of Simon (1960), Drucker et al. (1967) and Ansoff (1969) conducted by Gore et al. (1992). In Fiocruz, the collective decisions can be found in the three types described, but most notably in the strategic decisions, the formal locus of the organisation to make them, as we will see further.

Heller et al. (1998), applying the term “organisational democracy” when analysing participation in the organisational context, highlighted three arguments that support participation:
1. Humanistic: Participation builds up human dignity by contributing to personal growth and job satisfaction;
2. Power-sharing: Redistribution of power, protection of employees’ interests and extension of political democracy to the workplace;
3. Organisational efficiency: Meaning that participation may result in better decisions; people may be more likely to implement decisions they took part (rather than a determination coming from above); motivation may be enhanced; improve communication; and others.

According to this classification, Fiocruz arguments are mainly humanistic, as the next Section will point, but it is also possible to observe a mix of the power-sharing and the efficiency arguments.

Poole has also made a comprehensive analysis of a broad review of the literature, comparing practices between countries, and identified six forms of industrial democracy (1979):

1. Workers’ self-management: The workers have a substantial degree of participation on the main decision-making bodies, and it may be related either to a workers’ system of ownership or right. The main administration bodies are the worker’s assembly, workers’ council, and management board.
2. Producer co-operatives: This is a variation of the self-management, in which the management board is elected by the membership, social councils, job evaluation committees, and semi-autonomous groups.
3. Participation of worker’s representatives in management organs: This is underpinned by the assumption about the capacity of a unity of the different interests, what can be made by fostering cooperation to accomplish the company’s goals.
4. Works council (and similar institutions): The premise here is the harmony of interests, at least, on the main issues. There is a variation concerning legalism and voluntarism; and regarding composition, whether they are constituted only of employees or a joint management-worker.
5. Trade union action: This is related to collective bargaining and can be distinguished between relations in the private sector and those in planned economies. The former is also referred to as disjunctive participation, whereas the latter is known as integrative participation. The disjunctive is a set where no harmony of interests is assumed, while in the integrative one, the union is supposed to follow the company’s interests.
6. The shop-floor level: There are two kinds, which overlap one another, related to new concepts of work organisation and the promotion of the worker participation in the organisation. This form combines shop-floor practices with the formal participation, linking both the direct and indirect democracy in the organisation.

According to the studies conducted until now, the concept of industrial democracy itself can be summarised in terms of a. Participation in administrative decisions; and b. Collective bargaining. It varies from country to country and from company to company (Drenth et al., 1979; Emery and Thorsrud, 2013; IDE International Research Group, 1993, 1981).

This variation, in turn, is the expression of the diverse histories, cultures and policies:

“Variability amongst nations is interpreted, first and foremost, as the outcome of strategic choices, focused on different preferences of the initiating ‘actors’; and patterned by broad cultural and ideological meanings, public policies and legislative enactments. Culture is reflected in cohesive national values, which have diverse consequences for institutional innovation in industrial democracy. Ideology is also critical to the experiences of nations, for the types of institution, their initiating agents and principal objectives diverge fundamentally on the basis of the precepts of modern capitalism, managerialism, corporatism, liberal pluralism and social democracy, democratic socialism, state socialism and syndicalism. Moreover, at the level of meaning, ideologies and cultural values are mediated by public policies and reflected in given types of legislative enactment on industrial democracy.”

Poole, 1986b, p. 149

In Brazil, it is possible to observe industrial democracy mainly in the Universities and, most notably, in Fiocruz. It can be found, also, at least, in one private corporation, which has become well-known for the success with the democratic management that allows workers to design their jobs, select their supervisors and even payment levels (Semler, 2015, 1989). However, the model applied, in this case, seems to be more similar to companies like Google, Samsung and others that challenge management orthodoxy, rather than to Fiocruz, for instance. In fact, it is a mix of Industrial and Corporate Democracy.
2.6. Democracy as a Health Concept

In Fiocruz, democracy is a core value. It is linked to its history, which in turn is merged with the history of the country. In 1988, after a period of 21 years of military dictatorship, ended in 1985, a new constitution was launched, known as “The Citizen Constitution” (Paim, 2013). For the first time in the country, the constitution stated health as a universal right of citizenship. Before that, only those formally employed had access to the health services (de Souza, 2009).

The health chapter of the constitution set the basis for SUS, the National Unified Health System\(^4\), and it was the aftermath of the VIII National Conference of Health, in 1986. The latter counted on 3,000 participants and 1,000 delegates representatives from all sectors of the society, including ordinary citizens, health professionals, government, and private sector (Brasil, 1987). That was a moment of democratic effervescence in the country, by the end of the dictatorship, whose final years faced mass protests for the right to elect the Presidents (Bertoncelo, 2009).

The National Conference was led by Sergio Arouca, the President of Fiocruz at that time and the first one that emerged from the employees\(^5\). The motto was “Democracy is Health”, but more than just a slogan, it was a concept that was formulated during his speech in its opening (Brasil, 1987):

“ (...) I dedicate to them the discussion of this issue of “democracy is health” we are facing today.

To make this discussion, it seemed to me that nothing is better than making use of the health-disease concept that has been placed in recent years, particularly by the WHO\(^6\). A concept that has been strongly criticised, perhaps because it could not since it is too generic and abstract, be the basis to measure how many people have or do not have health in one country. However, it seems to me that, in this period of transition\(^7\), I think it is important to retrieve this concept and put it on the table: Health is not simply the absence of disease. It is not just one person who, at a particular time, by any means of medical diagnosis or any type of test, is found with no disease. The WHO considered it is more than that: Besides the mere absence of disease health should be understood as a physical, social and affective well-being.

In the debates leading up to the National Health Conference, some people, including Professor Cynamon, from the National School of

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\(^4\) SUS – Sistema Único de Saúde: Brazilian National Unified Health System, which is similar, in its conception, to the British NHS.

\(^5\) Before him, all the previous CEOs, including Oswaldo Cruz himself, were choices of the government.

\(^6\) “Health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.” (WHO, 1948)

\(^7\) Referring to the re-democratisation of the country.
Public Health, also added the absence of fear. Maybe it is interesting for us to wonder a little about the meaning of it, the meaning of this concept of health placed almost like something to be achieved. It is not simply having any disease anymore; it is more than that: It is social welfare; it is the right to work, to a decent wage, to water, to dress up, to education, to have information on how one can master this world and transform it. It is the right to an environment that is not aggressive, but the opposite, allowing for a dignified and decent life, the right to a political system that respects the free opinion, the possibility of the free organisation, of the free self-determination of a people. It is not to be all the time subjected to the fear of violence that arises from the misery and results in the theft, in the attack; the fear of violence of a government against its own people in order to maintain interests that are not the interests of the people, just as we sadly watched the last decade in Latin America and that we are still watching in some countries (although some countries in Latin America have managed in recent years to exclude the vast majority of dictatorships). We now see Haiti with joy, we now see the Philippines with joy, but we are still forced to live with the Chilean dictatorship.

Living without fear is to live with the possibility of individual self-determination, freedom of organisation, the peoples’ self-determination and, simultaneously, with the chance to live without the threat of a final violence, which would be an exterminating war of the whole civilisation. (…)” [Emphasis added].


The concept of health as welfare, and individual and people’s self-determination, must be understood as the aftermath of a specific historical moment, in which Brazil and other countries, particularly in Latin America, had been suffering under authoritarian regimes. The violence at that moment was expressed not only in torture and death but also in income concentration, which left the population poorer than before despite the “economic miracle”\(^8\) (Hammoud, 2008); hence, unable to have the basics for surviving with dignity and health.

Such concept broadened the WHO’s concept by settling a political dimension that onwards underpinned the perceptions and the actions of the professionals committed to the construction of the newly created Health System in the constitution of 1988, which states:

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\(^8\) The beginning of the ‘70s in Brazil were called the “economic miracle” because of the fast economic growth the country experienced around that period.
“Health is everyone’s right and duty of the State, guaranteed through social and economic policies aimed at reducing the risk of disease and other health problems and the universal and equal access to actions and services for its promotion, protection and recovery.” – [Emphasis added]

Brasil, 2015

The new Health System (SUS) was a landmark. Based on the three doctrinaire principles of Universality, Integrality and Equity, it literally included millions of new “consumers” overnight, by the launching of the new constitution. Until that moment, health was a right only for the people formally employed in the labour market. All the rest of the population depended on charity, especially those living in the interior. The provision of health care was linked to a formal employment contract with the insurance features and no right to citizenship. In addition, the Brazilian health policy presented functional and institutional differentiation: The Ministry of Health fit the collective actions and some basic care, and the social security, curative health restricted to policyholders (Menicucci, 2014).

The newly created system aimed at unifying that, as to provide full assistance coverage to the population, and the principles established in the constitution were an expression of it:

- Universality: All Brazilian citizens, without any discrimination, have the right to access to health services and actions (Fiocruz, 2017a).

- Integrality: There are three senses for this principle (Pinheiro and Mattos, 2006):
  1. Integrality of medicine: Related to a holistic view, not reduced to an exclusive biological approach.
  2. Integrality of practices: Integration between the vertical and fragmented health programs of the Ministry of Health in the level of the local units.
  3. Integrality of policies: Related to specific policies designed to support a specific health problem, or to support the health problems of a specific population.

- Equity: Perhaps the best understanding of this concept comes from its opposite: “The term inequity has a moral and ethical dimension. It refers to differences which are unnecessary and avoidable but, in addition, are also considered unfair and unjust. So, in order to describe a certain situation as inequitable, the cause has to be examined and judged to be unfair in the context of what is going on in the rest of society” (Whitehead, 1991).

The Brazilian public health system is a very ambitious project, but the origin of it is related to the growth of the private social security as well, which gradually expanded its coverage. The
government’s policy choice to account for this extension of coverage was not by providing the services directly, but buying them from the private sector. In this sense, the public policy for health encouraged the development of the private healthcare market, both for the purchase of services and for the government grants for the construction of hospitals. It is the birthplace of the private health plans and has created a system duality in the country (Menicucci, 2014).

The provision of health in Brazil, then, has two sides: The private and the public sectors. The former was the aftermath of a government policy that accounted for the extension of the private social security; the latter was a health professionals’ movement towards a universal and public health system, but also part of the fight against dictatorship, dating from the late ‘70s and is known as the “Brazilian Health Reform Movement”. The climax of it was the VIII National Conference of Health, led by the President of Fiocruz Sergio Arouca (Brasil, 1987; Cohn, 2009; Paim, 2008).

The newly created public system was then designed by two laws following the constitution, in 1990, and other complementary ones launched later. One of these two laws drew the so-called “social control” of the system, set to be made through collegiate bodies (health councils) in the federal, state and municipality levels, aiming at the formulation of strategies and the control of the implementation of health policy, including the economic and financial aspects (Brasil, 1990a). The health councils are composed 50% of common citizen representatives, 25% of health worker representatives, and 25% of representatives from the private sector – only those providing services to the system –, plus the government (Brasil, 2008).

The health system is therefore organised according to the broad concept of health stated in the VIII National Conference. The citizenship is exercised through the participation of common citizen representatives in the health councils, through which they have the possibility to take part in the decisions, as well as control the actions and accountability of the government.

2.7. Remarks on the Conceptual Framework

Aiming to disclose the centre of the “atomic model” (Figure 3) and answer the research questions, our framework at first located Fiocruz in the PRO literature, according to a classic conceptualization from OECD. As a PRO, Fiocruz has been subject to the constraints that affected the public administration worldwide, more notably at the end of the ‘80s and the beginning of the ‘90s, when the NPM management approach was extensively adopted.

Following the changes in the public administration, several organisations, including PROs, undergone a series of transformations to face the new challenges, comprising the enhancement
of partnerships with the private sector and privatisation. In this regard, the OCM literature provides us with concepts to know the dynamics involved in the process of organisational transformation, such as resistance, for example, which is crucial both to understand the event that motivated the research and to the proposed black box opening.

Those transformations, strategic ones, depend on decisions which in turn are made, in the case of Fiocruz, according to the organisational strategic planning. In this sense, the strategic management literature provides us with the basic concepts of the field, especially Chandler’s concept of strategy, which involves a long-term perspective.

Likewise, Mintzberg’s comprehensive reviews of decision-making provides us with concepts such as “emergent strategies”, which supports the understanding of Fiocruz processes; and locates this organisation’s approaches within the “Planning School”, because of the perspective that has been adopted over the years and the incorporation of long-term planning in its planning arsenal.

Regarding Mintzberg’s emergent strategies, this is a distinction related to Fiocruz decision-making, which is conducted through a highly participative democratic process; hence, the concepts from the decision in organisations “field”, concerning industrial democracy. This is the main literature with which this thesis shall dialogue, providing insights for the contribution to knowledge after opening the black box.

Similarly, the strategic planning, and more specifically the Foresight literature, will be a privileged subject of dialogue and contribution to knowledge as well, given the relevance it has acquired in the organisation in the last years and the participative approach.

Finally, the perspective of democracy as a health concept practised in Fiocruz will provide elements to overcome the limits of the literature in answering the research questions.
SECTION 3: METHODS

3.1. Introduction

3.1.1. Connection with Previous Sections

This research project aims to investigate how decisions are made in a PRO. The particular event which motivated the project was the proposal for organisational change put forward by the staff of Fiocruz, Brazil – the specific public research organisation under investigation – to become a public company instead of remaining as a public foundation.

The literature review has shown that, although pointing out many of the transformations such organisations have undergone, so far research has done little to explore the perspective of the PROs, or rather, the internal dynamics of such organisations in terms of their resistance, tensions, negotiations, and other factors, that a proposal for change may trigger. Likewise, the literature has done little to explore why some organisations use certain decision-making processes and, moreover, does not explore why an organisation such as Fiocruz makes its most strategic decisions in a highly participative way.

Therefore, this project has developed a conceptual framework combining the literature on Public Sector Research, Strategic Decision-Making, Organisational Change and Democracy in Organisations in order to focus and locate the analysis, as described in the last Section. This research is focused primarily on Fiocruz; its form is a case study in which two other PROs will be taken as contrasting cases: Embrapa, Brazil, and Pasteur Institute, France.

The cases are organisations similar to Fiocruz in several ways. Embrapa is similar in the territory, since it is a Brazilian PRO, and Pasteur is similar in the field because it is a PRO that investigates health issues. They were chosen as contrasting cases because of their similar international standing and reputation to Fiocruz, yet this research acknowledges that Fiocruz is unique in terms of a PRO in the health field of Brazil. The two chosen cases are therefore the most appropriate for comparison and contrast available.

3.1.2. Aims of the Section

The purpose of this Section is to describe the “tools” used to answer the research questions this project has outlined (Section 1). By doing this, a path for defining answers to these questions may be drawn out and understood.

This is a case study research project making use of the triangulation approach; applying both quantitative and qualitative methods to cross-check the data and results from this research. The
triangulation was selected to help give an in-depth analysis of the decision-making process within Fiocruz through the “across method” approach to quantitative validation and qualitative inquiry (Casey and Murphy, 2009).

The quantitative approach for this research entails a structured questionnaire, which enables to capture detailed answers from significant actors within the three PROs being contrasted in this study. The questionnaire contains, also, open fields aimed at qualifying certain binary questions, such as “yes” or “no”, for instance. Most of the qualitative approach, however, comes from semi-structured face-to-face interviews made with the key actors from each of the organisations, as well as the analysis of documents and historical/cultural aspects from each one of them.

The thesis is a comparative case study design, a method applied to reveal similarities and differences between phenomena. The focus of this research is on analysing decision-making within Fiocruz while utilising both Embrapa and Pasteur as two contrasting cases, as previously described. For this reason, both the questionnaire and the interviews were designed considering that the questions should allow the maximum comparability between the three PROs, taking into account the cultural and regulatory differences between them.

The triangulation approach, by making use of document analysis along with the other qualitative (interviews) and quantitative (questionnaires) methodologies of data collection, will be a means of supporting the distinction of unique cultural and regulatory factors in each PRO. It will happen via revealing distinctive trends in the answers given by actors from each organisation, which will also help the researcher in the historical understanding and cultural meaning(s) of the specific documents under analysis.

3.1.3. Subsections

The Section is organised into three main subsections: The epistemological position of the research, the purpose of the study, and the research design and strategy.

The epistemological position subsection aims to describe and discuss the philosophical roots that ground this research by presenting the leading schools of epistemology in management research and then discussing the perspective adopted, with theoretical justification.

The “research-purpose” subsection will introduce the question of why this research is important in the current context for PROs. Based on three classic models, this subsection will discuss how the research project will be conducted.
The last subsection, research design and strategy, is where the research plan will be detailed. This subsection will discuss particularly the chosen methodologies of this project in detail: Case study research, selection of the unit of analysis and informants, the collection of data, validation of data, and ethical concerns.

The aspects of this subsection stated above will aim to: Introduce the case study types and discuss the selection of cases most suitable for the analysis of PRO decision-making; introduce the tools applied to collect the data during fieldwork; point out the strengths and weaknesses of the data obtained and, finally, the ethical concerns of this project will be discussed, with an overview of the guarantees for the respondents.

3.2. **Epistemological Position of the Research**

The epistemological approach of a research project reflects the ways by which knowledge underpinning data collection and scientific findings are understood and interpreted. The most influential paradigms in management research are positivism, realism and interpretivism (Bryman and Bell, 2015; Saunders et al., 2011).

a. **Positivism:** It is related to the tradition of the natural sciences, in which there is an external reality that exists independent of the human mind. Knowledge is obtained through scrutinising an observed phenomenon in search of cause-effect patterns. The purpose is to generate hypotheses to be tested and gather information that can become generalised into laws, i.e., whenever the phenomenon “a” occurs, the phenomenon “b” will occur as well. As such, the positivist epistemological approach states that the social world is subject to the same methods of the natural sciences (Ackroyd and Fleetwood, 2000; Saunders et al., 2011).

b. **Realism:** It shares with positivism the belief that natural and social sciences can be approached in the same way. There are two types of realism: 1. Direct or empirical realism, which states that phenomena can be observed independently with the appropriate methods; 2. Critical realism, which takes into account different perceptions and the senses, i.e., the events are subject to our sensations. There is a system of concepts and practices, of social structure, mediating contact with the world and, as such, the phenomena may be subject to misinterpretation if not taking those into account (Bhaskar, 2014; Bryman and Bell, 2015).

c. **Interpretivism:** It rejects the application of natural science methods to the sphere of the social sciences, and seeks for understanding humans as social actors, which means going beyond the positivist epistemological point of view (also known as anti-positivism). This paradigm is rooted in the works of Schutz and Weber, following the phenomenological tradition of Husserl,
in which phenomenology is defined as a reflective study of consciousness as experienced from the first-person point of view (Bryman and Bell, 2015; Saunders et al., 2011; Woodruff Smith, 2007).

In “The Nature of Social Action”, Weber stated that human action is subjectively meaningful, and this is in a twofold way: a. Intention; and b. Construct. By intention he meant that action is intended by an individual, or agent, in a particular historical context; or by some individuals or agents, in a given set of cases. By construct, he stated that the meaning is attributed to the agent, or agents, in a pure abstract construction. In both situations, the definition itself is not thought as something that is objectively correct or true (Weber, 1978). Following this rationale, Schutz (1963) stated that the social scientist experiences the world according to a series of common sense pre-selected and pre-interpreted constructs. It is based on these that the scientists will attribute meanings to their observations.

Taking into consideration that reality has meanings and, thus, that human experience is meaningful, the interpretive perspective will search for the people’s points of view as to understand their actions and their social world (Bryman and Bell, 2015).

The interpretivist perspective has been applied in several and different types of studies investigating organisations, including analysis of consumer adoption of internet banking (Lichtenstein and Williamson, 2006), communication and organisations (Putnam and Pacanowsky, 1983), the significance of the concept of culture for organisational analysis (Smircich, 1983), ideologies supplanting formal structures to shape responses to the environment (Meyer, 1982), and organisational change (Brito, 2000).

The organisation to be studied in this research is far too complex and differently-negotiated to be understood in terms of the “laws” or cause-effect correlations that the positivist philosophy attempts to provide. The realist perspective, albeit proposing a critical point of view and incorporating the influence of the social environment, takes the phenomenon for granted and does not take account of actors’ perceptions or opinions, which are the core determinants of the development of this study. Hence, this perspective is also ruled out for this thesis.

Therefore, regarding the epistemological roots on which this thesis is underpinned, the interpretivist perspective is the one that best meets the needs of this investigation, once the points of view of specific individuals will be crucial to understanding their actions and their worlds. It is what can provide meanings to the phenomena under analysis, i.e., the democratic
managerial administration at Fiocruz. Moreover, the contrasting case Pasteur Institute is from a different country, immersed in a distinct environment and culture.

3.3. Purpose of the Research

The purpose of the research refers to the process through which it is conducted. It can be exploratory, descriptive or explanatory (Cooper and Emory, 1995; Saunders et al., 2011).

The exploratory research aims to help the researcher to get familiarised with the phenomenon under investigation and have a better comprehension of it in the early stages of the study when the researcher achieves insights conducting the work (Robson, 2002). As such, it is flexible and subject to changes as new data can appear and new insights require interpretation, generating new ideas for further work.

Exploratory studies can be made in three main ways: a. Literature review; b. Experts interviews; and c. Focus groups interviews (Saunders et al., 2011). It is relevant to highlight, however, that the named flexibility is different from not having a clear direction of the research. Rather, it means that at first there is a broad focus, which is narrowed down as the study goes further (Adams and Schvaneveldt, 1991).

Descriptive studies, as the term suggests, has the objective to describe the profile of persons, events or situations and, in this sense, they require a comprehensive previous knowledge of the studied phenomenon as to focus on adequate aspects and generate useful information (Robson, 2002).

Explanatory research is the one in search of the elucidation of a given problem, or a situation, by explaining patterns and identifying relationships between variables, which may be of causality or not (Bryman and Bell, 2015; Robson, 2002).

Taking into account those three main purposes of research, it is the explanatory process the key aspect of this investigation. By analysing the data, along with the interviews and documents, and a proper characterisation of the organisations, this study will seek meanings and insights to answer the research questions set out in subsection 1.5.

An exploratory aspect will, however, be underlying the whole research process, due to the necessity to make a constant exploration of findings from fieldwork (the interviews and questionnaires) to a theoretical exploration of the relevant literature, and vice-versa. Insights that shall emerge from the researcher making these linkages will correspond to exploratory contributions to knowledge highly specific to the cases at hand.
The descriptive aspect will also be present in the Sections related to characterising the organisations and, predominantly, the events and situations concerning the central organisation under analysis, namely: The democratic process in Fiocruz.

3.4. **Research Design and Strategy**

The design of a research is the plan, the framework, for collecting and analysing the data (Bryman and Bell, 2015; Creswell, 2002; Saunders et al., 2011).

There are several strategies, or methods, or designs, for conducting a research project. These are tools through which the research questions will be answered and some of them are: Experiment, quasi-experiment, ethnography, survey, case study, cross-sectional research, longitudinal research, archival research, action research, grounded theory, comparative design, research synthesis, economic and statistical modelling, history, and developmental methods (Cooper and Emory, 1995; Yin, 2006).

All those strategies can be combined, or not, as to provide an adequate approach to the subject and generate a proper investigation. When more than one method is used to collect both quantitative and qualitative data and subsequent analysis, this is the mixed-methods approach (Creswell, 2002; Creswell and Clark, 2007).

The fundamental principle of mixed research is that “methods should be mixed in a way that has complementary strengths and nonoverlapping weaknesses” (Johnson and Turner, 2003, p. 299). A mixed methods approach has four designs (Punch, 2013):

a. Triangulation.

b. Embedded.

c. Explanatory.

d. Exploratory.

This research employs triangulation as an integral part of the design. The triangulation makes use of both quantitative and qualitative data, which are complementary and are used to help interpret answers to the same research questions - involving concurrent but separate collection and analysis (Creswell and Clark, 2007; Punch, 2013).

In terms of strategy, the quantitative analysis was made through a scale specially designed in the form of a semi-structured questionnaire for online interviews – which contains open fields aimed at qualifying some answers; whereas the qualitative analysis takes the format of face-
to-face interviews and document analysis, as well as the historical aspects of each of the organisations.

The use of triangulation in the research reflects the complexity of the object the researcher has selected to work with. Online and face-to-face interviews, along with documental analysis and historical contextualization, generate information that can confirm or deny one another, therefore enhancing a holistic view of the unit of analysis, i.e., Fiocruz, or rather its democratic management model.

Since this research project focuses on a case study (Fiocruz) making use of two contrasting cases (Embrapa and Pasteur), the history of these organisations is an essential starting point for the analysis. It is because the culture of organisations is found to profoundly affect the values, culture and attitudes that develop within them (Schein, 2010), which also, of course, therefore extends to and has implications for decision-making processes. The context surrounding each organisation is unique; hence, it is mandatory for the analysis to be based on the historical background of the institutions.

The scheme in Figure 7 illustrates the approach of the research. From a purely conceptual proposal, the triangulation itself is located in the circle on the top left, because it comprises the collection and the analysis of both qualitative (face-to-face interviews) and quantitative (questionnaire) data. For the purpose of illustrating the research, the result of this triangulation will provide inputs for a second “triangulation”; this time vis-à-vis the analysis of the history and culture, plus the analysis of the institutional documents.
Figure 7 - Scheme of the triangulation of methods of the research

As it will be seen further, according to the framework adopted for this study, Pasteur Institute is regarded as an “IRI – Independent Research Institution” (p. 27). A characteristic of such organisations is related to its boundaries between the private and the public sectors, which means the possibility both the economic and political aspects of these areas are important for the analysis.

In terms of funding, comparatively, IRIs are not as clear in their funding models as the type of PRO classified as “MOC – Mission Oriented Centre” (p. 27), which is the case of Fiocruz and Embrapa – and whose primary source of income comes from public funds. Pasteur, as we will see, is a private non-profit organisation, and the government participation in the budget is not as important as for the other two organisations.

These general distinctions between these three PROs illustrate that the triangulation of methods approach is the one that offers the best possibility of making a holistic view and understanding each of the organisations, considering their distinct histories, structures and plans.

Ultimately, this is a comparative design as well, because it uses “more or less identical methods of two or more contrasting cases” (Bryman and Bell, 2015, p. 72). A comparative research design aims to enhance understanding social phenomena by the comparison of two or more contrasting cases or situations and can be conducted both in qualitative and quantitative research. The analysis can be in four levels: Individuals, groups, organisations and societies. The level of the analysis is organisational – Fiocruz – and the contrasting cases are both Embrapa and Pasteur Institute, as we have seen.
Comparative studies can be of two kinds: Cross-cultural approaches and intercultural approaches. The former compares national management systems and local business in different countries, whereas the latter studies the interaction between people and organisations in the various countries and cultures (Usunier, 1998).

This research, therefore, is a comparative study with a cross-cultural approach, utilising a triangulation design of mixed-methods. Above all, however, it is a case study. The comparative analysis will help place the central organisation studied – Fiocruz – between two other PROs, and the triangulation will contribute to enhancing the understanding of the phenomenon, i.e., the democratic management of Fiocruz.

3.5. Case Study Research

A case study is “a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence” (Robson, 2002, p. 178).

Its strength relies on the possibility to analyse a case in-depth, illuminating a particular situation to get a first-hand understanding of it, and is best when applied to descriptive or explanatory studies (Yin, 2011, 2009). Commonly a case study combines different methods, such as archival analysis, interviews, questionnaires, and observations; and can generate both qualitative and quantitative evidence (Eisenhardt, 1989a).

Case studies have been applied to investigate a wide range of topics, from a community (Lynd and Lynd, 1957) to the development of a new computer (Kidder, 2011); from education (Elmore et al., 1997) to decision-making (Allison, 1971).

Concerning decision-making, the subject of this research, several case studies have been conducted to understand its processes better. At the beginning of the ‘60s, Cyert and March (1963) developed a framework out from the analysis of four case studies (plus computer simulation) and found that a firm may have different and conflicting goals, pointing to a bounded rationality in the processes. Carter (1971), drawing up from their work, studied top decisions in a firm and suggested a reappraisal to the framework proposed by the first ones, extending it. Mintzberg et al. (1976), analysing 25 strategic decisions processes, found a basic structure underlying them, identifying critical phases of decision-making and external factors that influence the processes. Pinfield (1986) evaluated the structure and the anarchic perspectives in the Canadian government decision-making and concluded that both are useful for understanding organisational decision processes. Eisenhardt (1989b) investigated eight
microcomputer firms to learn how fast decisions are made to deal with high-velocity microcomputer industry and concluded that decision-makers can be boundedly rational in some situations, but are also capable of engaging in sensible strategies to compensate their limitations. Langley (1989) analysed three different organisations to understand the use of formal analysis and found that it might not be necessary if decisions are taken and implemented by single individuals, but when groups are interacting with one another, it can generate organisational commitment and ensure action. In contrast, Nutt (1984) studied 78 cases of decision-making and discovered that none of the managers made use of normative methods, or rather, they did not follow the formal processes, but instead submitted them to their ideas. Mintzberg and Waters (1982) in a classic study analysed the development of strategy in a firm over time, contrasting entrepreneurship and planning, and concluded that a balance between planning and strategy are linked to the survival of the company facing changes in the environment.

There are some conditions the investigation shall fulfil to use the case study properly (Yin, 2009):

1. The form of the research questions posted.
2. The extent of control of the researcher has over behavioural events.
3. The focus on current events vis-à-vis historical events.

Table 3 takes into consideration the three conditions stated by Yin (2009) to make a contrast between the case study method and the other four major research methods.
Table 3 - Relevant situation for different research methods

<table>
<thead>
<tr>
<th>METHOD</th>
<th>Form of Research Question</th>
<th>Requires Control of Behavioral Events?</th>
<th>Focuses on Contemporary Events?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment</td>
<td>how? why?</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Survey</td>
<td>who, what, where, how many, how much?</td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Archival Analysis</td>
<td>who, what, where, how many, how much?</td>
<td>no</td>
<td>yes/no</td>
</tr>
<tr>
<td>History</td>
<td>how? why?</td>
<td>no</td>
<td>no</td>
</tr>
<tr>
<td>Case Study</td>
<td>how? why?</td>
<td>no</td>
<td>yes</td>
</tr>
</tbody>
</table>

Source: Cosmos Corporation, adapted by Yin, 2009

A case can be an organisation, a location, a person, or an event (Bryman and Bell, 2015; Creswell, 2002). Case studies can be referred to one single case or multiple cases; and as a holistic case or an embedded case (Gillham, 2000; Yin, 2011, 2009). Figure 8 illustrates it. This research is framed in the second quadrant of the Figure. It is a single and holistic case.

Figure 8 - Basic types of design for case studies

Source: Cosmos Corporation, adapted by Yin, 2011
Single-case studies are adequate for critical or unique cases, or to analyse phenomena not yet explored or fully researched previously (such as decision-making within PROs). Multiple case studies are, on the other hand, used to see whether the findings of one organisation can be generalised (Saunders et al., 2011).

Single case studies have five rationales (Yin, 2009):

1. Critical case: Similar to a critical experiment, this is related to testing a theory, which can be confirmed, challenged or extended. Thus, it can determine whether the theory is correct or not.
2. Extreme or unique case: Related to clinical studies. When a particular injury or disorder is rare, and it is worth investigating.
3. Representative or typical case: Studies common situations from everyday life.
4. Revelatory case: Refers to new cases, when the phenomenon was not accessible to science previously.
5. Longitudinal case: Studies the same single case during a period to observe changes over time.

This research is a case study because it aims to analyse in-depth a particular phenomenon concerning PROs (organisational decision-making), exclusively in the context of Fiocruz. Therefore, it is a single case study because it provides a first-hand view of a phenomenon, namely the democratic managerial administration of a PRO, which has never been accessible before for the purposes of research. The rationale is that of a revelatory case because the results of this research project will be that of new exploratory scientific research findings.

The holistic and embedded rationale, in turn, is related to the unit of analysis, i.e., it is holistic when the study is referred to one organisation or program as a whole, and it is embedded when applied to an organisation and one or more of its subunits (Yin, 2011, 2009). In this sense, the study hereby conducted refers to the holistic rationale because it is related to one organisation as a whole.

The primary concern related to case study research is about generalisation from its findings. Yin (2011, 2009) has made a comprehensive discussion about this topic and, at first, distinguished between statistical generalisation and analytic generalisation. The latter is the one that applies to case study research.

The statistical generalisation is the most common when doing surveys or analysing archival data, and is often taken as the only way to generalise findings from social science, but that is
not correct. The case study for analysis is not a sample unit and should not be regarded this way.

Whereas statistical generalisations tend to generalise the findings for a population, the analytic generalisation tends to generalise the results to other situations. It may involve one or more cases, and concerns two steps: 1. A conceptual claim in which the findings inform the relationships between a set of concepts, constructs or sequence of events; and 2. Apply the same theoretical propositions to other situations, rather than the case study, with similar concepts, constructs or sequences that may be applicable. It, however, requires very well constructed claims, so that the theoretical framework establishes a logic that applies to other situations.

3.6. Selecting Unit of Analysis and Informants

Taking into account the characteristics of case studies, as we have seen, this research refers to the explanatory study of one organisation, hence a single case study (Yin, 2009). The unit of analysis is Fiocruz, or rather, the democratic management of this organisation.

Also, we have seen that as a single case study, the rationale is the revelatory one (Yin, 2009), due to its singularity between other PROs of its size and, moreover, because there is no similar analysis in PRO literature yet, as pointed in the literature review. Hence, the organisation’s highly democratic way of decision-making is yet to be explored by research, and this project aims to fill this gap in knowledge on PROs and their decision-making processes.

Ultimately, the rationale is also holistic since the study concerns the organisation as a whole (Yin, 2011, 2009), based on the analysis of the particular form of administration of the organisation.

Although a single case study, however, two other PROs will be analysed as contrasting cases (Bryman and Bell, 2015): Embrapa – Brazilian Agricultural Research Corporation, in Brazil, and Pasteur Institute, in France.

Embrapa is the major Brazilian PRO in the agricultural field. Along with Fiocruz, it performs an important role in the country, contributing to how Science and Technology research and praxis are structured and disseminated to the population, as well as contributing to the social and economic development of Brazil (Salles-Filho et al., 2001). In this sense, Embrapa is an organisation similar to Fiocruz in the territory, which means it is subject to the same regulatory environment and culture.
Pasteur Institute is the French organisation for research into Public Health, engaged in tropical and infectious diseases for 129 years (Nídia Trindade Lima and Marchand, 2005; Pasteur, 2014). It is an organisation similar to Fiocruz in the field. In fact, in many ways the histories of Pasteur and Fiocruz are connected to one another, either by the similarity of research conducted, the existence of the organisations through time (Fiocruz is 116 years old), but mainly because the latter has been shaped under the inspiration of the former; an organisation with which it maintains research partnerships since its inception (Britto, 1995; Fraga, 1972; Nídia Trindade Lima and Marchand, 2005).

The information collected from the three organisations was made via: a. Archival analysis, including websites; and b. Interviews with selected key actors:

a. Archival analysis: It involved exploring the organisations’ websites to collect documents (reports, organisational charts, plans, and others) that can support both the characterising of the organisations and the analysis.

b. Concerning the interviews, there are four main methods to conduct these (De Vaus, 2002):

1. Face-to-face: Trained interviewers personally apply the questionnaire to a respondent. This approach allows the respondents to get answers to their doubts, and clarify misunderstandings, on the spot. The majority of these interviews are paper and pencil, so the interviewer records the answers in a paper. It can be assisted, for instance, by computer technology (to administer an electronic questionnaire) or recorders (to transcribe the interviews later on).

2. Telephone: The interviews are made by telephone contact with a selected sample and asking the questions over the telephone. This method is less expensive and time-consuming than the face-to-face interviews and can be supported by computer technology as well. Likewise, it needs a trained interviewer.

3. Postal self-administered questionnaires: Whereas face-to-face and telephone interviews require trained personnel, the self-administered questionnaires rely on the respondents understanding and answering the questions. Hence, the latter must be easy to follow and self-explanatory. This method is cheaper but achieves low response rates.

4. Internet Surveys: The Internet surveys can be of three types – email, web pages, and a combination of the two. The email questionnaires have three formats: a. Plain text questions as part of an email, in which the respondents edit the email message and indicate their responses; b. A formatted questionnaire such as an email attachment; c. An interactive questionnaire sent as an email attachment as well. In the case of web
pages, these refer to questionnaires placed on a web server, where respondents visit the web page to answer the survey. Finally, there is the option to combine email and web pages, in which the respondents download the questionnaire to their computer or respond to the questionnaire online on the internet.

Face-to-face interviews are seen as the most effective, whereas the other three are found to offer low response rates. Nevertheless, it all depends on the combination, for instance, of the effect of the topic, the nature of the sample, the length of the questionnaire, and the motivation of the respondents (De Vaus, 2002; Dillman et al., 2009).

The interviews conducted for this project were of two kinds:

1. Interviews about decision-making and strategic planning (internet survey).
2. Interviews concerning decision-making and strategic planning of the specific organisations – “in-depth interview” (face-to-face interviews).

Interviews falling into category one were conducted via a self-administered questionnaire sent to respondents over the internet – a combination of email and web pages. These questionnaires were sent to personnel involved in the decision-making process of each of the three PROs for comparison. Respondents were asked to access a web page built through Manchester University’s Qualtrics system partnership: https://survey.mbs.ac.uk/.

In theory this type of survey is thought to achieve good response rates when used in specific, more homogeneous groups, such as members of an organisation, particularly if the subject under study is regarded as relevant to the group (De Vaus, 2002), which was the expectation in the case of the respondents chosen from the bodies/departments of the PROs this research is comparing, i.e., people involved in the decision-making processes of the organisations.

These are the bodies/departments of each organisation, involved in decision-making processes:

- **Online Questionnaire:**
  - Fiocruz – Deliberative Council: 32 people.
  - Embrapa – Strategic Management Committee: 14 people.
  - Pasteur – Management Team: 17 people.
  Total: 63 potential respondents.

Interviews falling into category two were face-to-face and involved 14 key actors, many of them former Presidents of the organisations, as well as current Presidents, and others somehow participating in the decision-making process, both now and in the past:
- Face-to-face Interviews:
  - Fiocruz: 5 interviews.
  - Embrapa: 4 interviews.
  - Pasteur: 5 interviews.
  Total: 14 potential respondents.

Among the 14 key players, nine of them – from Embrapa and Pasteur – were indicated to the researcher by the “gatekeepers” of each organisation. That is, the researcher initially used to gain access to the organisation and its decision-making stakeholders by those contacts. In the case of Fiocruz, the key actors were selected by the researcher, who has been working at the Directorship of Planning of this PRO for ten years.

In the case of the gatekeepers, they were selected as follows:

- Embrapa: The gatekeeper was known from the period when this researcher was one of the two coordinators of the First Brazilian Meeting of Foresight and Strategic Planning, which took place in Embrapa headquarters in 2012.

- Pasteur Institute: The researcher contacted the Centre for International Relations in Health, of Fiocruz, which indicated a former employee of French nationality who is now working at Pasteur Institute. This former employee, in turn, indicated an advisor to Pasteur Institute’s President, who became the gatekeeper to this organisation.

In both cases, the gatekeepers helped contact the management personnel and locate the key actors of each of the organisations. Regarding the management staff to take part in this research, these were chosen by the researcher through analysis of the organisations’ management structures, as well as via email exchanges with the gatekeepers in order to check positions and current/previous research projects of the management personnel.

The gatekeepers also suggested names of the main actors involved in decision-making according to both their current or past roles and assignments in the organisations. The key player characteristics to take part in an interview were described to the gatekeepers – these included occupying a key management position in the organisation, such as Presidency or Directorship, either currently or in the past.

The approach to the actors, however, was different in each one of the organisations, although following the same procedures: Except for Fiocruz, the contact both with the management personnel and the interviewees was made firstly by the gatekeepers and continued by the researcher.
The negotiations lasted up to one year, since the first contacts. After negotiating, the launching of the questionnaire, in the three organisations, was scheduled to happen on the same day, simultaneously. However, the unfolding was different in each one of them.

- **Fiocruz:** Before the launching of the questionnaire, one of the members of the Deliberative Council had been contacted to support the researcher. This member was supposed to make a presentation of the project to that council, which was not possible, on the scheduled day for it, due to time constraints. Considering the next meeting of the council would happen only one month after, delaying the application, the questionnaire was launched through the support of President’s cabinet, two weeks later.

- **Embrapa:** The gatekeeper put the researcher in contact with the Strategic Management Committee, so that one of the members would intermediate the sending of the questionnaire to the rest of them. However, it did not happen at first; rather one of the chiefs decided that only one member of the body would answer to the questionnaire, differently from what had been negotiated during the previous months. Also, they refused to provide the emails of the members, impeding the researcher to contact them (considering the need to send reminders systematically, which should be done by the investigator). Therefore, it was necessary to appeal to the Law of Access to Information (Brasil, 2011), which obliges the public organisations to provide information not protected by secrecy. Coincidently, on the same day the researcher appealed to the law, the organisation decided that all the members of the committee would answer the questionnaire. It is not possible to assess whether this decision was because of the appeal to the law. The committee started answering the questionnaire two months after the launching.

- **Pasteur:** The procedure was the same. The gatekeeper put the researcher in contact with a Management Team member, which was supposed to introduce the research to the rest of them. Nevertheless, despite the negotiations, on the date of the launching of the questionnaire, the research had not been introduced to the team yet. Hence, in agreement with this member, the questionnaire was sent by the researcher, but the team did not know about it; therefore, the launching of it looked like spam. Only after this, the Management Team member talked to the others to sensitize them.
3.7. **Collection of Data**

3.7.1. **Archival Analysis**

The research took into consideration the fact that the three PROs have a routine of making institutional documents regularly. All three make an annual report of activities and multiannual plans. In the case of Fiocruz and Embrapa, there is an annual mandatory Management Report, which is submitted to internal and external bodies of accountability. Besides these, each organisation makes some other documents according to their perspectives, such as “The Presidency Activity Report” of Fiocruz, or “Embrapa in Numbers” of Embrapa, for instance.

The main documents analysed, however, were the strategic plans of each of the organisations. In the case of Fiocruz, the analysis from such documents will mainly discuss the history of the evolution, or rather, the development of the strategic plans of this PRO, which represent not only the organisation’s most significant aspect of planning for the future but – moreover – it represents the pinnacle of its internal democracy. This idea will be critically explored in the case of Fiocruz, and similarly, the corresponding strategic plans and their relative significance will also be analysed for Embrapa and Pasteur.

3.7.2. **Interviews**

For the collection of data related to the interviews, the two questionnaires were specifically designed for the two kinds of interviews.

The questionnaire built for interview category one contains four parts (see Annexe):

1. **Personal Data:** Include demographic data and information concerning how respondents are linked to the management board of the organisation as well as to the organisation itself. Aimed at mapping characteristics of the respondents, such as experience, that may be helpful to contextualise and balance their answers (questions 1 – 7).

2. **Decision-Making:** Aimed at understanding the decision-making process and providing evidence to underpin the answer to research question one (questions 8 – 11, with sub-questions).

3. **Long-term planning in the structure of the organisation:** Concerns how Foresight specifically is/has been used in the organisation regarding a method of long-term planning. Aims at knowing the respondents’ familiarity with the subject (experience) and provide evidence to underpin the answer to research question two (question 12, with sub-questions).
4. Long-term analysis for the strategic planning of the organisations: Aims to see the contributions of long-term analysis for the organisations’ overall decision-making and underpin the answer to research question two (questions 13 – 15, with sub-questions).

The four parts of the questionnaire express the rationale of latent variables. Latent variables refer to the phenomenon underlying what a scale intends to reflect and contain two key features: a. As the name points, it is latent rather than manifest; b. The construct to which it refers is a variable rather than a constant. They also have two basic forms: 1. When they are regarded as causal variables, 2. When they define measurement processes (DeVellis, 2012; von Eye and Clogg, 1994).

This research makes use of the second form of the latent variable and, as such, it will measure the perceptions of the respondents about an individual subject, rather than the subject itself (Borsboom et al., 2003; Cohen et al., 1990).

In addition, some questions are similar to one another, and this is due to the concept of “redundancy”. This is a concept related to the confirmation in-between issues which are linked to the same subject but approaching it in different ways, like complementary questions (“redundant questions”). The aim is to give reliability to the information about the subject, and this is through the corroboration the answers to those questions may give to one another (DeVellis, 2012; Morrow, 1983).

For the face-to-face interviews a questionnaire was built with the following structure (see Annex e):

1. Personal data: Basically, the purpose here is the same of the correlated field in the questionnaire, i.e., provide demographic data and information concerning how respondents are linked to the organisation. Aims to characterise the respondents and help balance their answers (questions 1 – 6).

2. Decision-making: With the objective of knowing how actors comprehend the process of making strategic decisions, as well as their role and responsibility in making such decisions, which may help balance their answers. They were also asked to list around five strategic decisions the organisation made in approximately the past 15 years. These answers were grouped and analysed with the support of the word cloud technique, a straightforward and visually appealing method (Cidell, 2010; Heimerl et al., 2014). In this regard, the idea was to capture the strategy “zeitgeist”, rather than a balance
between the answers. Aimed at supporting the answer to research question one (questions 7 – 8, and sub-questions).

3. Resistance to changes in the organisation: Based on the literature about organisational change, the idea was to shed light on the internal factors/interests that lead to resistance, but considering one of the changes (chosen by the interviewee) mentioned in the previous question. This question was inspired by the event that motivated this research, which generated huge resistance among the community. Hence, the objective was to collect the respondent’s perceptions about the dynamics involved, not necessarily in that “original event” but preferably in resistance to change in general terms. Also aims at supporting research question one (question 9, and sub-questions).

4. The long-term analysis in the organisation: By asking the respondent about his/her agreement with literature regarding the usage of long-term analysis under contingency circumstances; the mechanisms that prompt it; and the triggering of it within the organisation, the idea is similar to question 12 from the questionnaire, in which the aim was to assess the familiarity with the subject (experience) and provide evidence to underpin the answer to research question two (question 10, and sub-questions).

5. Long-term analysis vs organisational change: The last question intends to collect the actors’ opinion about the role of long-term analysis on decision-making, contributions of long-term analysis for the organisations’ overall decision-making, and to underpin the answer to research question two (question 11, and sub-question).

The aim of the face-to-face interviews was to provide material for triangulation with the data collected from the questionnaire. It was designed to be both broad and short at the same time. i.e., considering the majority were very busy and could only offer a short period in their schedules, the interview should be comprehensive, but also brief. The average time to apply it was around one hour, ranging from 25 min to 2 hours. The questions began with a discussion of present concerns and circumstances, then recovered past decisions along with the resistances they might have generated, and ended with questions about long-term analysis.

The idea of this structure was to induce a degree of reflexivity about the decision-making process discussed, helped by invoking interviewees’ experience and historical knowledge. The structure was also found by the interviewer to help respondents speak openly and feel comfortable through the interview process.

Finally, it is noteworthy to note the application of some leading questions, such as question 11, sub-question 11.1, from the questionnaire (“Do you believe that solutions are better-informed
when taking account of the opinions and skills from the grass roots of the organisation?”), or like question 10, and sub-questions, from the face-to-face interviews (“Literature and argumentation suggest that long-term analysis is used (and/or takes different forms) under various contingency circumstances”).

At first, such questions were supposed to bias the responses. However, they assumed the leading position in regard to the findings from the literature, as the question 10 from the interviews demonstrates. In cases when these findings have become common sense, such as question 11 of the questionnaire, it was not necessary to refer to the literature like question 10 of the interviews. In these situations, the referred questions unfold to sub-questions aiming at understanding the original response.

3.8. Validation of Data

A pilot test was conducted along with four people in Embrapa and one in Pasteur to check the understanding of the questions given in the online questionnaire, as well as the time needed for completing the questionnaire, which was around 15 minutes.

In the case of the online questionnaires, the sampled population counted 63 people: 32 from Fiocruz, 14 from Embrapa, and 17 from Pasteur. The questionnaire was applied to each body/department during a period of 40 days, with reminder emails being sent weekly. The reminders are regarded as a tactic to minimise or avoid low responses (Dillman et al., 2009). The final sample was: 19 from Fiocruz, nine from Embrapa, and six from Pasteur, which equates to a total of 34 respondents.

The questionnaire contains a total of eight open fields expressing the opinions of the respondents, allowing the comparison both with one another and between the different PROs.

Despite a lower than expected response rate to the online questionnaires (which may limit generalisations to be made of the aggregate data set – 63 potential respondents –, since these are limited to the populations the samples are from – 34 respondents), these responses have still proved very helpful in providing paths for analysis and trends to explore further in both the face-to-face interviews and the documental analysis.

The case of Pasteur can clarify this rationale quite well: Not only was there a low response rate from the respondents, but also three researchers replied saying they did not consider the research “important” for them and refused to answer the questionnaire. Their email replies,
although not permissible in terms of validation of data, can be regarded as an extremely interesting and relevant set of responses.

An explicit refusal to engage with research into decision-making at their PRO not only confirms literature associating the adherence to surveys, like this research, when the group finds it relevant (De Vaus, 2002); but this attitude can potentially help understand the dynamics at play within Pasteur Institute, especially among the networks of key actors and other management personnel who make decisions here. This development in the data collection reinforces the essential role of applying triangulation with other sources, such as documents and the face-to-face interviews, to build up a more holistic picture of the perspectives of those within PROs on decision-making processes.

With a total of 34 respondents from the online questionnaire and 14 key actors from the face-to-face interviews, the general framework of data can be seen in Table 4. The response rates were similar for Fiocruz and Embrapa, whereas for Pasteur it was nearly half of the other two.

<table>
<thead>
<tr>
<th>Organisation</th>
<th>Method</th>
<th>Face-to-face (key actors)</th>
<th>Online Questionnaire (management bodies)</th>
<th>Online Questionnaire response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiocruz</td>
<td>5</td>
<td>19</td>
<td>59% (19/32)</td>
<td></td>
</tr>
<tr>
<td>Embrapa</td>
<td>4</td>
<td>9</td>
<td>64% (9/14)</td>
<td></td>
</tr>
<tr>
<td>Pasteur</td>
<td>5</td>
<td>6</td>
<td>35% (6/17)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>14</td>
<td>34</td>
<td>54% (34/63)</td>
<td></td>
</tr>
</tbody>
</table>

### 3.9. Ethics

Both the face-to-face interviews and the questionnaire contain open questions that, although not compromising the respondents by any means, may have solicited responses that respondents would judge confidential and would not want to be shared with other parties. This research guaranteed the respondents not only anonymity if they took part, but also the freedom to withdraw at any time from the process and to have their details withdrawn, without giving any reason and without any detriment to her/him.

In the case of the online questionnaire, the first page contained a participant information sheet identifying the research, the researcher and supervisors, the research questions and aims, and both the researcher and the university contact information. The second page, previous to the beginning of the questionnaire itself, contained an electronic consent form and signature so the respondent would be assured she/he was aware of the information sheet, of hers/his voluntary
participation, anonymity, and that the results of the research, in the form of the thesis, will be available for consultancy at any time, once approved by the University of Manchester.

3.10. Remarks on the Methods

Aiming to investigate the decision-making process in the “democratic managerial administration” of Fiocruz, both the questionnaire and the interviews were drawn to collect selected aspects of the conceptual framework, the most significant for this investigation: Decision-making and strategic planning, in case, long-term planning.

Due to the triangulation approach of this research, however, the data collected from the fieldwork are not enough to proceed with the study, requiring, therefore, a historical review of the organisations under analysis, most notably Fiocruz, as well as their characteristics, in order to encompass the three vertexes of Figure 7.

The next three Sections will explore those aspects of the triangulation, presenting both the history of each organisation and their characteristics.
SECTION 4: FIOCRUZ

4.1. Introduction

4.1.1. Connection with Previous Sections

Following the scheme of the thesis, the triangulation approach in this investigation implies the application of quantitative and qualitative tools at the first moment, then an analysis between these vis-à-vis the history of the organisation and its institutional documents, mainly its strategic plans, as we have seen.

Therefore, it is mandatory to explore Fiocruz, the case study of this research, or rather its democratic managerial administration, as to have an adequate understanding of this mission-oriented PRO.

4.1.2. Aims of the Section

Because this study has a cross-cultural approach (p. 67), the objective of this Section is to present Fiocruz and understand the environment in which it is embedded, highlighting the organisation’s decision-making process.

Considering the PRO concept – which includes heterogeneous groups of research centres –, the option for the history of the organisation, as well as its characteristics, are mandatory to differentiate it from the others and support the forthcoming analysis.

4.1.3. Subsections

There are three subsections: History, characteristics and “the search for changes”.

The history of Fiocruz aims to locate this PRO as supporting the State actions towards the development of the country, especially its role in the “sanitary movement” against the military dictatorship (1964-1985), which led to the making of the Health chapter of the new constitution of the country during the re-democratisation process.

The second Section, characteristics, aims to present the organisation with a focus on the decision-making process, disclosing how strategic decisions are made in Fiocruz.

The last Section is the one in which the motivation of the research is described. It aims to show the decision-making dynamics from a real situation, as well as an instance in the development of this work.
4.2. Fiocruz History

Fiocruz was created in 1900 in Rio de Janeiro, the capital of Brazil in that time, under the name of “Federal Serum Therapy Institute”, to produce serum against bubonic plague. Dr Oswaldo Cruz was the technical director but soon was nominated by the President of the Republic to assume the General Directorship of Public Health, when he made successful campaigns against yellow fever, bubonic plague and smallpox, under a broader process of modernization of the city (Fraga, 1972).

The successful campaigns brought national and international recognition. In 1905, a first branch was settled in the state of Minas Gerais. In 1908, the Institute was named Oswaldo Cruz Institute. In the same year the first patent – vaccine against symptomatic blackleg – was registered (Benchimol, 2001).

Soon after that, the institute became one of the government’s agents towards the development of the interior, when for the first time it was made a survey of health conditions (“Linha do Tempo - Destaques da história da Fundação Oswaldo Cruz,” 2015).

The 1918 pandemic flu, however, has shown the precarious sanitary situation of Brazil and in 1920 the government created the National Department of Public Health, nominating Carlos Chagas, the successor of Oswaldo Cruz, as its first director.

Over the century, the Institute entwined some of the political changes in the country, as when it lost its autonomy in the Revolution of 30⁹, becoming subordinated to the Ministry of Education and Health, and not allowed to defray its expenses by selling biological products and services (Benchimol, in: Lima and Marchand, 2005).

During the ‘40s, despite difficulties due to the WWII, the Institute recovered its prestige when new buildings were constructed as well as laboratories were re-equipped. The creation of the Division for Endemics Study made the Great Endemics Service, previously dependent on donations, state-owned. Also, fieldwork stations were opened in Pernambuco, a state in the northeast region – to study schistosomiasis –, in Minas Gerais – to study Chagas disease –, and in the interior of Rio de Janeiro – to study yaws (Benchimol, in: Lima and Marchand, 2005; Sanglard, 2005).

The production of serum, vaccines and chemotherapy raised to attend the national demand, and a plant was created for the manufacturing of the recently discovered penicillin to attend both

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⁹ See Appendix to understand the “Revolution of 30”.
national and international needs. However, it was a period in which the large international laboratories took the Brazilian market, so the production of biological material was extinguished (Benchimol, 2001; Benchimol, in: Lima and Marchand, 2005).

The ‘50s was a period of crisis in the Institute. By the end of the ‘40s, Director Henrique Aragão had resigned because of political disagreement with some changes10. After that, the short plans made could not set broad projects, and debates between basic and applied research split the team, facilitating the intervention of the military government in the future coup of 1964 (Benchimol, in: Lima and Marchand, 2005).

With the successful military coup in 1964, the political rights of 10 researchers (among 70 in total) were revoked in 1970. They were forbidden to work, in which was named “The Massacre of Manguinhos” (Lent, 1978)11.

Fiocruz was facing internal strife and deteriorated. It was also a moment, beginning of the ‘70s, when a meningitis epidemic threatened the country but again was not prepared to face an outbreak. Vaccines were then imported (sorting the outbreak), and the military government set a plan to recover the institution. It was when several partner institutions were added and when the foundation, as it is currently known, was settled. Likewise, the directorship of planning was created.

During the ‘80s, the normality in the country came with re-democratisation and the settlement of the new constitution in 1988. Nevertheless, it took a while until Fiocruz had its statute finally defined in law – in 2003 –, although much of its current internal functioning dates from the early ‘90s.

Before that, Fiocruz used to be more like a “holding of units”, where each of them would push its interests. However, along with the new statute, it began to be shaped more like an organisation, with coordination between its different units, with different missions and various fields. It was when the Fiocruz trademark, the Fiocruz idea began to have a greater weight than it did before, and the quadrennial plans gained more importance.

The organisation became closer to the government again, as part of it, like in the early days, so the units became more and more aligned to the State needs, producing health inputs, training human resources and so on, strengthening its role during the ‘80s and ‘90s. A start up, although

10 Until then, the direction of the institute was lifelong. The referred changes were the annexation of the institute by the University of Brazil and the transfer of the manufacture of anti-malarial and anti-smallpox vaccines, the two most important assets of the institute at that moment, to the Yellow Fever National Service.

11 Manguinhos is the neighbourhood where the headquarters of Fiocruz is located.
not exactly a “government need”, but a need of the population, was during the re-democratisation period when the bases for SUS were conceived within its doors.

That was a moment when the “new left” came to the scene, not linked either to the guerrilla against dictatorship or the “unionism of the state”\(^ {12} \). These actors were responsible for the largest strikes in the heart of the Brazilian industry at the end of the ‘70s and the beginning of the ‘80s (Sader, 2001). A plethora of democratic forums took place from north to south of Brazil in left-wing administrations, and the participatory budgeting\(^ {13} \) experience in the city of Porto Alegre, south of Brazil, became a landmark (de Sousa Santos, 1998).

The re-democratisation “zeitgeist” of that period backed the proposal of SUS. The expectations for the future were unlimited, in a certain way. The inclusion of the article 196 of the constitution, as seen in Section 2, literally included millions of people into the system from one day to another. A system, however, yet to be built.

The leadership of Fiocruz in the construction of the health system, along with the new conception of health linked to the exercising of citizenship, is undoubtedly the most significant contribution of the organisation to Brazil. The conceptual framework shaping the basis of SUS helped reinforce (or recover) its role as a state agent.

Indeed, Fiocruz has been an important agent in the government actions towards the health of the population, such as the process of compulsory licensing of HIV drugs, aimed at providing free access to the Brazilian HIV patients (Fortunaka and Antunes, 2006). In this sense, as part of the government policy, in the recent years, Fiocruz has been engaged, for instance, in the creation of the first antiretroviral manufactory in Africa, through its first international unit in Mozambique. Fiocruz has been helping not only in building the manufactory but transferring knowledge and training.

Ultimately, in 2006 the Foundation was elected the best institution in the world in its field by peer organisations from IANPHI (International Association of National Public Health Institutes). In 2011, it was awarded breakthrough of the year by Science as part of an international study concerning HIV transmission; in 2014, was awarded the best Brazilian research institution by Leiden University and, in 2016, a researcher was awarded “Nature’s 10”, for demonstrating the link between microcephaly and the Zika virus.

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\(^ {12} \) See Appendix, the Vargas Period.
\(^ {13} \) The participatory budgeting was a means for the population to participate and choose where budget should be applied.
The landmark achievement so far, however, was the discovery of the Chagas disease in 1909. It was a unique discovery in the history of medicine, in which the whole cycle of a disease was described all at once. Political issues in the Academy of Medicine, nonetheless, not recognising the discovery, impeded the scientist Carlos Chagas to win what would have been the country’s first Nobel Prize (Lewinsohn, 2003; Needell, 1987)\(^{14}\).

### 4.3. Fiocruz Characteristics

The Oswaldo Cruz Foundation is an organisation of Science and Technology in Health, responsible for conducting research, technological development and training in the health field, in addition to producing strategic inputs for the National Unified Health System – SUS (Fiocruz, 2015a).

Concerning the OECD typology of PROs seen in Section 2, Fiocruz can be regarded as a MOC (p. 27). It is owned and run by the Brazilian government, under the Ministry of Health, conducting research in the health field and supporting policy-making. In fact, it played a major role in the making of the health chapter of the Brazilian constitution of 1988, as we have seen. Nevertheless, it contains features of a PRC as well, once it undertakes both basic and applied research, besides training, production, and others. Like a PRC, it is a large organisation, spread in all regions of Brazil, consuming a significant amount of the health R&D capabilities.

The activities conducted in Fiocruz concern especially biomedical research and training in science and technology in health; clinical research and health care reference both in infectious diseases and in women, children and teenagers health; epidemiological and social research; postgraduate in public health and vocational training in health; production of immunobiological, reagents and drugs; preservation of the cultural heritage of health; and scientific and technological diffusion (Fiocruz, 2015a).

The organisation has more than 10,000 employees and is spread all over the country. Its mission is to “produce, disseminate and share knowledge and technologies aimed at the strengthening and consolidating the SUS, and at contributing to the improvement of health and the quality of life of the population, to reduce social inequalities and to the dynamics of national innovation, with the defence of the right to health and the broad citizenship as core values” (Fiocruz, 2010, p. 21).

\(^{14}\) There was an issue concerning Argentinian researchers who had claimed the discovery was not original, which was the “alibi” of the Academy not to recognise the discovery. The year, 1921, had no Nobel Prize in Physiology or Medicine.
As a strategic state institution, it aims to develop activities in the fields of health, education, and development of science and technology, and shall follow the guidelines for the governance system (Fiocruz, 2015a):

Figure 9 - Guidelines for improving the governance system
Fiocruz

<table>
<thead>
<tr>
<th>Guidelines for improving the governance system</th>
</tr>
</thead>
<tbody>
<tr>
<td>To take part in the formulation and implementation of National Health Policy, the National Policy on Science and</td>
</tr>
<tr>
<td>Technology and the National Education Policy (the latter two in the health field).</td>
</tr>
<tr>
<td>To promote and conduct basic and applied research the fields of health, education and development of science and</td>
</tr>
<tr>
<td>technology, and to propose criteria and mechanisms for the development of research and technology in health</td>
</tr>
<tr>
<td>activities.</td>
</tr>
<tr>
<td>To educate and train human resources for health and science and technology.</td>
</tr>
<tr>
<td>To develop production, product and process technologies, as well as other technologies of interest to health.</td>
</tr>
<tr>
<td>To develop reference activities for monitoring and quality control in health.</td>
</tr>
<tr>
<td>To manufacture biological, prophylactic products, medicines, pharmaceuticals and other products of interest to</td>
</tr>
<tr>
<td>health.</td>
</tr>
<tr>
<td>To develop reference assistance activities in support of the health system, the development of science and</td>
</tr>
<tr>
<td>technology and of research projects.</td>
</tr>
<tr>
<td>To develop activities of production, capture and storage, analysis and dissemination of information for Health</td>
</tr>
<tr>
<td>and Science and Technology.</td>
</tr>
<tr>
<td>To develop activities of services provision and technical cooperation in the field of health, science and</td>
</tr>
<tr>
<td>technology.</td>
</tr>
<tr>
<td>To preserve, enhance and promote the historical, cultural and scientific heritage of Fiocruz and contribute to</td>
</tr>
<tr>
<td>preserving the memory of health and biomedical science.</td>
</tr>
<tr>
<td>To promote activities of research, education, technological development and technical cooperation for the</td>
</tr>
<tr>
<td>preservation of environment and biodiversity.</td>
</tr>
</tbody>
</table>

Source: Fiocruz, 2015a

The organisation counts on 15 technical and scientific units. These are the units engaged in the core activities (described above). There are more five offices also involved in the core activities, but not yet with the same status of the other 15. Four of them are the nucleus of new units currently in the opening process, under the politic of expansion and regionalization of activities, and are located in four different states of the Brazilian federation. One more office is located in Mozambique, Africa. It is the first international office of Fiocruz. Besides these, there is a technical support unit, which is engaged in providing test subjects.

There are, also, four technical and administrative units, in charge of financial management, maintenance of the campus, human resources, and planning:

- Board of Administration (Dirad).
- Board of Campus Administration (Dirac).
- Directorship of Human Resources (Direh).
- Directorship of Planning (Diplan).

The Presidency is divided into five Vice-Presidencies:

- Administration and Institutional Development.
- Education, Information and Communication.
- Environment, Healthcare and Health Promotion.
- Production and Innovation in Health.
- Research and Reference Laboratory.

Likewise, the Presidency has six advisory organs:

- Attorney.
- Internal Audit.
- Regional Board of Brasília.
- Social Communication Coordination.
- Social Cooperation.
- Centre for International Relations in Health (Cris).

The technical and administrative units are linked to the Vice-Presidency of Administration and Institutional Development, as well as the Coordination of Quality and IT.

The Vice-Presidency of Production and Innovation in Health has three centres linked: CDTS – Centre for Technological Development in Health, whose facility is under construction, will be a hub for research and production; Gestec – Technological Coordination; which is in charge of the protection of the scientific heritage, dealing with patents and so on; and Sefar – Service of Pharmaceutical Equivalence and Pharmacokinetics, which is a laboratory mainly in charge of bioequivalence and bioavailability studies.

Ultimately, the Presidency as a whole is linked to the Deliberative Council. Through the latter, the former is linked both to the Internal Congress and to the High Council. The following organisational chart clarifies the structure of Fiocruz.
Figure 10 - Fiocruz organisational chart

Source: https://portal.fiocruz.br/pt-br/content/organograma
4.3.1. Decision-making in Fiocruz

The decision-making in Fiocruz, as pointed in the “atomic model”, is merged with democracy. The VIII National Conference scheme, organised as participatory democratic forums, was replicated within the organisation, expressed by the functioning of its Internal Congress, the highest representative body, whose first edition was launched in 1988, during the re-democratisation period (Fiocruz, 1988).

Following the industrial democracy characteristics, the democratic decision-making process in Fiocruz is a mix of both participatory and direct democracy.

The President of Fiocruz, e.g., is a nomination by the President of the Republic but is chosen from a triple list, indicated by the Ministry of Health, that comes from a poll within the organisation. It is expected that the President of the Republic chooses the person most voted for by the community. Candidates must be recognised by their technical and scientific capacity and may come either from the within or outside the organisation (Brasil, 2003).

Three collegiate bodies share the governance: 1 – High Council; 2 – Internal Congress; and 3 – Deliberative Council (Brasil, 2003):

1. High Council (HC): This is an external body, which controls the activities, observing the accomplishment of both Plans of Strategic Development and of Objectives and Goals, reporting it to the Minister. It may propose the removal of the President of Fiocruz, in cases previewed in the rules, as well as recommend the adoption of measures for the adequacy of the scientific and technical activities for the accomplishment of the objectives of Fiocruz. It is composed of 20 members that do not belong to Fiocruz staff, except for the President of Fiocruz, the head of it. The National Council of Health proposes them to the Ministry of Health, with representatives from:
   i. Government.
   ii. Personalities recognised by their technical and scientific knowledge.
   iii. SUS.
   iv. Science and Technology area.
   v. Other sectors, such as Education, Environment, Social Security, Agriculture, and Labour.

2. Internal Congress (IC): It is the highest representative body at Fiocruz, which deliberates on strategic issues relating to the Fiocruz institutional macro project; on the institution’s bylaws; and appreciates subjects that are of strategic importance for the
future of Fiocruz. The Deliberative Council will define, for each Congress, the proportionality criteria for the number of delegates of each unit of the Foundation.

3. Deliberative Council (DC): Composed of the President (President of the Council); the 5 Vice-Presidents; the head of the cabinet; the representative from the Workers’ Union; the directors of each of the 15 technical and scientific units; the supporting unit; and each of the 4 technical and administrative units. The head of the cabinet and the representatives of the technical and administrative units cannot vote the deliberations. The DC is in charge of:

i. Deliberating upon:
   a. Institutional development policy of Fiocruz.
   b. The schedule of activities and the annual budget proposal set out in the Plan of Objectives and Goals of the institution.
   c. The HR policy.
   d. The dismissal of Unit Director for noncompliance with the operational policies and guidelines, for performance failure, for serious misconduct against the institutional project, the bylaws, the Statute of Fiocruz or Server Code of Ethics.

ii. Approving the organisational and operational rules listed in the regiment of the units of Fiocruz.

iii. Monitoring and evaluating the performance of the technical and scientific units, the technical and administrative units, as well as the technical support unit, and the programmes developed by Fiocruz.

iv. Recommending the adoption of measures it deems appropriate, towards the structuring and the functioning of Fiocruz.

v. Deciding on the conclusion of agreements, contracts, covenants and arrangements with public, private, philanthropic, national, international and foreign entities.

vi. Calling new process for the appointment of the President, within ninety days, in the case of impeachment.

In summary, the DC is in charge of implementing the strategic decisions. The main guidelines are collectively decided in the IC, which takes place every four years, at the beginning of the

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15 See the Organisational Chart on page 89. Those three bodies (HC, IC, and DC) are linked to the Presidency of Fiocruz.

16 They do not vote because they are not elected in their units, but are nominated by the President.
mandate of the President, when the plan for the period (quadrennial plan) is set. Figure 11, represents this scheme.

Basically, the Presidency writes a document of proposals, a thesis, which is debated within the DC at first, where changes to it may be made. Then, it is released to be debated throughout the units and along with the whole community (this is the direct democracy moment), occasion in which the workers also choose their delegates – around 300 as a whole – to defend their points of view in the final plenary, when they are assembled to discuss the proposals from the DC and other ones that might emerge from the community. It is the moment when eventual emergent strategies, as seen on pages 40-41 (Section 2), may become incorporated into the plan. Like all the federal institutions in Brazil, nevertheless, Fiocruz plan must be linked to the government’s quadrennial plan.

Figure 11 - Scheme of the Internal Congress in Fiocruz

It is important to highlight, also, that counting about 10,000 employees, half of these are contracted. Only civil servants, however, are allowed to be delegates, although literally each employee, in the level of the units, is allowed and encouraged to participate in the debates.

Once Fiocruz quadrennial plan is ready, each unit assembles to make their own plans based on that. There is an Executive Board that supports both Fiocruz and the units’ plans, with advice from the Directorship of Planning. Basically, the planning reference applied is the Carlos Matus SSP (1991), but recently other references have been applied too, like the Balance Scorecard (Kaplan and Norton, 1996), the Five Forces Analysis (Porter, 2008), and others.

Each technical and scientific unit, as well as the supporting unit, have their own polls to select their directors, making a triple list for the President of Fiocruz to choose one name (these elected directors are the ones with seats in the DC). The rationale is the same as for the choice of the President of Fiocruz. Those units are independent, and each one of them has its own statutes and structures. In this regard, it means that they might choose to work with advice from the Directorship of Planning, or not, in order to build their quadrennial plans, for instance.
In addition to that, it should be mentioned that the description previously made is related to the formal process. Any decision-making situation does not always follow the formal process, but is subject to the everyday life circumstances, in light of opportunities. In any case, none of the daily life circumstances is allowed to overcome the overall strategic decisions previously made in the IC. It means that the decisions must be aligned with a broader policy of the government (which guides the deliberations in the IC).

4.3.2. The Executive Board

The Executive Board is a corporate body of the strategic management model in Fiocruz. It aims to promote innovation in the management and strengthen institutional development. Coordinated by the Vice-Presidency of Management and Institutional Development, the board is composed of the directors of the four technical and administrative units, plus the Coordination of Quality and the Coordination of Management and Information Technology, with the support of the Presidency’s advisory boards.

The Executive Board is in charge of proposing, promoting and implementing actions outlined in the strategic plans of Fiocruz, which aligns corporative macro-strategies to those of tactical and operational levels. The latter are developed in collaboration with the technical and scientific units, administrative units and support unit, in the completion of the Internal Congress and the Collective of Managers\(^{17}\) of Fiocruz.

One other important assignment of the Executive Board is the preparation of the Annual Management Report, which is the accountability of institutional achievements of Fiocruz.

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\(^{17}\) The Collective of Managers is a meeting that happens in-between the Internal Congresses in order to assess the accomplishment of Quadrennial Plan of Fiocruz. It is composed by the staff of the units.
4.3.3. Strategic Map

In the last IC, with the support of the Executive Board, the organisation has drawn a strategic map, with guidelines targeting the year 2022, according to Figure 12 (Fiocruz, 2010, n.d.).

On the first and upper level is the *vision* for 2022, which is “to be a public and strategic institution of health recognised by the Brazilian society and other countries for its ability to place science, technology, innovation, education and technological production of services and strategic inputs for the promotion of the population’s health, reducing inequalities and social inequalities, the consolidation and strengthening of the National Unified Health System (SUS), the formulation and improvement of public health policies” (Fiocruz, 2010, p. 23).

The second level lists the social aims and commitments of Fiocruz, which is the *foremost perspective* of the map and acts as a guide for the other levels. It has the following objectives:

- Promotion and improvement of life and health conditions of the population.
- Strengthen the political, technical and economic sustainability of SUS.

In the third level is located the *second perspective*. It is concerned with the strategic processes, which represent the key operational focuses:

- Challenges of the SUS.
- Science and Technology, Health and Society.
- Productive and Innovation Complex in Health.
- Health, Environment and Sustainability.
- Health, State and International Cooperation.

Finally, the bottom is the *basis perspective*, named as management of resources (both tangible and, mainly, intangible) for the development of Fiocruz. All of them are under the umbrella of *innovation in management*:

- Management of Information and Knowledge.
- Work Management.
- Management of Funding, Cooperation and Finance.
- Quality Management.
This Strategic Map represents the first efforts of the organisation to set targets, or guidelines, beyond the period of four years.

4.4. **Fiocruz and the Search for Changes**

This subsection is the “case inside the case”. It is related to the event that motivated the thesis: The proposal made by the Presidency for the whole organisation to change its juridical status from a public autarchy to a public company, to a public enterprise\(^{18}\). As part of it, the subsection will recover the trajectory of the participative decision-making process within the organisation, which is part of the re-democratisation process of the country that occurred during the second half of the ‘80s, as we have seen.

In fact, the controversy over the decision around the juridical status of the organisation reveals situations characteristic of the particular model of decision-making in this PRO. Therefore, they illustrate, or rather they evidence the singularity of the organisation. It is the “opening of the box” proposed as a “start-up” of this study. In this sense, more than showing where the research questions emerged from, the aim of this subsection is also to provide evidence for the

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\(^{18}\) Fiocruz, as a public foundation, along with other public agencies, has the status of an autarchy according to the Brazilian law, and as such, part of the indirect administration. A public company can be mostly characterised for owning the majority of its shares on the stock exchange, by the government; hence, more subject to the market mood (Brasil, 2016, 2014).
development of the thesis, along with the Sections ahead, whenever it is pertinent, and contribute to answering the research questions.

Fiocruz, in this sense, has been debating ways to improve its management since its first Internal Congress of 1988, the year of the launching of the new Brazilian constitution. The concerns of the IC at that moment were related to the implementation of a participatory management process (a new management model) and the consolidation of technology management as a priority for institutional development (Fiocruz, 1988).

The second Congress, during 1992-1993, defined the autonomy of the institution, subject to the general public administration in power at any time, as an essential requirement to provide Fiocruz with the management skills to address issues affecting the health of the population (Fiocruz, 1994). This debate came in a moment in which the new government started up a discussion on administrative reform, launching the “Master Plan for the Reform of the State Apparatus”, which was made under the New Public Management approach (Brasil, 1995).

Certainly, as a reflection of that master plan, the second Congress held an extraordinary plenary with the title “Autonomy, Flexibility and Quality” (Fiocruz, 1996). At this, a series of principles and “entrenchment clauses” approving guidelines of long and short terms duration were settled. These included the delegation for the Deliberative Council to take steps to give the institution the “character of public organisation of strategic support to the State, of public and state-owned nature, in the form of special autarchy, public foundation or autonomous agency, granting it greater autonomy and administrative and managerial flexibility” and “the conclusion of management contracts, disclaimers or other forms of contractual arrangements with clearly defined goals and responsibilities” – emphasis added (Fiocruz, 1996, p. 5).

That was a clear resistance by the community against the Master Plan just launched. The whole public administration was put under “suspicion” because of the “crisis of the State”, regarded as responsible for the economic crisis of the ‘80s. The re-definition of the role of the State was the agenda in the ‘90s, and overcoming forms of administration classic to the State, such as bureaucratic administration, towards an efficient, managerial administration, was a priority (Brasil, 1995).

The Master Plan proposed a transition period, a so-called “laboratory”, aimed at raising awareness among the public management teams and other civil servants of the adoption of new management ideals and practices, creating two basic new institutions to which all the public organisations should be transformed (Brasil, 1995):
a. Autonomous agencies: For exclusive State activities.
b. Social organisations: For competitive services or non-exclusive.

In the third Congress, however, the Fiocruz community proposed that the government create a new and alternative model to those two: An “executive agency”, supposed to match the organisation’s needs best, i.e., the strategic role of the institution and the state-like nature, plus the commitment to overcome the bureaucratic administration, towards the “results oriented” managerial administration (Fiocruz, 1998). It was a move to avoid falling into the “social organisation” model, which was seen as a threat of privatisation and was rejected.

In 2000, there was an extraordinary plenary for the exclusive discussion of the management model, with the objectives of changing the management, by a. Approving Fiocruz new management structure and setting the guidelines for the beginning of its operation, and b. Updating the organisational and political model of Fiocruz. First, however, the community re-endorsed the five “entrenchment clauses” proposed in the second Congress, which “characterise and justify the existence of Fiocruz”:

1. To be a public, state and strategic institution.
2. To maintain its institutional integrity.
3. To reaffirm its social commitment.
4. To ensure a democratic and participative management with social control.
5. To guarantee mechanisms to ensure efficiency and managerial effectiveness.

The management model then was set regarding a “democratic managerial administration”, with objectives and with quality control. The proposal set a multi-year management contract with goals of short, medium and long terms, including, on the one hand, accountability with goals and objectives in the areas in which the institution operated and, on the other hand, autonomy guaranteed in the resources management. Similarly, it set a new standard of the managerial relationship between the central administration (considering central administration all organs of the Presidency along with the technical and administrative units), the technical and scientific and the supporting units, ensuring greater effectiveness and efficiency to the process of administrative decentralisation of all the units. Also, the model should reinforce initiatives of formulation and implementation of institutional projects that strengthened integrating actions; and highlighted the strategic role of Fiocruz (Fiocruz, 2000).

The fourth Congress was the one that for the first time set the “principals and main theses” of the institution, which were an improvement of the “entrenchment clauses”.
In total, 17 principals and theses were established. The ninth is the one related to the commitment to the management:

“The institutional incentive for technological development at Fiocruz requires the implementation of adequate infrastructure, a culture change as well as the adoption of new work processes, organisational models and evaluation mechanisms to establish a management innovation. In particular, it is necessary to align the research and production activities, consolidate technological development programs focused on the institutional strategies, preserving other programs to encourage research without compromising the resources allocated to other strategic activities of Fiocruz.”

Fiocruz, 2002, p. 5

Innovation was the main theme of the fourth Congress. A subject that had not been part of the discussion in the previous congresses, at the fourth it showed up in full force. It was like the institution had overcome the threats to its existence and now could focus on subjects that indeed matter to the accomplishment of its mission. Brazil is still technology-dependent, both in its public and private sectors, and health is seen as a strategic sector to overcome that. Two major programmes were created: PDTIS and PDTSP19. There were many attempts and lots of energy spent on innovation, but that was scattered, with little organised effort (Buss, 2003). The new programmes had the aim to foster innovation through networking and alignment in joint efforts.

The fifth Congress established the quadrennial plan (continuity of the proposal of the previous one) and, also, convened an extraordinary plenary to develop the guidelines for the suitability of the structure (Fiocruz, 2005).

It was the sixth Congress, however, that was the most “shaking” one, and motivated the research questions. There was a “radical” proposal: Fiocruz to become a company. A public company. Whereas the previous resistance to privatisation had been a top-down, external threat, coming from a broader proposal for the reform of the State apparatus; the transformation into a company was a project coming from inside the institution, from the recently elected staff – though supported by the Ministry of Planning. It was not itself a privatisation proposal but was seen as a threat, maybe the first step towards that, a kind of a “ghost” of the “social organisation” of the Master Plan proposal that had been rejected before.

19 PDTIS – Programme of Technological Development of Supplies for Health: aimed at the development and innovation of supplies for health; PDTSP – Programme of Technological Development in Public Health: aimed at the development of innovative research related to the health of the population, including clinical, environmental, social research, an others, that impact the services of SUS. These programmes were created 13 years ago now and are aligned to the needs of the Ministry of Health and SUS. They articulate financing help via edits and the establishment of partnerships in different formats and with different goals.
The resistance to the proposal generated three extraordinary plenaries. Although these plenaries addressed several discussions, the company issue was the toughest one. It was originated from two units, which were involved in the production and therefore more exposed to the “market environment”: Biomanguinhos, responsible for the technological development and production of vaccines, diagnostic reagents and biopharmaceuticals; and Farmanguinhos, responsible for the technological development and the production of drugs.

Strategic units for the innovation process in Fiocruz, their main arguments pro-company were related to financing (e.g. impossibility of generating working capital but depending on the government’s financial support) and to difficulties related to human resources (e.g. difficulty of agile replacement of qualified workers), which created constraints for that process.

The Workers’ Union catalysed the resistance to the proposal. As many were the arguments pro-company, many were the contra-arguments by the Union. As a whole, the latter can be summarised as a suspicion that the “innovation argument” could lead to a market-oriented innovation, rather than social interest.

Because there was a massive resistance, the proposal reframed and became into turning those units into subsidiaries of Fiocruz. That is, instead of the whole Foundation becoming itself a company, only those two units would but under the control of Fiocruz (Fiocruz, 2010).

In 2012, finally, after a neck-to-neck voting process, the renewed proposal for the creation of a subsidiary succeeded. There were several proposals/changes aimed at enhancing the management of Fiocruz during this period. The most notable are as follows:

1. Amend the juridical status into that of a company (the “shaking” proposal).
2. Creation of the Centre for Strategic Studies for the development – among other tasks – of Foresight studies (in fact a project from the first congresses too, but the centre only, not Foresight yet).
3. Creation of a new system for the coordination of quality, linked to the Vice-Presidency of Management, indicating a new status to the quality of processes, pursued since the first congresses.

These three highlighted proposals are, in fact, part of a broader action of Fiocruz, which for the first time included a long-term analysis of its strategic plan, launching a strategy for the year 2022. In this sense, it was a landmark, and the three proposals can be regarded as aiming to create conditions to support the accomplishment of the long-term goals of that plan, such as promoting the manufacturing of critical inputs in the health productive chain, strategic for SUS.
That is an objective, for instance, which encompasses a. Demands for a long-term exercise to collect and analyse market trends regarding the production of those strategic inputs, which in turn are supposed to have guided the option for a more “agile” administration to face the future demands in a timely fashion (proposal one). b. Parallel to it, under the same rationale, the Centre for Strategic Studies (proposal two), to conduct studies to collect the trends in the field, and 3. The new status of the care with the processes, i.e., the improvement of the day-to-day activities, but having a long-term perspective (proposal three).

In fact, one of the arguments “pro-company”, were trends pointed as challenges to provide access to cheap or free drugs, vaccines and other inputs, to the population, supporting the efforts of the National Health System (SUS) in this constitutional task. More than that, Fiocruz in this respect has been in fact providing the Ministry of Health, or rather the Health System, with studies underpinning the strategic function of the production units (Biomanguinhos and Farmanguinhos), or rather the strategic role of a policy regarding the manufacture of health inputs as a whole: The “Economic-Industrial Health Care Complex” (EIHCC).

It is a Brazilian variation of the concept “Medical-Industrial Complex”. The latter refers to the influence of the big health corporations on health professionals, e.g., the “development” of certain techniques to be used with special devices, provided by those corporations (Baggish and Nezhat, 1992), and refers to those concerns of the US President Eisenhower, in 1961, with the power acquired by the armament industry and the conflict between public and private interests in the national defence sector because of this – Military-Industrial Complex (Relman, 1980).

The EIHCC is an economic area set in a particular political and institutional context as it involves many sectors of activity, companies, public and private institutions and civil society in an economic setting of investment, consumption, innovation, income and employment (Gadelha, 2003).

The concept refers to selected productive activities that maintain multisector relationships of buying and selling goods and services or knowledge and technologies in a context given by the characteristics of the health sector, which is distinguished from other economic sectors as it is situated at the intersection of social welfare systems and innovation systems (Albuquerque and Cassiolato, 2000; Erber, 1992; Gadelha et al., 2003).

The EIHCC includes 1. The State (manager of public health policies and its regulator), 2. The networks both of public health services (SUS) and of private services (health insurance), and
3. The industries of pharmaceuticals, of inputs and medical equipment (Cordeiro, 1985; Gadelha et al., 2012). It involves three sub-systems: 1. Chemical and Biotechnological; 2. Physics, mechanics, electronics and materials; and 3. Health care services. It is the third sub-system that mobilises the whole complex because it organises the whole supply chain for the entire network of industrial health products, as well as the citizen’s consumption (Gadelha, 2003).

The Brazilian literature concerning the EIHCC is related to the fact that SUS is the main consumer of the products from the health industry. The public power in Brazil, therefore, concentrates the purchasing asset to keep the chain moving. From this perspective, the public health sector is seen not as an area of expenditure in terms of GDP, but rather as an area of investment, in which the government is the owner of the capital and determines the technologies to be adopted, as well as the medical guidelines and services, aiming to guarantee the constitutional universality principle of the System, i.e., the right of health for everybody. The health sector, in this sense, is an inducer of the economy (Gadelha et al., 2003).

Brazil, however, although having the manufacturing capacity, has been importing health inputs from countries in the same level of development, such as China and India (Albuquerque and Cassiolato, 2000; “Biblioteca de Saúde Pública,” 2008). It has led to a deficit of US$11 billion in the trade balance related to health inputs (Metten et al., 2015), performing a situation that threatens the provision of health care as preconized by the constitution.

A classic example of the application of the EIHCC concept concerns the Brazilian National STD/AIDS Programme. Recognised as a global benchmark in the field, Brazil once was in the centre of an international controversy when the government first announced the compulsory licensing of the antiretroviral cocktail drugs freely distributed by SUS. The costs were making it impossible to maintain the Programme.

The prices charged to Brazil were higher than those charged for countries with similarly sized economies, like Thailand, although the manufacturing costs were the same. Therefore, supported by the flexibilities possible under the TRIPS Agreement, Brazil made the Efavirenz compulsory licensing in 2007 and 2009 started its production to meet domestic demand through public-private partnerships, thus strengthening the EIHCC. In addition to the viability of the program itself, the country saved budget by substituting the imports (Galvão, 2002; Levi and Vitória, 2002; Oliveira-Cruz et al., 2004).
The case of the compulsory licensing is not a common one but clearly, shows how strategic the production of health inputs can be. Fiocruz is the main supplier of HIV cocktail for the National STD/AIDS Programme, which distributes those drugs for free. Therefore, the debate upon becoming a company or not which motivated this research, for instance, is part of a major concern related to providing the government with proper tools that allow both the widening of the access to public health services, the fostering of the economic development and, as such, helping save the deficit of the Brazilian international trade in health inputs. It is, then, a political as well as a public health and academic research issue.

The EIHCC was found to be the “field”, in Fiocruz, subject to the first Foresight activity of the organisation. Also, the production units recall the origins of the organisation, when it was created for the manufacture of serum against bubonic plague, as we have seen. Hence, the production activity in Fiocruz emerges as a strategic one not just for the potential to improve the provision of health inputs and the economy, but also for its links with the past and the future of the organisation.

Likewise, the EIHCC is an example of a “production of policy”, as long as the Ministry of Health adopted this theoretical matrix as a policy to establish a series of actions envisioning both a decrease in the trade balance deficit in health and a widening of the access to health by the population. In this respect, Fiocruz can be regarded as “think tank” of the Ministry of Health, for SUS.

Concerning, in this sense, the strategic role of the EIHCC policy for the future of the Health System, the controversy around becoming a company or not, debated during the VI Internal Congress cited, was not, for instance, in terms of the role of the EIHCC policy itself. In fact, there was a general agreement regarding the strategic function of the manufacturing of inputs to health. The disagreement was in terms of the means to accomplish that, i.e., although there was a shared vision of the future, it was not enough for the employees to share the resolution proposed to shape that vision.

The “anti-company” arguments were directed towards the enhancement of the current laws, allowing therefore to overcome the bottlenecks of the autarchy juridical status, including the renewing of the workforce in a proper manner, and others. Nonetheless, the primary concern for the “anti-company” proposal was the threatening of privatisation. The organisation was split between the two options: “Status quo” vs company. The “status quo” at this moment did not refer to a passive position, but maintaining, or rather enhancing, the current struggle to
improve the working processes, both within the organisation and through corporate lobbies towards the Parliament, for the creation of laws facilitating them.

In such a complex controversy, the creation of a subsidiary company under the control of the organisation, i.e., under joint control, was a “halfway” solution: Neither the “status quo” nor the transformation of the whole structure into a company prevailed. However, it was a tough poll, meaning that nearly half of the community was not convinced of it.

The long-term perspective, in this sense, was a novelty, for the first time guiding a strategic plan of the organisation. It was, in fact, the unfolding of the Federal government efforts, in 2009, both to create a long-term planning for the country and, as part of it, the establishment of goals for the year 2022, year of celebration of the Brazilian Independence Bicentennial. The project “Brasil 2022” set goals in several areas, including agriculture, transport and health. Fiocruz was invited to support in setting goals for the health field.

The effort called the attention of Fiocruz managers, which implemented a series of actions envisioning the long-term planning. Besides the Foresight exercise aiming at the Bicentennial, other substantial actions were taken, such as the launching of the distant learning course “Intelligence of the Future” in partnership with the University of Brasilia (which has more expertise in long-term planning) to train the staff and other civil servants, and the launching of the book “Brasil 2030” as part of the project “Brasil Saúde Amanhã” (Brazil Health Tomorrow – https://saudeamanha.fiocruz.br/).

The project “Brasil Saúde Amanhã” was, in fact, the aftermath of the government call for Fiocruz to take part of the project “Brasil 2022”, and its role is complementary to that from the Centre for Strategic Studies. Whereas the latter focuses primarily on Fiocruz, the former has a broader scope, beyond its boundaries. It is a multidisciplinary research network that investigates and proposes paths for the country and the health sector over the next 20 years, applying mainly the scenarios methods, but also trend extrapolation, the case of the book “Brasil 2030”, and others.

In this sense, both the strategic plan from the VI Internal Congress, based on a long-term perspective and the book “Brasil 2030” can be regarded as landmarks in Fiocruz management. In 2014, it was the turn for the VII Congress, which aimed at the adjustment of the organisation statute to new challenges, basically the recent legal and policy frameworks of State, which is referred to the need of improvement of public management towards sustainability and innovation (Fiocruz, 2014).
Besides that, the seventh Congress launched a “political letter” reiterating health as a human right and as a decisive factor for social inclusion, development and reassurance of the national sovereignty. The document shares concerns with the exhaustion of the development model that had lasted for a decade in the country, based mainly on the containment of public spending, rising interest rates and the search for tax surplus, not facing structural challenges that can promote health among the population (Fiocruz, 2015b).

Table five shows a summary of the main deliberations of the Internal Congresses, in terms of management, over the years described. The number of extraordinary plenaries indicates the level of stress within the community, and so is that, whereas the first one had only one plenary, the sixth had four (three extras). All the rest demanded two plenaries (one extra). The second and third ones can be characterised as concerned with the identity of the institution when the operating bases were settled, and the last four represent the organisation settling its path down, although, for this, its identity has been scrutinised again.

Table 5 - Main deliberations of Fiocruz Internal Congresses
period 1988-2016

<table>
<thead>
<tr>
<th>Congress</th>
<th>Year</th>
<th>Main Deliberations</th>
<th>Number of Extraordinary Plenaries</th>
</tr>
</thead>
</table>
| First    | 1988 | - Implementation of a participatory management process.  
- Technology Management. | 0 |
| Second   | 1993 | - Autonomy of the institution as an essential requirement to provide it with management skills to address the issues affecting the health of the population.  
- Settlement of principles and “entrenchment clauses”.  
- Approval of guidelines of long and short terms. | 1 |
| Third    | 1998 | - Proposal of a third, alternative model to the government’s suggestion of two new institutions in the public sector: “Executive Agency”.  
- Re-endorsement of the second congress’ “entrenchment clauses”.  
- Approval of Fiocruz’s new management structure and guidelines for starting up its operation.  
- Democratic managerial administration, with targets and control of quality. | 1 |
| Fourth   | 2002 | - Setting of the “principals and main theses” of the institution (which were an improvement of the “entrenchment clauses”). | 1 |
| Fifth    | 2006 | - Establishing of the quadrennial plan.  
- Guidelines for the suitability of the new structure. | 1 |
| Sixth    | 2010 | - Creation of subsidiaries.  
- Creation of a new system for the coordination of quality.  
- Creation of the Centre of Strategic Studies for the development of Foresight studies. | 3 |
| Seventh  | 2014 | - Political letter.  
- Statutory modernisation to face new challenges (structure of the organisation).  
- Guidelines for Governance System Improvement. | 1 |


It is important to highlight that the issue around becoming or not a company is not the only one. There are several parallel tensions. Fiocruz, for instance, develops both fundamental and applied research, and it is a large organisation, spread throughout a big country, as we have seen. One important and old tension related to this, pointed in the fourth Congress, has been
around the integration of research. The organisation owns the means to conduct the so-called translational research\textsuperscript{20} within its own premises, but it has not been yet succeeding as much as it can (e.g. the constraints of the manufacturing units).

Despite the efforts and results of PDTIS and PDTSP programmes, particularly the first one, which has been bridging the gap not only within Fiocruz premises but also with industries, research remains dispersed in a certain level. These programmes do not support the wide range of Fiocruz projects. More alignment is needed.

One other example of tension was related to the dichotomy chronic diseases vs neglected diseases. Traditionally engaged in diseases of poverty, although not only these, the Fiocruz community found itself grappling with a dilemma in the sixth Congress: Chronic and degenerative diseases, seen as being responsible for 66.3\% of the national burden of disease (Schramm et al., 2004), but were not in the portfolio of the institution. It is an issue that requires training, contracting new workers, and so on. During the debates, however, it could be perceived a certain resistance in changing this research profile, as if it was a threat to some niches of research.

4.5. Remarks on Fiocruz

In this Section, it was possible to have a clear view of the size of this PRO, not only in structural terms but also regarding its historical strategic role for the country, doing research, training, manufacturing drugs and immunobiological, as well as proposing/fostering public health policies for the Ministry, such as the EIHCC and the creation of SUS. In this sense, we can assert that Fiocruz is the Ministry’s, or rather the State’s, “think tank” for the health field, or better, a “health hub”.

As such, it claims to be a “State Strategic Agency”. We have seen that the debates around becoming a company or not triggered massive resistance within the organisation, whose employees were afraid of a disguised first step towards privatisation. Responding to that, in an attempt to guarantee the trust of the community, the managers gave the report the subtitle “Fiocruz as a Strategic Public Institution for Health”, re-assuring both the state-owned and the strategic nature of the organisation.

\textsuperscript{20} “promote interdisciplinary research and to speed the bi-directional exchange between basic and clinical science to move basic research findings from the laboratory to applied settings involving patients and populations.” (NCAB - National Cancer Advisory Board, 2003, p. 3).
We have seen, also, how the democratic decision-making process of Fiocruz works, both in theory, by scheming the mechanics of it, and in practice, by analysing the debates around the proposal to become a company.

In the next Sections, following the same scheme of this one, we are going to learn about Embrapa’s and Pasteur’s history and characteristics as well, referring them to the case of Fiocruz, as to shed light on the understanding of the former.
SECTION 5: EMBRAPA

5.1. Introduction

5.1.1. Connection with Previous Sections

Taking into consideration it is a case study, we have seen that Embrapa is the Brazilian PRO chosen as one of the contrasting cases, because, along with Fiocruz, it plays a major role to the structuring of S&T in Brazil (p. 71).

Differently from Fiocruz Section, however, this one has two subsections instead of three: History and characteristics. It is mainly because it is not a “case” in the study, but a contrasting one.

5.1.2. Aims of the Section

The objective of this Section is to highlight the similarities and differences between Fiocruz and Embrapa, organisations that share the same environment, in order to support the forthcoming analysis.

Those similarities and differences, in turn, will pay special attention to the history and characteristics of Embrapa, particularly the decision-making process. Considering that both organisations share the same historical background, this comparison will shed light on understanding and position Fiocruz.

5.1.3. Subsections

The subsections of this Embrapa chapter are two, instead of three: History and characteristics. It is because Embrapa is not the case under investigation.

In the history subsection, the idea is to show the distinct trajectories of the two most important PROs in Brazil, despite sharing the same environment and, similarly to Fiocruz, understand the historical determinants that led this organisation to its current profile.

Likewise, the characteristics Section, which aims to show possible connections between the two organisations, with emphasis on the strategic decision-making process.

5.2. History Overview

The Brazilian Agricultural Research Corporation (Embrapa) was created in 1973 with the mission of enabling the modernisation and growth of agriculture, through technological research, transfer of knowledge to farmers and the extension of the agricultural frontier (Lima, in: Cabral, 2005). The organisation was the outcome of a process whose origin dates back to
the Brazilian development policies from the ‘30s and was reinforced in the post-war years (Brito, 2000; Delgado, 1985; Müller, 1988).

Those policies were concerned with imports substitution, seen as a way towards the economic development, and which determined the transformation of the technological basis of the Brazilian agriculture, a process that began in 1955 and was consolidated after 1965 as a State policy (Brito, 2000). As such, Embrapa would be in the coordination of the national system of agricultural research 21 and should introduce a research management model to generate technological innovation aligned with that development policy (Brito, 2000).

The idea underlying the creation of Embrapa was that the Brazilian agriculture should be equal to the one in the USA:

“I will say a basic idea, a key hypothesis for the starting up of Embrapa: That the agriculture in Brazil should be equal to the one in the USA. Embrapa was organised from that hypothesis.”

Interviewee 6

The new organisation had the aim to align the Brazilian agriculture with the international production trends, through agreements with scientific organisations and massive postgrad training of the researchers in the best international centres as to speed up the modernisation of the Brazilian agriculture and define a new technological standard. Likewise, the organisation should decentralise the research activities within the country (Brito, 2000; Cabral, 2005).

The internationalisation policy of Embrapa, in fact, was inserted in the “Green Revolution” dynamics, a network in the ‘60s concerned to the technology transfer of modern or high-yielding crop varieties from the developed to the developing countries (Evenson and Gollin, 2003). The “revolution” was linked to the chemical, mechanical and genetic agricultural standard, known as “technological packs”, developed in the USA and Europe and supposed to solve the problem of hunger in the world. Nevertheless, it contained a colonial bias because it served both to increase the production of cheap raw materials, aimed at agro-industries in wealthy countries that benefited them, increasing their value, and to increase the production of machinery and chemical inputs from these countries who sold them to the poor countries (Borges Filho, 2005; Montenegro Gómez, 2006).

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21 The national system of agricultural research would be officialised only in 1992. It included Embrapa in the coordination, other national centres, state companies and universities aimed at technology transfer of technological packs.
The technology transfer was enhanced with the creation of national systems of agricultural research in the Latin American countries like Mexico, Colombia and Chile. Similarly, both Ford Foundation and Rockefeller Foundation helped the establishment of international institutes in Africa, Asia and Latin America, performing an International Agricultural Research System (Borges Filho, 2005).

Largely, the implementation of those institutes was part of a broader strategic anti-communist ideology in the context of the Cold War. The possibility that developing countries could be co-opted by these ideas contributed to the approximation, by the countries aligned with the United States, to the periphery countries (Serafim, 2011).

Created during a military dictatorship aligned with the United States as well, Embrapa counted on two main argumentations (Brito, 2000):

1. Nationalist orientation, in terms of a Brazilian scientific and technological independence.
2. The expansion of food production regarded as a matter of national security.\footnote{22 The “National Security Doctrine” was inspired and supported by the government of the USA when, after WWII, generations of Brazilian officers attended to military courses in that country, mirroring their “national defence” philosophy and founding the Brazilian War Superior School, and created the “National Information Service”. The enemy, i.e., the communist, was not located abroad only, but also infiltrated within the country (Schoultz, 2014). As arguing the expansion of food production as a matter of national security, the government bestowed a strategic status to Embrapa within the context of the Cold War. It is the agile capitalist project of “modernisation” of agriculture.}

However, the consultancy of the Consultive Group International Agriculture Research (CGIAR) (Brito, 2000), linked to the International Agricultural Research System (Borges Filho, 2005), and the visit of the author of the Green Revolution in the ‘70s, Nobel Peace Prize Norman Borlaug (Cabral, 2005), definitely inserted the creation of Embrapa in the broader international network.

The context of the Green Revolution in the international scene of the ‘60s and ‘70s, and a government politically and ideologically supported by the USA\footnote{23 See Appendix.} was the best opportunity to create the organisation. The concern was the consumer in the fast spreading urbanisation of the last ¼ of the 20th century.

“Embrapa was somehow born from an urbanised need. It was necessary to give food at a cheap cost to the urban masses of consumers. If only we continued expanding the agricultural frontier, it would be practically impossible to meet all that human contingent concentrated in large cities. So, Embrapa was not born as a demand of...
farmers, but a concern for the military with the supply of large cities
(...)” [Emphasis added]

Former President, in: Brito, 2000, pp. 76-77

In parallel to Fiocruz, it happened in a moment (the ‘70s) when the Sanitarian Movement was beginning to take shape, concerned with the citizen, rather than the consumer: This is the original and main difference between the two most innovative Brazilian PROs, which will be reflected in their missions, visions and values.

In this sense, Embrapa can be regarded as a representative of the best creations of the dictatorship, when the government applied its best capacities and efforts in the building of a “state of art” company, linked to the best international centres, aimed at the strategic objective of feeding the “urban masses of consumers”: A case of national security, as pointed.

The organisation was founded during the government of General Garrastazu Médici, regarded as the climax of the dictatorship, in a period characterised as “the years of lead” (Gaspari, 2002).

As a project of the dictatorship, the organisation adopted certain administrative characteristics of military institutions. The strong technocracy24 rationale submitted the different research centres to a centralised and hierarchic control under authoritarian orientation. This centralism used to be expressed in the figure of the “stars of research”, who used to be nominated to assume administrative functions despite any lack of knowledge in the field (Brito, 2000).

That, however, was not an exclusive characteristic of Embrapa, but of almost all the Brazilian public organisations at that moment, when the State underwent an administrative reform supposed to overcome patrimonialism and personalism. Therefore, what happened to Embrapa was a reproduction, in its premises, of the efforts of the government in order to homogenise the institutions, including their behaviour codes and ways of communication (Brito, 2000; Machado, 1995).

Some of the homogenization efforts can be seen in similarities between the creation of Embrapa and the “transformation” of Fiocruz in the ‘70s. The latter, as it is currently known, was “created” in 1970 by a Presidential decree merging old government units to the original Oswaldo Cruz Institute (IOC), all under the new label “Fiocruz” (Brasil, 1970). Differently from Embrapa, the newly created Foundation was in the beginning mostly a “holding of units”,

24 “The government or control of society or industry by an elite of technical experts.” - https://en.oxforddictionaries.com/definition/technocracy
rather than an organisation internally identified as such. Embrapa, on the other side, was a whole new organisation, but making use of several existing structures of the government as well, which were converted into the first units of the “Embrapa conglomerate” (Embrapa, 2006).

Whereas in Fiocruz the reconfiguration set by the government was largely bureaucratic, motivated mainly by the necessity to produce vaccines and to get prepared to deal with urgent issues, in Embrapa there was a concern with the future due to the growing population in Brazil and the world. Embrapa was created as a strategic decision of the government based on a long-term perspective, as part of the State policy for the development of the country, to substitute imports and guarantee the expansion of food production. Embrapa was created looking at the future.

Both cases, however, shared another characteristic of the “homogenization” of that period: The government repression of its opponents. In Fiocruz, ten of the most prominent researchers lost their jobs and political rights and several researches, as well as materials and laboratories, were lost in the “Massacre of Manguinhos” (p. 84). In Embrapa, the method was similar:

“If it were not in military period, Embrapa would not have been created. There was resistance, but there was a higher power. The army knows how to cope with resistance. How does the army cope with resistance? By arresting and, in extreme cases, by killing. In our case here we warned the person that he/she could lose the job. We fired many people.”

Interviewee 6

That was a moment when the Brazilian urbanisation was under process, a time of huge transformations to support this process. Three aspects contributed to it (Santos, 2005):

1. A territorial configuration, with an exponential development of the transport system, as well as the telecommunications and energy.
2. Huge development of the material production, both industrial and agricultural, changed the structures, such as circulation and distribution. Consumption grew exponentially, as well as all the data referring to material life changed extraordinarily almost all over the country.
3. Development of new “economic forms”: There was not only the development of new forms of material production but also the “non-material production”, including health, education, leisure, information, and even expectations.
It was a significant rupture in the way the Brazilian land used to be explored. Since the colonial period the land had been explored directly by the work of man (slaves or peasants), but in the last ¼ of the century, a technical and mechanic way to explore the land was implemented, changing the definition of space and transforming its conditions of use. The ‘70s faced the largest growth of the urban population in Brazil due to an increase in the birth rate and decrease in the death rate motivated both by the improvement in the sanitary conditions and the living standards, besides the urbanisation itself (Santos, 2005).

In this respect, the coup d’état in 1964 can be regarded as a landmark due to the creation of conditions for the fast integration of the country to an international movement which seemed irreversible on the world scale. The Brazilian economy, then, was developed to serve both the national and the international markets. The growing population, the widening of the middle class, and the seduction of the poor for a more diversified expenditure leveraged the industrial expansion (Santos, 2005).

It was a moment when the government maintained a strong subsidies policy, including subsidized rural credit and minimum price guarantee policy, and built the necessary infrastructure, such as the construction of paved roads, ports, bridges, airports, power plants, rural electrification and the construction of warehouses for grain, i.e., the State promoted the boosting of the agriculture (Matos and Pessoa, 2011).

This boosting, however, has benefited mainly the activities aimed at exports. Based on a model focused on the producer, the policy envisioned the following roles of agriculture for economic development (Delgado, 2001):

- Allow the rural workforce to work in the industrial sector without decreasing the amount of food produced;
- The creation of a market for the industry sector;
- Expansion of exports abroad;
- Financing part of the economy capitalisation (subsidies policy).

The effects of that policy, however, generated distortions. Both the freeing of the workforce and the creation of a market for the industrial sector, for instance, boosted migration from the rural areas to the urban centres as a result of the expansion of large landholdings at the countryside aimed at exports, i.e., the policy did not include any program to support the peasantry. The forced migration multiplied the poor peripheries, the favelas, in the big Brazilian cities, providing, in turn, the cheap workforce for the industries and the new middle
classes. It was when, in the ‘70s, for the first time the number of urban inhabitants becomes the majority (Santos, 2005).

The period of 1965-1982 is regarded as the “golden age” of the development of a capitalist agriculture in Brazil, providing technical integration between agriculture and industry\textsuperscript{25}, and from these with the foreign; all under the financial mediation of the public sector. It was the “conservative modernisation” of the military regime (Delgado, 2005).

The conservative modernisation was born as an aftermath of the loss of the land reform movement\textsuperscript{26}. It was also the answer to the old agricultural policy focused on coffee, and a means to deal with the enormous challenges of industrialisation and urbanisation. Most of all, it was a process of upgrading an agrarian pact which was both technically modernising and socially conservative, and which brought to its shelter the old Brazilian rural oligarchies, widely supported by official subsidies (Delgado, 2005).

Besides conservative, the modernisation was also painful, once it was characterised by the incorporation of technical progress whose objective was to maximise the productivity of the land and the work, hence generating social contradictions as it advanced over the territory changing its use, as well as its culture and social agents (Graziano da Silva, 1981).

The 1964 coup extinguished the political debate and, slowly, imposed the exclusive debate on issues related to both the supply and the demand of agricultural products, their effects on prices, employment and foreign trade, omitting issues of land ownership and its consequences for the country. The technical modernisation cycle and growth in the Brazilian agriculture was completed without changes in the agrarian structure (Delgado, 2005).

In the early ‘80s, the economy was faced with a long term of relative domestic stagnation, largely imposed by the conditions of adjustment to the external debt crisis. In this context, the role of agriculture was crucial for the management of several macroeconomic junctures of the period (Delgado, 2005). It was also the moment of the re-democratisation of the country, in which researchers in Embrapa started a debate upon issues like the relationship between “technological packs” and sustainable development, the irrational use of natural resources, the social exclusion in the rural areas, and others (Borges Filho, 2005).

\textsuperscript{25} Similar phenomena had happened in the USA and West Europe by the end of the 19\textsuperscript{th} and the beginning of the 20\textsuperscript{th} century.

\textsuperscript{26} One determinant factor for the military coup were the tensions in the countryside, when by the ‘50s and ‘60s the peasants started organising and claiming for land reform – the “Peasant Leagues” –, in partnership with sectors of the Catholic Church and the Communist Party (Montenegro, 2004).
In the ‘90s, the policy for trade surpluses was abandoned towards an ultraliberal adjustment with a trade liberalisation to foreign countries and a dismounting of the existing agricultural subsidies, which promoted a widespread drop in the agricultural income and the abandonment of the family farming, now converted into activities for subsistence (Delgado, 2005).

The development project of the government in the ‘90s was conflicting with the new ideas that arose in Embrapa in the previous decade, hence the resources for the investigation in those areas were derisory, and the “new” agenda (sustainability, social exclusion, environment) did not advance much, despite the concept of “sustainable development” had been incorporated into the mission of the organisation (Serafim, 2011).

Around the turn of the century, the international liquidity crisis made the government recover the trade surplus policy previously abandoned and to re-launch the technical modernisation, again without land reform, now re-named as “Agribusiness”:

“Note that agribusiness in the Brazilian sense of the term is an association of the large agro-industrial capital with the large landed property. This association performs an economic strategy of the financial capital, pursuing profit and land revenue under State sponsorship policy.”

Delgado, 2005, p. 13

Similar to the conservative modernisation, the government set a series of measures to support agribusinesses, providing infrastructure, attractive exchange rate policies, weak regulation of the land market, and explicit guidance of the public system of agricultural research through the reorganisation of Embrapa, in order for the institution to operate well with multinational agribusiness companies (Delgado, 2005).

In the first decade of the 21st century, the government set policies envisioning the small farmers, i.e., the other side of the rural social structure27, what should be adopted by Embrapa. The perspective was not to break with the production method but to add issues like the environmental impact, the job creation, the valorisation of the peasant woman and child, and the inclusion of the family farming. The idea was the add those excluded to the development process (Serafim, 2011).

27 Previously, in 1995, the government had launched a program of subsidies for the family farming (Pronaf) and, in 1999, Embrapa launched the National Program of Agriculture and Livestock, whose title was “Family Farming: a perspective for the future”, suggesting that it would be a priority, but, despite the title it was marginal to the company’s strategies, in a context that would need “great global transformations” for something to be done (Serafim, 2011).
The subsequent plans of the organisation, however, did not materialise those policies. In fact, Embrapa adopted the speech towards sustainability and the concern with the family farming but did not turn it into reality. The latter was equalled to the Agribusiness in this regard, i.e., Embrapa’s vision of the family farming was in terms of the *technological apparatus* that could support the production, not problematizing the social implications of these (Serafim, 2011).

5.3. **Embrapa Characteristics**

Embrapa is a Brazilian PRO under the Ministry of Agriculture, Livestock and Supply. Counting approximately on 10,000 employees, its mission is to “provide research, development, and innovative solutions for the sustainability of agriculture and the benefit of Brazilian society” (Embrapa, 2015a, p. 8).

Regarding the OECD types of PROs (p. 27), it is also a Brazilian MOC, but in the agricultural field. Similarly to Fiocruz, it supports policy making and undertakes both basic and applied research, consuming large amounts of R&D too, hence it is a MOC with some characteristics of a PRC as well. Both Embrapa and Fiocruz play a major role in their respective areas and have been contributing to the structuring of Science and Technology in Brazil (Salles-Filho et al., 2001).

It operates to enable solutions for sustainable development agriculture, through the generation, adaptation and transfer of knowledge and technologies. It is the head of a national agricultural research network, which comprises 18 Agricultural Research State Organisations 28, universities, federal and state research institutes, plus private enterprises and foundations (Embrapa, 2015b).

The organisation embraces the following social objectives (Brasil, 2012):

1. To plan, guide, manage, implement and supervise agricultural research activities in order to produce technological knowledge to be used in the development of national agriculture 29.
2. To support technically and administratively, the organs and entities of the Executive Power, or organisations linked to it, with the assignment of formulation, guidance and

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28 Brazil is a federation of 26 states, plus the Federal District, which is the capital of the country (Brasília). The quote means the organisations are public and under the (local) state responsibility. They are not federal like Embrapa itself.

29 The research referred cover the areas of agronomy, veterinary, sociology and the rural economy, the areas related to agribusiness, forest science and the environment, fisheries, aquaculture, weather and other topics related to its object.
coordination of the agricultural policy, and science and technology policy, related to the agricultural sector.

3. To stimulate and promote operational decentralisation of agricultural research activities of regional, state, county and municipal interest, through actions of technical and scientific cooperation with bodies with similar goals.

4. To coordinate the National Agricultural Research System - SNPA, by agreement with the States, the Federal District and the municipalities.

The organisation counts almost 10,000 employees and is spread throughout each of the Brazilian regions\(^{30}\). In total, there are 71 units, distributed as follows (“Quem Somos - Portal Embrapa,” n.d.):

- 15 central units (located in the headquarters).
- 47 decentralised units (in all regions of Brazil).
- Virtual laboratories abroad (USA, Europe, China, and South Korea).
- International offices (in Latin America and Africa).

The central units are linked to the Presidency or, more specifically, to the Executive Board, which is composed of the President and the director of research and development, technology transfer, and administration and finance. They are responsible for planning, supervising, coordinating and controlling the activities of Embrapa, and formulate its policies (Brasil, 2012).

The decentralised units are those responsible for coordinating, programming and executing the core activities. There are four kinds (Brasil, 2012; Embrapa, 2016a):

1. Eco-regional units: Their activities are related to the main agriculture commodities of a biome or region, as well as their natural resources – 17 units.
2. Product units: Related to chains of agricultural products – 14 units.
3. Basic theme units: They work with themes and processes both basic and transversal to the several agricultural products, and support the other research centres – 10 units.
4. Service units: In charge of analysing, consulting, monitoring, training and capacity building – 5 units.

The organisational chart of the organisation helps visualise the distribution of units.

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\(^{30}\) The country is divided into five regions: North, Northeast, Centre-west, Southeast, and South. This division is due to geographic similarities.
Figure 13 - Organisational Chart of Embrapa

Source: https://www.embrapa.gov.br/en/organograma
The main activities of this PRO are (Embrapa, 2016a):

- Research and Development: Business and family farming, the frontiers of knowledge and the preservation of ancestral practices of traditional Brazilian communities. The agenda is to provide new knowledge that will turn into products, processes and services for the agricultural sector. Also, to generate information for public policies related to the mission of the organisation. The main objective is to strengthen Embrapa’s capacity to give answers to the demands of the Brazilian agriculture and to anticipate as well as face the challenges of the future.

- Technology Transfer: Comprises both technology transfer and knowledge exchange. It is a way to build knowledge interacting with the several segments in the area and to promote the sustainability of the Brazilian agriculture.

- Abroad: The international cooperation – scientific and technical – since the foundation of Embrapa has been an asset to face agricultural endeavours. As a reference in tropical agriculture, the organisation supports the Brazilian government in activities aimed at developing the sector in other emerging countries.

- Future: In order to keep contributing to the advance of the agricultural sector in the next years, the capacity of anticipating the future is fundamental.

5.3.1. Decision-making in Embrapa

The decision-making structure in Embrapa comprises the Administrative Council, the Executive Board and the National Advisory Council (Brasil, 2012). In Figure 13, above:

- Administrative Council: This is a high deliberation body. It is in charge of organising, controlling and assessing the activities of the company.
Source: Brasil 2012

The composition is:

a. Two members nominated by the Minister of Agriculture, Livestock and Supply – one from civic or governmental entities related to research, teaching and technical-scientific development, professional offices and entities linked to agriculture or agro-industrial activity; and one from organisations representing producers, businesses and workers in the agricultural and agro-industrial sectors.

b. One more member indicated by the Minister of Agriculture, Livestock and Supply.

c. The President of Embrapa.

d. One member indicated by the Ministry of Planning, Budget and Management.

e. One member indicated by the Ministry of Finance.

f. One member indicated by the Ministry of Agrarian Development.

g. One member representative of the employees of Embrapa.

The Administrative Council is the most powerful body of this PRO, in charge of the most sensitive and strategic decisions. However, it is basically composed of members of the government, not from the community of workers, like Fiocruz, indicating a top-down, or rather

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31 It is not specified, but very likely it is a member from that Ministry.
a centralised decision-making process likely to be biased by a particular political interest of the government.

- Executive Board: This is the high administration body. It is in charge of the accomplishment of Embrapa’s statute, authorise the encumbering of Embrapa’s movable, consider and offer suggestions for the elaboration of internal regiments of the central, decentralised and international units, and analyse and approve all matters submitted by the President of Embrapa to the Administrative Council.

The President of Embrapa and the directors of Research and Development; Technology Transfer; and Administration and Finance compose it.

- National Advisory Board: This board is basically external to Embrapa staff. It supports the Executive Board and aims to assist in the definition and harmonisation of strategic actions relevant to the planning of the company's programming (Embrapa, 2016b).

It contains 40 members. Three of them are permanent: The President of Embrapa, the chief of the Secretariat of Intelligence and Macro Strategy (Embrapa), and a member of the Ministry of Agricultural, Livestock and Supply. The other 37 members are representatives from several excellence institutions in the society, ranging from the government, agribusiness, and Brazilian Congress, to the Brazilian Academy of Science, banks and supermarkets representatives.

This board is similar to the High Council of Fiocruz (p. 90), with representatives from the broad society, but not with the same power.

5.3.1.1. Agropensa

The decision-making process itself, nowadays, is part of a system that was settled by the end of 2012 and is called Agropensa (“Agrithink”). It is the third organisational model adopted by this PRO over the years.

Firstly, the organisation worked with the “circular model”:

“The other thing was the vision that we had to enlarge our model which was a circular model. It began in the farmer, in the rural producer, and ended up in the rural producer, through research and extension.”

Interviewee 9
In 1995, the organisation underwent the first change in this model, which included two elements, the inputs and the consumer, each at one end:

“But this vision that we had to look at the whole agriculture chain, which is no longer just the rural producer, whom we call “inside the farm gate”, but pay attention to the “before the gate”: The inputs. And to look at “after the farm gate”, which we call post-harvest. And it will end on the supermarket shelf. Moreover, today is no longer just the shelf of Brazil.”

Interviewee 9

The third change was the creation of Agropensa, a sophisticated intelligence system, which is dedicated to producing and disseminating knowledge and information in support of formulating strategies for Research, Development and Innovation for Embrapa and partner institutions (Embrapa, 2016b).

The Agropensa system operates in mapping and supporting the organisation. It integrates and disseminates database and agricultural information; captures and foresees trends; identifies possible futures; and develops scenarios that allow the Brazilian agriculture to get better prepared for potential challenges and opportunities (Embrapa, 2016b).

The system works along with a network of all Embrapa’s decentralised units, the centralised administrative units, the current six virtual labs (Labex), and more than ten technical cooperation projects abroad. Operating in the network, the system fosters the articulation of internal and external actors, encouraging institutional partnerships and enhancing the generation of knowledge and innovative solutions for the agriculture of the future (Embrapa, 2016b).

There is a Strategy Management Committee (SMC), in charge of supporting the EB in terms of the strategic focus of the company, by the identification of relevant information both from the external and internal environment, and integrating this information to provide strategic advice related to research, development, innovation, technology transfer, communication, and management. It has 14 members; eight of them are permanent, indicated by the President (Embrapa, 2015c):

a. The three directors from the EB – Research and Development, Technology Transfer, and Administration and Finance.

b. Chief of SIM – Secretariat of Intelligence and Macro Strategy (Executive Secretary of SMC)
c. Chief of DPD – Research and Development Department  
d. Chief of DTT – Technology Transfer Department  
e. Chief of SNE – Secretariat for Business  
f. Chief of SGI – Strategic Management and Institutional Development

The six left are employees from the decentralised units, considering the different types of centres (eco-regional, product, base-theme, service) and the country’s regions.

The system concerns three components: Observatory of Trends, Analysis and Studies, and Strategies for Embrapa – Figure 15.

The first component represents Phase I – Capture and processing of database and information, and is related to what they call “macro themes”. These are themes organised as a value chain, representing a portfolio guiding the collection, organisation and diffusion of information, considering the multidisciplinary role that agriculture will perform in the future.

The capture and processing of information are made both by monitoring and foreseeing trends in the agricultural sector in Brazil and abroad. It is also made by collecting demands from the employees through a specific form.

The second component contains Phase II – Analysis and Studies, and Phase III – Analysis and Studies submitted to the EB for validation and use.

The SMC and EB prioritise the themes to be studied further in details. SMC will identify the teams both inside and outside Embrapa to conduct the studies. The results are then presented to the EB, which will validate them along both with the SMC and the NAC.

The final component corresponds to Phase IV – Transforming strategic information into plans and actions. It is when the analyses and studies approved by the EB are forwarded to the Secretariat of Management and Institutional Development (SGI) in order to turn the strategic information into effective decision-making. The studies will guide the actions in Research, Development and Innovation, Communication, and Technology Transfer considered relevant for the Brazilian agriculture.
5.4. Remarks on Embrapa

Embrapa is the Brazilian PRO that shares with Fiocruz the status of the most innovative public organisation of its field of the nation, as we have seen. Similarly, they both are large research organisations, counting on thousands of employees, and with units spread all over the country.

The comparison between their organisational charts helps visualises the similarities between them. In Figure 16, we can notice they both preserve the hierarchic design from the times they were created (or re-created, in the case of Fiocruz), during the military dictatorship, when the government proceeded a homogenization of public organisations (p. 110). The resemblances between the organisations are linked to this “heritage” of the military period.

However, it is possible to notice, also, a difference between them. Whereas Embrapa image is that one of a traditional hierarchic chart, in Fiocruz the chart, although similarly hierarchic, the Internal Congress, composed primarily by the grassroots, is set on top of the organisation, whilst at Embrapa it is the Administrative Council, consisting primarily of external personnel, except for the President of the organisation.

Source: https://www.embrapa.br/agropensa/sistema-agropensa
The fact that the highest bodies of both organisations are the opposite of one another reflects the distinct historical trajectories we have seen, despite both being in the same environments, under the same government. In this sense, the primary distinction in both charts is related to their highest decision-making bodies.

Considering that in Embrapa the Administrative Council is composed of members from the government, it is feasible to suppose that this organisation is likely to be more vulnerable to government changes than Fiocruz. The latter, on the other hand, is liable to be less exposed to such changes not only because the highest decision body is composed of the grassroots, but also because of its links with the constitutional principles, such as the reduction of poverty. Fiocruz, as a State strategic institution, bonds its commitment to the State policy, established in the constitution.

In the next Section, we will see how these aspects are configured in Pasteur.
SECTION 6: PASTEUR INSTITUTE

6.1. Introduction

6.1.1. Connection with Previous Sections

Pasteur Institute, the second contrasting case of this investigation, was selected because it is a PRO in the same field of Fiocruz, and responsible for several breakthroughs in the years. In Brazil, there is no such organisation that Fiocruz can be compared with.

6.1.2. Aims of the Section

The purpose of this Section, as expected, is like the last two ones, i.e., help understand Fiocruz and position it. This time, however, the emphasis is not the history of the organisation in terms of understanding, as much as Fiocruz, how it evolved to its current activities, but mainly provide means for comparison mostly regarding the strategic decision-making processes.

6.1.3. Subsections

Likewise Embrapa Section, this one counts on two subsections as well: History and characteristics. The former is an overview of the organisation trajectory which, despite some similarities with Fiocruz, helps us understand their similarities and differences, and make a proper analysis.

The characteristics of the organisation, similarly to the previous Section, will emphasise the decision-making processes and structures.

6.2. History Overview

The Pasteur Institute was founded in 1887 (opened in 1888), following the success of the vaccine for rabies, which had been developed by the French chemist and microbiologist Louis Pasteur in 1885. Rabies was a disease feared all over the world, and the discovery of the cure brought the international attention to the Pasteur Institute, and the search for effective vaccinations began in earnest everywhere. These changes in the field suggested a new and more appropriate organisational structure was needed in order to attend to the new demands (Debré, 2000; Marchand, 2015).

The institute was created with the mission to be “a clinic for the treatment of rabies, a research centre for infectious diseases and an educational centre for studies of microbes” (Marchand, 2015, p. 28), and was established under the auspices of internationalisation, due to donations
both from French society and from Brazil, Russia and Turkey (Marchand, in: Lima and Marchand, 2005).

The Emperor of Brazil, D. Pedro II, and the Tsar of Russia, Alexandre III, made significant donations and were honoured with statues at the Pasteur Museum by recommendation of the named scientist himself. The former Brazilian emperor and Pasteur experienced a friendship that led to a history of working relationships between the Pasteur Institute and Brazil (Minoprio and Ferreira, in: Lima and Marchand, 2005)

Donations (in contrast to Fiocruz and Embrapa) have been Pasteur’s main funding source since its inception. Whereas the other two are organisations whose main source of income comes from public funds, Pasteur is a private not-for-profit organisation, and the government participation in the budget is not as important as it is for the other two organisations.

Pasteur Institute was the birthplace of microbiology, immunology, and molecular biology, expressed in the first course of “Technical Microbiology” ever offered by an institution, and the five departments created within Pasteur (Marchand, 2015; Pasteur, 2016a):

1. General Microbiology.
2. Microbiology applied to hygiene.
3. Morphological Microbiology.
4. Rabies department.
5. Technical Microbiology.

The Institute trained people from all around the world, who became known as “Pasteurians” for applying Pasteur's postulates. It can be even said that in Brazil, Fiocruz was created under a Pasteurian inspiration. When the Brazilian government asked the Pasteur Institute for a named scientist to help defeat yellow fever in Rio de Janeiro, the institute suggested Oswaldo Cruz, who had recently arrived in Rio from Paris (Fraga, 1972).

The international recognition, supported by its scientific discoveries, is the main asset of the Institute. Since the first donations, the international participation has been present at all times, including the first Pasteurians that ran the Institute, such as Metchnikoff (Russian-born) and Yersin (Swiss-born) (Marchand, in: Lima and Marchand, 2005).

All the success achieved supported the creation of a huge network, counting 32 institutes spread on every continent of the world. It all began in 1893 when Pasteur announced collaborations with laboratories in Brazil, Thailand, Vietnam, India and Australia. The first overseas Institute
was set up in Saigon in 1891 (Marchand, 2015). Since then, throughout the 20th century, a new Pasteur Institute has been launched in a different country approximately every ten years.

Several breakthrough discoveries were made in that period, like septic vibrio, vibrio cholerae, staphylococcus, streptococcus, pneumococcus, the swine erysipelas, tuberculosis bacillus, and vaccines against chicken cholera and anthrax, besides rabies (Marchand, 2015).

In fact, the history of the Institute is deeply linked to its scientific achievements. In 1907, the first Nobel Prize was won by a Pasteurian scientist – Dr Laveran for his research on the role played by protozoa in causing diseases. Seven more prizes (ten scientists) since then, along the 20th century and into the 21st, have won this accolade for the Institute. The most recent was in 2008 for the isolation and identification of HIV in 1983 (Pasteur, 2016b).

Several other breakthrough discoveries took place over the 20th century. Although not Nobel prizes, they represent significant advances, such as – among many others – the development of BCG in 1921, yellow fever vaccine in 1932, poliomyelitis vaccine in 1954, protein biosynthesis in 1960, hepatitis B vaccine in 1985 (Pasteur, 2016a).

The internationalisation of the Institute began with the French ex-colonies, many of them located in tropical countries, helping in the development of research related to infectious diseases, endemic in those areas.

6.3. Pasteur Characteristics

The Pasteur Institute is a private non-profit foundation with charity status, counting around 2,500 employees on campus. It is an international institute based in France whose mission is to “help prevent and treat diseases, mainly those of infectious origin, through research, teaching, and public health initiatives” (Pasteur, 2015a, 2017).

Considering the OECD types (2011), Pasteur Institute differs both from Fiocruz and Embrapa and can be regarded as an IRI, instead of a MOC (p. 27). It is an IRI because, although doing research in the health field, these are driven by “issues” and “problems”, like when the Institute discovered the HIV-1 virus. In addition, albeit being a private organisation funded by different sources, it counts with representatives from the government in its governance structures, as will be seen further.

32 The organisation’s online reports do not mention how many employees are there in the International Network, only in Paris headquarters which, in comparison with Fiocruz, is of similar size to some of the technical and scientific units of the latter.
It counts on four core activities regarded as public interest (‘About us | Institut Pasteur,’ 2016):

1. Research.
2. Teaching.
4. Valorisation of scientific research via technology transfer and industrial partnerships.

1. Research:

The research in the Institute covers the fields of microbiology, infectious diseases, immunology, neuroscience, developmental biology, genetics and cancer. The main focus is on basic research and is aimed at understanding the physiological and pathological processes and at developing new strategies for diagnosing, preventing and treating diseases. There are 11 departments on the Paris campus:

- Cell Biology and Infection.
- Developmental and Stem Cell Biology.
- Genomes and Genetics.
- Immunology.
- Infection and Epidemiology.
- Microbiology.
- Mycology.
- Neuroscience.
- Parasites and Insect Vectors.
- Structural Biology and Chemistry.
- Virology.

There are also four transversal research centres, 13 program projects and 25 reference centres, performing a total of 130 research units.

2. Teaching:

There is a teaching centre whose courses are in three areas: Epidemiology and Public Health, Mechanisms of Living Organisms, and Biology of Microorganisms. There are post-graduation (doctoral and 2nd-year master students) and post-doctoral courses, and they are offered for scientists and health care professionals.

The students come from around 60 different countries, and the courses are run in partnership with institutions such as CNAM, Paris Descartes and others.
3. Public Health:

The Pasteur Institute network has a strong commitment with infectious diseases surveillance. Expert in microbiology, the network collaborates with WHO and hosts 16 national reference centres, centralising infectious diseases information.

The collaboration with WHO takes place through nine collaborating centres and is committed to collective research activities, information (collecting and disseminating), training (including research training), standardisation of nomenclature, technology, methods and techniques, providing reference substances, and coordination of activities (on a given subject) along institutions that take part in the same collaboration – it can be on a national basis, multi-country or worldwide.

4. Valorisation of scientific research via technology transfer and industrial partnerships:

This is a strategic asset of the Institute since it is the link that will turn the research into applications to solve problems in everyday life, just as Pasteur envisioned. It is made through close work with industry. A Business Development and Technology Transfer Department is bridging the Institute’s research and the product development by industry. It is made under the protection of Pasteur’s discoveries in order to reinvest the income from commercialization in the research programs.

**Pasteur Institute International Network**

This is the most important asset of the Institute:

“Now we are not a French Institute. We are an international institute in France. (…) All is Pasteur Institute and the headquarters is in Paris. (…) The consequence is that the international organisation is more important than in the past. (…) It is an international institute. There are no others.”

Interviewee 14

The international character of the institute is what distinguishes it from similar organisations. Originally it was a need, observed by its founder, for the researcher to be in the field (Marchand, 2015). This characteristic has, since then, acquired a new meaning, culminating in a particularity that gives a new identity for the organisation in the 21st century: It is an international network whose headquarters is in Paris – not anymore a French organisation with branches around the world.
This network counts on 32 institutes around the world, in 28 countries, and covering all the continents. The network comprises Pasteur Institutes and partnerships. They all share the same mission and values and are linked by missions of research, public health and education. Table 6 shows the list of countries.

Table 6 - Pasteur Institute International Network

<table>
<thead>
<tr>
<th>No.</th>
<th>Country</th>
<th>Country</th>
<th>Country</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Algeria</td>
<td>11. France (two institutes:</td>
<td>21. New Caledonia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paris – headquarters – , and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lille)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Belgium (partnership)</td>
<td>12. French Guiana</td>
<td>22. Niger</td>
</tr>
<tr>
<td>3</td>
<td>Brazil (partnership)</td>
<td>13. Greece</td>
<td>23. Romania (partnership)</td>
</tr>
<tr>
<td>4</td>
<td>Bulgaria (partnership)</td>
<td>14. Guadeloupe</td>
<td>24. Russia</td>
</tr>
<tr>
<td>5</td>
<td>Cambodia</td>
<td>15. Hong Kong (Research Pole)</td>
<td>25. Senegal</td>
</tr>
<tr>
<td>6</td>
<td>Cameroon</td>
<td>16. Iran</td>
<td>26. South Korea</td>
</tr>
<tr>
<td>7</td>
<td>Canada (partnership)</td>
<td>17. Italy</td>
<td>27. Tunis</td>
</tr>
<tr>
<td>9</td>
<td>China</td>
<td>19. Madagascar</td>
<td>29. Vietnam (two institutes and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>one partnership)</td>
</tr>
<tr>
<td>10</td>
<td>Côte d'Ivoire</td>
<td>20. Morocco</td>
<td></td>
</tr>
</tbody>
</table>

Source: Adapted from Pasteur, 2015b

The network is composed of 26 Pasteur Institutes, one research pole, and six partnerships. They all share the following principles (Pasteur, 2015b):

- Scientific solidarity.
- Response to national and regional needs.
- Contribution to education.
- Involvement in addressing global public health issues.

The area of activity (Pasteur, 2015b):

- Establishing and facilitating collaborative activities.
- Encouraging and supporting the creation of national and international partnerships with other biomedical research and public health bodies.
- Serving as a forum to foster communication between Network members.
- Fostering the sharing of knowledge and scientific findings amongst members via training, education, industrial applications and dissemination within the global scientific community.
6.3.1. Decision-Making in Pasteur

The decision-making in Pasteur Institute is a combination of bottom-up and top-bottom processes. The President counts on scientific advisors (some of them internal and others are external to Pasteur) whose task is to delineate and structure the strategic orientations. In addition, there is a second component: The heads of the research departments (meeting in regular times), and the scientific council, whose task is to evaluate the research units and the individuals, which contributes to shaping the visions.

Despite the formal structure, as hereinafter described, the strategic decision-making process in Pasteur Institute is not a formal process:

“It is a merge of individual advisors to the President, heads of the departments, and the scientific council. There are structural decisions and strategic decisions. The first ones are related to recruitment of new individuals, renewing units. For the strategic ones, it is a merge. It is not a formal process. The President integrates the advice from the different boards and also validates the orientations in front of the boards, which formally approves the strategy.” [Emphasis added]

Interviewee 10
The organisational structure of the Pasteur Institute comprises a Board of Directors, General Meeting, Scientific Council, and Management (Pasteur, 2016c).

1. Board of Directors (Pasteur, 2016d):

Responsible for settling the Institute’s matters, it is composed of 21 members that meet at least four times a year. They advise the President upon:

- Voting on the budgets, approving the accounts and setting the budgetary headcount.
- Determining the status and pay of the various categories of personnel.
- Authorising legal proceedings.
- Appointing the President after the Chairman has consulted each member of the Scientific Council, heads of the different scientific departments and if deemed useful, any other competent person.
- On a proposal from the President, appointing the scientific directors and senior managers to the rank of professor and Senior Vice-Presidents and Directors of the scientific departments as applicable.
- Approving the establishment or disestablishment of research units, also on a proposal from the President.
- Examining the accounts and any rate of levy applied or the period of use of funds by the foundation in order to balance out management of service provided.

The composition of the Board of Directors:

Five members are ex-officio, from outside the institute, and are nominated as follows:

- One representative of the French Minister for Research.
- One representative of the French Minister for Health.
- The Chief Executive Officer of the CNRS (French National Center for Scientific Research), representing the French Minister for Higher Education.
- The Chief Executive Officer of Inserm, representing the French Minister for Public Health.
- One representative of the French Minister for the Budget.

The other 16 members are elected at the General Meeting:

- Four members are chosen for their scientific expertise, at least 3 of whom work at the Pasteur Institute. These members are chosen on the basis of “double nominee” proposals made by the Scientific Council.
- Two members of Pasteur Institute non-scientific staff with at least ten years' service. These members are elected on the basis of "double nominee" proposals from the Works Committee.

- Ten members are not working at the Pasteur Institute: Four of them are chosen for their administrative expertise, at least two of whom working, or having worked, in scientific institutions or departments; and the other six are selected for their financial, industrial, commercial or legal expertise.

Half of the elected members are appointed for six years and are renewed every three years in each category. The Board of Directors chooses a Bureau from among its members, which is composed of a Chairman, one or two Vice-Chairmen, a Secretary and a Treasurer, elected for a three-year renewable term as well. The Board can also delegate some of its powers to the Chairman and bureau.

2. General Meeting (Pasteur, 2016e):

The General Meeting is in charge of approving the Board of Director's Annual Report on Pasteur Institute. The Meeting also elects the members of the Board of Directors (the 16 non-ex-officio members) and votes on changes – proposed by the Board of Directors – in the association clauses. They meet at least once a year upon convocation by the chair of the Board of Directors.

It counts between 93 and 109 members:

- Twenty ex-officio or appointed members.
- Six to twelve directors from the Pasteur Institute International Network. They shall be nominated under the rules of procedure and elected by the Council of Directors of the International Network.
- Thirty members from the scientific, administrative and technical managers working either full or part-time at the Pasteur Institute. These are elected by their peers.
- Six representatives from non-managerial Pasteur staff unions, elected by the Works Committee.
- Thirty-one to forty-one members are from outside the Pasteur Institute. They are chosen for their expertise or interest in the Pasteur Institute and are elected at the General Meeting under a proposal from the Board of Directors or a member of the General Meeting.
Except for the ex-officio members, all the General Meeting members are appointed for six years. A chair and a secretary are appointed by the General Meeting board itself from within its members.

3. Scientific Council (Pasteur, 2016f):

The scientific council advises both the President and the Board of Directors upon the issues related to scientific policy, organisation, and research and training. It may also be consulted upon the opening, closure and merging of scientific and teaching units.

It comprises 16 members. Eight of them are nominated from outside the Institute, and the rest are Pasteur Institute members. From these institute’s members, half are nominated, and half are elected.

4. Management Team (Pasteur, 2016g):

The Management Team is the one that sets the overall strategies of the Pasteur Institute, with the support of the Scientific Council and the Executive Board.

It comprises 17 members, including the President of the Institute. They are the heads of the following departments:

- Scientific Secretary General
- Deputy Directorate General for Administration
- The Scientific Careers Department
- Scientific Assessment Department
- Communications and Fundraising Department
- Department of International Affairs
- Medical Affairs and Public Health Department
- Education Department
- Department of Development
- Human Resources Department
- Legal Affairs Department
- Research Applications and Industrial Relations Department
- Technical Resources and Environment Department
- Technology Department

The following organisational chart helps visualise the relationship between the different bodies in the management of Pasteur Institute. The Management Team is located on the basis of it.
The President of Pasteur Institute is the ex-officio President of the Network, the Council of Directors, and the Executive Board. The Vice-President is elected from within the Executive Board from the five regional representatives for a term of three years. There is also an International Vice-President, who is the head of the International Relations Department and is responsible for the coordination of the Network’s shared activities (Pasteur, 2015b).

The Council of Directors is composed of the members of the Network, corresponding institutions, and, by invitation, the partners. The members have deliberative and casting a vote, the corresponding institutions are advisors (except in matters that affect their institutions). The Council meets each year to draw up the Network’s strategy and decide on (Pasteur, 2015b):

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33 The document does not clarify which five regions are those. Probably it is referred to the five continents.
- The programs and projects to be conducted.
- The amounts of annual contributions Members, Corresponding Institutions and Partners.
- The exclusion from the Network.
- The dissolution of the Network.
- The establishment of additional rules of operation of the Network that specify this Agreement without contradicting it.

The Executive Board is composed by:
- Five members (one per region for Africa, Asia-Pacific, the Americas, Europe and North Africa & Iran) elected by the Members of each region for a three-year term renewable once.
- The President of the Pasteur Institute, who is the President of the Network, or a specifically designated representative.

The Vice-President chairs the Board. It meets twice a year and may establish committees or working groups. It may also propose programs and projects to the Council of Directors but is in charge of implementing and monitoring these. In addition, it evaluates the proposals for courses and training.

The Board reports to the Council of Directors but can make all decisions not reserved to that body. The decision-making process requires the presence of 2/3 of the Board and must be by a majority of votes (except in cases stipulated in the Cooperation Document). In the event of ties, the sorting vote is from the Vice-President.

6.4. Remarks on Pasteur

Pasteur Institute shares with Fiocruz the dimension, field, commitment to public health, and the development of research for tropical diseases.

The historical and cultural development, however, are diverse, as well as the type of PRO. Whereas Fiocruz and Embrapa, as mission-oriented organisations, are owned by the government, hence linked to its budget, Pasteur is an Independent Research Institute. It is a private organisation of public interest and, as such, with government representatives in its governance structures, as observed, and donations fund it.

The governance, differently from Fiocruz and Embrapa, relies on the figure of the President, and there is no formal process for strategic decision-making. Perhaps due to this particularity,
the organisational chart shows a different configuration from those of Fiocruz and Embrapa (Figure 19).

**Figure 19 - Comparison between the organisational charts Fiocruz vs Embrapa vs Pasteur**

Differently, from Fiocruz and Embrapa, the governing bodies of Pasteur seem to be less hierarchical than the other two. Apparently, there is a horizontal perspective of those bodies about the President (Senior Management), instead of a vertical one, like Fiocruz and Embrapa. The chart, however, visually reinforces the centrality, the prominence of the President in this PRO.

It is closely linked to the history of the Institute, which ever since its foundation relied on the figure of the founding scientist, Louis Pasteur, which established a strong tradition on microbiology, the main asset of this PRO. In this sense, the history of the Institute does not register any concern between Pasteur and the government.

From the historical point of view, Pasteur was neither “created” in a context of opposition to the government, like Fiocruz, nor was it created as the outcome of a government policy, like Embrapa. The Pasteur Institute is the aftermath of pure interest in the development of science.

The next Sections will now present the outcomes and findings from the application of the questionnaire and interviews to the management bodies and key actors of the three organisations.
SECTION 7: FINDINGS FROM THE FIELDWORK

7.1. Introduction

7.1.1. Connection with Previous Sections

Concerning the purpose of the research, this is an explanatory study (Section 3). As such, it investigates a given situation, a case, to elucidate it by examining patterns between variables and identifying relationships between them (Bryman and Bell, 2015; Robson, 2002).

This examination was made primarily through the fieldwork when both the questionnaires and the interviews were applied. It is the “original” triangulation of the thesis (pp. 65-66), in which the quantitative and qualitative data are cross-checked (Casey and Murphy, 2009).

7.1.2. Aims of the Section

This Section aims to present and to analyse the data collected. The analysis, however, is not exactly the analysis of the implications of the findings yet, but the analysis of the raw data, of their meanings, through the exercise of exploring and identifying relationships between them.

The epistemological approach of the research, the interpretivism, seeks the people’s opinion for understanding their social world and their actions (Bryman and Bell, 2015). For this purpose, and to help visualisation, the data are presented in graphs and tables. In the case of the former, it is noteworthy that it is not a statistical analysis Sensu Stricto as it may seem at first sight.

7.1.3. Subsections

The first subsection is the demographic data. The idea of collecting the demographic information from the respondents is to have a balance between this and the answers given both to the questionnaires and the interviews. The profile of the respondents may be useful in understanding and locating their answers.

At first, the data from Fiocruz are analysed singly, as to collect their meanings with reference only to their responses. These are made in two parts: “Decision-making” and “long-term planning”, for the triangulation between questionnaire and the interviews per theme. Then a subsection with a summary of the main findings from Fiocruz.

On a second moment, a new “round”, this time analysing Fiocruz vs Embrapa vs Pasteur, considering the previous findings from Fiocruz, and the findings Section from this comparison.
The last subsection concern remarks on the findings, separately by decision-making and long-term planning, in light of the literature.

7.2. Demographic Data

a. Gender

There is a clear difference in gender distribution between Fiocruz and Embrapa, in the Brazilian context, and Pasteur, from a very different French context (Graphs 1 and 2). This difference reflects the histories and cultures of these two countries; Brazil, which remains a patriarchal society with widespread misogyny in the public sphere, and France, land of Joanna D’Arc, Simone de Beauvoir, the May 68 revolution, and the HALDE body designed to enshrine equal opportunities by prosecuting offences (HALDE, 2017). The participation of women in the Brazilian labour market, however, has been increasing over the years (Hoffmann and Leone, 2009), albeit this has not yet been reflected in management positions, as the profile of the two most innovative Brazilian PROs shows us.

Graph 1 - Gender distribution

Questionnaire
Fiocruz – Embrapa – Pasteur

Graph 2 - Gender distribution

Interviews
Fiocruz – Embrapa – Pasteur

b. Age Group

From the three PROs, Embrapa is the one whose management positions are more distributed between the different age groups, whereas Fiocruz and Pasteur concentrate them in the ages bigger or equal to 50 years old (Fiocruz: 74%; Pasteur: 67%), indicating that there might be an institutional engagement for younger professionals to assume management positions, probably with a look at the future, whereas the latter ones seem to rely mostly on more experienced professionals.

For the interviews, however, the exclusivity of ages bigger or equal to 50 years old reflect the option of interviewing professionals that knew the history of the organisation, preferably

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having lived the recent history, such as in the question asking whether they took part of the strategic decisions of the last 15 years.

c. Professional Qualification

Except for Pasteur, the qualifications of the respondents are similar. Two of the respondents of Pasteur, one is a Higher Degree Research and the other one, an MBA.

d. Primary Occupation

The idea of a “primary occupation” was to check, mainly, which careers are mostly represented in the management positions of the organisations and, perhaps, relationships between these and the answers.

The categories displayed in this field were related to careers from the Brazilian S&T job and career plan for PROs, specific of the Brazilian reality. Hence, there was an expectation that the answers from Pasteur might be different, and the responses confirmed this.
In the cases of Fiocruz and Embrapa, the researchers represent the most common career among the managers of those organisations. In Pasteur, the careers informed were more diverse, and an example of that is the case of “President” at Pasteur.

In fact, the current Presidents of the three organisations were interviewed, but in Pasteur, the President did not come from the staff. Rather he came from the outside, contracted exclusively for this purpose, whereas in Fiocruz and Pasteur, they are researchers from the staff which, by different means, took charge of the organisations.

e. Time Working with the Body or in the Current Position

This information aimed at knowing the experience of the respondents in the bodies they were representing, hence the pertinence of their answers. As a whole, the members of the management bodies of each organisation have similar experience occupying the specific function, i.e., the responses are likely not to be biased by this experience.

Considering the interviews, the respondents were not part of any distinct body of the organisations, but in most cases, were occupying management positions. In Fiocruz, the respondents were occupying the current position the most for 10 years, whereas in Embrapa and Pasteur we can observe interviewees in the current position for more than 15 years. Despite these, the interviewees have similar experience in the positions they are occupying.
f. Time working in the organisation

Concerning the time the respondents to the questionnaire work in the organisation, this is diverse. No standard can be highlighted unless perhaps the fact that Fiocruz and Pasteur have relatively new employees taking part in the management bodies, whereas in Embrapa the newest respondent has been working there for at least ten years. It means the majority of the respondents from Fiocruz and Embrapa are supposed to know their organisation well, except maybe Pasteur, whose half of the six respondents have been working there for less than five years.

In the case of the interviewees, these are basically composed of senior professionals. Except for Pasteur, all the professionals have been working in the organisation for at least 20 years, what is supposed to add more consistency to their responses.
g. Other position than the current body

Considering that the composition of the management body of Fiocruz (Deliberative Council) includes directors of the units, this field aimed at checking this frequency, or how many of the members were running independent units. Hence, their experience in regard to this. The other two organisations were likely not to have similar answers, considering the question was aimed at Fiocruz mainly.

Graph 13 tells us that the majority of the respondents, both in Fiocruz and Embrapa, do occupy other positions, whereas in Pasteur the majority are exclusively engaged in their roles in the management body.

In the case of the interviews, the respondents occupied some kind of management position, albeit not necessarily part of any management body. Except for the President of Pasteur, who was contracted exclusively for that position, all the rest have a primary occupation, which is not “naturally” the same as the current management position. For this reason, their positions will not be displayed because of the ethics of this research, which aims to preserve the identity of the respondents. If their positions are displayed, it will facilitate the identification.

Graph 13 - Other position than the current body
Fiocruz – Embrapa – Pasteur

![Graph 13]

<table>
<thead>
<tr>
<th>Organisation</th>
<th>No</th>
<th>Yes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiocruz</td>
<td>26%</td>
<td>74%</td>
</tr>
<tr>
<td>Embrapa</td>
<td>22%</td>
<td>78%</td>
</tr>
<tr>
<td>Pasteur</td>
<td>67%</td>
<td>33%</td>
</tr>
</tbody>
</table>

g.1 How long in the other position

Those respondents who informed to occupy other position along with the management body, in Embrapa we can see that the vast majority are occupying the position for less than five years. In Fiocruz the respondents show a balance between the different periods, and in Pasteur half are working for more than 15 years, the only case between the organisations.
In the case of the interviewees, the “how long in the other position” is the same as in Graph 10, in which the respondents were mainly senior professionals, indicating their answers are supposed to be more trustworthy.

Graph 14 - How long in the other position
Questionnaire
Fiocruz – Embrapa – Pasteur

Graph 15 - How long in the other position
Interviews
Fiocruz – Embrapa – Pasteur

7.3. Analysis of Fiocruz

7.3.1. Fiocruz Questionnaire

7.3.1.1. Decision-Making – Fiocruz

The decision-making part of the questionnaire aims at understanding the “democratic managerial administration” of Fiocruz, according to its management board. The aspects investigated are 1. The degree of participation of the grassroots in the decisions of the organisations (How participative is it?); 2. The capacity of participative decision-making to respond to challenges of the future (How efficient is it?); 3. Changes (Does it impede changes?); 4. The capacity of the grassroots to inform better solutions (What is the effectiveness of it?).

a) Participation in the decision-making process and the final decisions – Fiocruz (question 8 – sub-questions 8.1, 8.2)

These two variables aimed at understanding how participative is the decision-making model of Fiocruz, considering both the processes and the final decisions.

The processes, as expected, are regarded as highly participative (Graph 16). The final decisions, in turn, although also regarded as participative, are not as participative as the processes (Graph 17). It is somehow expected as well, i.e., after a highly debated process, the final decisions to be made by a more restricted group.
The “restricted group” in the case of Fiocruz is the Deliberative Council, which is in charge of implementing the decisions, following the guidelines debated in the Internal Congress, under a highly participative process.

It is important to remind that the Deliberative Council is a group composed mostly of representatives of the units, their elected directors. Therefore, although in this level the decisions are made by a more restricted group, this is a representative one (pp. 91-92). Similarly, at the level of the units, these directors along with their local boards will make the day-to-day life decisions, aiming to implement the objectives established in the Internal Congress.

According to one of the interviewees:

“The more structured process, formalised, would come from a multiyear plan that is placed at the level of the references from the Internal Congress. (...) The formalisation is made by the Internal Congress.

(...) This is the macro-definition of broad lines, and a more followed-up process is made by a Deliberative Council under the initiative of the President of Fiocruz, under the initiative of the directors of the units. The issues of strategic development are discussed and decided by the Council.

I am talking about it in a more structured, formal and planned process, but many decisions are taken in the light of the opportunities and very specific and short-term evaluations.”

Interviewee 4

The answers to this question express the perceptions about both the Internal Congress, in which the main guidelines of the organisation are drawn in a formal and very participative process,
and the Deliberative Council, which is in charge of implementing them, but also subject to the situations of the everyday life.

Decisions are made both strategically and reactively depending on the decision-making body and the specific context.

b) Capacity of highly participative decision-making to respond to the challenges of the 21st century – Fiocruz (question 9 – sub-question 9.1)

This question may seem limited from a certain point of view, considering that “challenges” is a generic term but this is because the same questionnaire was applied for three different organisations, located in two different countries and continents, dealing with two different subjects. Therefore, the word “challenge” as proposed was expected to trigger each respondent to reflect about their own field when answering this question.

Despite the challenges they might have taken into account, the consensus (Graph 18 – 89%) from respondents shows that highly participative decision-making does respond to the challenges of the 21st century.

Graph 18 - Capacity of highly participative decision-making to respond to the challenges of the 21st century Fiocruz

Part of the positive responses as to why participative decision-making responds or not to the challenges of the 21st century (or challenges of the future) are related to the incorporation of various views (Table 7 – rows 11; 12; 13; 16). Another category of responses that is complementary to it concerns the commitment to the implementation of decisions into the everyday life of the organisation, by those taking part in such decisions (rows 4; 12; 14). These two perceptions are likely underlying the answer pointing to the less risk of error (row 5), although the respondent did not specifically mention that, i.e., both the incorporation of various
views and the commitment to the implementation of the decisions are likely to decrease the risk of error.

Based on these, a summary response to the question could be: “Highly participative decision-making responds to challenges of the 21st century because it helps integrate different views and responsibilities. Hence, the decisions are more likely to be implemented due to the commitment of those taking part of the process, reducing the risk of error”.

The two negative answers, in turn, are referred as “time-consuming” and to the “efforts” participative decision-making requires (row 18), and one concern related to participation as being a process determined by elections (row 19). The first one is pointing to an opposite view to the majority of the positive answers, i.e., the efforts put on the debates would hinder and reduce the subsequent actions rather than increasing the probability to make them happen. The latter is not so clear, but it seems that a highly participatory process may somehow “limit” or “threaten” the decisions of top level management, considering the “fairness” of the decisions of the latter is subject to an assessment expressed in votes – i.e., if the community does not agree with the decisions it is likely the manager will neither be re-elected nor elect the successor.
Table 7 - Why is a highly participative decision-making process effective or not in responding to challenges – Fiocruz (summary of questionnaire responses)

<table>
<thead>
<tr>
<th>Number</th>
<th>Statement</th>
</tr>
</thead>
</table>
| 1.     | "Decisions made in a participatory manner are the foundation of democratic institutions. In addition, the new information technologies contribute to a simpler and more effective participation."
| 2.     | "Because it provides a process of discussion of strategies and outcomes for the community."
| 3.     | "Because the centralised decisions tend to a biased vision."
| 4.     | "Any system that encourages participation and, therefore, shared responsibility is more likely to be sustained, particularly in the most critical moments."
| 5.     | "Because shared decisions always represent less risk of error."
| 6.     | "The sharing of power is a requirement of the knowledge society."
| 7.     | "Yes, but on one condition: that the issues brought to the "participatory" debate are general, representing general guidelines. / Unfortunately, sometimes very technical issues and therefore restricted domain of a small portion of professionals, are discussed in very large bodies, for example the Internal Congress of Fiocruz, where are delegates who are not in fact fluent in the subject. In other words, making "highly participatory" can be taken in a superficial way."
| 8.     | "Provided it is not time consuming and meetings have records with actions, responsibilities and deadlines."
| 9.     | "Because it assesses the demands of the categories involved, which usually bring the issues experienced in their day to day."
| 10.    | "In my opinion there should be an option "maybe", since not always the highly participatory way is able to cope with the challenges for the 21st century."
| 11.    | "Because it allows the incorporation of various views."
| 12.    | "For the possibility to listen to different approaches and to respect the diversity present in institutions, sharing discussions, deliberations and specific responsibilities."
| 13.    | "Participatory decisions serve to all the institutional interests and help to integrate different views and interests of a public organization."
| 14.    | "It is important to qualify the affirmative answer. Decentralisation of decisions I believe it is necessary. However this does not mean positive assessment of the current system. For it to actually work in a strategic perspective, it's necessary to improve the agenda of discussions and deliberations, avoiding dispersion and the tendency of multiplying the participatory forums. I also believe that we have to go along much in co-responsibility not only by the decisions, but also on their implementation processes."
| 15.    | "Our organisation has a participatory decision-making structure already quite traditional and very organised, with defined processes and instances."
| 16.    | "The multiplicity of perspectives on a given issue enriches the approach to it and makes the intervention more complete."
| 17.    | "It is better to hit our shared than err in isolation."
| 18.    | "The highly participatory decision making process is, in my judgment, a very long discussion time and difficulty on the final decision, which often hinders or reduces the effort devoted to the actions themselves, besides hindering bolder and higher risk decisions and actions. In my assessment, there should be more autonomy for the representatives and other institutional leaders to take bolder initiatives and with lower cost of negotiation in each decision. The variety of the institution's actions as well as the rate of change at the frontier of knowledge require swifter decision making."
| 19.    | "The decisions of the high management cannot be made subject to a "highly participatory" process determined by elections."

Some of the positive answers show concerns with the participatory system adopted by the organisation, although agreeing that highly participative decision-making does respond to the challenges of this century.

One concern is technical knowledge (row 7). Because there are subjects supposed to require experts’ opinion, they should not be decided by laypeople. According to this response, there is a risk of superficiality when debating broadly.

The other concern is the risk of dispersion and the tendency of multiplying the participatory forums (row 14). It is not related to technical knowledge but, similarly to this one, it indicates
the risk of superficiality, hence the proposal of improvement of the agenda of discussions and deliberations in the response given.

As a summary of the answers collected for this question, it should be said that they do reinforce the role of the participative decision-making in the organisation, but there is also awareness of the need to improve the model, mainly to avoid the risk of superficiality, both in terms of lack of technical knowledge and in terms of dispersion of the debates.

c) Highly participative decision-making impeding changes – Fiocruz (question 10; sub-question 10.1)

This question was inspired by the proposal for Fiocruz to become a company, and aims to know the perceptions of the respondents about possible relationships between participative decision-making and resistance to organisational change. The majority (Graph 19 – 84%) believe that highly participative decision-making does not impede changes.

However, in the controversy about Fiocruz becoming a company or not, the participative decision-making can be seen both as impeding changes or not impeding changes.

From the point of view of not impeding changes, the passionate debates about becoming a company did not stop the organisation from going ahead with the proposal, although not the original one. Thus, this answer is somehow expected since the respondents, except for the Union representative, are from the top management team, which, along with the Presidency, proposed the change and won the dispute.

From the point of view of impeding changes, against the perception of the majority of the respondents it is feasible to consider that, once the original proposal for Fiocruz to become a company did not happen, then this change was indeed impeded, and this resulted from the extremely comprehensive participative process.

Beyond the two “possibilities” given by the question (impeding changes or not), the final “solution” points to an “alternative” way, which is characteristic of the dialectic process. In this sense, the event in Fiocruz can be stated as an “empirical demonstration” of that: Neither the proposal for the Foundation as a whole to become a company succeeded, nor did the resistance aiming to keep the status quo.

Rather than impeding changes or not, the final solution, in this case, was a “halfway solution”, a dialectic synthesis. The collective debate in Fiocruz can be therefore regarded as a “mature” process, with the potential to bring the most feasible “solution” to a given situation.
Unfolding the answers (Table 8), the “commitment to the changes if these are decided in a participative way” (rows 1; 2; 3) reinforces the answers from the previous question when the respondents say that highly participative decision-making would favour changes rather than impede them.

Similar to the preceding question, there are concerns about the process in terms of “demanding negotiation” and being “time-consuming” (rows 4; 9; 15; 17). It is more often in the current question (mentioned four times) than in the last one (mentioned once, at row 18, Table 7), meaning that it is not the same respondents giving the same answers, i.e., it is not a single concern.

Likewise, there is a concern for the proposal of change to be well debated in order to be well understood by those representatives of the community responsible for taking the decisions (rows 6; 7; 10). It was mentioned three times in the current question, whereas it was mentioned only once in the previous one (Table 7, row 14). Again, it is not a single concern.

Finally, one respondent informed that, rather than not impeding changes, the collective decision-making gives legitimacy to the decisions, although it may be more costly in terms of political dealings.
The answers given to this question confirm the previous one, suggesting that participative decision-making is regarded as an asset of the organisation. They also confirm concerns related to gaps in this model: The risk of superficiality (when stating the proposals of change shall be well debated) and the risk of being time-consuming.

It is interesting to note that the democratic model adopted at Fiocruz, is not unanimously praised (which might stimulate such debates regarding its future), but there is also an awareness from those within the organisation about the limits of it.

d) Better-informed solutions when taking account of the opinions and skills from the grassroots – Fiocruz (question 11; sub-question 11.1)

Most of the respondents, 89%, agree that grassroots capacities and abilities better inform solutions (Graph 20). Unfolding the answers, communication (the understanding of the proposals) is a key concept here (Table 9 – rows 1; 2; 3; 6; 7; 12; 13; 15). Some of the answers

The answers given to this question confirm the previous one, suggesting that participative decision-making is regarded as an asset of the organisation. They also confirm concerns related to gaps in this model: The risk of superficiality (when stating the proposals of change shall be well debated) and the risk of being time-consuming.
can be characterised as on a two-way move, both top-down and bottom-up but, principally, they can be characterised as an interaction.

Graph 20 – Better-informed solutions when taking account of the opinions and skills from the grassroots

Fiocruz

In terms of bottom-up, they refer to the asymmetric information between the managers and the grassroots (rows 8; 12; 13), whereas the top-down can be regarded as “opportunity to clarify the subjects to the grassroots” (row 2). Most of all, the answers “classify” the grassroots as part of an interaction process of exchanging information and experiences, with the potential to better inform the decision-making (rows 1; 2; 3; 4; 6; 7; 8; 10; 11; 12; 13; 14; 15; 16), i.e., they refer to the process – the Internal Congress – the organisation has created, which allows dealing with the “information asymmetry”\(^{34}\) between its different actors, and this is why the communication is a key concept here.

Finally, some answers indicate a very strategic role for the grassroots, once these are in contact with the real needs and demands (row 11) and, also, because they are in charge of implementing the changes (rows 5 and 11).

The two negative answers explicitly do not agree with the relevance of the views of the grassroots, either because “the solutions can be adopted independently of their views” (row 18) or “because their opinions might be different” (row 19). Although the latter does not explain to what the grassroots opinions might be “different”, the answer derives from the board of managers, hence very probably referring to opinions which are different from that board.

\(^{34}\) The concept of “asymmetric information” is applied from the studies of Akerlof (1970), Rothschild and Stiglitz (1976), and Spence (1973). In general it is referred to information failure in a trade situation when one party has information the other party does not; hence, the first party can be in a position of advantage.
The answers given show that the model of a democratic administration in Fiocruz, regarding its grassroots capacity and skills, is not unanimous among managers. It is a different situation, distinct from the perception that there are gaps in need of being addressed in participative decision-making in order to improve the process.

With respect to the gaps identified, the answers to this question point to a possible solution to them when indicating the communication between the different actors to have a more efficient management.

7.3.1.2. Long-term planning – Fiocruz

The long-term planning part of the questionnaire aimed to understand how the organisations of Fiocruz make use of this strategy. The aspects investigated are: 1. The existence of a department dedicated to long-term planning (Is it officially incorporated in the structure?); 2. Determinants of the long-term approach and the types of analyses used (What is the purpose of making use of long-term planning and what is the experience with it?); 3. What triggers the need for long-term planning in the organisation (What is the need of the organisation?); and 4. Opportunities for the Foresight to contribute to the organisation (How can Foresight be helpful?).
a) Existence of a long-term planning department – Fiocruz (question 12)

Four out of 19 members of the DC do not know there is a long-term planning department in Fiocruz, the newly created Centre for Strategic Studies, indicating an information asymmetry between the members of the management body about aspects of the Foundation. This kind of absence of knowledge is not unheard of in large organisations like this one.

Graph 21 - Existence of a long-term planning department
Fiocruz

The asymmetric information is clearer in sub-question 12.1, made just for those respondents supposed to know about the existence of the new Centre, concerning the period of activity of the department. The majority (8 out of 15) informed that the long-term department has more than 15 years of activity, but it does not (Table 10). They very likely suppose it is the Directorship of Planning, which exists since the ’70s and would be the “natural” department to conduct the long-term studies – and, in fact, it did conduct a small number of them. Only two of the respondents seem to know about the recent implementation of the Centre for Strategic Studies as an “independent” department from the Directorship of Planning, linked to the Presidency, now in charge of conducting such studies.

Table 10 - Period of activity of the long-term department

<table>
<thead>
<tr>
<th></th>
<th>Fiocruz</th>
<th>Embrapa</th>
<th>Pasteur</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1 year</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 year ≤ 5 years</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5 years ≤ 10 years</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10 years ≤ 15 years</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>≥ 15 years</td>
<td>8</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>
b) Determination of choice of a long-term approach and types of analyses used – Fiocruz (sub-question 12.2)

In this question, by understanding what determines the choice for long-term, the objective is to understand the purpose of it for the organisation, and by knowing the types of analyses used, the objective is to map the experience with long-term planning. Also, it was made only for those supposed to know about the long-term department. Those who responded “no” did not answer the following sub-questions, but jumped to question 13.

b.1) Determination of choice of long-term approach – Fiocruz (sub-question 12.2.1)

In this field, at first, the answers indicated the possibility that the respondents might not have understood the question very well. However, taking a closer look, the answers (Table 11 – rows 1 to 6; 8; 9; 11; 14) indicate that the respondents are not yet familiar with the long-term planning. This knowledge was assumed by the researcher given this is a novelty in Fiocruz. It is, therefore, another example of information asymmetry existent in the organisation.

The answers one to three, for instance, reflect the recent engagement in long-term studies as a top-down demand, both from the Ministry of Planning (whose plans all Brazilian public organisations must follow) and, part of this chain, the Presidency of Fiocruz. Similarly, other answers refer to the demands of the society (row 10), to the Internal Congress (row 4), or to the strategic role of the organisation (row 12).
One respondent, however, gave a more detailed answer (row 15):

“Only recently Fiocruz opted for setting goals beyond the period of four years. The Long-Term Plan established challenges and goals by the year 2022. I think the determinant for it was the perception that investments and current decisions impact the future and that the changes indicated in Brazilian demographic and epidemiological levels require immediate effort.”

The unfamiliarity with the subject is also expressed by the answers related to the next item of the questionnaire (types of analyses) when mentioning the anticipation of scenarios (rows 5; 7; 11; 13).

As a whole, besides the unfamiliarity with the subject, the answers indicate that the major determinant of the long-term approach relies on the top-down demand, regarded as “top-down” not only as the organisational chain starting at the Ministry of Health down to Fiocruz but also via the demand of wider society, the Internal Congress and the role of the organisation.
b.2) Types of analyses – Fiocruz (sub-question 12.2.2)

The answers to this sub-question point to the scenarios and the futures workshops as the most used analyses when long-term studies are conducted in Fiocruz. In fact, these two types of analyses represent one single activity, i.e., the futures workshops activities in Fiocruz have been conducted aiming at building scenarios, what is common to happen, and it is not a coincidence that these two had the same number of citations.

The literature shows that the mostly used analysis is the literature review (Popper, 2008). Although the types of analyses vary from organisation to organisation, the low responses concerning literature review and others may be confirming the unfamiliarity of Fiocruz with long-term planning, which relies mostly on scenarios workshops as the main tool to conduct futures studies.

It can also be a deliberated option of the organisation to work mainly with scenarios workshops, but given the answers to the previous question, the context of unfamiliarity is likely to be underpinning them.

Graph 22 - Types of analyses
Fiocruz

<table>
<thead>
<tr>
<th>Analysis</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other(s)</td>
<td></td>
</tr>
<tr>
<td>Trend extrapolation</td>
<td></td>
</tr>
<tr>
<td>SWOT analysis</td>
<td></td>
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<tr>
<td>Scenarios</td>
<td></td>
</tr>
<tr>
<td>Questionnaires/surveys</td>
<td></td>
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<tr>
<td>Literature Review</td>
<td></td>
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<tr>
<td>Key Technologies</td>
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<tr>
<td>Interviews</td>
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<tr>
<td>Futures workshops</td>
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<tr>
<td>Expert Panels</td>
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<tr>
<td>Essays</td>
<td></td>
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<tr>
<td>Environmental scanning</td>
<td></td>
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<tr>
<td>Delphi</td>
<td></td>
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<tr>
<td>Brainstorming</td>
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n = 19

157

c) What triggers the need to use/conduct long-term planning – Fiocruz

This question is complementary to the one about the determination of a long-term approach. Whereas the latter refers to a broader perspective, the current one is more accurate, trying to take a closer look at the case of Fiocruz.

Most of the answers associate the commencement of long-term planning to the fact that this is part of strategic planning and, ultimately, to the role of Fiocruz as a strategic organisation (Table 12 – rows 1; 4; 5; 7; 9; 11; 12; 13).
Those considerations can be understood as if long-term planning was a “natural” path of the strategic planning for them and, indeed, the literature informs that scenario planning is a tool that has been added to the strategic planning school (p. 41). It can be indicative that long-term planning may not be so unfamiliar to the organisation, although the association of long-term planning and strategic planning may be “instinctive” sometimes.

Despite the respondents mentioning actions to be done in the present moment (rows 2; 9; 12), some answers can be characterised as a passive position regarding the future (rows 1; 2; 7; 14). These respondents see the future as something to get prepared for, rather than building it, i.e., not a proactive perspective.

Table 12 - What triggers the need to use/conduct long-term planning – Fiocruz

| 1. The need to establish strategic guidelines in connection with the possible future scenarios. |
| 2. Every organisation should consider the scenarios and trends in order to achieve its vision and correct this mistakes of the present. |
| 3. “Every big organisation need long-term planning in order to map out future investments and areas of expertise, especially when we deal in science, production and Public Health.” |
| 4. “The inherent challenges of the institutional mission in itself lead to the need for planning.” |
| 5. “The institution plays a strategic role as a State agency for health issues and their numerous and complex relationships. The concept of health as a component of national development strengthens this perspective, therefore, the long-term planning is vital to the institution.” |
| 6. “The future is always uncertain and because of it planning should be of goals to be achieved in the long-term, which does not mean that short and medium term goals are unnecessary.” |
| 7. “Fiocruz aims to be a State strategic institution for Health and as a result of this role needs to have a long-term planning.” |
| 8. “Any organisation needs it to survive and / or to serve society satisfactorily.” |
| 9. “Today’s Public health issues, which may remain in the national scenario if not addressed with a strategic plan.” |
| 10. “Social demands, several epidemiological studies, technological developments and the resources that will be needed.” |
| 11. “Its strategic role for public health and the defense of life in the country.” |
| 12. “Present for 115 years and with a relevant and strategic nationwide role, besides we acting in the present, Fiocruz needs to monitor trends in the field of Health and STI not only in the national context, but inserted in interactional strategic proposals.” |
| 13. “Fiocruz is a state strategic institution of state for health and for science and technology in health with over 100 years of existence, and shall mandatorily act with this type of planning.” |
| 14. “The need to predict trends in order to get better prepared for the policies it is involved in.” |
| 15. “The projected changes in the country in demographic, epidemiological and technological levels.” |

One other batch of the answers indicates a necessity of a connection, or rather a “dialogue”, between the present and the future (rows 1; 2; 9; 10; 12).

As a whole, the answers point that the need for long-term planning is linked to the strategic role of the organisation, hence demanding a dialogue with the future in order to get prepared for it.
d) Opportunities for the Foresight to contribute to the organisation – Fiocruz (question 13 and sub-questions).

This questionnaire makes use of the concept of “redundancy” via a scale measurement (p. 77). It means the questions are related to a latent variable, which is the subject of investigation. These questions “surround” the latent variable in order to catch different aspects of it, giving reliability to the scale (DeVellis, 2012).

Within this sub-question, the redundancy was applied by similarity, and the similar statements were randomly spread in a sheet. For the analysis, however, these statements are displayed side by side in order to compare whether the answers confirm one another (Graphs 23 to 30).

The opportunities for the Foresight to contribute to organisations are related to four components of interest for this research:

- Decision-making (Graphs 23 and 24)
- Planning (Graphs 25 and 26)
- Research alignment (Graphs 27 and 28)
- Strategic Thinking (Graphs 29 and 30)

For the decision-making component, basically, all the respondents agree that Foresight can contribute to this (Graph 23) and that it is an important tool (Graph 24). For the planning component, the answers are similar to those about decision-making – and it is expected to happen, as long as these two variables are closely linked to one another.

Comparing them, however, the answers show the respondents are more confident in Foresight for the planning process (Graphs 25 and 26) rather than the decision-making one (Graphs 23 and 24).
For the research alignment component, it shows agreement between both the shared appraisal (Graph 27) and the alignment of the research (Graph 28) – the latter a little more robust than the first, indicating perhaps more confidence when the alignment is referred to the research, rather than the appraisal of it.

Finally, the strategic thinking component, it is expressed regarding the appraisal of long-term challenges (Graph 29) and the demands of wider society (graph 30), i.e., it refers to the relationship between the organisation and the environment.

The vast majority of the respondents do agree that Foresight helps both the appraisal of the researchers about the long-term challenges and the demands of wider society. It is indicative of a contribution of Foresight to strategic thinking because the appraisal of the challenges demands an assessment of the researcher capabilities to face them. These challenges can be either from within or outside the organisation and in this case, it is from the demands of society.
e) Long-term planning effectiveness in setting priorities, building networks – Fiocruz (question 14, sub-questions 14.1; 14.2; 14.3)

It is surprising that after mostly agreeing with the previous statements about Foresight, the answers to the effectiveness of long-term planning in setting priorities and building networks are mostly negative (Graph 31), pointing that the respondents seem to be unconvinced about this.

The answers indicate that most of the respondents may be somehow sceptical about long-term planning, although with a robust belief that Foresight can help decision-making and planning, for instance. It might be again due to the novelty of Foresight within the organisation, not having had enough time to have embedded itself deeply within the organisational culture yet. In this sense, their views expressed in the previous questions vis-à-vis those expressed in the current one seem to be mostly the expression of a wish, rather than experience.

Graph 31 - Long-term planning effectiveness in setting priorities, building networks
Fiocruz
Those who agreed that long-term planning can be effective were asked to justify why they believe this. The answers can be summarised in the establishment of goals (Table 13, row 2) based on future needs (row 7), including allocation of resources (rows 1; 4; 8). The resource allocation, cited three times, is the main concern of the respondents when the subject is about setting priorities.

Considering the building of networks (and other goals), the participative environment of the organisation is regarded as a stimulation for that (row 3).

Table 13 - Why long-term planning is effective in setting priorities, building networks and other goals – Fiocruz

<p>| | |</p>
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<thead>
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<th></th>
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<tbody>
<tr>
<td>1</td>
<td>&quot;Because it is through this instrument that we define the resource allocation priorities.&quot;</td>
</tr>
<tr>
<td>2</td>
<td>&quot;It defines directions and goals.&quot;</td>
</tr>
<tr>
<td>3</td>
<td>&quot;Because the planning is done in an environment of much participation.&quot;</td>
</tr>
<tr>
<td>4</td>
<td>&quot;It is more effective to meet the demands of society, to strengthen the health system, provide resources, reduce costs and do more with less.&quot;</td>
</tr>
<tr>
<td>5</td>
<td>&quot;Because it allows us to dream and anticipate scenarios. Orthodox planning limits this ability to dream.&quot;</td>
</tr>
<tr>
<td>6</td>
<td>&quot;For analysing the previous goals and results, in addition to strategic priorities placed for the future on a national level.&quot;</td>
</tr>
<tr>
<td>7</td>
<td>&quot;Foresight allows the manager to develop planning based on future needs.&quot;</td>
</tr>
<tr>
<td>8</td>
<td>&quot;This type of planning stimulates the creation of networks, the rational optimization of resources and to guide the organisational development and investments.&quot;</td>
</tr>
</tbody>
</table>

The answers to the usefulness of long-term planning (Graph 32), i.e., how much of the information is put into practice, 38% (three out of eight) indicate that for the respondents the information generated by long-term planning is, the most, half useful (25%; some part of it + 13%; half of it). This outcome corroborates that there might be some scepticism about long-term planning.
Those who did not agree that long-term planning can be effective were then asked what would be necessary to make it so, and part of the answers was related to information/communication (Table 14, rows 1; 2; 3), reinforcing previous notes about the importance of this (pp. 151-153).

Other answers, in turn, once more reflect the novelty of Foresight in the organisation (rows 5; 6; 8). It is interesting that one of the respondents admitted to not being able to answer (row 6), despite having previously considered that long-term planning is not effective. This answer confirms the one in row five, which points a need for Foresight to mature within this PRO.

Table 14 - What would it need to be effective, in terms of management support – Fiocruz

<p>| | |</p>
<table>
<thead>
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</table>
| 1. "To be carried out on the basis of issues relevant to the Fiocruz needs and to be available to compose the Internal Congress theses document."
| 2. "The information generated by the study is not spread sufficiently for the understanding of Fiocruz community, and is still contaminated by choices of political / electoral nature."
| 3. "To be based on more information about the institutional processes as well as the objects of investigation and action of the institution and improve the steps following the construction of the plan as to have an effective deployment."
| 4. "If we understand that the main function of strategic planning is to impose structural adjustments in organisations to get adjusted to the environment, any change in the environment would mean a change in the organisational structure to adjust to it. This means that the evolution of the company and its environment requires it to review strategies that end up changing the structure, ie, this is an ongoing work setting. In this sense, there is no more or less important moment to think about strategic planning and neither a more important tool. We need, wherever possible, quickly detect changes and, accordingly, the Foresight can be very helpful."
| 5. "I think that this process is still relatively little matured under Fiocruz. Will be needed more years of planning, monitoring and maturity so that the results are truly effective."
| 6. "I cannot answer."
| 7. "Identify well the problems in public health for a good long-term planning."
| 8. "To promote the appropriation of the methodology of projects as "Health Tomorrow" for the foresight to be referred to the institutional development of Fiocruz. In the case of this institution, it is also necessary to better articulate studies under projects such as appointed to iniciatives as the Center for Strategic Studies, favoring thus the medium and long-term planning. In short, it is about avoiding dispersion and promoting the strengthening of institutional planning."
| 9. "To implement the decisions or trends taken from the process."
| 10. "There is need for a more systematic approach so that foresight can have greater impact at Fiocruz."
| 11. "Seriousness and commitment." |

f) Long-term analysis helping organisational change – Fiocruz (question 15, sub-question 15.1)

All respondents were unanimous about the long-term analysis helping organisational change. Most of them associate the helping of organisational change to aspects of the present moment (Table 15, rows 1; 3; 4; 5; 6; 7; 11; 12; 14; 15; 16; 18), hence corroborating the previous findings about the connection, the dialogue, between the present and the future (p. 158).

Other aspects cited were the information/communication (rows 1; 2) as a way to help that, which confirms previous findings as well (pp. 151-153); and the visualisation of targets/routes to be accomplished (rows 3; 5; 6; 11; 13; 15; 16).
Table 15 - Why long-term analysis can help organisational change – Fiocruz

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1.</td>
<td>&quot;A good long-term analysis would be ideal for composing the internal congress theses document, once it would more effectively underpin the theses dispute.&quot;</td>
</tr>
<tr>
<td>2.</td>
<td>&quot;If it is disseminated taking into account the institutional culture, it is an instrument of great change.&quot;</td>
</tr>
<tr>
<td>3.</td>
<td>&quot;Because it makes explicit the routes of action.&quot;</td>
</tr>
<tr>
<td>4.</td>
<td>&quot;It is an important piece, but it must be inserted in a set of actions to be in fact effective.&quot;</td>
</tr>
<tr>
<td>5.</td>
<td>&quot;It poses permanent challenges to the institution.&quot;</td>
</tr>
<tr>
<td>6.</td>
<td>&quot;Strategic planning is directly related to long-term results. But companies that care about the future should also be aware of the present. Therefore, initiatives and responses in short time frames should also be taken into account.&quot;</td>
</tr>
<tr>
<td>7.</td>
<td>&quot;The future guides the present.&quot;</td>
</tr>
<tr>
<td>8.</td>
<td>&quot;Provided that it is structured in a flexible manner, capable of adaptations and adjustments, if necessary. Often we look at long-term analyses generating very rigid recommendations for organisations, which may not be feasible.&quot;</td>
</tr>
<tr>
<td>9.</td>
<td>&quot;Long-term analysis often justifies the need for organizational change.&quot;</td>
</tr>
<tr>
<td>10.</td>
<td>&quot;Because there will be created areas of interest for the unit, focused on local problems.&quot;</td>
</tr>
<tr>
<td>11.</td>
<td>&quot;Because it allows us to visualize what will be important to maintain or implement. It facilitates the visualization of growth, which will eventually generate a need for change.&quot;</td>
</tr>
<tr>
<td>12.</td>
<td>&quot;We are already using Fiocruz Ceará obtaining excellent results.&quot;</td>
</tr>
<tr>
<td>13.</td>
<td>&quot;The long-term analysis has already been used and helps a lot in planning the activities and priorities of Fiocruz (see ‘Health Tomorrow’).&quot;</td>
</tr>
<tr>
<td>14.</td>
<td>&quot;It contributes to institutional investments, both in human resources and in infrastructure.&quot;</td>
</tr>
<tr>
<td>15.</td>
<td>&quot;Fiocruz has a wealth of knowledge and practices among the most valuable public institutions in the country. However, it is necessary to improve management and planning mechanisms. Needless to reiterate how long-term analysis is needed to achieve this goal. In considering the current economic and political crisis, however, it is necessary to think of long-term analyzes that can think of different alternative scenarios and, especially, mobile scenarios;&quot;</td>
</tr>
<tr>
<td>16.</td>
<td>&quot;Yes, it makes it possible to work always looking at the goals and preparing the institution and its staff for the necessary changes.&quot;</td>
</tr>
<tr>
<td>17.</td>
<td>&quot;Helps in the better elaboration of policies.&quot;</td>
</tr>
<tr>
<td>18.</td>
<td>&quot;Because it allows one to see what is not immediately before the eyes, it requires reflection.&quot;</td>
</tr>
<tr>
<td>19.</td>
<td>&quot;It seems obvious to me.&quot;</td>
</tr>
</tbody>
</table>

Changes, taking into consideration the answers, can be helped by long-term planning as long as they are discussed and disseminated within the organisation, guiding current actions, like assisting the development of policies and improving management and planning. It is complemented by other answers that mention the possibility to reflect upon subjects not easily seen (row 18) and facilitating the visualisation of growth (row 11).

Finally, one single answer mentions the human resource and the infrastructure aspects (row 14), crucial for any organisation with an eye on the future.
7.3.2. Face-to-face interviews – Fiocruz

7.3.2.1. Decision-making – Fiocruz (interviews)

The decision-making part of the interviews aimed at understanding aspects of the democratic administration of Fiocruz according to the key actors identified, and to compare these with the answers to the questionnaire in order to consolidate or refute the findings. The aspects concern:
1. Understanding how strategic decisions are made within the organisation;
2. Understanding which decisions were the important strategic decisions and why they are strategic (what about them is strategic for the organisation and why?);
3. Understanding the factors that lead to fewer or more changes in the organisation (what causes resistance to change in the organisation and what helps change?);
4. Understanding changes that were put in place (did the decisions work?)

The idea, as a whole, is to understand the Fiocruz decision-making process, its strategic thinking and, along with it, how the organisation deals with resistance, considering whether the decisions led to concrete changes or not.

a) How strategic decisions are made – Fiocruz (question 7)

The five interviewees mentioned the Internal Congress processes as the locus for the strategic decisions. One of the answers, however, recalled the demands of wider society regarding the incidence of diseases, and the burden of diseases, and others, underpinning the decisions. According to it, the interest of the society and the interest of the government are the guidelines for the decisions:

“- And thus I answered to you how to make a decision.
- The decision is the demand of the society.
- Exactly! And then, evidently, in this context there is the incidence of the disease, the burden of the disease, the cost-effectiveness of disease, and so on... On top of that: The interest of society and the government’s interest.”

Interviewee 2 (dialogue with the interviewer)

This observation by the interviewee is relevant because it points to an external determinant to the decisions made by the Internal Congress, meaning that there are limits for the decisions made in that forum.

Nevertheless, the plans generated by the Internal Congress, the four-year plans, supposed to guide the actions of the organisation, are still of weak tradition, without strong roots in the institutional culture:
“Fiocruz has a statutory tool for this, and it is the Congresses. They are periodic, and we are in the seventh edition, the third stage of the seventh edition. There is also a tradition of four-year plans that is a weak tradition, is not a strong thing in the institutional culture. Although they are drawn up periodically - not in Congress but are linked to the Congress - they are made periodically and mobilise intelligence. Diplan plays a major role in the elaboration, then it is presented to the Congress, where the debate is widespread because it was elected to it; but in my opinion, it [the four-year plan] has a little weight on the day-to-day institutional life.”

Interviewee 5

Although counting on collegiate bodies, such as the Internal Congress and the Deliberative Council (Section 4), the decision-making process is not as systematic as it may seem at first. It does follow a formal process but, as such, it is subject to the virtues and defects of a democratic system:

“So, the decisions are made in the collegiate bodies, but not in a systematic way. Perhaps Fiocruz is still far from functioning as the big companies that have strategic definitions, with a market as a reference. Fiocruz, however, works with its own values. Large corporations work with the idea of competition, Fiocruz less. It works with a much-debated internal governance, very democratic and participatory. However, in my view, it is still subject to the circumstances of internal debate, to power, to this whole thing.”

Interviewee 5

There are two components to the decision-making process: Formal and informal. The formal one is represented by the collegiate bodies, whereas the informal one is represented by the several executive bodies of the organisation, from the Presidency to the boards of the units, and a good part of the decisions are made by the executive bodies rather than the collegiate. The day-to-day situations, such as an opportunity for funding or the strategic aspect of a project, drive the informal component of the decision-making process:

“We have a process that involves the collegiate instances where the main body is the Internal Congress, and another body is the Deliberative Council. It is from a formal point of view. Nevertheless, I would say that most of the strategic decisions are run by the action of the executive authorities. Especially the President of Fiocruz and the boards of the units, where specific projects have a strategic character and are appreciated, considered and pushed forward. Then there is a component of large, say, guidelines that are located in the collegiate bodies, and there is a component, I would say, of a more executive

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35 Directorship of Planning, where this researcher works.
character, of a more strategic impact, that is located in the executive bodies, basically the Presidency and the Directors of the main units.”

Interviewee 3

The formal component starts with the mission of the organisation, which was recounted by one of the interviewees (although this was not their primary focus at the time). However, when mentioning the demands of the society, it refers to the mission of the organisation, which expresses its commitment to the promotion of health and quality of life of the population (pp. 86-87). Hierarchically, that comes first and, then, the Internal Congress and the Deliberative Council perform the collegiate bodies in charge of the formal decision-making process.

The following scheme illustrates both components of the decision-making process in Fiocruz, according to the interviewees.

Figure 20 - Decision-making components in Fiocruz, according to the interviewees

As a whole, we observe that these findings regarding formality corroborate literature (Mintzberg, 1979). A particularity of Fiocruz is the parallelism between the formal and informal processes and the hierarchy of the formal processes over the informal ones, meaning that the latter are subject to scrutiny by the community, as much as the former ones.

b) The five major strategic decisions in the last 15 years – Fiocruz (question 8, sub-question 8.1)

In this field, some of the five respondents mentioned more than five decisions; hence, there were 30 answers instead of the expected 25. Moreover, for the analysis of this field, the
investigation will make use of the word cloud technique, which summarises the contents of all the answers given, depicting the more frequent words in a larger, darker type.

Word clouds have emerged as a straightforward and visually appealing visualisation method for analysis (Cidell, 2010; Heimerl et al., 2014). This visualisation of the more frequent words, in turn, can indicate us the underlying assumptions permeating the responses.

In the case of Fiocruz, for instance, all the respondents referred to decisions related to “production”, certainly concerned with the strategic role of this activity in providing cheap inputs to the public health system and, thus, widening the access of the population to it.

That is closely related to the debates around becoming a company, proposed by the two production units; or maybe reflecting the fact that four out of five respondents of the following question – whether they took part of the decisions or not – replied saying they participated in all of them. In this case, the answers may reflect a certain bias, as long as they might tend to consider the decisions in which they took part to be more strategic than others.

The word cloud of the answers below illustrates the prominence of the words “production” and “health” in the minds of the respondents, besides the word “fiocruz” itself. As it will be seen further, the most prominent word in the three organisations was the name of the organisation, reason why the word “fiocruz” was put aside in order to give a more proper visualisation of the words left.

Figure 21 - Word cloud of the five major strategic decisions in the last 15 years
Fiocruz

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36 Excluding articles, pronouns and prepositions. Also, words with a length smaller than four letters.
In fact, as we have seen in Section 4, the production of health inputs has been one of the main focus of studies in Fiocruz in the last several years, resulting in new policies by the government towards the development of the “Economic-Industrial Health Care Complex” (EIHCC), and the EIHCC policy itself can be regarded as one of the “products” of Fiocruz, as much as the conception of SUS:

“Another was, say, more remotely, in the 1980s, 1990s and within this framework of Fiocruz to build and strengthen this identity as a component of health governance in the country, was the production of policies. Fiocruz is the place where SUS was conceived in the 80’s, already in the management of Arouca and also in the moment in which the country lived its transition.” [Emphasis added]

Interviewee 5

Table 16 shows the frequency and weighted percentage of the 20 most quoted words by the interviewees. The two mostly weighted ones are followed by the words “health”, “also”, “national” and “biomanguinhos”.

Table 16 - Word cloud of Fiocruz strategic decisions
The 20 most quoted words

<table>
<thead>
<tr>
<th>Number</th>
<th>Word</th>
<th>Count</th>
<th>Weighted Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>fiocruz</td>
<td>43</td>
<td>3.45%</td>
</tr>
<tr>
<td>2</td>
<td>production</td>
<td>30</td>
<td>2.41%</td>
</tr>
<tr>
<td>3</td>
<td>health</td>
<td>27</td>
<td>2.17%</td>
</tr>
<tr>
<td>4</td>
<td>also</td>
<td>16</td>
<td>1.29%</td>
</tr>
<tr>
<td>5</td>
<td>national</td>
<td>16</td>
<td>1.29%</td>
</tr>
<tr>
<td>6</td>
<td>biomanguinhos</td>
<td>15</td>
<td>1.20%</td>
</tr>
<tr>
<td>7</td>
<td>field</td>
<td>15</td>
<td>1.20%</td>
</tr>
<tr>
<td>8</td>
<td>another</td>
<td>12</td>
<td>0.96%</td>
</tr>
<tr>
<td>9</td>
<td>institution</td>
<td>12</td>
<td>0.96%</td>
</tr>
<tr>
<td>10</td>
<td>area</td>
<td>9</td>
<td>0.72%</td>
</tr>
<tr>
<td>11</td>
<td>development</td>
<td>9</td>
<td>0.72%</td>
</tr>
<tr>
<td>12</td>
<td>strategic</td>
<td>9</td>
<td>0.72%</td>
</tr>
<tr>
<td>13</td>
<td>think</td>
<td>9</td>
<td>0.72%</td>
</tr>
<tr>
<td>14</td>
<td>government</td>
<td>8</td>
<td>0.64%</td>
</tr>
<tr>
<td>15</td>
<td>money</td>
<td>8</td>
<td>0.64%</td>
</tr>
<tr>
<td>16</td>
<td>point</td>
<td>8</td>
<td>0.64%</td>
</tr>
<tr>
<td>17</td>
<td>research</td>
<td>8</td>
<td>0.64%</td>
</tr>
<tr>
<td>18</td>
<td>state</td>
<td>8</td>
<td>0.64%</td>
</tr>
<tr>
<td>19</td>
<td>view</td>
<td>8</td>
<td>0.64%</td>
</tr>
<tr>
<td>20</td>
<td>certain</td>
<td>7</td>
<td>0.56%</td>
</tr>
</tbody>
</table>

Regarding the responses themselves, albeit all the interviewees had mentioned the word “production”, answers such as “authorisation for the public company”, “new plant for immunobiologicals”, and others, did not explicitly mention “production” but were concerned with it.
Finally, sub-question 8.1 asked whether the respondents have taken part in the decisions they mentioned and four out of five said they took part in all of them, whereas one respondent participated in only one of the decisions quoted by himself/herself.

c) Why the decisions are strategic – Fiocruz (sub-question 8.2)

Two of the answers (Table 17 – rows 3; 4) pointed to the “national project”, which is the expansion of Fiocruz by opening new units, in different areas of the country. The word cloud presented before somehow anticipated this, by displaying the word “national” (Table 16).

The “national project” is a strategy for decentralising R&D and creating new centres of excellence, forging ahead with local development. One example of this is Fiocruz Ceará, a new unit in a traditionally poor region of the country (the northeast) that will be distinguished from other units mainly via the development of equipment and materials for health, responsible for a significant part of the trade deficit in the health field, as mentioned previously.

In this sense, the “re-alignment” of Fiocruz (row 3) is referred to the “rescue” of the organisation regarding its role in helping the development of the country through actions that contribute to the improvement of health.

Three respondents mentioned, “upgrade” and “new standard” (rows 2; 3; 4). They are referring both to Fiocruz Ceará and to a new plant for the production immunobiological agents in Rio de Janeiro, which, along with the manufacturing of drugs, shall provide access to those products for the population and, thus, assist in decreasing the deficit in the trade balance. Therefore, these are actions of early impact for the health system (rows 1; 5).

The last response (row 5) can be regarded as a summary of the others. Strategic decisions, in brief, are those that consider the environment vis-à-vis the conditions of the organisation to deal with that to accomplish its objectives. All the responses, in one way or another, point to that, but the last one indicates the development of strategic thinking among the managers.

Table 17 - Why the decisions are strategic – Fiocruz
(summary of the responses)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
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<tbody>
<tr>
<td>1</td>
<td>“They are actions of early impact for the Brazilian health system.”</td>
</tr>
<tr>
<td>2</td>
<td>“They are landmarks that upgraded the institution.”</td>
</tr>
<tr>
<td>3</td>
<td>“They re-align the positioning of Fiocruz in the field of healthcare, for instance. In terms of the offices, we are positioning ourselves in more regions of Brazil. They strategic because they open new work fronts, new relationships, expanding the national presence of Fiocruz […] They are strategic because they establish a new standard, a new responsibility, a new reality, a new role, such as a ‘player’ in all those fields.”</td>
</tr>
<tr>
<td>4</td>
<td>“From the point of view of the institutions, their capacity to assert themselves is when they can upgrade the relevance of their activities in very large fields and networks. In the case of Fiocruz, the national feature character comes first”</td>
</tr>
<tr>
<td>5</td>
<td>“The strategic decision rationale is recent. They were not necessarily conscious decisions but became clear in the heads of the principals. They bridge the gap with the future, with an impact on daily life, a changing impact, reorienting, creating new inspirations for the process of medium and long terms.”</td>
</tr>
</tbody>
</table>
d) Factors/interests that led to more or less change – Fiocruz (question 9.1)

The answers to this question considered the strategic decisions in item “b”, which saw the word “production” emerge as the most mentioned (after “fiocruz”). The respondents were suggested to take those decisions into consideration when answering to this field.

Some of the responses were related to the “national project” (Table 18, rows 2; 4). The respondents pointed to factors leading to less change when mentioning the fear of tighter resource funding. In fact, some researchers did not agree at first with change initiatives as they were afraid of losing funding and hoped and anticipated future expansion of Fiocruz would go ahead if the budget were kept static. It is the parochial self-interest type of resistance stated by Kotter and Schlesinger (2008) described in Section 2, pp. 31-32, in which people are more concerned with their interest rather than the organisation as a whole.

One respondent pointed to factors/interests that may lead both to more and to less change (row 3). According to this response, the sovereignty (of the population) is regarded as the “soul of Fiocruz”, hence this would lead the organisation to more change (to accomplish its mission), whereas the opposite – less change – would be due to the organisational structure. This response was referring to the change towards a public company, which demands the restructuring of wages and careers, for instance. Hence, it is not exactly a phenomenon of “resistance”, in this case, leading to fewer changes, but inherent aspects of the structure subject to transformation.

One other answer refers to another reason informed by Kotter and Schlesinger (2008), and it is the “misunderstanding and lack of trust” (row 1). The respondent “complained” because, from his perspective, the people did not know what they were voting on.

Finally, a respondent referred to technical aspects as a fundamental means to face resistance, i.e., potentially leading to more change (row 5). In fact, it is one of the six manners listed by Kotter and Schlesinger (2008) to deal with change: Education and communication (p. 32).
Table 18 - Factors/interests that led to more or less change – Fiocruz
(summary of the responses)

| 1. “How do you organise an Assembly in which 80% of the people participating have no conditions and no knowledge of the fact; and yet vote?” |
| 2. “Fear of dilapidating the resources/funding; lack of transparency; lack of identity with the organisation.” |
| 3. “The matter of sovereignty, which is the soul of Fiocruz, i.e., to provide answers to certain critical needs of the Brazilian population, associated with the incorporation of technological and productive capacities (...). An obstacle factor is the organisational structure. Transforming Biomanguinhos into a public company triggers resistances that overflow to Biomanguinhos. Some of them ideological, but some are material and complex, such as wage and careers.” |
| 4. “The competition for resources is a factor that triggered resistance to the national project, to the expansion of Fiocruz as a means of development (...). Another resistance to the national project concerned the risk of sustainability.” |
| 5. “The strategic decision triggers resistance. Therefore, the process must be well rooted in technical fundamentation as to keep the decision. The more a decision has a technical fundament with evidence that I am generating conditions for more efficiency and delivery of results, it is an important base, but it is not enough because it is necessary to break other variables, of political nature, of interests at stake. But the technical evidence is fundamental. Without it, I cannot overtake the other.” |

e) Changes that happened as a result of the decision – Fiocruz (question 9.2)

In this question, the aim was to check what in fact happened in terms of changes, considering the decisions mentioned previously in item “b”. In light of this, the word cloud is used once more, following the rationale then applied. The words highlighted confirm the decisions made. The changes were related to the word “company” and, secondarily, “production”, as expected.

Figure 22 - Word cloud of the answers concerning the changes as a result of the five major strategic decisions in the last 15 years

Fiocruz

The following answer citing the “national project”, expresses this:

“The main one was the expansion of Fiocruz, the quantitative and qualitative growth in research, teaching. In fact, this project, although not in detail or carefully prepared as a future project, it was super successful. First, because it meant investment funds and Fiocruz intelligence, unique in these states, where the investments usually found super fertile land. In Fiocruz Amazonia, taking regional eco-systems...”
with all its complexity, they were eager to have access to more sophisticated means of science. It is visible today: The scientific production of Fiocruz headquarters, compared to the production of the regional units altogether, it is almost equal to Fiocruz headquarters, what is an almost amazing thing because it practically started from a scratch and quickly created an academic and exchange development system. And quantitative: Public tenders started to provide these regional units with new professionals. Quantitatively and qualitatively, today the integration of Fiocruz as a whole, it is very advanced, the participation of the Deliberative Council, the exchange of students and could be even more (...). We can multiply the training of students in exchange for excellence. It was a huge benefit to Fiocruz as a whole, growth, national presence, appreciation. Today Fiocruz is a highly valued excellence brand. Ceará, for example, is building a complex for the production of medicines, equipment; then providing Fiocruz as a whole with more powerful conditions to interact with the market.”

Interviewee 5

It is important to highlight that when referring the word “production”, most of the times it is related to the manufacture of immunobiological and drugs, for instance, but it also refers to the “manufacture” of policies (such as EIHCC), as previously observed. The word, however, can sometimes acquire a different meaning in this context. For instance, in the quotation above the term is used to compare the headquarters and the regional units, the scientific production, i.e., scientific papers. Despite this “bias”, in the end, the respondent informed that decisions characterised as strategic were related to producing inputs to SUS, to the health agenda.

The following Table 19 contains the count and weight of the most quoted words in this response, by the interviewees.
Considering the responses themselves, similarly to the answers about the strategic decisions, not all of them referred to the subsidiary company. In fact, just three out of five referred to it, not necessarily quoting the word “company”.

A summary of those three responses is: (1) “creation of the company”\(^37\), (2) “the public-private partnership itself and the production of the vaccine” and (3) “articulations as one organisation, reinforcement of the brand Fiocruz, strengthening of Fiocruz contemporaneity”.

The other two (summarised) answers were:

- “Decision of the construction of the institutes complex, changing culture and practices”: It is related to the two newly created national health care institutes, in fact an upgrade in the two research-driven health units. As the institutes were planned to be working in new buildings to be constructed in the same site, the answer referred to the new arrangements these units would have to make in order to share platforms, processes and others, generating a change in culture and practices. This change, said the

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\(^{37}\) “(...) A public company, to be created needs to be able to leverage all the activities it has to have. Ultimately, development, production, design, non-design. We are worried, we are in a very difficult situation economically and politically. And what will happen? If it is a public company without proper conditions, we will not want a company. I just think so. We will not accept that.” (Interviewee 2)
interviewee, can be spread to the newly created company as well, as long as it shall cover the two production units of Fiocruz: Biomanguinhos and Farmanguinhos.

- “Expansion of Fiocruz, very advanced integration”: Referring to the “national project”, expressed in the word cloud by the words “regional” and “integration”, in this response the interviewee also referred to “production of drugs, equipment.”

These two responses, although not directly focused in the company itself, express the concerns of the respondents with the manufacturing as a means to overcome the bottlenecks of the health system.

7.3.2.2. Long-term analysis – Fiocruz (interviews)

The aspects under consideration in this part of the interviews are related both to understanding the role of long-term analysis in Fiocruz (is it useful to deal with contingency circumstances?), what determines and what triggers long-term analysis, and the role of long-term analysis in helping organisational change.

a) Use of long-term analysis under contingency circumstances (question 10)

This question was split into three sub-questions related to the use of long-term analysis, as follows.

a.1) Validation/agreement with the statement that long-term analysis is used under contingency circumstances (question 10.1)

For this first part of the question, all the respondents agreed with the statement, recognising the relevance of long-term studies. Taking it into account, the two following questions asked what, according to them, would prompt the use of long-term analysis and then what would trigger this being employed in Fiocruz.

a.2) Mechanisms that prompt the use of long-term analysis – Fiocruz (question 10.2)

From the listed mechanisms (Table 20), the “lack of a State strategic long-term planning [from the government]” (row 2) expresses a general perception among both the managers and the people involved in long-term planning initiatives.

Rows 1 and 3, in turn, indicate a need that seems to be related to experience. The first row points to the nature of the decision-making being done, i.e., to the policy choices. The second row indicates the dynamism of a sector regarding competition and investment.
Table 20 - Mechanisms that prompt the use of long-term analysis – Fiocruz
(summary of the responses)

<table>
<thead>
<tr>
<th>1.</th>
<th>“The mechanisms that lead to this is the nature of decision-making, the policy choices by the power set at that time, at that juncture. The arrangement of political forces that give a certain figuration to a government. Especially in an institution like Fiocruz, with this multiplicity of decision-making.”</th>
</tr>
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<tr>
<td>2.</td>
<td>“The lack of strategic long-term planning. The country has no tradition of development and adoption of a State long-term planning policy.”</td>
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<tr>
<td>3.</td>
<td>“See, I have several conditions that impose this kind of analysis to me. This will vary from sector to sector. The more dynamic is a sector, the larger the amount of investment, the greater the competition. These are elements that require foresight analysis with more intensity, and then to be able to monitor this decision. If I take a long-term decision, that decision, by the way, as all decision-making process, is not monolithic. If I'm making a decision for ten years, in the ten-year journey I will adjust that decision”</td>
</tr>
<tr>
<td>4.</td>
<td>“I believe that long-term analysis sheds light on contingency.”</td>
</tr>
<tr>
<td>5.</td>
<td>“The capacity of giving answers to the health needs. Fiocruz is not an isolated competing company but compromised with a certain project. It has the capacity because it has the availability for it.”</td>
</tr>
</tbody>
</table>

a.3) What triggers the need to use/conduct long-term planning – Fiocruz (question 10.3)

At first, the long-term debate in Fiocruz was proposed by the managers (Table 21, row 2), according to Mintzberg (2000, 2009), a deliberate strategy (pp. 39-41). In this sense, it would have been a decision of the managers which triggered the need for long-term planning.

One of the answers was related to the “lack of a long-term planning culture” (row 2), but it cannot be regarded as something that would trigger the use of long-term planning. One would not trigger such a process of planning because it is not part of the institutional culture yet, although it can be a determinant for any period of reflection regarding the necessity of it.

What can, in fact, trigger the need to use/conduct long-term planning in the organisation is related to concrete situations such as investments, the character of the organisation (row 3), which is a strategic State institution, hence demanding a strategic vision concerning the future (row 1).

The strategic vision concerning the future, in turn, includes the “demand” for the growth of the organisation (row 5). The growth of the organisation, consecutively, leads to issues related to its sustainability (row 4).

Finally, the anticipation of demands (row 5) indicates the need for a dialogue with the future.

Table 21 - What triggers the need to use/conduct long-term planning – Fiocruz
(summary of the responses)

| 1. | “The need to have a strategic vision, to build a long-term vision for Fiocruz, and these will guide the internal processes.” |
| 2. | “Depends on the administrators' heads. Unfortunately, it does not come from the organisation. Unfortunately, it is not in the culture.” |
| 3. | “The investments, the decisions, the size and the character of the institution.” |
| 4. | “The need to know what will be important for the sustainability of the organisation. The processes in which the organisation is involved in are made and conditioned by the long-term.” |
| 5. | “The growing feeling of responsibility following the growth of the organisation, reflected in growing demands, generating the need to anticipate the demands.” |
b) Long-term analysis helping organisational change – Fiocruz (question 11)

b.1) The respondents were unanimous in agreeing that long-term analysis helps organisational change.

b.2) Why does long-term analysis can help organisational change – Fiocruz (sub-question 11.1)

The answers to this sub-question show the respondents have a good understanding of long-term planning and its role in the organisation and offer responses complementary to one another. As a whole, each one of them can be summarised as “the complexity of the world, demanding a connection with the future” (Table 22, row 2), “the construction of a democratic nation” (row 3), “the definition of actions at the present moment” (row 4), “anticipation of problems” (row 5), and “there is not only one thing that helps” (row 1).

The last one summarises the others:

“The long-term analysis can help. There is a number of things. There is not only one thing that helps. The long-term analysis is part of this set. It is because we have real problems today, not in the long-term. You cannot ignore it. (...) In fact, it is because you have to have a goal to achieve in the medium and long terms. Short, medium and long term. And you have to have that vision for you to organise your work, but you have to know what you will want and the objective to accomplish. I think it is very important to know very well the institution and the actors who make the institution. Of course, you also have to know the country, the demands of the country’s necessities.”

Interviewee 1

The perspective that the future affects the present day actions of those within the organisation may be regarded as rather unextraordinary between the experts in the field. However, within Fiocruz this a signal that these temporal considerations to organisational life are more known than we might have come to expect, considering the different “levels” of understanding about long-term planning revealed thus far in this research, and that that present-future dialogue is a relatively recent debate for the organisation.
Table 22 - Why long-term analysis can help organisational change – Fiocruz

1. “The long-term analysis can help. There is a number of things. There is not only one thing that helps. The long-term analysis is part of this set. It is because we have real problems today, not in the long-term. You cannot ignore it (…). In fact, it is because you have to have a goal to achieve that have a medium and long term. Short, medium and long term. And you have to have that vision for you to organise your work. But you have to know what you will want and aim to achieve. I think it’s very important you know very well the institution and the actors who make up the institution. Of course, you also have to know the country, demands that the country needs.”

2. “Because of the world in its complexity, the speed at which things happen, in the sciences and in all fields, politics and such. You get disarmed if you do not have the ability to develop tools to talk to the future. And to consciously build this future. There can only be a will problem, intuitions, because it is insufficient today. So I see no way out of it.”

3. “For those who, like me, insist on believing that to build a strong, democratic and equitable nation, it is necessary that certain social policies be developed by the State. The simple operation of market forces does not solve it.”

4. “When I’m drawing future scenarios, I’m making this very strongly relationship with the present. If I go from here to there, I have to start now. What are the barriers, what are the opportunities, what are the conditions that make the immediate action in the present will take me to a particular scenario or to another one? Looking at the final effect of what I want is to define, also, the space to act.”

5. “Because they allow me to anticipate problems, solutions. They call my attention to behavioural variables I need to know. What is the trend of the behaviour of these variables? Be the population size, population age, population disease or, in the case of health, the technologies that will make me successful or will defeat me an increasingly competitive environment. So I do need to anticipate, otherwise, every moment that I did not anticipate, I’m moving away, I’m increasing the future risk. I need to decrease the future risk.”

Therefore, taking into account that long-term analysis alone is not regarded as enough to help organisational change; the answers given to this question indicate respondents consider there to be a link between the present and the future, in which the future guides concrete actions at the present moment. It is the reason why, according to the respondents, long-term analysis can help organisational change.

7.4. Findings from Fiocruz

This part is divided into two subparts, aiming to help answer the research questions regarding decision-making and long-term planning. For each of them, the responses of both the management team to the questionnaire and the key actors to the interviews are taken into account in the cases when possible, as long as the questions are not identical, but complementary to one another.

The phenomenon investigated is the broader aspect regarding what, in general, leads to the use of long-term planning, its determinants, and the mechanisms that would generate its usage. In both cases, the questions precede the one about what might trigger Fiocruz, or the organisations, to use long-term planning, which is a narrower question, aiming to know the specific situations.

7.4.1. Decision-making Findings in Fiocruz

There are two components for the decision-making in Fiocruz: Formal and informal. The formal component is related to the process of decision-making characterised by a high degree of participation by virtually the whole community. It is the Internal Congress, which establishes the main strategic guidelines of the organisation for the next four years and, recently, also for the long-term.
The informal component is related to the final decisions made by a more restricted group of representatives of the employees: Both the boards of Fiocruz – Deliberative Council – and the boards of the units. These are the decisions related to the day-to-day situations and opportunities.

The participative decision-making is regarded, also, as helpful to respond to challenges presented by the future through the integration of different views and by forging commitment by those who take part in the process, thus decreasing the risk of error, although the respondents expressed concerns about the risk of superficiality in cases when there is lack of knowledge about the subject or dispersion of the debates (the trend to create too many forums).

The participative decision-making, also, was regarded as not impeding changes, albeit the experience in Fiocruz, concerning the proposal to become a company, indicates a different situation, i.e., the participative process as capable of forging a dialectic synthesis between the proposal of becoming a public company and the resistance to it. This process, however, can be time-consuming, or rather, debate-consuming, since it demands negotiation.

Considering it can be “debate-consuming”, this is linked, in turn, to the capacity of the grassroots to inform better solutions. In this sense, although not unanimous, the grassroots are regarded as a strategic asset of the organisation, as long as the organisation manages to address the gap in communication, considering that the grassroots can shed light on the real needs and demands of the organisation, as well as implement the decisions made.

There is, also, awareness about the limits of the collective decision-making and it is related to the asymmetry of information among the different actors within the organisation, both among the managers and between them and the grassroots.

Nevertheless, despite the limits, strategic decisions have been made at the time, and the most important are related to the production of inputs for the health system, strengthening the government EIHCC policy by the creation the subsidiary companies in charge of that.

There are, however, factors that can trigger resistance to change, such as the parochial self-interest and the misunderstanding and lack of trust (Kotter and Schlesinger, 2008). On the other hand, the sovereignty of Fiocruz, in terms of supporting the development of the country, is regarded as a means that can lead to changes, as well as information and communication (Kotter and Schlesinger, 2008).
7.4.2. Long-term Planning Findings in Fiocruz

The first findings related to long-term planning is the *asymmetry of information* concerning the existence of a department dedicated to long-term planning.

Regarding the determination of a long-term approach or the mechanisms that prompt its usage, the *top-down demand* and the *lack of a State long-term planning* were the main findings. Also, the *dynamism of the health sector*.

The answers to these questions, in the interviews, indicated a certain *unfamiliarity* with the subject of the long-term planning by the respondents, and this is corroborated by the answers to the questionnaire concerning the types of analyses used.

When narrowing down the question to the organisation, i.e., what triggers the long-term planning, the *strategic role of the organisation* was the most common perception both in the questionnaire and in the interviews. This role, according to the answers of both groups, demands a *dialogue between the present and the future*, although assuming a *passive position* in terms of getting prepared for it instead of a proactive attitude, building it. Also, the *growth of the organisation*, along with its *sustainability* were mentioned as well.

In terms of opportunities for the Foresight methods and practices to contribute to the organisation, the respondents as a whole agree that it *does contribute*; considering the components assessed (decision-making, planning, research alignment and strategic thinking), although these elements were not named directly. Respondent’s answers concerning decision-making were slightly more confident than those related to planning, indicating the respondents rely more on Foresight contributing on *formal processes*.

In terms of Foresight setting priorities and building networks, the respondent answers showed there is not a great deal of consensus about this. Some agreed that the main motivation for setting priorities and building networks concern *resource allocation*. Those who did not agree that Foresight can help in these objectives suggested that *communication* can help. It is interesting, however, to note that although all the respondents agreed that Foresight does contribute to the organisation, it is not the same when the matter is setting priorities or building networks.

Perhaps due to this “hesitation” in terms of setting priorities or building networks, the questionnaire responses indicated that, for the respondents, Foresight is, the most, *half useful*,
which is regarded as a gap in terms of information – pointed as a need to be addressed in order to make Foresight useful.

Finally, in the organisational change component all the respondents, both in the questionnaire and in the interviews, agreed that long-term planning can be useful for this purpose. Likewise, both the responses to the questionnaire and the interviews reinforced the relevance of having a dialogue with the future.

In this sense, the anticipation of problems and the visualisation of targets/routes were also aspects cited as helpful for organisational change, leading to the definition of actions to be done at the present moment.

Other findings are the support in building a democratic nation, and the awareness that long-term analysis alone is not enough to help organisational change.

7.5. Analysis of Fiocruz vs Embrapa vs Pasteur

Succeeding the analysis of Fiocruz, both the questionnaires and the interviews, the attention in this subsection is towards the comparison between Fiocruz and the two contrasting cases selected for this research.

As a comparative case study, this research is making use of contrasting cases in order to look for similarities and differences between phenomena under investigation, i.e., the decision-making processes and the long-term analysis. It will help locate and distinguish Fiocruz from the other two PROs: Similar in space (Embrapa), hence subject to the same environment as Fiocruz; and similar in the field (Pasteur), thus engaged in the same topic of study: Health.
7.5.1. Questionnaires

7.5.1.1. Decision-making – Fiocruz vs Embrapa vs Pasteur

The questionnaire applied to Embrapa and Pasteur was the same one applied to Fiocruz. Consequently, the aspects investigated are the same: The degree of participation of the grassroots in the decisions of the organisations; 2. The capacity of participative decision-making to respond to challenges of the future; 3. Changes; 4. The capacity of the grassroots to inform better solutions.

a) Participation in the decision-making process and in final decisions (question 8 – sub-questions 8.1, 8.2).

Whereas in Fiocruz the decision-making process is indeed highly participative, in the other two organisations the process is not as participative as in Fiocruz (Graph 33). Pasteur is the organisation whose discussions are more centralised according to half of the respondents (50%). In Embrapa decision-making is participative as well, but not to the extent seen in Fiocruz.

Final decisions made by Embrapa and Pasteur, like Fiocruz, are not as participative as the processes to reach such decisions (Graph 34). Pasteur is the case where final decisions are fairly centralised rather than made by the grassroots of the organisation. The situation is similar within Embrapa, whose respondent answers demonstrate a significant trend towards centralisation – there are more respondents considering final decisions centralised (44%) rather than participative (33%).

It is interesting to note that Embrapa respondents, in both questions, presented nearly the same proportion (24% vs 22%) of answers in the middle of the scale.

Graph 33 - Decision-making process
Fiocruz – Embrapa – Pasteur

Graph 34 - Final decisions
Fiocruz – Embrapa – Pasteur
b) Capacity of highly participative decision-making to respond to the challenges of the 21st century (question 9 – sub-question 9.1)

Since three different organisations were dealing with two distinct subjects, i.e., health and agriculture, the challenges were not specified, considering they are certainly different between both fields. Therefore, each respondent would have to consider their own perspectives to answer this question.

The overall considerations are that highly participative decision-making is able to respond to the challenges of the 21st century, although the negative answers from Pasteur are slightly higher than those from the other two organisations.

In respect to why highly participative decision-making responds to such challenges, in Fiocruz the respondents had indicated the incorporation of various views as a factor (Table 23 – rows 11; 12; 13; 16), and this was also corroborated by Embrapa respondents (rows 22; 23; 24; 25) and Pasteur (row 29).
One other point indicated by Fiocruz corroborated by the other two organisations is the commitment to the decisions (Fiocruz – rows 4; 12; 14. Embrapa – row 25. Pasteur – rows 30; 32). Likewise, the decreasing of the risk of error (Fiocruz – row 5. Embrapa – rows 24; 27). The respondent from Embrapa, differently from the one in Fiocruz, informs that the less risk of error is due to the incorporation of various views (row 24).

Pasteur also confirms the time-consuming perspective pointed out by Fiocruz (Fiocruz – row 18; Pasteur – row 34), although in a different perspective, i.e., whereas in Fiocruz the internal processes were referred to the costing of negotiations, in Pasteur the respondent referred to the external competitive environment of the field, which would demand faster decision processes.

The negative answer from Embrapa (row 28), in turn, informs a perception about the “impossibility” to involve the whole company in a highly participative process. The practice in Fiocruz, however, demonstrates that it is indeed possible to involve the whole organisation.

Some of the answers from the other organisations, however, mention aspects that had not been clearly envisioned by Fiocruz, such as reducing resistance towards innovation, and the autonomy of workers, their empowerment (Pasteur – rows 31; 33). Concerning the first aspect, the experience of Fiocruz demonstrates that participative decision-making does not reduce resistance. The second one, the empowerment of the workers, confirms the grassroots can be an asset of organisations.

Finally, two answers from Embrapa concern knowledge (rows 20; 27), hence reinforcing the risk of superficiality observed in the answers from Fiocruz.
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<tr>
<td>1.</td>
<td>&quot;Decisions made in a participatory manner are the foundation of democratic institutions. In addition, the new information technologies contribute to a simpler and more effective participation.&quot;</td>
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<tr>
<td>2.</td>
<td>&quot;Because it provides a process of discussion of strategies and outcomes for the community.&quot;</td>
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<td>3.</td>
<td>&quot;Because the centralised decisions tend to a biased vision.&quot;</td>
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<td>4.</td>
<td>&quot;Any system that encourages participation and, therefore, shared responsibility is more likely to be sustained, particularly in the most critical moments.&quot;</td>
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<td>5.</td>
<td>&quot;Because shared decisions always represent less risk of error.&quot;</td>
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<td>6.</td>
<td>&quot;The sharing of power is a requirement of the knowledge society.&quot;</td>
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<tr>
<td>7.</td>
<td>&quot;Yes, but on one condition: that the issues brought to the &quot;participatory&quot; debate are general, representing general guidelines. / Unfortunately, sometimes very technical issues and therefore restricted domain of a small portion of professionals, are discussed in very large bodies, for example the Internal Congress of Fiocruz, where are delegates who are not in fact fluent in the subject. In other words, making &quot;highly participatory&quot; can be taken in a superficial way.&quot;</td>
</tr>
<tr>
<td>8.</td>
<td>&quot;Provided it is not time consuming and meetings have records with actions, responsibilities and deadlines.&quot;</td>
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<td>9.</td>
<td>&quot;Because it assesses the demands of the categories involved, which usually bring the issues experienced in their day to day.&quot;</td>
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<tr>
<td>10.</td>
<td>&quot;In my opinion there should be an option &quot;maybe&quot;, since not always the highly participatory way is able to cope with the challenges for the 21st century.&quot;</td>
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<tr>
<td>11.</td>
<td>&quot;Because it allows the incorporation of various views.&quot;</td>
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<tr>
<td>12.</td>
<td>&quot;For the possibility to listen to different approaches and to respect the diversity present in institutions, sharing discussions, deliberations and specific responsibilities.&quot;</td>
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<td>13.</td>
<td>&quot;Participatory decisions serve to all the institutional interests and help to integrate different views and interests of a public organization.&quot;</td>
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<td>14.</td>
<td>&quot;It is important to qualify the affirmative answer. Decentralisation of decisions I believe it is necessary. However this does not mean positive assessment of the current system. For it to actually work in a strategic perspective, it's necessary to improve the agenda of discussions and deliberations, avoiding dispersion and the tendency of multiplying the participatory forums. I also believe that we have to go along much in co-responsibility not only by the decisions, but also on their implementation processes.&quot;</td>
</tr>
<tr>
<td>15.</td>
<td>&quot;Our organisation has a participatory decision-making structure already quite traditional and very organised, with defined processes and instances.&quot;</td>
</tr>
<tr>
<td>16.</td>
<td>&quot;The multiplicity of perspectives on a given issue enriches the approach to it and makes the intervention more complete.&quot;</td>
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<td>17.</td>
<td>&quot;It is better to hit our shared than err in isolation.&quot;</td>
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<tr>
<td>18.</td>
<td>&quot;The highly participatory decision making process is, in my judgment, a very long discussion time and difficulty on the final decision, which often hinders or reduces the effort devoted to the actions themselves, besides hindering bolder and higher risk decisions and actions. In my assessment, there should be more autonomy for the representatives and other institutional leaders to take bolder initiatives and with lower cost of negotiation in each decision. The diversity of the institution's actions as well as the rate of change at the frontier of knowledge require swifter decision making.&quot;</td>
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<td>19.</td>
<td>&quot;The decisions of the high management cannot be made subject to a 'highly participatory' process determined by elections.&quot;</td>
</tr>
<tr>
<td>20.</td>
<td>&quot;As long as those who participate are competent.&quot;</td>
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<tr>
<td>21.</td>
<td>&quot;The more participation the better the decision-making process.&quot;</td>
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<tr>
<td>22.</td>
<td>&quot;The mode of construction of the knowledge required for the current moment must have a transdisciplinary approach, where the participatory character is mandatory.&quot;</td>
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<tr>
<td>23.</td>
<td>&quot;Given the educational, cultural and human perspective diversity.&quot;</td>
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<tr>
<td>24.</td>
<td>&quot;One of the main features 21st century is transparency, permeated by leadership split between leaders and several actors. It makes no more sense a decision-making grounded in only one way of thinking. A board as the GPB exists precisely in order to support the decisions of the Executive Board after rich debate between the representatives of various segments of the same strategic importance. The mutual learning that the diversity of opinion provides is very beneficial to make decisions with less chance of error. Error is possible only if there is intense participation of the members of the strategic boards. The intense participation occurs when there is exposure of all views and contexts that may be impacted by the managerial decisions.&quot;</td>
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<tr>
<td>25.</td>
<td>&quot;It brings different views on the issue and generates greater commitment.&quot;</td>
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<tr>
<td>26.</td>
<td>&quot;As long as there are clear institutional guidelines, yes.&quot;</td>
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<tr>
<td>27.</td>
<td>&quot;For better understanding of the decision-making context, to reduce the risk of error; for training of new staff in management; to improve the process of internalisation of strategies.&quot;</td>
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<td>28.</td>
<td>&quot;The concept of &quot;highly participative&quot; is dubious, because we cannot involve a whole company structure for decision-making processes. I understand rather that a participatory process is key to this planning, implementation and monitoring of results.&quot;</td>
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<td>29.</td>
<td>&quot;Common understanding of the complex landscape and of the different parties objectives.&quot;</td>
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<td>30.</td>
<td>&quot;A participative way to discuss the research policy will increase the support from researchers and units directors.&quot;</td>
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<td>31.</td>
<td>&quot;To let everyone to have the perception to participate to the final decision and not have to much resistance towards innovations.&quot;</td>
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<tr>
<td>32.</td>
<td>&quot;To favour the appropriation of all the actors of the science.&quot;</td>
</tr>
<tr>
<td>33.</td>
<td>&quot;Need for autonomy of the workers / empowerment / creativity at all levels.&quot;</td>
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<tr>
<td>34.</td>
<td>&quot;Not at Pasteur for the time being. / As a private not for profit organisation in France, Institut Pasteur has to challenge its scientific strategy with a business model in a continuous changing mode. As an example, the direct contribution of governmental funding fell from over 40% to less than 20 within 30 years. Pasteur is in a competitive international ecosystem (Universities and research Institutes) while being also regulated by a French highly constrained administrative system. It is difficult (although would be desirable) to cope with these challenges in a timely fashion with a very democratic participative decision making process.&quot;</td>
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As a summary, in this question, the answers collected from Embrapa and Pasteur as a whole confirm the concerns noted in Fiocruz. Nevertheless, some differences can be observed, and they concern supposed limits to a highly participative decision-making model: a. The “impossibility” to involve the whole company; b. The difficulty in coping with the challenges of the 21st century in a timely fashion.

Two observations, in turn, corroborate the findings from Fiocruz: a. The possibility of collective decision-making to mitigate resistance; b. The empowerment of the workers. The former will depend on the nature of the change and the negotiations around it. The latter reinforces the role of the workers.

c) Highly participative decision-making impeding changes (question 10; sub-question 10.1)

This question aimed to ascertain the perceptions of the respondents about possible relationships between participative decision-making and resistance to organisational change and was inspired by the event that motivated this research. There is no need of a Graph for Embrapa because all the answers were “no”.

Proportionately, Pasteur's positive responses were double those of Fiocruz, which in turn is halfway between Embrapa and the French organisation. Apparently, this indicates the lack of experience with such a model of decision-making, by the contrasting cases.

Graph 38 - Highly participative impeding changes
Fiocruz

Graph 39 - Highly participative impeding changes
Pasteur

In respect to why highly participative decision-making impedes change or not, the answers from Embrapa are unanimous in affirming it does not impede change, yet leave an aspect of ambiguity; for instance, “provided that the process is well conducted” [change will not be adversely affected] (Table 24 – row 20). The respondents seem to have an intuition, but they do not specify exactly why it does not impede change (rows 20; 21; 22; 26; 27). Some answers seem to allude to the commitment of the workers (rows 21; 22), whereas another one points to
this explicitly (row 28). Lastly, one response corroborates the findings from the Fiocruz experience (row 24):

“Not always [is change impeded]. It depends on the importance and the impact of the issue versus the situation”.

In Pasteur, one negative answer similarly alludes to the commitment by the workers (row 30), when saying the contribution to the implementation agenda comes from the bottom up, but then goes on to list a series of limitations, such as the competitive field and the need to have a stable regulatory ecosystem, that requires efficient management. Other answers are related to the legitimation of final decisions in the organisation (rows 16; 23; 32) and the capacity to anticipate the operational impacts and to define proper solutions (row 34).

In a similar way to Fiocruz, the positive answers from Pasteur indicate the need for knowledge, hence the need for communication to improve in order to better understand the proposals (rows 29; 30).

In summary, the majority of these responses confirm the findings from Fiocruz when stating, as a whole, that this kind of decision-making would favour changes rather than impede them. There are, similarly, concerns about the process, which needs negotiation and can also be time-consuming.
Table 24 - Does highly participative decision-making impede organisational change why or why not

| Yes | 1. “The changes are difficult because in the discussion of the historical processes are often cited, the ‘entrenchment clauses’ and other conservative references, which are not always aligned to the needs of an institution that intends to act in the innovation field."
| | 2. “Yes, sometimes the ‘highly participative’ decision-making can actually prevent changes. When ‘radical’ changes are proposed, changing paradigms, they are not always understood in its fullness by the institution’s workforce as a whole.”
| | 3. “I can scrimp the manager due to an electoral process.”
| | 4. “Changes may require a little more time because they tend to be the most debated. However, after the decisions are made, they have greater support and adhesion.”
| | 5. “The broad participation allows one to mobilise people to build a new future.”
| | 6. “If the proposed change is justified and well crafted with the necessary explanations, there is a high chance of being absorbed and accepted.”
| | 7. “The political and institutional processes are dynamic and the changes are operated over time with different rhythms. The high participation is even a component that allows the confrontation between the different positions/views and in many cases the changes happen.”
| | 8. “The structuring changes should be well mature and appropriate for the institution.”
| | 9. “The changes occur even in an environment of great participation, because the determinants of change are not conditional on the mode of decision.”
| | 10. “Provided it is not time consuming and meetings have records with actions, responsibilities and deadlines.”
| No | 11. “Because it accepts the decisions that, after being discussed, they reflect a consensus.”
| | 12. “Instead it is a facilitator for change, since many have opportunities to put multiple answers.”
| | 13. “It is quite the contrary: it can capture new trends.”
| | 14. “The changes are the result of the identification of needs, using foresight and usually also, even if not explicitly, using matrices as SWOT.”
| | 15. “The larger participation, the higher are the possibilities for change.”
| | 16. “I believe that this way to decision-making gives more legitimacy and implementation capacity, even though it may bring higher cost in time and political dealings.”
| | 17. “The experience of Fiocruz is that participatory management, when properly structured and rooted in the institution, is highly mobilising and favors the dynamic of changes.”
| | 18. “Highly participatory decisions can make decisions slower, since it requires negotiation, but does not impede changes. I do not see any relationship between the two variables. Centralized processes may or may not impede changes, as well as decentralized processes. Everything depends on the context.”
| | 19. “Not necessarily.”

| Embrapa | No | 20. “Provided that the process is conducted.”
| | 21. “It is important to have participation to make viable the changes.”
| | 22. “As I mentioned before, the concept of ‘highly’ creates difficulty in answering. However, the whole process being participatory, the changes become more effective and rapid.”
| | 23. “Rather, it gives rise to the legitimisation of changes required by the shop floor that would not show up nor would be legitimised in non-participatory processes.”
| | 24. “Not always. It depends on the importance and impact of the issue versus the situation.”
| | 25. “I understand that the opposite occurs. There are more chances of changes when participatory decisions permeate the environment of organisations. That is because people are more likely to be represented or present their critics and suggestions on topics that often have no chance to reach decision makers. After cases display, debates and various constructive criticisms, I believe that managers can be more secure in promoting change.”
| | 26. “The group that I am involved with accepts and responds well to the debate of ideas.”
| | 27. “It is necessary that, combined with participatory decision-making mechanisms, to have institutionalised procedures for proposing and managing changes.”
| | 28. “It may be slower, but it is fraught with greater commitment.”
| Pasteur | Yes | 29. “Transversal knowledge and expertise help to have a clear vision and address quickly the reality of the situation.”
| | 30. “Always better to understand why change is needed.”
| | 31. “In principle, an on going process of top-down strategic vision and bottom-up implementation opportunities should contribute to a final strategic plan including its implementation agenda. Where are the limitations: mostly the various time scales of the parties; Science is highly competitive; to be efficient, the administrative/regulatory ecosystem of a research institution must be stable (I do not include stable funding which may vary). This is the case in many anglo-saxon countries. Not in France. Incertainties at this level must be compensate by quite strong and efficient management.”
| | 32. “If the decision maker knows how to maintain the main objective, the highly participative decision-making process allows to legitimate the final decision with respect to most people, and to prevent resistance to innovations.”
| | 33. “On the contrary, it favors the collective decision-making and the sustainability of the decisions.”
| | 34. “Capacity to anticipate the operational impacts and to define proper solutions at all levels of the organization / Capacity to develop early support and derivation of change.”

| Fiocruz | No | 35. “Highly participatory decision-making prevents changes, since it requires negotiation, but does not impede changes. I do not see any relationship between the two variables. Centralized processes may or may not impede changes, as well as decentralized processes. Everything depends on the context.”
| | 36. “Not necessarily.”

| Pasteur | Yes | 37. “Transversal knowledge and expertise help to have a clear vision and address quickly the reality of the situation.”
| | 38. “Always better to understand why change is needed.”
| | 39. “In principle, an on going process of top-down strategic vision and bottom-up implementation opportunities should contribute to a final strategic plan including its implementation agenda. Where are the limitations: mostly the various time scales of the parties; Science is highly competitive; to be efficient, the administrative/regulatory ecosystem of a research institution must be stable (I do not include stable funding which may vary). This is the case in many anglo-saxon countries. Not in France. Incertainties at this level must be compensate by quite strong and efficient management.”
| | 40. “If the decision maker knows how to maintain the main objective, the highly participative decision-making process allows to legitimate the final decision with respect to most people, and to prevent resistance to innovations.”
| | 41. “On the contrary, it favors the collective decision-making and the sustainability of the decisions.”
| | 42. “Capacity to anticipate the operational impacts and to define proper solutions at all levels of the organization / Capacity to develop early support and derivation of change.”

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d) Better-informed solutions when taking account of the opinions and skills from the grassroots (question 11, sub-question 11.1)

Similarly to Fiocruz, the respondents from the other two organisations agree with the statement, although Pasteur once more shows a slightly higher proportion of negative answers.

Concerning the reason why the grassroots can better inform solutions, in Fiocruz the majority of the answers were referred to them as part of an interaction process for exchanging information and experiences (Table 25 – rows 1; 2; 3; 4; 6; 7; 8; 10; 11; 12; 13; 14; 15; 16). Also, because they are in contact with the real needs and demand (row 11) and in charge of implementing the changes (rows 5; 11), they can be then regarded as having a strategic role in the organisation.
Checking the considerations from the other two organisations, in Embrapa the answers inform the recognition of the capacity and skills of the grassroots (rows 20; 21; 22; 23; 25), corroborating the observations from Fiocruz in terms of both the top-down (rows 24; 26) and bottom-up (rows 22; 23; 27) process of interaction and exchanging information and experiences.

Nevertheless, the responses from Embrapa rely mostly on this process of exchange. They did not assess the grassroots, like Fiocruz did, as an asset of the organisation in terms of being those in contact with the day-to-day problems and in charge of implementing the decisions. Moreover, the negative answer considered the question “inconsistent”, stating that there is no relationship between improved solutions/decision-making and the views and capacities from the grassroots (row 28), which is similar to a negative answer collected from Fiocruz (row 18).

The answers from Pasteur, in turn, also tend in the direction of recognising the capacities of the grassroots (rows 29; 30; 33). Some answers, however, seem to indicate the grassroots are useful merely to legitimate decisions, regarding adherence and ‘ticking the box’ of asking staff their views, rather than fully contributing to the decision-making process (rows 31; 32). As a whole, the recognition of the grassroots in the Pasteur responses mainly relate to “source of legitimation”, rather than participation, interaction, as noted both in Fiocruz and Embrapa.

Lastly, one respondent from Pasteur was not sure to have understood the question (row 34). The answer, however, indicates the recognition of the organisation’s expertise but points to the “diversity of the world”. It can be inferred that the disagreement with the statement relies on this: Not only the grassroots (the “expertise”) matters but also the environment is regarded as key to it.

Altogether, all three organisations indicate that capacity and skills from the grassroots can inform better solutions, although this has different meanings for different respondents. In Fiocruz two answers indicate the grassroots are a strategic asset of the organisation once they are in contact with the real needs [of society/the organisation] (row 11) and are in charge of implementing the changes decided upon (rows 5; 11).

In the other two organisations, the grassroots are seen mostly as a resource for information exchange.
Table 25 - Why grassroots capacity and skills can better inform solutions

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<tbody>
<tr>
<td></td>
<td>1. &quot;Whenever there is discussion of different views, the decision becomes more robust.&quot;</td>
<td>2. &quot;The opinions of the entire community must be respected, and, if in doubt, directed with a new format or new language that may be understood by the segment that generated doubt.&quot;</td>
<td>4. &quot;It is not simple but the grass roots of an organisation should always be mobilised.&quot;</td>
<td>5. &quot;The grass roots of an organisation will be responsible for operating the changes.&quot;</td>
<td>6. &quot;More interaction produces more information.&quot;</td>
<td>7. &quot;The long-term sustainability for the solutions is somewhat conditioned to the understanding of its importance and relevance by the collective of workers.&quot;</td>
</tr>
<tr>
<td></td>
<td>9. &quot;Here there should also be the option 'maybe' once the information depends on other factors, not only the opinions of the grass roots of the organisation.&quot;</td>
<td>10. &quot;Yes, more heads are better than one acting singly.&quot;</td>
<td>11. &quot;The organisation's grass roots are in direct contact with the demands and needs, also responsible for implementing processes resulting from the guidelines and decisions.&quot;</td>
<td>12. &quot;Institutional auscultation strengthens the solutions.&quot;</td>
<td>13. &quot;In a complex organisation of science and technology, having permanent mechanisms of auscultation and verification of new trends of opinion is fundamental to innovation in management.&quot;</td>
<td>14. &quot;In this way the solutions will be based in practical and live experience of the agents and in capabilities actually existing.&quot;</td>
</tr>
<tr>
<td>Fiocruz</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
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<tr>
<td></td>
<td>18. &quot;The process of information on adopted solutions can be effectively conducted independently of the views of grass roots, respecting the minimum of its capacity.&quot;</td>
<td>19. &quot;Because it depends on the degree of organisation of the grassroots and the opinions, unlike the decisions, may differ.&quot;</td>
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<tr>
<td>Embrapa</td>
<td>Yes</td>
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<td></td>
<td>19. &quot;Certainly, for grassroots participation has the gift of bringing elements for the solution of real problems, via solutions analysed for the compatibility with the reality in the analysed situation.&quot;</td>
<td>20. &quot;A STI organisation has great competence in various levels.&quot;</td>
<td>21. &quot;Gives more basis for decisions.&quot;</td>
<td>22. &quot;The implementation of the solutions certainly lies on a previous process of information and observation of the organisation's opinions.&quot;</td>
<td>23. &quot;Certainly, for grassroots participation has the gift of bringing elements for the solution of real problems, via solutions analysed for the compatibility with the reality in the analysed situation.&quot;</td>
<td>24. &quot;Because when people are heard they become &quot;owners&quot; of the new situation, getting to know and to be more interested in the process. Therefore, it becomes easier to inform and communicate them on issues affecting them.&quot;</td>
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<td></td>
<td>25. &quot;They bring different visions to the analysis.&quot;</td>
<td>26. &quot;As broadening the base of participants, it already establishes per se reporting mechanisms. The more participants the more the grassroots of the institution will be informed.&quot;</td>
<td>27. &quot;This strategy improves the level of awareness about what is important and meaningful to the grassroots, but we must be careful that sometimes the grassroots attack momentary and specific issues without vision of future.&quot;</td>
<td>28. &quot;Inconsistent question. There is no relationship between the shape and intensity of solutions communication with the views and the capacity of grass roots. It is recommended to review the question.&quot;</td>
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<tr>
<td>Pasteur</td>
<td>Yes</td>
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<td></td>
<td>29. &quot;Pasteur's culture has to be taken into account.&quot;</td>
<td>30. &quot;Most strategic decisions at Pasteur should contain a certain amount of scientific input (new concepts; new technologies or expertise; large scale data generation; interdisciplinary research, etc.). / Scientific input should come out of the campus.&quot;</td>
<td>31. &quot;Not to make error and to get adherence to innovations from most people.&quot;</td>
<td>32. &quot;Because it is more difficult of manager of the teams not invested in an approach or which do not adhere to an approach.&quot;</td>
<td>33. &quot;Complexity of the solutions that have to be defined / Impossibility to define change only with a top-down axis / need to cross scientific, technological and management skills to implement more and more complex changes.&quot;</td>
<td>34. &quot;Pasteur is not alone. Taking into account the expertise of Pasteur but the diversity of the world is key. Not sure though if I understand the question.&quot;</td>
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No
7.5.1.2. Long-term planning

a) Existence of long-term planning department in the organisation (question 12)

In Embrapa all the answers were positive (no need of a Graph), whereas in Pasteur (Graph 44), similar to Fiocruz (Graph 43), the answers showed an asymmetry of information concerning this, but in the opposite direction. In Fiocruz a department was created for this purpose, and in Pasteur, there is no such department.

Graph 43 - Existence of the department
Fiocruz

Graph 44 - Existence of the department
Pasteur

The asymmetric information to this point in Embrapa is not related to the existence of a long-term planning department, but to the period of activity. In fact, there is not exactly a department, but a “system” which interacts directly with the respondents, hence the answers were unanimous.

Only two respondents, however, reported the real period of activity of the current system Agropensa, considering it was created in 2012. The majority of the answers saying more than 15 years, in fact, expresses the tradition of long-term planning in the organisation (Table 26).

Table 26 - Long-term department period of activity

<table>
<thead>
<tr>
<th></th>
<th>Fiocruz</th>
<th>Embrapa</th>
<th>Pasteur</th>
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<tbody>
<tr>
<td>&lt;1 year</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>1 year ≤ 5 years</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>5 years ≤ 10 years</td>
<td>2</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>10 years ≤ 15 years</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>≥ 15 years</td>
<td>8</td>
<td>6</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>9</td>
<td>1</td>
</tr>
</tbody>
</table>

Interestingly, the answers both from Fiocruz and Embrapa reflect a similar perception of the respondents: They refer to the existence of a long-term planning department as somehow already part of the structure of the organisation, but do not realise there have been recent changes. In the case of Fiocruz, the Centre for Strategic Studies and, in Embrapa, Agropensa.
b) Determination of choice of long-term approach and types of analyses used (sub-question 12.2)

The understanding of the determination of choice of long-term approach concerns the purpose of it, and the types of analyses used refer to the experience with long-term planning. The question was made only for those assumed to know about the long-term planning department in the organisation. Those who answered “no” jumped the following sub-questions to question 13.

b.1) Determination of choice of a long-term approach (sub-question 12.2.1)

The answers given by Fiocruz to this question indicate the respondents were somehow unfamiliar with the subject, which may have been expected given it is a novelty in the organisation (Table 27 – rows 1 to 6; 8; 9; 11; 14). The answers point to a hierarchical chain, as a top-down, external demand.

In Embrapa, the responses are more robust considering the familiarity with the subject. The answers are more technical, mentioning strategic planning elements, like the analysis of the environment and future vision (rows 20; 21; 22; 24). However, some answers also indicate the opposite, i.e., not everybody is indeed familiar with long-term planning within the organisation (rows 16; 23).

The answer from Pasteur, in turn, is not at all clear, but could potentially be an effort of the respondent to help with the research (row 25).
### Table 27 - Determinations of a long-term approach

| 1. | "In general, it is related to the alignment proposed by the Ministry of Planning. It also takes into consideration the way of planning in Fiocruz, which is congressional." |
| 2. | "By the guidance of the Vice-Presidency (of Administration and Institutional Development) to which the Diplan (Directorship of Planning) is linked, or the Presidency." |
| 3. | "In this item I am answering about my unit, since I do not know all the elements that are used within the Presidency of Fiocruz. In our case, we have an area dedicated to strategic planning and we use an approach that directly impacts on our business." |
| 4. | "Appreciation of the participation of institution's grassroots and the democratic process." |
| 5. | "It is a definition from top management of the organisation, agreed in the deliberative and decision-making instances. Analysis of internal and external scenarios are made." |
| 6. | "I do not know how to answer." |
| 7. | "As far as I know, it was created a group of scholars who are studying possible scenarios in relation to health in Brazil, for the next twenty years. However, it seems to me that the "component" of STI is not object of the same priority as the SUS surveillance and care components." |
| 8. | "I do not take part of this choice." |
| 9. | "The approach depends on the given issue." |
| 10. | "The demands of society itself and in the case of Fiocruz the demands of the health sector. It takes into account the social determinants and the structures that will be needed to achieve the proposed targets." |
| 11. | "It is fundamental to think about the future design of Fiocruz and anticipate the various scenarios." |
| 12. | "The quadrennial plans are based on foresight and on national medium and long-term plans, and necessarily considering and strengthening our role as a strategic state institution." |
| 13. | "The analysis of the probable scenarios of the country, the technology and the potential of the institution." |
| 14. | "It is not clear what is to be answered." |
| 15. | "Only recently Fiocruz opted for setting goals beyond the period of 04 years. The Long-Term Plan established challenges and goals by the year 2022. I think the determinant for it was the perception that investments and current decisions impact the future and that the changes indicated in Brazilian demographic and epidemiological levels require immediate effort." |
| 16. | "There is a long-term vision document that sets the path for Planning." |
| 17. | "Since its inception Embrapa used the medium and long-term planning to guide its decisions, given the type of activity developed in its research centres." |
| 18. | "The company created a structure called Agropensa, which is Embrapa's Strategic Intelligence System dedicated to producing and disseminating knowledge and information to support the formulation of Research, Development and Innovation (RD & I) strategies for the company itself and partner institutions. Thus, the current study generated the 'Vision 2014-2034 Document'." |
| 19. | "Actually I missed, in the previous sections, an area to qualify the 'figure' dedicated to long-term studies in the organization chart. It exists but has limited operating strategy, because it acts in a centralised way, and the decentralised units have no sector to dialogue to from its mandate, which greatly limits the effectiveness of operation of the 'figure' in the company. I do not quite understand what is demanded in this item 12.2.1." |
| 20. | "Scenarios, trends, demands, strategic positioning and other strategic design components." |
| 21. | "The study of scenarios, partner's opinions (leaders, organisations and Embarpa's employees), the analysis of threats, weaknesses, opportunities and strengths of the institution." |
| 22. | "External environment, challenges, opportunities, demands of society, both potential and real." |
| 23. | "The question can be better answered by the team working with it." |
| 24. | "Essentially based on scenarios and future vision, with big axes (themes) as guides." |

---

**Fiocruz**

- Pasteur

**Embrapa**

- Pasteur
b.2) Types of analyses (sub-question 12.2.2)

Whereas in Fiocruz the scenarios are associated with the futures workshops, i.e., they are conducted mainly with the objective of building scenarios; in Embrapa, the scenarios analysis also plays an important role, but not as much as the workshops. The expert panels, in Embrapa, seem to play a similar role to the workshops in Fiocruz.

Taking into account the Agropensa system, through which the organisation electronically consults its experts about subjects under investigation, and then builds the scenarios; it may explain why the number of citations is the same both for scenarios and the expert panels.

Therefore, this might distinguish both organisations: Although both rely on scenarios to make their long-term studies, in Fiocruz the scenarios exercise is made through workshops, whereas in Embrapa it is conducted through expert panels.

Besides this, Embrapa makes more use of other techniques available, such as interviews, trend extrapolation and literature review, showing a wider variety of tools, which is expected once it does long-term planning since its creation. Within Fiocruz on the other hand, long-term planning is a novelty.

Graph 45 - Types of analyses
Fiocruz and Embrapa
c) What triggers the need to use/conduct long-term planning (sub-question 12.3)

In this variable, the answers from Fiocruz are mostly related to its role as a strategic organisation (Table 28 – rows 1; 4; 5; 7; 9; 11; 12; 13) and, because of it, the need to map trends and foresee changes in order to get prepared for the future related to health, i.e., Fiocruz sees the need to have a dialogue with the future.

The answers from Embrapa, in turn, take into account the characteristics of the research, like its length and results (rows 16; 17). Also, similarly to Fiocruz, the responses indicated the need for dialogue with the future in order to guide actions at the present moment (rows 18; 19; 21; 22; 24).

Some other answers from Embrapa also point to the role of the organisation as a research and development company (row 18), and the need to have a strategic vision to face challenges (row 20). It is important to highlight that, differently from Fiocruz, in Embrapa, it is possible to note a different perspective towards the future. Instead of a passive position, one respondent assumes a proactive one, when mentioning it is a company that needs to build the future in the present (row 22).

One last observation to be highlighted concerns the recognition of the organisation of its role in wider society and the world. Embrapa is indeed a strategic organisation for the Brazilian State considering that since from its inception it has been playing a crucial role in the development of Brazilian agriculture. Nevertheless, the organisation does not present itself, like Fiocruz, as a strategic state organisation, although some answers to this sub-question indicate that it does (rows 18; 19).
<table>
<thead>
<tr>
<th>Table 28 - What triggers the need to use/conduct long-term planning</th>
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<tbody>
<tr>
<td>1. &quot;The need to establish strategic guidelines in connection with the possible future scenarios.&quot;</td>
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<tr>
<td>2. &quot;Every organisation should consider the scenarios and trends in order to achieve its vision and correct this mistakes of the present.&quot;</td>
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<tr>
<td>3. &quot;Every big organisation need long-term planning in order to map out future investments and areas of expertise, especially when we deal in science, production and Public Health.&quot;</td>
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<td>4. &quot;The inherent challenges of the institutional mission in itself lead to the need for planning.&quot;</td>
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<tr>
<td>5. &quot;The institution plays a strategic role as a State agency for health issues and their numerous and complex relationships. The concept of health as a component of national development strengthens this perspective, therefore, the long-term planning is vital to the institution.&quot;</td>
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<tr>
<td>6. &quot;The future is always uncertain and because of it planning should be of goals to be achieved in the long-term, which does not mean that short and medium term goals are unnecessary.&quot;</td>
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<td>7. &quot;Fiocruz aims to be a State strategic institution for Health and as a result of this role needs to have a long-term planning.&quot;</td>
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<tr>
<td>8. &quot;Any organisation needs it to survive and / or to serve society satisfactorily.&quot;</td>
</tr>
<tr>
<td>9. &quot;Today’s Public health issues, which may remain in the national scenario if not addressed with a strategic plan.&quot;</td>
</tr>
<tr>
<td>10. &quot;Social demands, several epidemiological studies, technological developments and the resources that will be needed.&quot;</td>
</tr>
<tr>
<td>11. &quot;Its strategic role for public health and the defense of life in the country.&quot;</td>
</tr>
<tr>
<td>12. &quot;Present for 115 years and with a relevant and strategic nationwide role, besides we acting in the present, Fiocruz needs to monitor trends in the field of Health and STI not only in the national context, but inserted in interactional strategic proposals.&quot;</td>
</tr>
<tr>
<td>13. &quot;Fiocruz is a state strategic institution of state for health and for science and technology in health with over 100 years of existence, and shall mandatorily act with this type of planning.&quot;</td>
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<tr>
<td>14. &quot;The need to predict trends in order to get better prepared for the policies it is involved in.&quot;</td>
</tr>
<tr>
<td>15. &quot;The projected changes in the country in demographic, epidemiological and technological levels.&quot;</td>
</tr>
<tr>
<td>16. &quot;The results of the researches are in the medium and long-term. Long-term vision and planning, then, are essential.&quot;</td>
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<tr>
<td>17. &quot;Embrapa needs to do planning given the length both of its researches and the technology transfer and adoption processes. Without planning the risk of making mistakes in the generation of technologies would be too big.&quot;</td>
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<tr>
<td>18. &quot;As a research and development company, there is essential need to have this long-term planning. The Agropensa system operates in mapping and supporting the agricultural information and database organisation, integration dissemination. It captures and prospects trends, identifies possible futures and develops scenarios that allow the Brazilian agriculture to get better prepared for potential challenges and opportunities.&quot;</td>
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<tr>
<td>19. &quot;A public company with a national characteristic and with a mandate that goes beyond its own country, and covers the various biomes, should mandatorily plan in the long-term strategic way in order to better guide its actions in different levels.&quot;</td>
</tr>
<tr>
<td>20. &quot;The need for constant strategic vision and positioning to face both new and expected challenges.&quot;</td>
</tr>
<tr>
<td>21. &quot;A science and technology company needs to foresee the future to do research to address the problems to come. It does not seem possible to solve serious or ambitious problems when they come, especially in the field of agriculture. You have to have solutions before the issues appear.&quot;</td>
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<tr>
<td>22. &quot;It is a company that needs to build the future in the present.&quot;</td>
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<td>23. &quot;The answers of science to the challenges of the productive sector should reflect future expectations. Panorama, scenarios are essential for the research problems to be well focused.&quot;</td>
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<td>24. &quot;The need to anticipate scenarios, as well as the continuous alignment with the ongoing changes in agriculture.&quot;</td>
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<td>25. &quot;The budget management and the identification of needs in human resources.&quot;</td>
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</table>
d) Opportunities for Foresight to contribute to the organisation (question 13)

It is useful to remember that the questionnaire makes use of the concept of “redundancy”, which means the questions are related to a latent variable (DeVellis, 2012). The concept was applied by similarity, and the statements were randomly spread in a sheet. For the analysis, they are displayed side by side in order to compare whether the answers confirm one another (Graphs 46 to 53).

Opportunities for Foresight to contribute to the organisations are related to:

- Decision-making (Graphs 46 and 47)
- Planning (Graphs 48 and 49)
- Research alignment (Graphs 50 and 51)
- Strategic Thinking (Graphs 52 and 53)

The analysis of Fiocruz regarding decision-making and the planning components observed that Foresight is thought to contribute to both, but slightly more for planning, given that decision-making is a more informal process and that Foresight is a formal one (Graphs 46 to 49).

In the case of the other two organisations, Embrapa follows Fiocruz in this trend, i.e., Foresight is regarded as contributing slightly more to the planning rather than the decision-making itself. Responses from Pasteur however, are exactly the same both for the planning and for the decision-making components, which probably expresses certain unfamiliarity with long-term planning considering there is no such department in Pasteur.
For the research alignment component, Fiocruz answers showed agreement between both the shared appraisal and the alignment of the research, the latter a little more robust than the first (graphs 50 and 51). As a whole, however, in Fiocruz the respondents agree with the possibility of alignment of research.

The most sceptical of all are the responses came from Pasteur, perhaps reflecting the lack of experience of the organisation with Foresight/long-term planning. In Embrapa, the responses are halfway between Fiocruz and Pasteur. They do not agree as much as Fiocruz and are not as sceptical as Pasteur.

The outcome from this sub-question might be indicating a certain optimism by the respondents from Fiocruz, where Foresight is a novelty and the opposite being the case of Pasteur, where there is no long-term planning. Within Embrapa, the most experienced in Foresight studies, shows a balance in-between both positions.
Finally, the strategic thinking expressed in terms of the demands of society and the appraisal of long-term challenges (Graphs 52 and 53) is described here. There is an overall agreement between answers from all three organisations. There are, however, some outliers from Pasteur, again reflecting the lack of planning of the organisation and culture within the organisation, which only recently launched its first strategic plan, for the period 2014-2018 (Pasteur, 2014).

Graph 52 - Foresight contribution to a researcher appraisal of long-term challenges
Fiocruz – Embrapa – Pasteur

Graph 53 - Foresight contribution to the alignment with the demands of society
Fiocruz – Embrapa – Pasteur

e) Long-term planning effectiveness in setting priorities, building networks (question 14, sub-questions 14.1; 14.2; 14.3)

In Fiocruz it was surprising given the high level of agreement with previous statements in the questionnaire, that answers regarding the effectiveness of long-term planning in setting priorities and building networks are almost half in favour and half believing this not to be effective. The fact that Foresight is a novelty in the organisation, along with some optimism expressed in the previous answers, does not mean, as it seems, that the respondents are blind to the limitations of the Foresight approach.

In the case of Embrapa, the majority of the respondents agreed with the statement. In Pasteur, following the answers from Fiocruz, four out of six respondents did not agree with it. Taking into account that Embrapa is the more experienced organisation, it is likely the answers from all three organisations are a reflection of their experiences with long-term planning.
When asked why long-term planning is effective, those who agreed with the statement in Fiocruz gave reasons such as the establishment of goals (Table 29 – row 2), the participative environment (row 3), the future needs (row 7), and the allocation of resources (rows 1; 4; 8).

In Embrapa, two answers cited the experience, both on the previous plans and the current system Agropensa, which mobilises a network of researchers, fostering the articulation of actors and encouraging partnerships (rows 9 and 11). Also, the answers pointed to long-term planning as a subject based on studies, fostering reflection and defining actions (rows 10; 12; 13; 14).

In Pasteur, one answer was left blank, and another one observes the length of the research as a long-term process, hence the need to look at the future to have a strategic vision (row 17).

The responses from the three organisations are complementary to one another. Results from Fiocruz pointed out the need for allocation of resources as something that would give meaning to long-term planning, by the identification of needs and the establishment of goals, for instance. Responses from Embrapa, in turn, mostly highlighted the role of fostering the
articulation of actors. The unique response from Pasteur (row 17) reinforced the strategic role of long-term planning by linking it to the length of the research, i.e., given that an investigation can be a long-term process, the long-term perspective can be crucial for success.

Table 29 - Why is long-term planning effective in setting priorities, building networks and other goals.

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| 1. | "Because it is through this instrument that we define the resource allocation priorities."
| 2. | "It defines directions and goals."
| 3. | "Because the planning is done in an environment of much participation."
| 4. | "It is more effective to meet the demands of society, to strengthen the health system, provide resources, reduce costs and do more with less."
| 5. | "Because it allows us to dream and anticipate scenarios. Orthodox planning limits this ability to dream."
| 6. | "For analysing the previous goals and results, in addition to strategic priorities placed for the future on a national level."
| 7. | "Foresight allows the manager to develop planning based on future needs."
| 8. | "This type of planning stimulates the creation of networks, the rational optimization of resources and to guide the organizational development and investments."
| 10. | "Yes, because it is based on such plannings that future projects are defined, networking, etc."
| 11. | "The Agropensa system has been an important driver of the current Guiding Plan of the Company, with the vision of 2014/2034. The system relies on a network of 47 research and service centers, 15 administrative units, 6 Virtual Labs (Labex) and more Embrapa technical cooperation projects abroad. Operating in network, Agropensa system fosters the articulation of internal and external actors to Embrapa, encouraging institutional partnerships and enhancing the generation of knowledge and innovative solutions for the agriculture of the future."
| 12. | "Guides the actions, people, processes and structures."
| 13. | "Because it is based on studies both of the current and the future situations."
| 15. | "It provides inputs and important diagnostic."
| 16. | "Nothing to declare."
| 17. | "Research can be a long term process. It is important to look far if you want to have a strategic vision."
| 18. | ----- (No answer)

After having answered the above questions, respondents were asked how useful long-term planning can be; regarding the usefulness, how much of the information generated by the long-term planning is put into practice (Graph 57).

Pasteur is the organisation in which half of the respondents (one out of two) regards long-term planning as “a little useful”, against 37,5% (three out of eight) from Fiocruz that consider it at most “half useful”, and 25% from Embrapa (two out of eight) who consider “some part” of the long-term planning process useful.

These outcomes reinforce the association of the experience of long-term planning with the assumption of its effectiveness.
Those who did not agree with the effectiveness were then asked what would be needed for long-term analysis to support management.

The answers in this field are related mostly to *information* in the case of Fiocruz (Table 30, rows 1; 2; 3). In Embrapa, the single answer is related to *governance*, indicating a centralisation of the process, not well absorbed by the decentralised units (row 12).

In Pasteur, similarly to Embrapa, the answers are related to the governance as well (rows 13 to 16). They point to the need of having perennial governance, which would formally assume long-term planning. There is a need to change the current decision-making processes, according to the last response (row 16).
Table 30 - What would it need to be effective, in terms of management support.

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<tr>
<th>Fiocruz</th>
<th>Embrapa</th>
<th>Pasteur</th>
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<tbody>
<tr>
<td>1. &quot;To be carried out on the basis of issues relevant to the Fiocruz needs and to be available to compose the Internal Congress theses document.&quot;</td>
<td>12. &quot;The previous item is neither yes nor no. It is intermediates... For foresight to be effective in terms of management there is the need for a focus/performance alignment within the Embrapa units, because in reality, adoption locus is in the states / municipalities levels, etc. but the actions and planning are made within the DUs and CUs which have different levels.&quot;</td>
<td>13. &quot;Clear governance rules below the executive level who has itself a very clear governance.&quot;</td>
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<td>2. &quot;The information generated by the study is not spread sufficiently for the understanding of Fiocruz community, and is still contaminated by choices of political / electoral nature.&quot;</td>
<td>13. &quot;Seriousness and commitment.&quot;</td>
<td>14. &quot;Long term Strategic planning should be formalised with a group of managers / It should include benchmark/analyses tools and phases.&quot;</td>
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<td>3. &quot;To be based on more information about the institutional processes as well as the objects of investigation and action of the institution and improve the steps following the construction of the plan as to have an effective deployment.&quot;</td>
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<td>15. &quot;To have strategic plans that can survive following the changement of the President of the Institute (every four years).&quot;</td>
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<td>4. &quot;If we understand that the main function of strategic planning is to impose structural adjustments in organisations to get adjusted to the environment, any change in the environment would mean a change in the organisational structure to adjust to it. This means that the evolution of the company and its environment requires it to review strategies that end up changing the structure, i.e., this is an ongoing work setting. In this sense, there is no more or less important moment to think about strategic planning and neither a more important tool. We need, wherever possible, quickly detect changes and, accordingly, the foresight can be very helpful.&quot;</td>
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<td>16. &quot;A change of the governance and decision-making processes / Leadership and management training of researchers.&quot;</td>
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<td>5. &quot;I think that this process is still relatively little matured under Fiocruz. Will be needed more years of planning, monitoring and maturity so that the results are truly effective.&quot;</td>
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<td>6. &quot;I cannot answer.&quot;</td>
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<td>7. &quot;Identify well the problems in public health for a good long-term planning.&quot;</td>
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<td>8. &quot;To promote the appropriation of the methodology of projects as &quot;Health Tomorrow&quot; for the foresight to be referred to the institutional development of Fiocruz. In the case of this institution, it is also necessary to better articulate studies under projects such as appointed to initiatives as the Center for Strategic Studies, favoring thus the medium and long-term planning. In short, it is about avoiding dispersion and promoting the strengthening of institutional planning.&quot;</td>
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<td>9. &quot;To implement the decisions or trends taken from the process.&quot;</td>
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<td>10. &quot;There is need for a more systematic approach so that foresight can have greater impact at Fiocruz.&quot;</td>
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<td>11. &quot;Seriousness and commitment.&quot;</td>
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f) Long-term analysis helping organisational change (question 15, sub-question 15.1)

All respondents were unanimous about long-term analysis helping organisational change. The unanimity is expressed from different points of view, both within the three organisations, and between them – Fiocruz and Embrapa on one side, and Pasteur on the other side.

In Fiocruz, the answers can be summarised in terms of actions to be done in the present (Table 31 – rows 1; 3; 4; 5; 6; 7; 11; 12; 14; 15; 16; 18). Changes, in this sense, can be helped by long-term planning as long as they are discussed and disseminated within the organisation, guiding current actions. In Embrapa, the answers are also concerned with current actions, but slightly different from those in Fiocruz. They are a little more concerned with strategic aspects, such as different levels of implementation (strategic, tactical, and operational) and reviews of structure, powers and functionalities (rows 22; 23; 24; 26; 27).
The answers of Pasteur, in turn, are concerned with the implementation of long-term planning itself, regarding the formalisation of a systematic approach and perennial governance, hence reinforcing the previous responses about effectiveness (rows 30; 32; 34).

They also consider long-term planning relevant as a means to deal with tensions, setting priorities at the team level, and giving visibility to the employees and the organisation, indicating the need for more communication with the grassroots (rows 29; 31; 33). In this sense, the adoption of long-term planning in Pasteur is itself a substantial organisational change.
Table 31 - Why long-term analysis can help organisational change

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<td></td>
<td>1. &quot;A good long-term analysis would be ideal for composing the internal congress theses document, once it would more effectively underpin the theses dispute.&quot;</td>
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<td>2. &quot;If it is disseminated taking into account the institutional culture, it is an instrument of great change.&quot;</td>
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<td>3. &quot;Because it makes explicit the routes of action.&quot;</td>
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<td>4. &quot;It is an important piece, but it must be inserted in a set of actions to be in fact effective.&quot;</td>
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<td>5. &quot;It poses permanent challenges to the institution.&quot;</td>
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<td>6. &quot;Strategic planning is directly related to long-term results. But companies that care about the future should also be aware of the present. Therefore, initiatives and responses in short time frames should also be taken into account.&quot;</td>
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<td>7. &quot;The future guides the present.&quot;</td>
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<td>8. &quot;Provided that it is structured in a flexible manner, capable of adaptations and adjustments, if necessary. Often we look at long-term analyses generating very rigid recommendations for organisations, which may not be feasible.&quot;</td>
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<td>9. &quot;Long-term analysis often justifies the need for organisational change.&quot;</td>
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<td>10. &quot;Because there will be created areas of interest for the unit, focused on local problems.&quot;</td>
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<td>11. &quot;Because it allows us to visualize what will be important to maintain or implement. It facilitates the visualization of growth, which will eventually generate a need for change.&quot;</td>
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<td>12. &quot;We are already using Fiocruz Ceará obtaining excellent results.&quot;</td>
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<td>13. &quot;The long-term analysis has already been used and helps a lot in planning the activities and priorities of Fiocruz (see &quot;Health Tomorrow&quot;).&quot;</td>
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<td>14. &quot;It contributes to institutional investments, both in human resources and in infrastructure.&quot;</td>
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<td>15. &quot;Fiocruz has a wealth of knowledge and practices among the most valuable public institutions in the country. However, it is necessary to improve management and planning mechanisms. Needless to reiterate how long-term analysis is needed to achieve this goal. In considering the current economic and political crisis, however, it is necessary to think of long-term analyzes that can think of different alternative scenarios and, especially, mobile scenarios.&quot;</td>
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<td>16. &quot;Yes, it makes it possible to work always looking at the goals and preparing the institution and its staff for the necessary changes.&quot;</td>
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<td>17. &quot;Helps in the better elaboration of policies.&quot;</td>
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<td>18. &quot;Because it allows one to see what is not immediately before the eyes, it requires reflection.&quot;</td>
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<td>19. &quot;It seems obvious to me.&quot;</td>
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<td>20. &quot;Organisational change is not an easy job. But it helps a lot.&quot;</td>
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<td>21. &quot;A company like Embrapa can not do without long-term studies.&quot;</td>
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<td>22. &quot;Yes for sure. A public P &amp; D company must be with its long-term planning fully instituted and implemented at its different levels (strategic, tactical and operational) because it works at the frontier of knowledge today to have technologies applied to agriculture tomorrow.&quot;</td>
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<td>23. &quot;For it offers an opportunity to analyze a large and complex set of elements but, in order to be effective, it has to consider the corresponding scales (spatial and temporal).&quot;</td>
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<td>24. &quot;For it contributes to the development of organizational culture and collective visionary and strategic thinking.&quot;</td>
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<td>25. &quot;Because it provides information essential for the company to prepare and make pertinent and safe changes to suit new requirements.&quot;</td>
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<td>26. &quot;Align efforts and internal resources with a focus on the vision of the future.&quot;</td>
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<td>27. &quot;Every process of change must be preceded by good diagnostics and prospective studies.&quot;</td>
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<td>28. &quot;Both historical and long-term analysis are important. Anticipating organizational challenges is critical to reviewing the structure, map of competencies and functionalities.&quot;</td>
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<td>29. &quot;Planning and setting priorities at team level.&quot;</td>
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<td></td>
<td>30. &quot;Pasteur needs to have stronger long term vision and to structure its internal organisation more formally.&quot;</td>
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<td>31. &quot;Long term analysis allows according tensions between the various time scales : research projects ; infrastructures ; new areas of science : new expertises ; securing revenues.&quot;</td>
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<td>32. &quot;Innovations can currently be stopped by management changes (every four years).&quot;</td>
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<td>33. &quot;It allows to give of the visibility to the employees and to the organization and so to give the ways and the resources.&quot;</td>
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<td>34. &quot;More and more changes must be viewed with a systematic approach. They have impacts on the scientific projects that are handled, on the technological choices and investments that have to be made and on change management to adapt HR (long-term training to adapt the skills to the needs, adaptation of our sourcing and recruitment).&quot;</td>
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7.5.2. Interviews – Fiocruz vs Embrapa vs Pasteur

7.5.2.1. Decision-making

As stated before, the decision-making part of the interviews had the objective of understanding the democratic administration of Fiocruz according to the key actors identified, as well as comparing them with the answers to the questionnaire in order to consolidate or refute the findings. At this stage, the aim is to compare the answers from Fiocruz with the contrasting cases and, similarly, to consolidate or refute the findings from the questionnaires.

The aspects investigated are the same: 1. Understanding how strategic decisions are made within the organisation; 2. Understanding which decisions were the important strategic decisions and why they are strategic (what about them is strategic for the organisation and why?); 3. Understanding the factors that lead to fewer or more changes in the organisation (what causes resistance to change in the organisation and what helps change?); 4. Understanding changes that were put in place (did the decisions work?)

a) How are strategic decisions made? (question 7)

In Fiocruz, the answers in this field were found to be related to the formal and informal components of the decision-making process. The Internal Congress is the locus of formal decisions (those decisions which are strategic) and is guided and underpinned by the demands of society regarding disease incidence and the burden of diseases. The plans generated by the Internal Congress, however, are not strongly rooted in the institutional culture, as there is a weak tradition of such schemes in Fiocruz’ history.

The day-to-day situations in Fiocruz, in turn, such as an opportunity for funding or the strategic aspect of a project, guide the informal component of the decision-making process.

In the case of Embrapa, the answers are similar to those from Fiocruz in terms of formal and informal processes of decision-making:
“I divide this into two topics:
1. Simple issues. These are made by the majority of the researchers and the chiefs of departments. The solutions start in the grassroots and go to the headquarters, which approve or reject them.
2. Complex issues: These require the bright minds, with a touch of creativity, capable of addressing the solution to a difficult issue, to find a way never thought before.

The formal system in Embrapa, like Fiocruz, can be used to address the simple issues only.”

Interviewee 6

Although from a slightly different perspective, this quote recognises that there are two kinds of decision-making processes, similar to Fiocruz. The respondent considers the formal processes as something to address simple issues, but in Fiocruz, differently to what is presupposed by the interviewee, this is not quite the case, and the proposal whether Fiocruz should become a company or not is the best example of complex issues being addressed by formal processes.

Therefore, taking into account the quotation above, the complex problems mentioned can be regarded as unusual ones, addressed neither by the formal nor by the informal components of decision-making, but by an extraordinary solution.

Regarding Embrapa, there was only one interviewee who mentioned any other decision-making component, rather than the formal one. The other responses are mainly related to the formal process in the organisation:

“Basically, it is a process based on the establishment of observatories that allow us to mobilise capacities and competencies of the company and of other institutions for us to capture signals, tendencies, risks, opportunities. This set of gathered information is analysed and studied to generate references so that the company can contract, instruct and review its strategy in a systematic way. The operation of this system allows Embrapa to design its vision document that we reviewed in 2014, with a 20-year horizon. So, we published at the end of 2014, the vision for the next 20 years. It is the synthesis, and this document then guided the review of Embrapa’s current master plan, which also has a 20-year horizon, but it is revised. Revised and updated every four years. This platform continues, it works in a systematic way, with links to the several Units that make, through the observatory, follow the main productive chains related to the agro-Brazilian, and it relates to other institutions such as the CGEE, think tanks in Brazil and abroad, capturing signals, doing studies that allow us to revise the vision document that feeds the revision of the strategic plan in a systematic way.”

Interviewee 7
In fact, more than a formality, there is a planning culture in Embrapa:

“Embrapa has a culture of strategic planning. Has it, or had it? Of course, strategic planning already gives the major direction of this planning. We are guided by this planning. We have several instances of chiefs’ meetings, technical advice, mostly with the technical part, where technical decisions about research are made.”

Interviewee 8

There are, however, concerns related to the fact that the country (Brazil as a whole) does not have the same planning culture as Embrapa, more specifically there is a lack of focus on long-term planning:

“That is a general idea. The practice is more complicated. Why is it more complicated? First, because Brazil does not have a national plan. There is no national plan. Brazil does not have medium- and long-term planning. And this creates a huge difficulty for Embrapa planning. And a question I usually ask our Embrapa leaders, chiefs, at more strategic meetings: Can Embrapa do well if Brazil is not well? Can Fiocruz do well if Brazil is not well?”

Interviewee 9

That is because Embrapa, analogously to Fiocruz which sits under Ministry of Health, is under the Ministry of Agriculture, Livestock and Food Supply:

“And then you have Embrapa’s relationship linked to the Minister of Agriculture, and there goes a bit of the vision of the Minister of Agriculture. And the Minister of Agriculture has changed a lot. Then one has a vision, then another one has another vision and brings other guidelines to the company. Then you go to the planning because we are connected to the Dest which controls the state companies. So, we do not have so much freedom. (…) We depend on the good moods of ministers, governments, these fluctuations that we have in these instabilities or lack of continuity. Very short views.”

Interviewee 9

Thus, although having a culture of long-term planning and reliant on a sophisticated system of long-term planning, the organisation faces constraints from changing the mood of ministers, which demands the organisation develop survival strategies to cope with:

“Well, what do we do internally? Research Programming Committee, Strategic Committee and a certain confrontation, often. For research that is fantastic, for the researcher it is wonderful, for the scientist,
there is a huge network of high quality. They publish. They have all the scientific, academic criteria. But on the other hand, that is not a national priority. Then you must cut that project down, lower that project. So this is done internally at Embrapa."

Interviewee 9

Such a survival strategy manifests itself in Embrapa as confrontation when faced with opposition; resulting in damage reduction to the current plans of the organisation. Some projects do however succumb to external forces in the end and need to be cut. However, how are they cut? It was not mentioned by the respondent, but it is feasible to conclude that it is made per criteria linked to long-term planning in terms of the main projects related both to the survival of the company and the country.

The responses from both Fiocruz and Embrapa, which exist in the same political context, indicate two different aspects of the decision-making process. Answers from Fiocruz are related to the internal process, regarding its formal and informal aspects, whereas answers from Embrapa link the decisions to the external environment and the need to deal with the instability encountered here.

Similarly, in responses from Pasteur, the formal and informal components were quoted too. In this case, they are regarded, or “named”, as structural and strategic:

It is a combination of bottom-up and top-to-bottom. There are scientific advisors, high-level scientists, delineating and suggesting orientations (...) There are also the heads of the research departments, meeting the President at regular times, and the scientific council, whose task is to evaluate the research units and the individuals. So it is a merge of individual advisors to the President, the heads of departments and the scientific council. So, then, how the decisions are taken? You have the structural decisions and the strategic decisions. The structural decisions I mean should we recruit or not these individuals, should we renew or not this research unit. It is a task of the scientific council, which makes the proposal to the President. For the strategic decisions, the fields of research, and so on it is a merge of the advice of the different... It is not a formal process. It is more. The President has to integrate the advice from the different bodies I mentioned. And also the President of Pasteur has to validate his or her orientations in front of the board, which formally has to approve the strategy. It is again a combination of the bottom-up and top-to-bottom."

Interviewee 10
In the quote, decisions related to structural matters are likened to the day-to-day decisions of Fiocruz or the simple issues of Embrapa. Differently from Fiocruz, however, it is a formal process in which the advisors to the President and the different bodies of the organisation play a major role. On the other hand, strategic decisions are the opposite: Within Fiocruz these follow a formal process, whereas at Pasteur these are informal.

The combination of bottom-up and top-to-bottom decision-making, however, is a new characteristic of the organisation:

“The institute is historically very centralised. The President frames the strategies, which are reviewed by the board of directors, but basically, they usually approve them, as long as they are not involved and this is mostly in terms of budget rather than framing strategies. It is because the board, composed of four members from Pasteur, representatives of the State and personalities, are not well equipped to deal with strategic issues.

(...) The strategy is highly dependent on the vision of the President, and the board trusts the President so that when he/she presents a plan to the board of directors, it is usually accepted.

(...) However, by large, the balance is that the director runs the thing.”

Interviewee 12

The fact that teams are not well-equipped to deal with strategic issues and a dependency on the vision of the President seem to be a heritage that can be traced directly to the culture that existed at the time of Louis Pasteur:

“(…) I understand the role of the President is very strong. Apparently, he/she has a lot of ideas for the development of the Institute, and I think his/her personal impact is very strong.”

Interviewee 13

Despite this over-reliance on the figure of the President, rather than well-equipped teams delegated responsibility to deal with strategic issues, the organisation has been implementing developmental changes in the processes of decision-making over the years. Administrative aspects have gained more importance in the organisation over the course of this trajectory:

“I think it is better now than in the past, ten years ago. It is more structured and organised now than ten years ago when decisions were taken by different people, not anyone specific, sometimes the researcher, sometimes the director. Now it is clearer. Ten years ago communication was not very well. It did not exist. Now they created a communication service, with a director of communication and so on. I also think that now communication is more professional. Before,
administrative functions were very low, not interesting for anyone. Now they are more than important. Administrative functions have gained importance, and it is almost at the same level of scientific functions; it is more heard. The director of a laboratory now cannot do anything, without asking the scientific director. In the past anyone could ask for money, but not anymore. There's a service in charge of purchases. They are not scientists, but they are very professional to search for the best prices, less expensive machines. It is a very new service. We are private, so we have to find money. And you have to use the same procedures. Before, there was no coordination with the others. So, if you buy a thousand packs of paper together, it is less expensive, for instance. For me, I think it is better, but of course, there are constraints. It is more difficult for certain people. It is boring.”

Interviewee 14

According to the interview responses, changes that have occurred so far within Pasteur, however, seem to be mostly related to bureaucratic aspects, rather than strategic ones, thus confirming the gap related to strategic thinking in the organisation, as indicated in item “d” of subpart 7.5.1.2.

Summarising the answers to this question from Fiocruz, Embrapa and Pasteur, it can be said that whereas the first two organisations take a more professional approach to strategic aspects of decision-making, the responses from the latter shows a gap in this aspect. Strategic planning is recent in Pasteur:

“I believe in the strategic plan, and I will give you our strategic plan, and it is nothing very so uprising, but it happened, and it has been the first time in the history of Pasteur that a strategic plan was set up.”

Interviewee 10

b) The five major strategic decisions in the last 15 years (question 8, sub-question 8.1)

Similarly to Fiocruz, the most frequent words in the other two organisations were the names of the organisations themselves (“embrapa”, “pasteur”, “institute”) and, because of it, these words will not be included in the analysis either (Figure 23).

As we have seen previously, in Fiocruz the answers to this sub-question were related to “production”, indicating its strategic role to the public health system in terms of widening the access of drugs to the population.

In the case of Embrapa, the word “problem” is the one that excels. This word refers to the creation of the organisation itself as a strategic decision. In this sense, it was created to solve a
problem, which is the need to feed the growing population of the urban centres and to strengthen Brazilian Agribusiness. One of the interviewees’ response expresses it:

“In an institution you have to separate your strategic decision. The first strategic decision was Embrapa and how Embrapa is organised. It was organised with the basic idea that it exists to solve a problem. It does not exist to publish paper.

(...) The first decision was to create an institution specialised in research, created by the central government, like the size of Brazil. The second point was to have an internal organisation that avoided dispersion of efforts, i.e., each Embrapa Unit has a scope. The third point is that the researcher must be very well trained at the international level. Fourth, you have trivial problems and non-trivial problems. You have to see how to handle it.

(...) The source of inspiration for Embrapa’s problem is the Brazilian agriculture.”

Interviewee 6

Differently from Fiocruz, however, in which the word “production” was present in all five answers of the interviewees, in Embrapa the word “problem” (or “problems”) was present in three out of four responses.

The corresponding strategic decisions concerning the solving of the problems of the Brazilian agriculture were related to:

- Internationalisation: All the respondents mentioned the internationalisation of research. Nevertheless, this word does not appear among those 20 most quoted ones (Table 32). This is because it is not only the word “internationalisation” the one that may expresses it. Other related words, such as “international” (word count: Eight) and “internationalised” (word count: Two) can be added to this counting. Considering that the word “internationalisation” itself counted four times, then there is a total of 14 words potentially related to the internationalisation of research, which relocates this perspective between the 20 most quoted ones, indicating that it was indeed underpinning the responses. It can be summarised in the following answer:

“One of them, from the strategic point of view, was to create this international research network – Labex.”

Interviewee 9

39 Reminding that in Embrapa there were only four interviewees, instead of five, like Fiocruz and Pasteur.
Human Resources: Three out of four respondents mentioned the investment in human resources as one of the strategic decisions of the organisation. It dates from the origins of the organisation and is closely linked to the internationalisation of the research, one of the word cloud’s highlights:

“Another very important decision of Embrapa was to strengthen its internationalisation process. Embrapa is practically a company that was born internationalised, because when it was created 42 years ago, almost 3,000 professionals were hired and sent to the most varied parts of the world (...). Most Embrapa researchers had the opportunity to receive training at an international level”.

Interviewee 7

In addition, it is referred to the renewing of the cadres:

“The fourth thing is in the area of human resources and I had the privilege of dealing with it. And it was the question of the renewal of the cadres. The main asset of Embrapa, Fiocruz and any institution of knowledge are human resources. (...) Today, Embrapa has practically half of its cadres renewed and half old, which is great because of the new generation and our generation, which was created in another way.”

Interviewee 9

Two out of four responses explicitly mentioned the “resolution of problems” and two mentioned “intellectual property”. Concerning the problems, we have seen they are the problems of the Brazilian agriculture. Part of them are related to the necessity of dealing with the market (of innovations), hence the relevance of the intellectual property:

“A little bit earlier, in the late 1990s, we took another very critical decision which was with the advent of new knowledge protection laws, the revision of industrial property law (...). And Embrapa at that time also decided to strengthen its ability to deal with the new logic of Intellectual Property, the protection of Intellectual Property, to improve and strengthen the interface with the market of innovations, gaining more ability to handle contract, knowledge-based negotiations, sharing responsibilities with the private sector (...). The company no longer takes the responsibility of developing solutions in a self-sufficient and isolated way, but Embrapa will combine its assets with the private sector assets to jointly bring the products and results to market faster. So, this openness to the relationship with the market for innovations, the market that became more dynamic and more competitive, was also a very important strategic decision of the company.”

Interviewee 7
In Pasteur, the words “important” and “think” are related to different situations, which can be identified through the answers themselves. In this sense, all the interviewees mentioned the international orientation of research, the third most quoted term in the word cloud (after dismissing the name of the organisation – “pasteur” and “institute”).

That orientation is, in fact, a “Pasteurian” heritage of fieldwork. Louis Pasteur himself used to demand his team to be predominantly engaged in fieldwork rather than found in a laboratory setting. The internationalisation of the organisation has been an expression of this very same attitude both in the past and remains so today:

“And I forgot another decision that Bréchot just took recently I think, I understand, that I took this from. It is to oblige the scientists of Pasteur to go and work in the network of the Institute. He wants the scientists to go and work in the field, in the network, for three months or six months a year, and that’s a very strategic decision because in his mind it implies, it shows that there’s not the campus on one side, which decides for everybody else, and that it implies that the people from the network can bring something to the Parisian campus. It should work both ways, and it’s very new. Bréchot thinks that the scientists of Pasteur here in Paris should not feel superior to the other ones, and that dialogue should go in both ways. So I think it is a strategic point. It was done already years ago, but not in such a precise, compulsory for the young scientists to go in the field.”

Interviewee 13

Similarly to the internationalisation of research, all interviewees showed concerns with the scientific teams at Pasteur, i.e., the need for younger scientists conduct work in progress, as well as attempts at making scientists work together more collaboratively. The incorporation of people from the industries and the public health helps diversify the views within the organisation. Likewise, attracting fresh brains to the organisation is by large an important strategic decision, especially because this is seen a key concern for safeguarding the future of the institution.

“The second one inside Pasteur it was to try to make scientists talk together and work together much more than before, beyond the limits of the scientific departments. Kourilsky and I think Bréchot have launched horizontal programmes in a very strategic foresight, because they both thought that the scientist work too much in the old closer environment and they pushed them to go beyond and so, to be more open. (...) The recruitment of young scientists, the idea of giving more responsibility to younger scientists. (...) The concern for the Pasteur Institute to work more with outside institutions.”

Interviewee 13
Finally, it is noteworthy highlighting the word “bréchot”, which corroborates the prominence of the figure of the President of Pasteur, hence the paternalistic characteristic of this PRO.

“Very, very, very important is the choice of Christian Bréchot. Now we are not a French Institute. We are an international institute in France. It is different. It is a vision now. (...) Now we have a global management of the whole. All is Pasteur Institute and the headquarters is in Paris. (...) We are a big family. We are an international family.”

Interviewee 14

Figure 23 - Word cloud of the five major strategic decisions over the last 15 years
Fiocruz – Embrapa – Pasteur
embrapa
also
national
1.76%
1.08%
think
8
11
bréchot
institution
0.64%
0.72%
Count
16
Count
0.95%
0.48%
Count
1.08%
0.48%
network

bréchot
people
research
2.41%
Fiocruz
13
health
0.44%

embrapa
also
national
1.76%
1.08%
think
8
11
bréchot
institution
0.64%
0.72%
Count
16
Count
0.95%
0.48%
Count
1.08%
0.48%
network

bréchot
people
research
2.41%
Fiocruz
13
health
0.44%

bréchot
people
research
2.41%
Fiocruz
13
health
0.44%

Table 32 - Word cloud of strategic decisions
The 20 most quoted words
Fiocruz – Embrapa – Pasteur

<table>
<thead>
<tr>
<th>Number</th>
<th>Fiocruz</th>
<th>Count</th>
<th>Weighted Percentage</th>
<th>Word</th>
<th>Count</th>
<th>Weighted Percentage</th>
<th>Pasteur</th>
<th>Count</th>
<th>Weighted Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>fiocruz</td>
<td>43</td>
<td>3.45%</td>
<td>embrapa</td>
<td>68</td>
<td>3.29%</td>
<td>institute</td>
<td>35</td>
<td>4.76%</td>
</tr>
<tr>
<td>2</td>
<td>production</td>
<td>30</td>
<td>2.41%</td>
<td>problem</td>
<td>28</td>
<td>1.36%</td>
<td>pasteur</td>
<td>34</td>
<td>4.62%</td>
</tr>
<tr>
<td>3</td>
<td>health</td>
<td>27</td>
<td>2.17%</td>
<td>decision</td>
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<td>0.97%</td>
<td>important</td>
<td>13</td>
<td>1.76%</td>
</tr>
<tr>
<td>4</td>
<td>also</td>
<td>16</td>
<td>1.29%</td>
<td>look</td>
<td>18</td>
<td>0.87%</td>
<td>think</td>
<td>13</td>
<td>1.76%</td>
</tr>
<tr>
<td>5</td>
<td>national</td>
<td>16</td>
<td>1.29%</td>
<td>important</td>
<td>17</td>
<td>0.82%</td>
<td>international</td>
<td>10</td>
<td>1.36%</td>
</tr>
<tr>
<td>6</td>
<td>biomanguinhos</td>
<td>15</td>
<td>1.20%</td>
<td>research</td>
<td>17</td>
<td>0.82%</td>
<td>strategic</td>
<td>10</td>
<td>1.36%</td>
</tr>
<tr>
<td>7</td>
<td>field</td>
<td>15</td>
<td>1.20%</td>
<td>agriculture</td>
<td>16</td>
<td>0.78%</td>
<td>first</td>
<td>8</td>
<td>1.08%</td>
</tr>
<tr>
<td>8</td>
<td>another</td>
<td>12</td>
<td>0.96%</td>
<td>strategic</td>
<td>15</td>
<td>0.73%</td>
<td>french</td>
<td>8</td>
<td>1.08%</td>
</tr>
<tr>
<td>9</td>
<td>institution</td>
<td>12</td>
<td>0.96%</td>
<td>today</td>
<td>14</td>
<td>0.68%</td>
<td>vision</td>
<td>8</td>
<td>1.08%</td>
</tr>
<tr>
<td>10</td>
<td>area</td>
<td>9</td>
<td>0.72%</td>
<td>things</td>
<td>13</td>
<td>0.63%</td>
<td>years</td>
<td>8</td>
<td>1.08%</td>
</tr>
<tr>
<td>11</td>
<td>development</td>
<td>9</td>
<td>0.72%</td>
<td>created</td>
<td>12</td>
<td>0.58%</td>
<td>bréchot</td>
<td>7</td>
<td>0.95%</td>
</tr>
<tr>
<td>12</td>
<td>strategic</td>
<td>9</td>
<td>0.72%</td>
<td>great</td>
<td>12</td>
<td>0.58%</td>
<td>people</td>
<td>7</td>
<td>0.95%</td>
</tr>
<tr>
<td>13</td>
<td>think</td>
<td>9</td>
<td>0.72%</td>
<td>system</td>
<td>11</td>
<td>0.53%</td>
<td>research</td>
<td>7</td>
<td>0.95%</td>
</tr>
<tr>
<td>14</td>
<td>government</td>
<td>8</td>
<td>0.64%</td>
<td>thing</td>
<td>11</td>
<td>0.53%</td>
<td>institutes</td>
<td>6</td>
<td>0.81%</td>
</tr>
<tr>
<td>15</td>
<td>money</td>
<td>8</td>
<td>0.64%</td>
<td>well</td>
<td>11</td>
<td>0.53%</td>
<td>made</td>
<td>6</td>
<td>0.81%</td>
</tr>
<tr>
<td>16</td>
<td>point</td>
<td>8</td>
<td>0.64%</td>
<td>company</td>
<td>10</td>
<td>0.48%</td>
<td>network</td>
<td>6</td>
<td>0.81%</td>
</tr>
<tr>
<td>17</td>
<td>research</td>
<td>8</td>
<td>0.64%</td>
<td>institution</td>
<td>10</td>
<td>0.48%</td>
<td>health</td>
<td>5</td>
<td>0.68%</td>
</tr>
<tr>
<td>18</td>
<td>state</td>
<td>8</td>
<td>0.64%</td>
<td>point</td>
<td>10</td>
<td>0.48%</td>
<td>industry</td>
<td>5</td>
<td>0.68%</td>
</tr>
<tr>
<td>19</td>
<td>view</td>
<td>8</td>
<td>0.64%</td>
<td>also</td>
<td>9</td>
<td>0.44%</td>
<td>orientation</td>
<td>5</td>
<td>0.68%</td>
</tr>
<tr>
<td>20</td>
<td>certain</td>
<td>7</td>
<td>0.56%</td>
<td>brazil</td>
<td>9</td>
<td>0.44%</td>
<td>public</td>
<td>5</td>
<td>0.68%</td>
</tr>
</tbody>
</table>

c) Why are the decisions strategic (sub-question 8.2)

In Table 33, the answers from Fiocruz (rows 3; 4) mentioned the “national project”, which is a strategy for decentralising R&D and creating new centres of excellence, forging ahead with local development in poor regions and without a strong tradition of science projects or funding. Following this rationale, the “re-alignment” of Fiocruz (row 3) meant the recovering of the role of the organisation in supporting the development of the country. In rows 2; 3; 4, the responses concerned an “upgrade” and a “new standard” are related to the new unit in the state of Ceará and the new plant for immunobiological manufacture in Rio de Janeiro, as this new unit and this new facility shall help both to widen access to those products and to decrease the trade
deficit in Brazil. These are positive actions for creating early impact within the health system (rows 1; 5).

As a whole, the responses from Fiocruz indicate the need for those within the organisation to get prepared to cope with challenges from the external environment.

In Embrapa, similarly to Fiocruz, the answers were concerned with mechanisms to deal with the *external environment*, such as the demands of society (row 6), the adjustment to a changing reality (row 7), and internationalisation in a globalised world (row 8). In order to respond to these challenges effectively, there needs to be training to keep the organisation competitive and innovative (row 8), given that human resources continue to be regarded as the organisation’s main asset (row 9).

Likewise, in Pasteur, the interviewees pointed to the need for the organisation to cope with the external environment, for instance via shifting paradigms in terms of the way the institute runs (row 10). The need to conduct field research in institutes around the world was also identified, hence building links to a global landscape of research (row 11). Also, the need to maintain high standards to fulfil the mission of the organisation, which is linked to the need for maintaining funding and the survival of the Institute over the long-term (row 12). A similar theme is also seen in the answers of rows 13 and 14, where the respondents clearly link the work of the management of the organisation to a wider collaboration with a ‘new world’ of challenges and opportunities.
Table 33 - Why the decisions are strategic (summary of the responses)

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>“They are actions of early impact for the Brazilian health system.”</td>
</tr>
<tr>
<td>2.</td>
<td>“They are landmarks that upgraded the institution.”</td>
</tr>
<tr>
<td>3.</td>
<td>“They re-align the positioning of Fiocruz in the field of healthcare, for instance. In terms of the offices, we are positioning ourselves in more regions of Brazil. They strategic because they open new work fronts, new relationships, expanding the national presence of Fiocruz […] They are strategic because they establish a new standard, a new responsibility, a new reality, a new role, such as a ‘player’ in all those fields.”</td>
</tr>
<tr>
<td>4.</td>
<td>“From the point of view of the institutions, their capacity to assert themselves is when they can upgrade the relevance of their activities in very large fields and networks. In the case of Fiocruz, the national feature character comes first.”</td>
</tr>
<tr>
<td>5.</td>
<td>“The strategic decision rationale is recent. They were not necessarily conscious decisions but became clear in the heads of the principals. They bridge the gap with the future, with an impact on daily life, a changing impact, reorienting, creating new inspirations for the process of medium and long terms.”</td>
</tr>
<tr>
<td>6.</td>
<td>“Because they allow the organisation to cope with the demands of the society.”</td>
</tr>
<tr>
<td>7.</td>
<td>“So we, Brazil, chose 40 years ago to develop a model of agriculture based on science, to achieve food security. But then Brazil took a step further. Maybe, something we did not expect in the creation of Embrapa. Brazil has projected itself as a major food supplier to the world. A great player. So today Brazil is a major exporter of food […] So I believe that these decisions were important in order to adapt, to quickly adjust the company to a changing reality.”</td>
</tr>
<tr>
<td>8.</td>
<td>“In a globalised world, with globalised science, internationalisation is fundamental to keep competitive projects; Intellectual property gave an idea of the assets; training to keep the organisation on the top, and focus on sorting issues of tropical agriculture for the competitiveness.”</td>
</tr>
<tr>
<td>9.</td>
<td>“If I look at human resources, the main asset in a knowledge institution is the researcher and those who support research, analysts, and technicians. So what is the main asset? It’s people. Qualified human resource of high level. Talents.”</td>
</tr>
<tr>
<td>10.</td>
<td>“Because they have introduced changes in the paradigms, the way the Institute Pasteur was run. They were not obvious, not only follow up of the previous orientations. Because they change the paradigms they are strategic.”</td>
</tr>
<tr>
<td>11.</td>
<td>“They are strategic because they give the chance to go to the field […] Internationalisation gives the chance to go to the field. It’s a vision for all Pasteur Institute; it’s better linked to the world; important to the image; good for getting funds; think of tomorrow (change before it’s too late); to remain the leader in microbiology; large vision.”</td>
</tr>
<tr>
<td>12.</td>
<td>“Because in the long-term, an institution like Pasteur Institute has to fulfill a mission. It has to excel, otherwise, funding will not come […] A good deal makes of funding comes number 1 from donations and number 2 from industry. So, if you do not reach the standards, you compromise the entire system. So I think that all of this was fairly very strategic in the sense that if a single of the seven points are not being done the institution was acquit to failing in the long-term.”</td>
</tr>
<tr>
<td>13.</td>
<td>“Because I think it is central for Pasteur Institute to keep the dynamic way of working. It is central for this institution to be adapted to the new world, to the new scientific international environment. I mean, it is vital for such an institution. If people go on working on their own limited field, limited scope, the institute will not be able to stay alive for very long. I think.”</td>
</tr>
<tr>
<td>14.</td>
<td>“I think it is a vision for all Pasteur Institute; 2. It’s better management linked to the world; 2. It’s important for the image of Pasteur Institute; 3. It’s better for getting funding than before; 4. It’s better for the mission of Pasteur Institute, and thinking of tomorrow to change before it’s too late; 5. Pasteur Institute has to be the leader in microbiology in the world today; 6. It shows we can have a mission inside the Pasteur Institute in which we don’t think only in Pasteur, but have a large vision.”</td>
</tr>
</tbody>
</table>

a) Factors/interests that led to more or less change (question 9.1)

The answers to this question were related to the strategic decisions mentioned in item “b”. It was suggested to respondents to take these decisions into account when answering.

In Fiocruz, where the word “production” had emerged as the most common in the interviews, some answers given by respondents concerned the “national project” (Table 34, rows 2; 4), and the fear of a loss of resource funding was seen to lead to trepidation regarding implementing change. It demonstrates well a type of resistance described by Kotter and Schlesinger (2008) as parochial self-interest (subpart 2.3.3). In row 3, the answer is related to becoming a company and refers to factors/interests that may lead both to more change (sovereignty) and to less change (organisational structure), which are not precisely regarded as resistance aspects like the parochial self-interest in rows 2 and 4.

The answer in row 1, in turn, regards the “misunderstanding and lack of trust” reason for resistance stated by Kotter and Schlesinger (2008), and in row 5 the response is about a factor
– information and communication – that may lead to more change, since it is one of the manners
to cope with resistance, listed by the same authors.

The answers that were given by Embrapa, one of them mentions a very unusual method for
catalysing change, which became a strategic tool during the military dictatorship: Arresting
and killing (row 6). It links somewhat to Kotter’s and Schlesinger’s coercive manner of dealing
with resistance (2008), in which speed is crucial\textsuperscript{40}. These authors, however, did not mention
arresting and killing as part of the methods applied. The interviewee clearly stated that if it had
not been for the military dictatorship of Brazil (1964-1985); Embrapa would not have been created.

Considering that the dictatorship ended in 1985, the threat of arrests and killings\textsuperscript{41} was present
for the first 10-13 years of the existence of the company. It, in turn, relates to the adaptive
aspect in which the individual is less likely to be resistant to the decisions of the organisation,
as stated by Bovey and Hede (2001), as seen in subpart 2.3.3.

Nevertheless, in the case of the beginning of Embrapa, the resistance was probably a
maladaptive aspect, more conscious than unconscious, as those in the organisation had to
contend with the threat of intimidation and scare tactics from the military dictatorship, which
in turn relates to the role of the environment in resistance, as observed by Oreg (2006) – see
subpart 2.3.3.

The threatening environment apparently declined with the rise of democracy in Brazil, and the
persuasion, or rather communication, was found to be a much more effective measure for
dealing with resistance within Embrapa (rows 6; 7). It is interesting to note, however, that a
recent change in the organisation did not trigger any resistance nor questioning (row 7),
especially considering that it was a significant change which was enacted in a short period of
time.

The other two responses from Embrapa (rows 8; 9) indicate that the environment is
predominantly responsible for resistance to change, both because bureaucracy incites
resistance from staff, and since a lack of understanding regarding external forces on the
organisation can stop change from going ahead.

\textsuperscript{40} It is feasible to understand that the dictatorship needed the newly created company to present good results to
prove the efficiency of the system.

\textsuperscript{41} There is neither evidence nor rumour that arrests or murders did happen to the first employees of Embrapa.
In Pasteur, four out of the five interviewees indicated parochial self-interest as the main issue related to resistance (rows 10; 12; 13; 14). Especially the answers in rows 12 and 14, which are related to an “insurgent” event called “Fit of Rage” that happened in the organisation in 2005 (Marchand, 2015). In that year, as described in row 12, the Institute had been given lands in the suburbs of Paris for building new units, but the scientists refused to move because they lived near the institute. It was a huge resistance.

In row 13, the interviewee describes a series of causes for resistance within the organisation, such as misunderstandings (“the President was often away from the institute… He was going to Korea, China, to Hong Kong, and so on and so forth… I think the scientists resented that … Scientists of the Institute were not that concerned, were conscious enough of the evolution of biology in different parts of the world”) and lack of trust (“In some cases, the scientists had the impression that the decision was already taken before the President asked their advice. That was not always true, but in terms of psychology they thought that the President should have asked them their advice more”); self-interest (“in a way the Pasteurians, they are wonderful people, but sometimes they think a bit too much they are wonderful, and they are very independent, so they don’t always see the point of being forced to go in such or such direction”); and communication (“Also there is another factor that is very important: There is the President on the top of the organisation, there are the scientists in the laboratories, and in the middle there are chiefs of departments, such as the scientific council and different bodies. The link between the President and the basic scientists has to go through these different bodies; they should feel that they have to transfer the message to the bases. If this link does not work, it cannot work properly. [It is about] Communication between the top and the grassroots”).

The answer in row 10, in fact, can be regarded as a mix of parochial self-interest and different assessment, since significantly different salaries and the subsequent feeling of iniquity may indeed lead people to resist to changes if this gap is not solved and, in the end, it may disrupt the organisation as a whole.

Finally, in row 11 the resistance is related to the environment in terms of the rhythm of the evaluation that the researchers are subject to.

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42 The author plays a wordsmith narrating what happened: In French the word for “rabies” is “rage”, which is the same as for “anger”. The wordsmith in the title of the chapter is due to the fact that rabies vaccination was the first great discovery of Pasteur.
It is interesting to note that whereas interviewees at Fiocruz and Embrapa mentioned aspects of organisational decision-making that can lead to more change, not only resistance, in Pasteur the answers were exclusively related to resistance.
| 1. | “How do you organise an Assembly [Internal Congress] in which 80% of the people participating have no conditions and no knowledge of the fact; and yet vote?” |
| 2. | “Fear of dilapidating the resources/funding: lack of transparency; lack of identity with the organisation.” |
| 3. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 4. | “If you organise an Assembly [Internal Congress] in which 80% of the people participating have no conditions and no knowledge of the fact; and yet vote?” |
| 5. | “Fear of dilapidating the resources/funding: lack of transparency; lack of identity with the organisation.” |
| 6. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 7. | “If you organise an Assembly [Internal Congress] in which 80% of the people participating have no conditions and no knowledge of the fact; and yet vote?” |
| 8. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 9. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 10. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 11. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 12. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 13. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |
| 14. | “The other side has its interests. If you know it will hurt interest, you have to know what you are going to do.” |

Table 34 - Factors/interests that led to more or less change (summary of the responses)
b) Changes that happened as a result of the decisions (question 9.2)

This question had the intention of checking those changes which occurred in light of the decisions that had been mentioned by the interviewees. Following the rationale in item “b”, the word cloud is used for this purpose: Revealing the changes that resulted from strategic decision-making. All the responses from the various respondents of each organisation were hence analysed using the word cloud method in order to unfold the underlying assumptions, vis-à-vis the responses themselves.

Except for Pasteur, in this question, the interviewees once again referred mainly the name of the organisations themselves, similarly to the word clouds concerning the strategic decisions (pp. 216-218). For this reason, the words “fiocruz” and “embrapa” will not be displayed in the respective clouds (Figure 24), for practical reasons, but will be listed on the Table 35.

In Fiocruz, we have seen that the word “company” and, secondarily, “production”, were those mostly mentioned by the interviewees, therefore confirming the organisation’s concern with the provision of health inputs for the population, as informed in item “b”.

Figure 24 - Word cloud of the answers concerning the changes as a result of the five major strategic decisions of the last 15 years
Fiocruz – Embrapa – Pasteur

Fiocruz
The word cloud of Embrapa, similarly to Fiocruz, reinforces the findings of the previous word cloud, concerning the strategic decisions. In the preceding image we have seen that the word “problem” was related to the problems of the Brazilian agriculture as a whole, and specifically in terms of the internationalisation of research and the investment in human resources. In this one, after dismissing the word “embrapa”, it is the word “today” that has more weight than the other ones highlighted, including “brazil”, “institution”, “public”, “society”, “culture” and “organisation”. It is interesting to note that the word “internationalisation” has disappeared in this cloud.

To begin a brief analysis, we can say that the word “today” refers to the sovereignty of the organisation over time, to its perenniality:

“(…) So, there was a special circumstance that allowed Embrapa to be just the way it is today. Now, after it has become the way it is today after it has succeeded, you create a culture of the institution. The big problem is creating a culture of the institution. (…) The idea of solving the problems of the society; and the individual is proud to work at Embrapa.”

Interviewee 6
“(…) So, this whole logic and this whole effort were to give this organisation what few Brazilian institutions have: Continuity of purpose. Back in time, it was created a much-improved ability to understand the challenge for an institution like this and to realise that we would not meet this challenge in 2, 3, 4 years. It would take 20-30 years for us to begin to meet this challenge. The whole construction that is done here is in the sense of giving this organisation continuity of purpose. This vision of trajectory it needs to have in a much-improved way.” [Emphasis added]

Interviewee 7

Concerning the disappearing of the word “internationalisation”, moreover, any word that could remit to that, two out of the four respondents were clear about it:

“The international Embrapa ended. It was extinguished.”

Interviewee 8

“The result was paralysis (…). It is an extremely difficult time to internationalise in the broad sense.”

Interviewee 9

That, however, was due to external resistance, rather than a decision from inside the organisation, as observed in the previous Section (Table 34 – rows 8; 9). The main outcome of the decisions has been the continuity of the organisation as a whole.

In Pasteur, the word cloud highlighted the word “scientist” and, secondly, the word “innovation”, re-confirming the prominence of scientists at the centre of the organisation, but the responses do not signify that “scientist” is necessarily a positive association:

“The problem in a research institution like this is that there are several extremes. The natural tendency in such an institution is that everyone wants to run his lab partly and you end up with a patchwork, which loses efficiency.”

Interviewee 12

“People tried to work in fashionable fields and this generated a Nobel prize, but on the other hand you had some people who sometimes cannot develop their research with creativity because they are always directed. So, we have two sorts of results: A good one and a not so good one, a bad one.”

Interviewee 11

Apart from the quotations above, which only indirectly pointed to the figure of the scientist, two respondents explicitly mentioned the successful recruitment of new investigators, whereas
another one remits to the power of the scientist, once again confirming item “b” in terms of the role of the scientist within the organisation:

“We have recruited in two years 14 new non-French investigators. So I would say that the consequence is that... Actually it started before... You see, the situation is that from the year 2000. At Pasteur, has been introduced a programme for recruiting junior scientists from the outside, which has been very successful. And so we maintained this programme, but it was initiated before.”

Interviewee 10

“I think the recruitment of young scientists has been efficient in the last 15 years. I’m sure they are very good young scientists, I think.”

Interviewee 13

“It’s a little less easy for scientists to say no, because now administrative decisions are as important as the scientist’s.

Interviewee 14

Maybe it is worth pondering the reason why, in this field, differently from the other two organisations, and from the responses on the word clouds in item “b”, this time the name of the organisation did not even count between the first 20 words (Table 35). In fact, the words “pasteur” and “institute” (or “institutes”) counted only once (see Annexe).

Considering the traditional power of the scientists, as observed in the event named “Fit of Rage” (Section 6), as well as the huge difference of quotes between the responses to the word cloud of strategic decisions and this one, then it is feasible to infer that the word “scientist” to be equal to “pasteur institute”, i.e., maybe the absence of the latter was due to the quotations of the former.
Table 35 - Word cloud of changes
The 20 most quoted words
Fiocruz – Embrapa – Pasteur

<table>
<thead>
<tr>
<th>Number</th>
<th>Fiocruz</th>
<th>Word</th>
<th>Count</th>
<th>Weighted Percentage</th>
<th>Embrapa</th>
<th>Word</th>
<th>Count</th>
<th>Weighted Percentage</th>
<th>Pasteur</th>
<th>Word</th>
<th>Count</th>
<th>Weighted Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>fiocruz</td>
<td>16</td>
<td>3.97%</td>
<td></td>
<td>embapa</td>
<td>25</td>
<td>2.69%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>company</td>
<td>6</td>
<td>1.49%</td>
<td></td>
<td>today</td>
<td>12</td>
<td>1.29%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>production</td>
<td>5</td>
<td>1.24%</td>
<td>brazil</td>
<td>years</td>
<td>5</td>
<td>1.08%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>whole</td>
<td>5</td>
<td>1.24%</td>
<td>institution</td>
<td>figures</td>
<td>4</td>
<td>1.08%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>diseases</td>
<td>4</td>
<td>0.99%</td>
<td>public</td>
<td>people</td>
<td>4</td>
<td>1.08%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>process</td>
<td>4</td>
<td>0.99%</td>
<td>society</td>
<td>time</td>
<td>4</td>
<td>1.08%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>regional</td>
<td>4</td>
<td>0.99%</td>
<td>culture</td>
<td>also</td>
<td>3</td>
<td>0.97%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>today</td>
<td>4</td>
<td>0.99%</td>
<td>organisation</td>
<td>changes</td>
<td>3</td>
<td>0.97%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>units</td>
<td>4</td>
<td>0.99%</td>
<td>policy</td>
<td>field</td>
<td>3</td>
<td>0.86%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>debate</td>
<td>3</td>
<td>0.74%</td>
<td>whole</td>
<td>phenomena</td>
<td>3</td>
<td>0.86%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>example</td>
<td>3</td>
<td>0.74%</td>
<td>world</td>
<td>problem</td>
<td>3</td>
<td>0.86%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>excellence</td>
<td>3</td>
<td>0.74%</td>
<td>thing</td>
<td>programme</td>
<td>3</td>
<td>0.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>exchange</td>
<td>3</td>
<td>0.74%</td>
<td>time</td>
<td>really</td>
<td>3</td>
<td>0.75%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>integration</td>
<td>3</td>
<td>0.74%</td>
<td>agriculture</td>
<td>successful</td>
<td>3</td>
<td>0.65%</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>15</td>
<td>less</td>
<td>3</td>
<td>0.74%</td>
<td>like</td>
<td>think</td>
<td>3</td>
<td>0.65%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>public</td>
<td>3</td>
<td>0.74%</td>
<td>purpose</td>
<td>young</td>
<td>3</td>
<td>0.65%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>quantitative</td>
<td>3</td>
<td>0.74%</td>
<td>research</td>
<td>administrative</td>
<td>2</td>
<td>0.65%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>together</td>
<td>3</td>
<td>0.74%</td>
<td>years</td>
<td>another</td>
<td>2</td>
<td>0.65%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>almost</td>
<td>2</td>
<td>0.50%</td>
<td>always</td>
<td>bacteria</td>
<td>2</td>
<td>0.54%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>also</td>
<td>2</td>
<td>0.50%</td>
<td>another</td>
<td>better</td>
<td>2</td>
<td>0.54%</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
7.5.2.2. Long-term analysis

The questions of this subsection are the same as those for Fiocruz, and are related both to understanding of the interviewees about the role of long-term analysis (in terms of its usage under contingency situations), what determines the application a long-term approach (in a broad sense), what triggers the implementation of the long-term (in the organisation), and the role of it in organisational change.

The questions aimed at providing information about the respondents' knowledge regarding long-term analysis and possible associations between this knowledge and the given answers.

a) Use of long-term analysis under contingency circumstances (question 10)

Three sub-questions were made to cover this item:

a.1) Validation/agreement with the statement that long-term analysis is used under contingency circumstances (question 10.1)

Similarly to the interviewees from Fiocruz, the ones from the other two organisations also agreed with the statement unanimously, hence confirming the importance of long-term studies, according to their perspectives. Admitting this, the next questions investigated both what would prompt the use of long-term analysis (in general terms) and what would trigger that in each of the organisations. The aim was to have an idea about their knowledge about the subject as to understand the responses in light of this.

a.2) Mechanisms that prompt the use of long-term analysis (question 10.2)

Table 36 shows a list of mechanisms mentioned by the interviewees of the three organisations. In Fiocruz, the “lack of a State policy of long-term strategic planning” (row 2) is a major concern of both the managers and of the people involved with the long-term planning. In terms of the mechanisms, they will depend on a particular situation given by the conjuncture, by the sector under analysis (rows 1; 3).

In Embrapa, one of the answers mentions the need to have a good knowledge about long-term analysis underpinning its use in terms of formulating the proper hypotheses in order to avoid mistakes (row 6). Although a significant observation, it does not answer the question. It is not the need to have appropriate hypotheses about the future that would prompt the use of long-term analysis if such long-term planning had not existed at this point.

The subsequent answers, however, address the question more appropriately; the environment in which the business is embedded is cited as important, including factors such as advances in
science and a changing society (row 7), the need for information about potential future scenarios the organisation may face (row 8), and also of the short and mid-term planning along with the long-term planning (row 9).

The interviewees from Pasteur, in turn, point out the need for making decisions about important things for the future (row 11), a combination of the analysis of the current situation to deduce what it may lead to and, hence, the development of the vision of the organisation (row 12), the need to have a permanent dialogue with the different parties responsible (row 13), and anticipation to be aware of the different variables and adapt the plan of the organisation according to these changing variables in the future (row 14).
Table 36 - Mechanisms that prompt the use of long-term analysis (summary of the responses)

<table>
<thead>
<tr>
<th></th>
<th>1. “The mechanisms that lead to this is the nature of decision-making, the policy choices by the power set at that time, at that juncture. The arrangement of political forces that give a certain Figuration to a government. Especially in an institution like Fiocruz, with this multiplicity of decision-making.”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiocruz</td>
<td>2. “The lack of strategic long-term planning. The country has no tradition of development and adoption of a State long-term planning policy.”</td>
</tr>
<tr>
<td></td>
<td>3. “See, I have several conditions that impose this kind of analysis to me. This will vary from sector to sector. The more dynamic is a sector, the larger the amount of investment, the greater the competition. These are elements that require foresight analysis with more intensity, and then to be able to monitor this decision. If I take a long-term decision, that decision, by the way, as all decision-making process, is not monolithic. If I'm making a decision for ten years, in the ten-year journey I will adjust that decision.”</td>
</tr>
<tr>
<td></td>
<td>4. “I believe that long-term analysis sheds light on contingency.”</td>
</tr>
<tr>
<td></td>
<td>5. “The capacity of giving answers to the health needs. Fiocruz is not an isolated competing company but compromised with a certain project. It has the capacity because it has the availability for it.”</td>
</tr>
<tr>
<td>Embrapa</td>
<td>6. “Anyone who is dealing with the long-term, is having a great risk of going wrong. But one needs to make the hypotheses explicit. What is my severe criticism of long-term analysis? Not having the clear hypotheses. Me, if I make a program for your institution, I ask: what is the unknown disease for Brazil and what diseases can become an epidemic? These are hypotheses, I may be wrong. There is no crystal ball for this. So, what are the evidences that give me reason to formulate this hypothesis?”</td>
</tr>
<tr>
<td></td>
<td>7. “I think that organisations can no longer dispense the construction of competencies and processes that allow them to dedicate themselves in a constant, systematic, continuous way, to analyses of the future and analysis of possible trajectories for the organisation, taking into account its business, the environment where the business is embedded, the advancement of science, the changes in society. So, I believe the most powerful mechanism for organisations today is this so-called mechanism of strategic intelligence. Understanding, as strategic intelligence, the construction of designed, appropriate and empowered environments for the organisations to deal with the future. Anticipate, foresee, model possible futures and, from them, help the company in building trajectories towards those futures that interest the organisation.”</td>
</tr>
<tr>
<td></td>
<td>8. “One has to be continuously making scenarios studies, so that can observe what kind of scenarios one has. It is not making an immense scenarios study. It is to have elements that give you scenarios signals. You must have information from the way you are. For example, in our case, which is much more complicated, the technological advancement. The technological guidelines that Embrapa is putting as a priority, how is that going on in the world, what kind of direction it is taking or not. What kind of direction do we have to go. What comparisons we have.”</td>
</tr>
<tr>
<td></td>
<td>9. “In addition to the strategic planning decision, one needs to have the vision of short and medium-term adjustments, beyond the long-term vision. And then you get into the crises. Institutional crisis, crisis in the board, crisis in resources (…”</td>
</tr>
<tr>
<td>Pasteur</td>
<td>10. “I believe that the mechanisms that prompt long-term analysis, which have been used for the long-term analysis are those that I have described when we discussed about strategic orientations” [It is a combination of bottom-up and top-to-bottom (…) so it is a merger of individual advisors to the president, the heads of departments and the scientific council (…) For the strategic decisions, the fields of research, and so on it is a merge of the advice of the different... It is not a formal process. It is more... The president has to integrate the advice from the different bodies I mentioned. And also the president of Pasteur has to validate his or her orientations in front of the board, which formally has to approve the strategy.]”</td>
</tr>
<tr>
<td></td>
<td>11. “I don’t know exactly what is long-term analysis in the sense that you can first analyse what is going on, analyse the situation and then you deduce what this is going to lead to with a certain probability. This is point one. Point two is to check your mission, use your vision and then build long-term analysis to develop the vision. So, of course you need to do both, but it’s not the exactly same process. A lot of people as far as I guess use long-term analysis without the vision. So, if I claim something in this venture is to try to combine both.”</td>
</tr>
<tr>
<td></td>
<td>12. “I think the communication is very important and permanent dialogue with the different responsible, also very human behaviour with the people. I mean, if you give the impression you are the best, better than the others, the decisions you take are not easily respected. I think that human behaviour is very important. It’s central. You can have all the best ideas (…) but if you think you are God people don’t like it.”</td>
</tr>
<tr>
<td></td>
<td>13. “Anticipation, of course. We cannot work for planning without anticipation, the knowledge of the different parameters, variables, before the planning, one has to imagine different possibilities and, after, we can imagine all the possibilities and have to choose one strategy, one plan, but all the time we need to be aware of the variables and adapt the plan.”</td>
</tr>
</tbody>
</table>

a.3) What triggers the need to use/conduct long-term planning (question 10.3)

In Fiocruz, the long-term debate was proposed by the managers (Table 37, row 2). As such, it was a deliberate strategy (Mintzberg, 2000, 2009). Other factors mentioned for introducing long-term planning were the “lack of a long-term planning culture” (row 2), the character of Fiocruz being a strategic organisation (row 3), which demands a strategic vision concerning the future (row 1), including the “demand” for its growth (row 5), and issues related to its sustainability (row 4). Also, the anticipation of such demands (row 5), which indicates the need for a dialogue with the future.

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Within Embrapa, long-term planning is also a deliberate strategy. In fact, Embrapa was created as part of the strategy of the military government in Brazil, linked both to the international green revolution and the cold war, as we have seen in Section 5. Long-term planning is part of the “DNA” of Embrapa:

“(…) Our business is not a short-term business. Today we are reaping the fruits that were planted two, three decades ago. What we are planting here now, will generate results, perhaps, in 20 years or 30 years. The large portfolios that Embrapa is building, driving now, will produce results over time. I always say that the future is our main input.”

Interviewee 7

In practical terms, the commencement of the long-term planning at Embrapa is related to the demands of society, of the environment (rows 6; 7), but also to the fact that it is a research organisation. As such, the “research time” in the related field is around 10-15 years, hence demanding a plan which encompasses such a period (rows 8; 9).

The answers from Pasteur are similar to those from Embrapa regarding “research time”. In Pasteur, however, this “concept” goes a bit further so that the answers can be categorised as “research centred”, both in terms of time and money. Considering that the future is not predictable, an important strategy for the organisation to “best allocate research time” is by recruiting the best human resources available (row 10). Linked to this is the need for focusing the organisation’s attention and resources on the growth of a “subfield” (“microbiology”, in fact, is the main sub-field and strategic asset of the organisation) – row 11.

When one respondent mentioned that the organisation should “keep growing”, this answer also refers to financial aspects of planning for the future, which was still a concern in the subsequent answers, as respondents talked about the need to do projects well, in order to win grants for the organisation, since Pasteur is not under public ownership and budgets, like Fiocruz and Embrapa (rows 10; 12; 14).

In this sense, long-term planning in all three organisations is a deliberative strategy according to Mintzberg’s categorisation (2000, 2009), despite the different perspectives recorded in the interview responses. In Fiocruz, the answers indicate a more “theoretical approach”, mentioning a long-term planning “culture” and “strategic vision” for an organisation considered strategic to the State of Brazil as a whole. In Embrapa, the long-term strategy is more “pragmatic”, because it is linked to the “research time” – the time given over to achieving
the research goals and whether this is the short, medium or long term. In Pasteur, there is also pragmatism referring to the need to submit well-planned projects in the search for funds.

Table 37 - What triggers the need to use/conduct long-term planning (summary of the responses)

<table>
<thead>
<tr>
<th>Fiocruz</th>
<th>1. &quot;The need to have a strategic vision, to build a long-term vision for Fiocruz, and these will guide the internal processes.&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. &quot;Depends on the administrators' heads. Unfortunately, it does not come from the organisation. Unfortunately, it is not in the culture.&quot;</td>
<td></td>
</tr>
<tr>
<td>3. &quot;The investments, the decisions, the size and the character of the institution.&quot;</td>
<td></td>
</tr>
<tr>
<td>4. &quot;The need to know what will be important for the sustainability of the organisation. The processes in which the organisation is involved in are made and conditioned by the long-term.&quot;</td>
<td></td>
</tr>
<tr>
<td>5. &quot;The growing feeling of responsibility following the growth of the organisation, reflected in growing demands, generating the need to anticipate the demands.&quot;</td>
<td></td>
</tr>
<tr>
<td>Embrapa</td>
<td>6. &quot;The necessity comes from the demands of society, which is not explicit, one has to formulate. And it also comes from how agriculture in the world goes. So, there is a lot of history in it. Third, what is the role of the frontier discoveries of science in changing the pattern of agriculture. So you put the story together, joining the influence of science in changing the market, and third, examines what other countries are doing and what the Brazilian society wants. You put it all together.&quot;</td>
</tr>
<tr>
<td>7. &quot;The ability of the company to relate to its environment, to move through the business environment that is linked to its mission, its ability to relate to society. Its ability to grasp the signals coming from the world of science.&quot;</td>
<td></td>
</tr>
<tr>
<td>8. &quot;The first point that triggers the focus issue I mentioned to you. To have focus one has to have it. A very important instrument for the focus: the long-term. Second point: research, by nature, is a long-term activity. So research activity, more than ever, more than any other, it needs to have this planning, in the sense that you allocate financial, human, material, infrastructure resources for you to achieve what you are proposing. And that goal, it is not achieved tomorrow, it is achieved in the long-term.&quot;</td>
<td></td>
</tr>
<tr>
<td>9. &quot;At first is the fact that it is a research institution. The &quot;research time&quot; anywhere in the world is around 10/15 years. So if you work with the 15-year &quot;time&quot;, you have to elaborate the project, run the project, generate the product or result, test the result, apply it in the agricultural field, for example. Then transfer this knowledge to society, to the productive, to the social sector, whatever. This &quot;time&quot; takes 10 years. You cannot do innovation in a few minutes or a few days. The very nature of the institution is intrinsic to the activity (...) The timing of the research establishes the need to have a strategy, otherwise you get to nowhere, just like a ship adrift.&quot;</td>
<td></td>
</tr>
<tr>
<td>Pasteur</td>
<td>10. &quot;Now, the reason why it triggers the need for long-term analysis is the fact that in science you need, again, to always be humble, to recognise that the best thing that you can do in a research institution is to recruit the best, but at the same time we have to make choices. We have to make choices in the allocation of resources. For example, we have met as many, many, institutes at the analysis that bioinformatics and integrative biology are changing the science. This is a long-term analysis where we have been investing a lot in the past two years and we maintain this investment. So this is an example. The long-term analysis is that the international network of the Pasteur Institute is the key asset, is the key differentiating element, the differentiating pattern of the Pasteur Institute. We've regarded to the so many excellent research institute abroad. So this is a factor the triggers.&quot;</td>
</tr>
<tr>
<td>11. &quot;The need to keep growing the research on microbiology, etc., this is what makes Pasteur use long-term analysis.&quot;</td>
<td></td>
</tr>
<tr>
<td>12. &quot;I believe that Pasteur should be run like a company. A non-for-profit company, but basically it has to learn from the private sector the best procedures. So just to run everything properly requires long-term analysis because some things you are dealing with are long-term analysis (...) So, HR and management ask to use long-term analysis and things which are not very well done usually (...) So the proper running of such a thing and planning of the future funding and so on requires long-term analysis. It has to be professional. (The same in terms of equipment).&quot;</td>
<td></td>
</tr>
<tr>
<td>13. &quot;I mean, the country like France today, if people have the impression that you take the decision one day, then you change the other day, you go back and move forwards, I mean, you don't give any trust. You don't inspire anything, people don't trust you. And if they don't trust you, you cannot go forward.&quot;</td>
<td></td>
</tr>
<tr>
<td>14. &quot;Pasteur needs a strategic plan to organise its research. We work like an enterprise and our budget is limited. If we do not make like that, we have the idea, but not the money. We have to have a plan just like any company.&quot;</td>
<td></td>
</tr>
</tbody>
</table>

b) Long-term analysis helping organisational change (question 11)

Notwithstanding one interviewee from Pasteur, all the rest agreed that long-term analysis does help organisational change.

The outlier answer, however, is not quite a negative response, but rather it points out a condition or a situation without which nothing else would be helpful for organisational change: The exchange of ideas. The interviewee described what is important in the organisation as being able to develop conditions to exchange ideas.

It is an interesting observation because it links long-term analysis and the exchange of ideas, in the sense that the former can be one of the most appropriate conditions for exchanging ideas.
Taking this into account, it is then possible to note the answers were unanimous, although coming from different points of view.

b.1) Why can long-term analysis help organisational change (sub-question 11.1)

One of the interviewees from Fiocruz highlighted that long-term planning is part of a broader set, as the necessity to deal with current and mid-term issues, as well as knowledge about the institution and the country (Table 38, row 1). The perspective of the actions of the present day being affected by the future can be regarded as a signal that long-term planning is becoming more widely known in this relatively recent debate in the organisation. The interviewees quoted below offer an overview of this, such as “the complexity of the world” (row 2), “the construction of a democratic nation” (row 3), “the definition of actions at the present moment” (row 4), and “anticipation of problems” (row 5).

In Embrapa, the first quote (row 6) relates long-term planning to a parochial self-interest by the employees. The interviewee’s point of view is that the long-term survival of the organisation is the survival, firstly, of jobs. Interested primarily in keeping their jobs, the employees must think about the survival of the organisation, which is the motivation that underpins their long-term planning activities.

The following answer (row 7) mentions the society as the main concern of the organisation, thus indicating a tradition of strategic thinking within Embrapa. Also, some of the respondents mentioned actions to be done now (rows 8; 9), therefore pointing to dialogue with the future, similarly to some of the answers from Fiocruz.

The answers from Pasteur, although not an organisation as experienced as the other two PROs in terms of long-term planning, show there are clear ideas about this subject from those working in the organisation; that it is critical to action some decisions now (row 10), such as creating conditions for exchanging of ideas (row 11), improving communication (row 12), moving in a clear direction (row 13), and taking into account external forces from the environment (row 14).

In this sense, albeit Pasteur is the less experienced in long-term planning of the three PROs of this study, all Pasteur’s key actors selected for this research have a good understanding of the long-term planning as a subject.
### Table 38 - Why long-term analysis can help organisational change

<table>
<thead>
<tr>
<th>Institution</th>
<th>Quote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiocruz</td>
<td>1. &quot;The long-term analysis can help. There is a number of things. There is not only one thing that helps. The long-term analysis is part of this set. It is because we have real problems today, not in the long-term. You cannot ignore it (...). In fact, it is because you have to have a goal to achieve that have a medium and long term. Short, medium and long term. And you have to have that vision for you to organise your work. But you have to know what you will want and aim to achieve. I think it's very important you know very well the institution and the actors who make up the institution. Of course, you also have to know the country, demands that the country needs.&quot;</td>
</tr>
<tr>
<td></td>
<td>2. &quot;Because of the world in its complexity, the speed that things happen, in the sciences and in all fields, politics and such. You get disarmed if you do not have the ability to develop tools to talk to the future. And to consciously build this future. There can only be a will problem, intuitions, because it is insufficient today. So I see no way out of it.&quot;</td>
</tr>
<tr>
<td></td>
<td>3. &quot;For those who, like me, insist on believing that to build a strong, democratic and equitable nation, it is necessary that certain social policies be developed by the State. The simple operation of market forces does not solve it.&quot;</td>
</tr>
<tr>
<td></td>
<td>4. &quot;When I'm drawing future scenarios, I'm making this very strongly relationship with the present. If I go from here to there, I have to start now. What are the barriers, what are the opportunities, what are the conditions that make the immediate action in the present will take me to a particular scenario or to another one? Looking at the final effect of what I want is to define, also, the space to act.&quot;</td>
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<tr>
<td></td>
<td>5. &quot;Because they allow me to anticipate problems, solutions. They call my attention to behavioural variables I need to know. What is the trend of the behaviour of these variables? Be the population size, population age, population disease or, in the case of health, the technologies that will make me successful or will defeat me in an increasingly competitive environment. So I do need to anticipate, otherwise, every moment that I did not anticipate, I'm moving away, I'm increasing the future risk. I need to decrease the future risk.&quot;</td>
</tr>
<tr>
<td>Embra</td>
<td>6. &quot;Because of a very simple reason. If you do not want to take risks, you probably will not make a mistake, but will not be accurate either. You will not solve the problem and will wear out in the long-term. If you opt for risk and if that analysis is not well done, you can wipe out your institution the day after. So this thing must be pretty heavy, because what you want, we all want, is the long-term life of this institution. We can say that we are thinking about a problem, in society, but deep down, it is our institution that feeds us. So we want its survival. So these long-term analyses are based, first and foremost, on the survival of the institution. As survival depends on the correct answers you are going to make, then you usually talk in a somewhat leery way that you are concerned about the problems of society.&quot;</td>
</tr>
<tr>
<td></td>
<td>7. &quot;Long-term analysis for a science organisation, a technological institution that has the role of helping society overcome challenges, embrace new opportunities, the long-term analysis, is not simply a necessity, it is an imperative. In fact, it is imperative for governments, for institutions. We are embedded in a world of increasing complexity. (...) So, I think this effort to pick up signals, to channel signals, helps us navigate this world. A minimally calibrated compass to guide us in directions that make sense to us.&quot;</td>
</tr>
<tr>
<td></td>
<td>8. &quot;In the case of research, to give focus, for you to continue in the search for results that are not short-term. Otherwise you're going to stay ... If you run out of a strategic planning, you just keep &quot;putting out fires&quot;, every day. Not to say that you will not have to &quot;put out the fire&quot;. You're going to have to &quot;put out the fire&quot;. The problems arise, you have to solve. But in the case of research, you have to have that long-term focus. Otherwise you stay here alone, you have no vision of the future.&quot;</td>
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<tr>
<td></td>
<td>9. &quot;You have only one chance just to make change and get it right. So the odd for you to make a mistake is very big. The first good assessment is to have a very good assessment of scenarios, strategic vision and conclude that it is worth making change. If not, do not make change. It has to be bold, advanced when you have a strategy that will make it viable, that underpins it. On the contrary, you have to be conservative in public management. Str to make it worse or leave it as is, it's not worth it. There is only one chance you can make change for the better, in three. Then you have a 2/3 chance to make a mistake and 1/3 a hit. So that 1/3 has to be very well calculated, well studied. And then you need strategy.&quot;</td>
</tr>
<tr>
<td>Pasteur</td>
<td>10. &quot;I believe it can help if you have a permanent realistic critic view of what you have achieved. I really believe it can help. We are really experiencing a revolution in technology, in science, in medicine, in public health. These are fashionable borders, but there are real borders. And you cannot only... You cannot wait for the things, you have to really have a vision, and this vision must be based on the view of what is coming. Obviously it is general, and I really believe that long-term analyses are very important, but what is the key and this is not difficult actually to achieve... The key is to have long-term analysis with some real perspective with the behaviour of day-by-day life, but at the same time to have in your organisation a possibility to welcome absolutely unexpected findings... And to really have them and to accept the idea that your long-term analysis can be changed... And this is a key point when you have strategic plan, when I discuss with the board.&quot;</td>
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<tr>
<td></td>
<td>11. &quot;The most important is to develop conditions for people to work not worried about publishing, publishing, publishing. Conditions for people to exchange ideas, not much worried about competition on publishing. If you create conditions for people to exchange ideas, to work in a less stressed way, then maybe long-term analysis can be helpful for organisational change. But even since people are focused in publishing, nothing can help organisation change.&quot;</td>
</tr>
<tr>
<td></td>
<td>12. &quot;This is the basics of the changing practices, but to do that people say to have communication; you have to be clearly clear in your head. You have to manage the distance between the plan and the expectation of the people. That also requires listening and on analysing more than that. The expectation of the people also helps rationalising your long-term analysis. Long-term analysis should not be fully technocratic. This is a big danger. It has to be qualified first. It has to be guided by vision and never let the technocrats overcome. It has to be qualified with the sharing with the people. Of course there's resistance to change. Technocrats are a disaster!&quot;</td>
</tr>
<tr>
<td></td>
<td>13. &quot;Because I think it makes changes more acceptable if people know that it's for long-term and good direction. Of course it has to be good. It has to be wisely chosen. I think it's very important if people feel safe. If there is not leadership, no direction, they will never feel safe, and that's a source of trouble. of turbulence.&quot;</td>
</tr>
<tr>
<td></td>
<td>14. &quot;Because when we change one element, we change other elements, I think. It's an error to imagine that we can change only one thing and all the rest don't change. I think it's an important strategy to have a plan, a good anticipation, a good reflexion about the other elements. So sometimes we have to change the strategy, the plan. The plan is not finished, it's open. It must be written precisely, but be open.&quot;</td>
</tr>
</tbody>
</table>
7.6. Findings from Fiocruz vs Embrapa vs Pasteur

Mirroring the Section with the findings from Fiocruz, this Section will take into account the findings from Fiocruz, vis-à-vis the contrasting cases for this study: Embrapa and Pasteur.

This part, therefore, is also divided into two subparts: Decision-making and long-term planning. With responses from: a. The management team who answered the questionnaire; and b. The key actors who took part in the interviews.

7.6.1. Decision-making findings in Fiocruz vs Embrapa vs Pasteur

From the questionnaires, the investigation found that the decision-making processes are more participative in Fiocruz whereas in Pasteur decision-making is more centralised with the focus on the figure of the President, despite recent efforts to change this culture. In Embrapa, the decision-making processes are in-between both Fiocruz and Pasteur, i.e., neither as highly participative as Fiocruz, nor as paternalistic as Pasteur, but centralised in the decision-making bodies.

One of the findings in Fiocruz and the contrasting cases concerned the two components for the decision-making process: Formal and informal. The formal component in Fiocruz is the Internal Congress, characterised by a high degree of participation of the whole community, and establishes the main strategic guidelines of the organisation. The informal component concerns those decisions taken in the course of day-to-day life, which are made by the two main groups of representatives: The Deliberative Council, which is the board of Fiocruz; and the boards of the units.

In Embrapa, an equivalent body is the Administrative Council, and in Pasteur, the Board of Directors. Differently from Fiocruz, however, the members of these bodies are mostly from outside of the organisation and are not chosen by election from among the organisation’s employees.

Both the formality and the informality of the decision-making process, in Fiocruz, are subject to formal processes, meaning the day-to-day informal decisions might also be subject to formal structures, like the boards of the units, or the monitoring bodies of the Presidency, which regularly check the alignment of the decisions with the four-years plan, i.e., the informal decisions must follow the overall guidelines.

Many of the responses of the three PROs regarded participative decision-making as helpful in responding to the challenges of the future. For instance, the integration of various views, and
the commitment by those taking part in the process were mentioned. Some concerns were related to the risk of superficiality in situations when there is a lack of knowledge about the subject. Hence, participative decision-making can be time-consuming in negotiations.

The participation in the decision-making process was regarded also, by the three organisations, as not impeding changes, despite the Fiocruz experience regarding becoming a company, which indicates a different situation: The participative process forging a dialectic synthesis between the public company proposal and the resistance to it, showing the capacity of the grassroots to better inform solutions and to resist.

Pasteur mentioned participative decision-making as a means for the empowerment of the workers, although from a different perspective from Fiocruz. Pasteur was found to use the grassroots as a resource of information, rather than an interactive point of view like in Fiocruz.

Whereas in Embrapa and Pasteur the grassroots are one more actor subject to the asymmetry of information between the different actors within organisations, in Fiocruz the grassroots are regarded as a strategic asset, albeit subject to asymmetry as well.

There is, however, awareness of the limits of collective decision-making, mainly due to the barrier of asymmetric information. If Fiocruz manages to address the gap in communication, the grassroots are shown via responses to shed light on the real needs and demands of the organisation, as well as implement the decisions made.

7.6.2. Long-term planning findings in Fiocruz vs Embrapa vs Pasteur

The asymmetry of information concerning the existence of a department dedicated to long-term planning is the first finding from the management teams of both Fiocruz and Pasteur. This asymmetry, however, was not found in Embrapa, which has a high level of familiarity with the subject, dating from a culture that comes from the creation of this PRO.

Concerning the long-term planning helping in contingency circumstances, such as a budget squeeze, all the interviewees agreed with it.

The mechanisms that prompt long-term planning, are shown to come from a top-down demand in the three organisations, as well as a lack of a long-term planning at the State level, were quoted in the case of Fiocruz, also the dynamism of the health sector, which leads to the need to anticipate the future in order to prioritise investments.

The respondents, both to the questionnaire and to the face-to-face interviews, showed some unfamiliarity with long-term planning, mainly those from Fiocruz and Pasteur. In Fiocruz and
Embrapa, however, concerns raised related to the external environment, and this informs these two PROs are more accustomed to strategic thinking.

What triggers the need for long-term planning? In the three organisations, it is a deliberative strategy as stated by Mintzberg (2000; 2009). In Fiocruz its strategic role was shown to be an important perception by the respondents both in the questionnaire and in the interviews. It is a role which requires a dialogue between the present and the future, regarding the growth of the organisation and its sustainability. It is, also, a “theoretical” approach in terms of building a “culture” of long-term planning in this PRO.

In Embrapa, besides the strategic role of the organisation, there also exists a pragmatic approach, and it takes into consideration the “research time”, which would last approximately 15 years on average, according to their responses. Pasteur is “even more pragmatic” because the search for grants, which therefore requires high quality projects, for which the researcher is supposed to consider the long-term perspective, i.e., in this last PRO the triggering of long-term planning is related to project funding mainly, not due to any necessity to have a dialogue with the future and deal with it.

Concerning the opportunities for the Foresight as a school to contribute to the organisation, the respondents as a whole agree that it does contribute. The answers point out that the respondents rely more on Foresight’s contribution to formal processes. In terms of Foresight setting priorities and building networks, responses indicated that this could be helpful regarding resource allocation, but further agreement on this was lacking.

In terms of what contribution Foresight can make to organisational change, there is an overall agreement that Foresight can be useful, by helping with the anticipation of problems and the visualisation of targets/routes. For Fiocruz and Embrapa the complexity of the world sets the need for a dialogue with the future, with the anticipation of problems, and the definition of actions to be made now. In Pasteur, some answers mentioned the creation of conditions for the exchanging of ideas and improving communication.

A new concern was introduced by one of the answers from Fiocruz: The building of a democratic nation. Also, the awareness that long-term analysis alone is not enough to help organisational change.
7.7. Remarks on the Findings

7.7.1. Decision-making

Concerning this point, as a whole, the outcomes from the three organisations confirm the literature regarding benefits of the collective decision-making. A wide range of studies have been suggesting that decisions made in a participatory way are better than individual decision-making (Bonner et al., 2007; Dirks et al., 1996; Foote et al., 2003; Gigone and Hastie, 1997; Isham et al., 1995; Johnson and Hollenbeck, 2007; Kleingeld et al., 2004; Martell and Borg, 1993; Papadopoulos, 1995; Scott-Ladd and Marshall, 2004; Shaw, 1981; Watson et al., 1991).

The following benefits of collective decision-making have been identified (Schmerhorn et al., 2011):

a. More knowledge and expertise are available to solve the problem.
b. A greater number of alternatives are considered.
c. The final decision is better understood and accepted by all members of the group.
d. More commitment among all members of the group to make the final decision work.

However, the participation has disadvantages as well (Schmerhorn et al., 2011):

a. Social pressure to conform: When individuals feel compelled to follow the group.
b. Minority domination: The collective decision may be forced, either by one individual or by a dominant group.
c. Time delays: When there are more people involved in the debates, the group decisions tend to be longer than the individual decisions.

Irvin and Stansbury (2004) performed a review of the citizen participation literature and listed a series of conditions in which participation can be useful, as well as those in which it can be costly and ineffective.

Table 39 represents a visualisation scheme by the authors concerning the advantages of participation, both for the citizens and the government, regarding processes and outcomes.
Table 39 - Advantages of citizen participation in government decision-making

<table>
<thead>
<tr>
<th>Decision Processes</th>
<th>Advantages to citizen participants</th>
<th>Advantages to government</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Education (learn from and inform government representatives)</td>
<td>Education (learn from and inform citizens)</td>
</tr>
<tr>
<td></td>
<td>Persuade and enlighten government</td>
<td>Persuade citizens; build trust and allay anxiety or hostility</td>
</tr>
<tr>
<td></td>
<td>Gain skills for activist citizenship</td>
<td>Gain legitimacy for decisions</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Break gridlock; archive outcomes</td>
<td>Break gridlock; archive outcomes</td>
</tr>
<tr>
<td></td>
<td>Gain some control over policy</td>
<td>Avoid litigation costs</td>
</tr>
<tr>
<td></td>
<td>Better policy and implementation decisions</td>
<td>Better policy and implementation decisions</td>
</tr>
</tbody>
</table>

Source: Adapted from Irvin and Stansbury, 2004

Table 40 is the visualisation of the disadvantages.

Table 40 - Disadvantages of citizen participation in government decision-making

<table>
<thead>
<tr>
<th>Decision Processes</th>
<th>Disadvantages to citizen participants</th>
<th>Disadvantages to government</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time consuming (even dull)</td>
<td>Time consuming</td>
</tr>
<tr>
<td></td>
<td>Pointless if decision is ignored</td>
<td>Costly</td>
</tr>
<tr>
<td></td>
<td></td>
<td>May backfire, creating more hostility towards government</td>
</tr>
<tr>
<td>Outcomes</td>
<td>Worse policy decision if heavily influenced by opposing interest groups</td>
<td>Loss of decision-making control</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Possibility of bad decision that is politically impossible to ignore</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Less budget for implementation of actual projects</td>
</tr>
</tbody>
</table>

Source: Adapted from Irvin and Stansbury, 2004

Up to this point, locating the answers collected from the fieldwork in the literature reveals that the majority of the findings have already been observed in other sites. There are, however, some advantages and disadvantages that were not observed in the fieldwork of this study, although these are likely to be found in Fiocruz. Some differences were found mainly in terms of the disadvantages.

Considering the advantages: A greater number of alternatives (different views) to be considered; the commitment with the decision; and legitimacy, for instance, were findings from across the three PROs. Another advantage found corroborating literature was the empowerment of the grassroots, or skills gained for activist citizenship, also from across the three PROs, highlighting the role of the grassroots observed at Fiocruz.

Regarding the outcomes, those listed by Irvin and Stansbury were observed in the event that motivated this research. Both the grassroots and the managers broke gridlocks and achieved outcomes – a “negotiated” solution. The gridlocks were located on both “sides” of the debate: Both the pros and cons the company project had the opportunity to discuss openly, so that resistance could be faced with information and, in the end, the outcome achieved was the
“dialectic synthesis”. The control over policy process, however, is not something to be achieved, but rather it is an assumption in the case of Fiocruz. As such, it is not the case, also, of litigation.

Nevertheless, it is regarding the disadvantages that the outcomes from Fiocruz reveal a little more difference to the literature. The main similarity is the time-consuming aspect. The authors, however, did not stipulate how long time can be considered as “consuming”. For this purpose, a review conducted by Mintzberg et al. (1976) may be useful to estimate it and check whether the decision-making process at Fiocruz is indeed time-consuming or not.

In that study, the authors investigated 25 strategic decision processes, whose duration lasted from less than one year up to greater than four years, with the following frequency:

- > 4 years: Six firms.
- 2-4 years: Two firms.
- 1-2 years: Seven firms.
- < 1 year: Eight firms.
- Unknown: Two firms.

Table 41, adapted from that study, shows the decisions per category. Six were in manufacturing firms, nine in service firms, five in quasi-government institutions43, and five in government agencies. The time span seems to be spread randomly among the different categories. Hence, it is possible to assure, despite the categories, the time span is supposed to be long.

That can be inferred by comparison to another study, about fast strategic decision-making in microcomputer firms (Eisenhardt, 1989b). In this investigation, the fast decisions ranged from 1.5 to 18 months in the eight firms investigated. The average was eight months, but the mode was 12 months, i.e., the most often length.

Therefore, based on these studies, a fast strategic decision-making process can be regarded as lasting the most one year, whereas a time-consuming one would last at least four years. Observing Table 41, it is possible to notice that the decisions that lasted more than four years were likely to be more complex, such as development of urban renewal programme (decision 20), than those taken, for instance, in less than one year, like firing of radio announcer (decision 5).

43 The authors do not specify, in this paper, what is a quasi-government institution. It is assumed here as a hybrid organisation, similar to Pasteur.
### Table 41 - Decision processes in 25 firms

<table>
<thead>
<tr>
<th>Decision</th>
<th>Duration (Years)</th>
<th>Type of Organization</th>
<th>Type of Decision Process</th>
<th>Number of Steps Reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Change of retirement age policy in a major electronic firm</td>
<td>&gt;4</td>
<td>Mfg.</td>
<td>Problem</td>
<td>Given</td>
</tr>
<tr>
<td>2 Acquisition of distribution agency by marketing board</td>
<td>&lt;1</td>
<td>Inst.</td>
<td>Problem</td>
<td>Given</td>
</tr>
<tr>
<td>3 Institution of new form of treatment in hospital</td>
<td>&gt;4</td>
<td>Inst.</td>
<td>Problem</td>
<td>Crisis</td>
</tr>
<tr>
<td>4 Development of new operating agreement</td>
<td>&gt;4</td>
<td>Serv.</td>
<td>Opportunity</td>
<td>Modified</td>
</tr>
<tr>
<td>5 Filing of radio station</td>
<td>&lt;1</td>
<td>Serv.</td>
<td>Problem</td>
<td>Given</td>
</tr>
<tr>
<td>6 Merger of controlling firm</td>
<td>&lt;1</td>
<td>Serv.</td>
<td>Crisis</td>
<td>Ready-made</td>
</tr>
<tr>
<td>7 Acquisition of new airport for regional airline</td>
<td>1–2</td>
<td>Serv.</td>
<td>Problem</td>
<td>Modified</td>
</tr>
<tr>
<td>8 Purchase of new telecommunication system for hospital</td>
<td>1–2</td>
<td>Inst.</td>
<td>Problem</td>
<td>Modified</td>
</tr>
<tr>
<td>9 Purchase of new building equipment for telephone company</td>
<td>?</td>
<td>Govt.</td>
<td>Opp.-Prob.</td>
<td>Modified</td>
</tr>
<tr>
<td>10 Purchase of new off-line system for manufacturing</td>
<td>1–2</td>
<td>Govt.</td>
<td>Opp.-Prob.</td>
<td>Modified</td>
</tr>
<tr>
<td>11 Purchase of new off-line system for firm</td>
<td>1–2</td>
<td>Serv.</td>
<td>Problem</td>
<td>Modified</td>
</tr>
<tr>
<td>12 Development of new TV program</td>
<td>&lt;1</td>
<td>Serv.</td>
<td>Problem</td>
<td>Custom-made</td>
</tr>
<tr>
<td>13 Development of new brewery</td>
<td>1–2</td>
<td>Mfg.</td>
<td>Opp.-Prob.</td>
<td>Custom-made</td>
</tr>
<tr>
<td>14 Development of new biot in new industrial market</td>
<td>&lt;1</td>
<td>Mfg.</td>
<td>Opportunity</td>
<td>Custom-made</td>
</tr>
<tr>
<td>15 Development of new electronics product</td>
<td>1–2</td>
<td>Mfg.</td>
<td>Opp.-Prob.</td>
<td>Custom-made</td>
</tr>
<tr>
<td>16 Development of promotional program for motorcycle</td>
<td>&lt;1</td>
<td>Serv.</td>
<td>Problem</td>
<td>Custom-made</td>
</tr>
<tr>
<td>17 Development of new super computer in hospital</td>
<td>&lt;1</td>
<td>Serv.</td>
<td>Opportunity</td>
<td>Custom-made</td>
</tr>
<tr>
<td>18 Development of new consumer terminal in port</td>
<td>?</td>
<td>Govt.</td>
<td>Opp.-Prob.</td>
<td>Custom-made</td>
</tr>
<tr>
<td>19 Development of new market for decarbre</td>
<td>&lt;1</td>
<td>Mfg.</td>
<td>Opportunity</td>
<td>Custom-made</td>
</tr>
<tr>
<td>20 Development of urban renewal program</td>
<td>&gt;4</td>
<td>Govt.</td>
<td>Opp.-Prob.</td>
<td>Custom-made</td>
</tr>
<tr>
<td>21 Development of new survey for airport</td>
<td>2–4</td>
<td>Govt.</td>
<td>Opp.-Prob.</td>
<td>Custom-made</td>
</tr>
<tr>
<td>22 Development of new building for new college program</td>
<td>1–2</td>
<td>Inst.</td>
<td>Problem</td>
<td>Custom-made</td>
</tr>
<tr>
<td>24 Development of new plant for small firm</td>
<td>&gt;4</td>
<td>Mfg.</td>
<td>Problem</td>
<td>Custom-made</td>
</tr>
<tr>
<td>25 Development of new headquarters building for bank</td>
<td>&gt;4</td>
<td>Serv.</td>
<td>Crisis</td>
<td>Custom-made</td>
</tr>
</tbody>
</table>

| Totals | 28 | 15 | 25 | 63 | 83 | 33 | 38 | 15 |

Source: Adapted from Minzberg et al., 1976
Those decisions were related to: Change of retirement age (decision 1), institution of new form of treatment in a hospital (decision 3), purchase of seat in stock exchange (decision 4), development of urban program (decision 20), development of new plant (decision 24), development of new headquarters building (decision 25).

Comparing these to the decision process concerning the subsidiaries of Fiocruz, and the debates surrounding this decision, which took around three years, then we can agree that the “time-consuming” perception from the respondents to the questionnaires, as well as the literature, may be more related to an “energy-consuming”, or even dull aspect, in terms of demanding engagement in the debates and studying, for instance, rather than a time that would last much longer than the usual. If we consider that Mintzberg’s work does not discriminate which decisions were made collectively and which ones did not, then the “time consuming” mentioned by Fiocruz staff may be not as long as it may seem at a first approach, especially if we take into account that this three-year decision episode is not the routine in Fiocruz decision-making process, as we could observe in Section 4.

Therefore, regarding similarity to the disadvantages listed by Irvin and Stansbury (2004), the time-consuming aspect should be relativized. Likewise, the other aspects, in terms of processes and outcomes, when applied to the Fiocruz case, should be relativized as well.

This relativization comes mainly from the fact that the authors did not investigate organisations, but participation in government decisions. In the case of Fiocruz, for instance, it is unlikely for the participants to consider pointless if the decision is ignored. Rather, there are mechanisms, such as the “Managers Collective”, which reunites two years after the launching of the strategic plan in order to check whether the decisions and performance for the period have been accomplished.

Another supposed disadvantage is the worse policy decision if heavily influenced by opposing interests. Once more, in the case of Fiocruz, it is supposed to be only one interest, which is the interest of SUS. Nevertheless, there is indeed a risk of influences by opposing interests, but mainly from outside the organisation, rather than from inside.

Considering the side of the government, or the management of Fiocruz in our case, the disadvantages should be relativized as well. The costly aspect, for instance, is referred in the literature by litigation processes, in which disgruntled stakeholders might leave the process or even go to court. It is a risk in Fiocruz as well, but very unlikely to happen, unless perhaps in a situation in which the democratic process was not accomplished.
Concerning the other disadvantage aspects of collective decision-making, either from Irvin and Stansbury (2004) or from Schermerhorn et al. (2011), such as “minority domination” or “social pressure to conform”, they are intrinsic to any democratic system, hence they are on the table and should be faced as part of the process. Both the literature and the fieldwork inform that communication and transparency are the best ways to confront these and other disadvantages, such as lack of knowledge, for instance, one important concern of Fiocruz staff.

Finally, considering the outcomes from the data collected, the main concern pointed by the respondents both from Fiocruz and Pasteur, was the time-consuming aspect, but we have seen that this matter may be more related to the burden inherent to long debates when these are not well conducted, rather than the length of time. Moreover, the literature does not explore much one aspect observed in this Section: The risk of superficiality, which is the “opposite” of the “time-consuming”, i.e., in the case of Fiocruz, there is a risk of settling too many forums for debates, not necessarily followed by consistent discussions.

These two negative aspects observed in Fiocruz, in turn, were seen by the respondents to be faced through communication, assumed as the best means to deal with the lack of knowledge about the subject under discussion; hence, improving the quality of the debates and avoiding the risk of superficiality or time-consuming decisions.
7.7.2. Long-Term Planning

Similarly to the decision-making, we can assert that the outcomes of the long-term planning investigation corroborated the literature as well. In this case, however, literature does not yet explore the subject in terms of the advantages vs disadvantages dichotomy.

The literature review concerning long-term planning, or rather, Foresight, informed us about five elements and rationales (pp. 43-44), which can be a good starting point for the remarks and this is because they can be referred to the previous Section, i.e., to the decision-making outcomes in terms of its formality and participation aspects. Foresight is, firstly, a collective and a formal process (Georghiou, 1996; Reger, 2001). Hence, we can say that the participative culture at Fiocruz, as well as the formal side of the decision-making, provide a proper environment for this long-term exercise.

In fact, Foresight may present solutions to some of the disadvantages of the participative decision-making observed in Fiocruz, namely in terms of communication, which was observed as a means to deal with the lack of knowledge of the subject under analysis, one of the issues that have emerged from the interviews:

"How do you organise an Assembly in which 80% of the people participating have no conditions and no knowledge of the fact; and yet vote?"

Interviewee 2

Part of these gaps of the collective decision-making, such as communication, can be addressed by the 5Cs characteristics of Foresight (Martin and Johnston, 1999):

1. Concentration on the long-term perspective.
2. Communication among the actors.
4. Consensus in terms of a shared vision of the future.
5. Commitment to the results of the exercise.

That is, Foresight, or the long-term planning, can provide chances for the improvement of the democratic decision-making process at Fiocruz. In common, the commitment as a characteristic pointed by the respondents in this fieldwork, and corroborated in the literature, as an advantage when the decision is shared with the grassroots of the organisation.
In fact, the concentration on the long-term perspective and the consensus in terms of a shared vision of the future are examples of characteristics that can grant a meaning, a sense, a direction, a guide, for the participative decision-making process at Fiocruz.

Indeed, the time-consuming issue, related to democratic decision-making, which also emerged from this fieldwork, for instance, we supposed to be related more to the burden of conducting hard debates, rather than to the period itself. In this regard, Foresight, due to its characteristics in terms of building consensus, is expected to generate a common understanding and a shared vision of the future. Therefore, tending to unburden the debates around the decisions for the present moment, considering that a shared vision of future is supposed to be generating a common understanding around the issue to be decided.

Nonetheless, this hypothesis may not resist to a confrontation with reality, such as the “case inside the case”, related to the debates that motivated this research, i.e., to become or not to become a company. It was a debate which occurred concomitantly to the construction of the vision and the plan for 2022. Therefore, supposed to generate that common understanding, but it did not. Not at the beginning.

Although sharing the same vision of future, the tactics through which the employees envisioned to achieve the goals planned for 2022 were different. As seen in Fiocruz Section, half of the organisation wanted to become a company and half did not. Both sides argued about the best way to accomplish the shared vision of future.

In the end, after all, we have seen that the organisation ended with a “dialectic synthesis” (subsidiary company), which was an alternative proposal, and this final decision was made through a neck-to-neck poll. This situation seems to have been extraordinary, because the chances to have one single option out of an originally binary situation (become company x current status quo) were high, given the polarity of opinions.

This experience, therefore, can be regarded as a warning about Foresight in terms of generating a shared understanding around a certain subject, i.e., this understanding is not given simply by having a shared vision, rather it should be worked. In fact, the episode informs us that the participative decision-making in Fiocruz emerges as a very appropriate environment for Foresight, given the degree of participation, as well as Foresight emerges as contributing for the organisation not only in terms of resource allocation or building networks, as observed in the answers, but also in terms of communication, pointed as a gap by the respondents.
7.7.3. The First and the Second Triangulation

Once having analysed the outcomes from the fieldwork, by exploring the raw data and applying the triangulation approach between the questionnaire and the interviews, added of the respective literature, it was possible to locate the role of the collective decision-making for the sample to which the tools were applied, as well as the relationship between the long-term planning structures – Foresight Studies – created in support of decision-making.

At this point, the results of the fieldwork will turn into “inputs” for the “second triangulation”, which is not a triangulation from a purely conceptual sense, but only “secondarily”, taking into account that these “inputs” come from the confrontation of qualitative and quantitative data, the “first triangulation”, referred to the fieldwork data.

The “second triangulation”, then, shall be made in the next Section with the “inputs” from the fieldwork, in light of the characteristics of the organisations and the analysis of their institutional documents.
SECTION 8: DISCUSSION

8.1. Introduction

8.1.1. Connection with Previous Sections

Following the methodological approach of this research, the triangulation of methods was found to be the most adequate in answering the research questions. As observed in Section 3, the triangulation approach will support the analysis of the same phenomena (decision-making and strategic planning) across the three chosen organisations (Fiocruz, Embrapa and Pasteur) and will highlight characteristics of Fiocruz which are regarded as helpful in answering the research questions of this revelatory case study. Therefore, the discussion will discuss not only the findings from the questionnaires and interviews but these findings vis-à-vis the context in which Fiocruz is embedded, including the relevant history of the organisations.

It is possible to understand the findings of the triangulation and the implications of this research into three distinct PROs as long as the uniqueness of each organisation is taken into account. It is because of the PRO concept, as seen in the literature review, which is broad and includes heterogeneous, unique organisations. Therefore, it is the relationship between the organisations – with their idiosyncrasies –, and their respective environments, that is the main focus of this Section, considering that the data collected with the questionnaires and the interviews will reflect the different contexts facing each of the three institutions.

Likewise, for the considerations about the organisations’ idiosyncrasies, it will be necessary to include some specific institutional documents in the analysis. It will complement the understanding of the findings and the institutional context, which can help shed light on cases of possible different meanings to similar answers given to the same question by the three PROs.

Following this rationale, for instance, the profile of the respondents can be regarded as an “indicator” of the different contexts mentioned: Pasteur is the only organisation with a gender balance among its respondents, reflecting an important cultural aspect of the country of the French Revolution and the protests of May 1968, whereas Fiocruz and Embrapa are embedded in a Latin American patriarchal culture, reflected by the absolute majority of males in the management bodies of these organisations.

Moreover, Fiocruz and Embrapa were created (Fiocruz, in its case, was “re-created”) during the dictatorship of a country characterised by a “slavocrat” culture and a huge social inequality,
although they have developed different profiles and different organisational cultures in this shared context.

8.1.2. Aims of the Section

The main objective of this Section is to answer the research questions. Before that, however, it is necessary to contextualise the organisations in terms of history and culture, which will help interpret the findings from the fieldwork, by locating the points of views of the respondents and understanding their meanings.

8.1.3. Subsections

There are three subsections. The first one contextualises the three organisations according to Schein’s organisational culture (p. 65), taking into account the findings from the fieldwork. These findings will help characterise each organisation regarding artefacts, values and assumptions. It is the upper right vertex on Figure 7 (p. 66).

The second subsection concerns the analysis of the organisation’s documents, or rather their strategic plans, this time taking into consideration both the findings and the characteristics of the organisations. It is the bottom vertex on Figure 7.

The last Section, finally, is dedicated to answering the research questions.

8.2. Contextualising the Three PROs: Fiocruz, Embrapa and Pasteur

To better understand the meanings and to qualify the implications of the answers given by all the respondents, the concept of organisational culture will help the qualitative analysis of this research:

“A culture is a set of basic tacit assumptions about how the world is and ought to be that a group of people share, and that determines their perceptions, thoughts, feelings, and, to some degree, their overt behaviour.”

Schein, 1996, p. 11

The author considers three levels of culture (Schein, 2010):

- Artefacts: This is the most visible level, the “surface”, and it is related to the characteristics of the organisations, such as the architecture, language, myths and stories, including organisational processes and formal descriptions about the routine of the organisation. Although easily visible, they are not easily meaningful, i.e., the artefacts alone do not express their meanings to a given group.
- Espoused beliefs and values: These are the official values of the organisation underlying the artefacts, expressed in terms of rules of behaviour, according to the organisation’s philosophies and or ideologies. They express the employees’ mindset, either by consensus or by training the new ones.

- Underlying assumptions: These are the core of the culture, taken for granted and invisible. They are unconscious, not usually stated, hence difficult to be recognised by the group within the culture.

For this research, the artefacts are mainly expressed by the characteristics of the organisations, as described in the respective Sections. The values, in turn, are those in Figure 25. The first thing to note is that there is a clear difference between the lists of Fiocruz and Embrapa, and Pasteur’s list.

Pasteur’s list, apropos, is not exactly a list of values, but principles. In fact, none of the documents on the website of this PRO, including its strategic plan, mentioned what the values of the organisation were, and this is unusual as it is common to observe such “values” on corporate websites and documents. Instead, however, there is a list of principles in the Cooperation Agreement of the Pasteur Institute International Network (Pasteur, 2015b, 2014).

Therefore, due to the absence of formally identified values on the website and documents available, and considering that the international network is the “new identity” of the organisation, the principles of Pasteur International Network are taken as the values of this PRO for the purposes of this research.

Observing Figure 25, there is a visual imbalance in it, placing Fiocruz and Embrapa on one side and Pasteur on the other, indicating their different experiences with strategic planning. There is also another “imbalance”, this time placing Fiocruz on one side, with Embrapa and Pasteur on the other. It is due to the difference between the values of Fiocruz and the other two PROs.

The values of Fiocruz are mainly differentiated because of aspects such as (science and innovation for the) socioeconomic development and health promotion; reduction of inequities; social transformation; and participatory democracy. Fiocruz is clearly committed to contributing to better conditions of life through health innovations, particularly.

In the case of the other two PROs, Embrapa’s values are the most “elaborated” and “meaningful”. The organisation’s list appears to be correlated to the word cloud concerning the outcomes of the strategic decisions: “embrapa” and “today” (Table 35, p. 228). It is because
the majority of its values are linked to the organisation’s activities (line 1); teamwork (line 2); diversity in pursuit of goals (line 3); and delivering the best (line 5), i.e., these are values envisioning the performance of the organisation. In this regard, the concern is the organisation. There is, however, a concern beyond the borders of the organisation as well, and it is expressed in terms of “return investments to society, with a due commitment to the environment” (line 6), and “seeking solutions for the agriculture” (line 7). The other two values are related to ethics and transparency, which are values shared with Fiocruz (line 3), as well as some of the reflexive or inward-looking values, such as quality and excellence (line 5).

Figure 25 - Institutional values – Fiocruz, Embrapa and Pasteur

In this sense, it is possible to state that the main distinction between the values of Fiocruz and Embrapa is that the values of Fiocruz have a social perspective, in terms of reduction of inequities (line 8), for instance, whereas Embrapa’s values is a more embedded in a technical characteristic, i.e., although the values of the organisation include, for instance, social-environmental responsibility (line 6), they do not express a commitment to social transformation, such as the reduction of inequalities, but technical aspects which include “excellence” (line five) and “flexibility” (line 7), for instance. In this regard, Embrapa’s values

Source: Fiocruz, 2010; Embrapa, 2015; Pasteur, 2015
are supposed to be ordinary ones, linked to good practices of sustainability, ethics, transparency, and others, that can be assumed as “sustainable business” (Dyllick and Muff, 2015; Gladwin et al., 1995).

Nonetheless, this “social perspective” of Fiocruz, related to the reduction of inequalities, is in fact underpinned by a technique argument:

“For some time now, also, has arisen a concept of the economic cycle of the disease, often criticised, including even by myself. At this point, perhaps with important trait-back, because it is a notion that should be understood and thought with simplicity. This concept of health/disease says only this: If a person makes little money and cannot buy what is fundamental for his or her survival, he or she cannot recover all energy that is expending to work, and therefore weakens. If someone does not live well, does not have a home protecting against environmental damage, if someone does not have access to education, he or she is not aware of what to do to master the nature. Everything finally leads to the conclusion that, if a person does not eat what is the minimum necessary and suitable for the reproduction of life, he or she is weakened, and, if weakening, loses the fight against the aggression and gets sick. Getting sick, he or she cannot work and cannot win all the fights of a competitive society. Therefore, he or she works less, talks less, lives worse, have worse water, feed worse and gets sicker.”

Arouca, in: Brasil, 1987, pp. 36

This is the meaning of the value “reduction of inequities”, which differentiates Fiocruz both from Embrapa and Pasteur because it implies engagement in social transformation, pursued in the case of Fiocruz through science, technology and innovation for health, particularly for SUS.

The fact that the values of Pasteur are not displayed on its website and documents adds elements to the findings indicating the organisation unfamiliarity with strategic planning. It is not mandatory, however, for any organisation to display its values to the public, yet their absence in a strategic plan can be regarded as a signal of such unfamiliarity. It could be that this absence is not only indicative of it. However, we could also argue it is a metaphor for an organisational lack of interest in the subject underlying the research: Management.

In this respect, it is meaningful to note the fact that three out of 17 potential respondents to the online questionnaire, from the Management Team of Pasteur, took the time to inform this researcher via email that the research is “not of interest”. This attitude indicates more than simply ignoring the email that was asking them to take part of the research – a common behaviour due to the priorities of day-to-day life but also indicates underlying assumption among the management team that such research projects are not valuable.
Therefore, considering that Pasteur showed by far the lowest response rate from the three organisations (Table 4, p. 80), then it is possible that those three “non-interested-respondents” were expressing not only their disinterest, but also the opinions of the eight non-respondents, or part of their views. In fact, as observed by one interviewee:

“I think it is better now than in the past, ten years ago. It is more structured and organised now than ten years ago when decisions were taken by different people, not anyone specific, sometimes the researcher, sometimes the director. Now it is clearer (...) Before, administrative functions were very low, not interesting for anyone. Now they are more than important. Administrative functions have gained importance, and it is almost at the same level of scientific functions; it is more heard.”

Interviewee 14

The quote above, rather than signalling that the organisation is undergoing changes (both the developmental and the transitional types – pp. 30-31), it informs us that, despite any change that might be happening, the “scientific functions” remain in power, whereas the administrative functions became “more heard”. Another interviewee was clear about this point:

“We have to distinguish two periods: Before 2000 and after 2000. Before 2000 the organisation of the Pasteur Institute was more or less “a council” familiar or paternalist, but most of the decisions were made internally.”

(...) “After 2000 there has been a complete change with the creation of the AERES. AERES is the Evaluation Agency for Research and Higher Education44. It is an external committee, which evaluates from outside. It is the great change of the process of evaluation, of decision-making. But there are two other kinds of evaluation. One great change is linked to the “editorial policy”. For instance: You have a paper in Nature, then it gives you a ‘key’, even if I do not know what there is in the paper. Nature has decided what is important. It is a caricature, but I think that impact factor of the review has a strong influence on the process of decision, because, in the scientific committee, AERES and so, the director has no time to read all the papers and so.”

Interviewee 11

The interviewee tells us that the process of choosing the members of the different boards of the organisation relies on the scientific merit of potential joiners, rather than anything else. In this same quotation, he/she informs us that before 2000 the organisation of Pasteur Institute was more “familiar”, more paternalist, i.e., there was not a culture of professionalism. Then, after

44 http://www.aeres-evaluation.com
2000, there was a “complete change” with the creation of AERES, which was supposed to overcome the “old system”. The aftermath, however, seems to have been a “re-invented paternalism”, this time under the technical competence of “star researchers”, no matter the fields they are from.

The power of the scientists can be observed in the event called “Fit of Rage” (Marchand, 2015), mentioned in the last Section (Table 34, p. 223 – rows 12 and 14). It was an occasion in which the Institute needed to attend to a requirement from the authorities to refurbish some buildings for security reasons. Otherwise, they would have to be closed. A private company then offered some lands in the suburbs of Paris for the construction of new facilities, but the possibility of moving to the suburbs generated a hostile resistance at the time. The Administrative Council resigned generating a crisis that spread across the organisation, culminating in the resignation of the President.

“A very important problem came when the head of Pasteur decided to put a big part of Pasteur in another place in the south of Paris because we needed. There was a big resistance. In the beginning, it was a logic decision, in the Human Resources point of view. Some scientists did not want to go, and the direction had no choice. There was a lobby from some scientists. The direction chose some to go and others to stay. There was a plan, and people do not always follow the plan. There are important scientists who can change the decisions. Sometimes they are wrong, but they have power. It is a problem if you want to work as a company. They can even expel directors.” [Emphasis added]

Interviewee 14

The prominence of the scientist in Pasteurian culture, in fact, had been observed in the word cloud concerning the changes that happened as a result of the strategic decisions the organisations made in the last 15 years (Figure 23, pp. 216-217). This prominence, in turn, is underpinned by the assumption that human resources are one of the main assets of this PRO, as the last Section pointed out (pp. 232-233), indicating a rationale that comes as a heritage from the founder of the Institute: Scientific curiosity guiding research, or rather, biomedical research. The editorial text of the strategic plan is clear about this point (Pasteur, 2014):

“(…) In keeping with the humanistic nature of its founder, the Institut Pasteur champions the avant-garde spirit necessary for the conduct of advanced biomedical research (…)”

Christian Bréchot, President of Pasteur Institute
The quote summarises essential characteristics of this PRO: At first, the image of the humanistic founder of the Institute. Secondly, the avant-garde spirit of the founder inspiring the research at the frontier of knowledge. Third: This knowledge is biomedical.

These three characteristics, in turn, are common between Fiocruz and Pasteur: The image of the founder; the inspiring avant-garde spirit; and the biomedical knowledge. Fiocruz, however, has a wider research portfolio, which reflects a holistic approach to health, although also maintaining a solid biomedical tradition, in fact, a heritage from Pasteur (p. 126).

In both cases, Fiocruz and Pasteur, the biomedical tradition is reflected in similar actions envisioning health innovation for infectious diseases, including the application of the concept of translational research (p. 105); production of vaccines; and establishing partnerships with industry in order to push the innovation process through the manufacturing of new drugs.

Pasteur, however, offers the possibility of access to the ultimate equipment for biomedical research, such as technological platforms, which attracts brainpower from all over the world, creating a virtuous circle, considering that these brains help build projects that attract donations, which attract more brains and more equipment, forging an encouraging environment for research. It is different from the context the Brazilian PROs in this study face, where the import of the equipment faces bureaucratic constraints at airport customs, delaying research programmes potentially for months, and forging a far more hostile environment for research and innovation in the country (Academia Brasileira de Ciências, 2013). It is a strong difference between these organisations. As a whole, however, they all share a commitment to research on the frontiers of knowledge, and to achieving technological discoveries and positive outputs for science.

Nevertheless, differently from Pasteur, the Fiocruz portfolio of research is more diverse, expressing a holistic point of view of health, whereas the former has a clear focus: Biomedicine. In this sense, the research going on in Pasteur can be characterised as having an organicist perspective, while not addressing all the aspects of the health-disease process as Fiocruz does, including the “Social Determinants of Health”, which is a debate led by the WHO since the 2000’s (Buss and Pellegrini Filho, 2007).

In this regard, the aforementioned scientific curiosity of Pasteur is characterised as holding both a “specialised” research agenda and a culture of technicism\(^{45}\). While not addressing other

\(^{45}\) "Technical quality or character; technique; (also) the use or advocacy of scientific or technological methods, emphasis on technique." [highlights given] - https://en.oxforddictionaries.com/definition/technicism.
health aspects aside from the specialism of biomedicine, Pasteur pushes the science of microbiology to its ultimate state of innovation at the frontiers of science.

This *culture of technicism* is a characteristic that Pasteur shares with Embrapa. Similarly to the former, the latter is focused on applied research and adopts a positivist approach to S&T\(^{46}\). It means that the technicians and researchers in Embrapa treat techniques as if they were neutral and would inextricably generate material prosperity, no matter the different political projects and models of development (Serafim, 2011).

In fact, as observed before, Embrapa was created under technocracy:

> “Embrapa was born in a military time, totally dominated by technocracy. To understand its birth, it is necessary to understand this context.”

Former President, in: Brito, 2000, pp. 76-77

As a military creation, the strong technocratic rationale forged a centralised culture: Hierarchical and authoritarian. Similarly to Pasteur, the centralism generated “star researchers” (Brito, 2000). However, differently from Pasteur, these “star researchers” do not seem to have the same power as Pasteur’s, as demonstrated in the “Fit of Rage” episode, for instance.

In this regard, “stars” exist everywhere and this is no different to the culture in Fiocruz. These are professionals whose status comes from hard work and innovation, improving the reputation of the organisations (Lucey et al., 2010). In the case of Fiocruz, a good proportion of these “star researchers” recognise the relevance of management in addressing the needs of the institution’s research. Others, however, also regard the institutional planning and decision-making processes as “not of interest”, echoing those responses we heard earlier from Pasteur.

As a whole, and taking into account the findings pointing out the interaction process of exchanging information and experiences with the grassroots both within Fiocruz and Embrapa, it is feasible to ascertain that the stars from both these two PROs are more integrated into the decision-making processes than those from Pasteur.

Nevertheless, the aforementioned interaction with the grassroots within Fiocruz and Embrapa observe a different perspective from each of the organisations, also pointed out before (p. 237), i.e., although both organisations indeed interact more with the grassroots than Pasteur, in Embrapa this interaction has a characteristic similar to Pasteur’s in terms of being a source of

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\(^{46}\) The “technicist approach” is not characterised by applied research or the Positivism, necessarily. Rather, it is better characterised by a strong emphasis on technique, whatever these techniques are. However, the “technicism” often relies on the positivist perspective and believes the techniques only are enough to deal with reality.
information. Neither Pasteur nor Embrapa gives the same status or attention to the grassroots as Fiocruz does.

The same historical context of Fiocruz and Embrapa, however, has led to very different trajectories: A strong centralisation in the case of Embrapa, and a strong decentralisation in the case of Fiocruz (Salles-Filho et al., 2001). It, certainly, reflects their different cultural trajectories and philosophies, although both of them equally perform strategic roles for the development of the national state.

Fiocruz, as seen in its history, was “created” in the ‘70s pushed by the meningitis outbreak, through a tentative of homogenisation of some of the government institutions. The re-democratisation of the country in the ‘80s, in turn, was when Fiocruz re-invented itself, with the debates that would culminate in the creation of SUS, the new policy for health based on citizenship and expressed in the constitution. The history of Embrapa was quite the opposite: The organisation appeared in the aftermath of a policy aimed at modernising Brazilian agriculture to face the challenges of growing populations, in the context of the “Green Revolution” (Section 5). In this sense, it can be said that Embrapa is the result of a policy in the agricultural field, whereas Fiocruz supported the creation of a policy in the health field.

Embrapa, an institutional project born from a deliberate policy, was part of the broader action plan of the government at the time in Brazil, in which the organisation occupied a central role. However, that was not enough to accomplish the mission of modernisation of the agriculture if other sectors of the government were not similarly involved. Aiming at exports, the government promoted huge changes in the infrastructure. The agricultural sector, as a matter of national security, counted on massive support and the target was the producer, the consumer.

In this regard, for instance, Fiocruz did not count on any specific or similar policy for public health to boost the sector. Health was not a matter of national security. In fact, the health policy set with the creation of SUS was not an initiative of the government, but a collective work of the professionals along with the population, the social movements.

In fact, the government had made an option to contract private services, as well as the financial subsidies for the construction of private hospitals, instead of investments in public health care structures. Similarly to the rationale in the agricultural field, in the health sector, the government envisioned a system like the one in the USA. In this context, the proposal of a universal public health system was counter-hegemonic (Bertolozzi and Greco, 1996; Elias and Cohn, 2003; Faleiros et al., 2006).
So far, the main distinction between Fiocruz and the other two PROs is the object, or rather the approach to the object they work with. Both Embrapa and Pasteur award a very specific focus on the power of technology to address solutions for a better living to humanity. The object, in the case of Embrapa, is the seed, the soil; the agriculture. In the case of Pasteur, the object is the microbe, the virus; the biomedicine. In Fiocruz, on the other hand, the object is the health of the human being, understood as a citizen. Therefore, health ranges from the use of pesticides on food up to the ultimate vaccine, including the right to have access to health services as well as drugs. In this respect, it is possible to assert that the “object” of Fiocruz is SUS in terms of health promotion, protection and recovery (Brasil, 1990b).

Perhaps an exercise of imagination is suitable to illustrate their differences. Supposing that Pasteur, which is in the same field, had the same concern of Fiocruz to health as a universal right, demanding social transformation, an expression of citizenship and so on, rather than an exclusive biomedical approach: Perhaps the international network of Pasteur would not have become as big as it is today, for instance, because of the possibility that social transformation might threaten local power, for any reason. In the case of Embrapa, applying the citizenship perspective of Fiocruz, instead of focusing on the consumer, is it likely that the debate would include land reform as well.

Therefore, watching not to reduce the complexity of each of the organisations, especially when referring to their organisational culture, Figure 26 represents a tentative to summarise some characteristics observed so far, which may help locate the underlying assumptions of each one of them.
These eight characteristics may not explore all the aspects concerning the underlying assumptions of the organisations, but maybe they are enough for the purpose of crystallising what has been discussed up to this point, helping to visualise how the organisations relate to one another, according to those characteristics.

Embrapa, coincidently in the middle, shows characteristics both of Fiocruz and Pasteur. Similarly to the former, it is a strategic organisation for the State; it is experienced in strategic planning, and it mirrors within its premises the overall patriarchal culture of the country.\(^{47}\) Albeit sharing the same environment of Fiocruz in terms of history and rules, however, Embrapa shares more organisational characteristics with Pasteur. These are the centralism (or “paternalism”); hierarchy (star researcher on top); meritocracy (articles published in Nature); technocracy (or “technicism”).

It is however surprising that Fiocruz and Pasteur do not share any points of intersection, but in fact, this only tells the half story: Considering that the characteristics listed are those that are most prominent in these three PROs. Hence, as previously observed, for instance, there are star researchers at both in Embrapa and Fiocruz, but neither of them shares the “star performer” culture observed so prominently in Pasteur.

There are also then “secondary” characteristics which may be helpful to list too. These are not the most prominent in the organisations, yet they are present and are common to the three

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\(^{47}\) In the case of Fiocruz, one more evidence of this is the official program “Gender Equality”, which was launched in order to lead the counterbalance of genders within the organisation.
PROs. Five are listed: Star researcher; hierarchy; meritocracy; avant-garde science; and technicism. In Figure 27, the characteristics are written in red where they are found in a secondary capacity.

Figure 27 - Secondary and common characteristics of the organisational culture
Fiocruz – Embrapa – Pasteur

Embrapa remains in the intermediary position considering that its common aspects to the other two PROs are both its main and the secondary characteristics, but what distinguishes this organisation from the other two is the technocracy. In this sense, it can be said that it is a type of “technicism” elevated to the last degree, involving managerial aspects, as well as the highly technological research conducted within its premises. The recently created Agropensa system is the ultimate outcome of this perspective.

However, all the aspects identified need to be understood according to each organisational context, as pointed out previously. The hierarchy in Pasteur, for instance, is the hierarchy which places the star research on top. In Embrapa, it is the hierarchy of a technocracy, and in Fiocruz it is the hierarchy of collective decision-making.

Also, it is important to highlight that culture is emergent (Bonder et al., 2004), a movement of practices, underlying values and people that are constantly being shaped by the internal and external contexts every organisation must contend with. Therefore, it is important to note that all three PROs are, necessarily, undergoing changes in their culture at this moment.

Pasteur, from launching its first strategic plan in 2014, is potentially forcing its researchers, including those “star” ones, to think about their practices from a “different” point of view. Considering that administrative functions used to be left aside in the past, it is indeed a signal of change the fact that the organisation has made its first steps in strategic planning in an
environment which used to make use of “familiar administration” in the recent past, via paternalistic initiatives.

In the case of Fiocruz, it has been a process since the first plans of the organisation, which were dedicated, at first, to settle the identity of the organisation and, at a second moment, the settlement of its path to the future. In this respect, Fiocruz has been undergoing a long process of developmental change along the years since the ‘80s.

Embrapa, in turn, is the organisation which has been concerned with management aspects since its creation, but it was only in the ‘80s that the organisation, like Fiocruz, started its formal strategic planning. It is because the new constitution demanded the federal government, and its organisations, to make multiannual plans (Brasil, 2015).

8.3. The Strategic Plans

As seen previously in Section 3, the strategic plans of the organisations are the main documents of interest of this research. For the purpose of comparison, the analysis will consider the last strategic plans – or equivalent – of Embrapa (2015) and Pasteur (2014), but in Fiocruz it will be the penultimate one (2010), and this is because it is the one concerning the “case inside the case”, i.e., the event that motivated this research. The last Internal Congress of Fiocruz (2014), in fact, was the unfolding of the previous one in 2010, and aimed at structuring the axles of the strategic map that had been established in that plan and, also, at officialising some new structures created in alignment with those guidelines, as well as attempting to adapt the organisation to the new Brazilian S&T legal framework (Fiocruz, 2015b). The documents under analysis are:


The reason why there are two documents from Embrapa is that its Master Plan is based on the Vision document. The documents are therefore two parts of one single effort.

The first aspect to be highlighted concerning the strategic plans of the three PROs is the fact that Pasteur only recently, in 2014, launched its first plan, whereas Fiocruz and Embrapa both
launched their first plans in 1988, attending to a new constitutional requirement from the Brazilian government.

As a whole, it is possible to interpret the plans as an expression of the organisational characteristics mentioned before. Both the plans of Embrapa and Pasteur are objective summaries of the guidelines established for the periods chosen, as well as the organisations’ strategic objectives. Both documents are presentations of the plans of the organisations to a broader society. In the case of the former, however, the plan is an outcome of more fundamental work at the organisation which envisions the great technological challenges of agriculture for the next 20 years, based on scenarios (Embrapa, 2014).

In the case of Fiocruz, their plan is also a presentation to a broader audience and, in comparison to Embrapa, the plan contains both the scenarios and the strategic map, for instance, in only one document. In this regard, the Fiocruz document is more comprehensive.

However, despite the framework chosen to build each document, we can interpret the plans as artefacts from Schein’s culture model: Expressions of the different perspectives and organisational cultures that have been unfolded in this research. The opening words of each of the plans, from the Presidents of the three PROs in this study, may provide more evidence of the underlying assumptions of each organisation.

The President of Fiocruz, for instance, addresses the commitment of the organisation to the health and the improvement of the quality of life of Brazilians, besides positioning itself as important for the country’s long-term plan:

“With these perspectives, Fiocruz, as a differentiated institute in the field of science and technology in health, positions itself as an important piece of the Brazil 2022 Plan, which seeks to think the country strategically for the year in which the Bicentenary of Independence will take place. The VI Congress addressed the theme by projecting how the Foundation will be contributing to the country in 12 years. The event, a unique experience of institutional collective construction, enables us to present to society strategies and projects that reinforce our commitment to health and to improve the quality of life of Brazilians, renewing a legacy that comes from the times of the patron Oswaldo Cruz, from Carlos Chagas and many generations of researchers and workers over the decades.”

Paulo Gadelha, 2010
President of Fiocruz

The President of Embrapa, in turn, corroborates the word cloud outcomes “embrapa” and “today”, indicating the organisation itself as a major concern to its managers. There is no
mention of its strategic position for the country, as was so salient for the President of Fiocruz, for instance:

“In this way, much more than a document, Embrapa’s VI Master Plan is the reflection of a real managerial transformation that has been implemented in Embrapa, in order to provide the company with the conditions to face the constant challenges that are presented. It is ultimately the proof that scientific revolutions, so widespread in the academic world, can also be operated by institutional revolutions.”

Maurício Lopes, 2015
President of Embrapa

The belief in the exclusive power of technology to address the needs of the sector is in the presentation of the Vision document:

“Agricultural production today has the challenge of continuing to develop, in a sustainable way, in times of rapid changes and paradigm breaks. More efficient technologies will be needed to meet the demands of food, fibre, energy and other raw materials for the processing and green chemistry industries, and export surpluses in order to contribute to global food and energy security. The research and innovation system - integrated into a network of knowledge that brings together organisations from all over the country - will need to be prepared to respond to demands for increasingly complex and demanding agricultural production.”

Maurício Lopes, 2014
President of Embrapa

Finally, the President of Pasteur, who confirms the organisation’s commitment to applied research:

“In this context, the strategic plan presented in this document is intended to reignite the ambitious vision and the leading role of the Institute, while maintaining the uniqueness of its position. This strategic plan focuses on eleven priorities: Our scientific vision, recruitment and career management, our educational mission, the essential role of the Institut Pasteur International Network, the organisation of research, and development of transversal and incentivised research programs, public health and translational research, national and European Research strategy, valuing Pasteur research and industrial partnerships, upgrading our infrastructure and our fundraising strategy.”

Christian Bréchot, 2014
President of Pasteur
Besides the Presidents’ words reiterating the identity of each of the PROs, the organisations’ mission statements are complementary and reinforce these identities. The strategic plan of Pasteur does not contain the organisations’ mission or list its values explicitly. It does not mean, however, that the organisation has no mission. It does, and it is displayed on the organisation’s website (Pasteur, 2017). See Figure 28 below.

Figure 28 - Mission statements of the three PROs
Fiocruz – Embrapa – Pasteur

- **Fiocruz**: Produce, disseminate and share knowledge and technologies aimed at the strengthening and consolidation of the Unified Health System (SUS) and contribute to the promotion of health and quality of life of the population, to reduce social inequalities and to the dynamics of national innovation, with the defence of the right to health and the wide citizenship as core values.

- **Embrapa**: Provide research, development, and innovation solutions for the sustainability of agriculture and for the benefit of Brazilian society.

- **Pasteur**: Help prevent and treat diseases, mainly those of infectious origin, through research, teaching, and public health initiatives.

Source: Fiocruz, 2010; Embrapa, 2014; Pasteur, 2014

Rather than confirming the different, or similar, perspectives of the organisations, which are also reflected in the strategic objectives of each, and other parts of these documents, the analysis of the plans informs us that the different experiences with strategic planning should be considered. In this respect, considering that Fiocruz and Embrapa have been regularly making their strategic plans since 1988, the organisations could be “grouped” with these two as being more experienced in the practices of strategic planning, and Pasteur with less experience on the other side, considering this 2014 plan is the first one launched by the organisation.

Although more experienced in strategic planning and sharing the same historical context, Fiocruz and Embrapa developed different experiences with it. Whereas the former, inspired by Arouca’s seminal “Democracy is Health”, adopted a participatory process of decision-making which has been gradually evolving over the years and culminated in the first-ever plan to incorporate long-term analysis, Embrapa has been applying the long-term perspective since its first Master Plan, in 1988. Despite some managerial changes during this period, the long-term analysis follows the technocracy rationale that comes from the military regime of 1964-1985.
Similarly to Fiocruz, in this sense, the long-term analysis has improved over the years, culminating in the creation of the sophisticated Agropensa system.

The document “Vision 2014-2034” is the first product delivered through Agropensa. The making-of that document took two years – including the creation of Agropensa –, and involved more than 200 people from virtually the whole company, plus partners, both in Brazil and abroad, from the Academy, government, private sector, research organisations and the civil society.

According to the words of the President, quoted on page 263, the last Master Plan is the reflection of a “managerial transformation”. It is likely that he was referring to the effectiveness of this new Agropensa system, but from the point of view of Fiocruz, the “managerial transformation” would be related to the involvement of more than 200 people, a number not far from the 300 delegates that take part in the congresses of this organisation every four years.

It is an outstanding achievement that Embrapa managed to develop such a system, and this could perhaps become a benchmark for Fiocruz and other PROs in the future. Perhaps this “benchmarking” hereby proposed, however, is not explicitly connected to the Agropensa system, as it may seem at first, but to the historical commitment with long-term planning at Embrapa, expressed in each one of their six Master Plans. The strategic positioning of the company, the development of the strategic objectives, as well as the actions for the short-term (multiannual plans), have always been based on a broader long-term analysis. In Embrapa, the strategic planning is inextricably associated with the long-term analysis. In this sense, it is noteworthy recovering a quote from an interviewee (p. 232): “I always say that the future is our main input”, meaning that strategic planning in Embrapa is a synonym of long-term analysis.

In this sense, the concept of strategy at Embrapa, and Fiocruz, links to the concept of Chandler: “Strategy can be defined as the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals” (Chandler, 1962, p. 13).

Literature corroborates this “Chandlerian” perspective, by both the “merging” between the classic strategic planning and long-term planning in Minzberg’s Planning School (p. 41), and the adoption of Foresight by large R&D corporations as an integrated part of decision-making at all managerial levels, considered, similarly to Embrapa, a core activity of the strategy
formulation of the company. It is the “third generation of Foresight”, as stated by Reger (pp. 44-45).

The third generation of Foresight can be regarded as an expression of Chandler’s concept of strategy because it is an integrated part of the decision-making process, or rather, part of the strategic planning of the organisations, encompassing both the long-term and the actions of the present moment. Likewise, Miles and Keenan (2002) called the third generation of Foresight as “Fully-Fledged Foresight”, distinguishing it basically as a model that involves a wider range of stakeholders, beyond the boundaries of the organisation (p. 45).

The recent experience of Embrapa, in particular, in which the organisation created a broad network of stakeholders and experts (including Universities, government, the private sector, research organisations and civil society) to build the document Vision 2014-2034, can be considered a Fully-Fledged Foresight experience, according to Miles’ three elements.

The case of Fiocruz may not yet follow this trajectory for the 2022 Plan from the VI Congress. In this case, there was a broader range of stakeholders, but mainly at the beginning of the debates at the Secretariat for Strategic Affairs of the Presidency of the Republic, which was the body in charge of the Brasil 2022 Plan of the government as a whole.

As an unfolding of that plan, the 2022 Plan of the VI Fiocruz Internal Congress, however, was made only with the participation of the Fiocruz staff and community, without involving a wider range of stakeholders, as Embrapa did. Nevertheless, it is a strategic plan underpinned by a systematic analysis of the long-term, albeit not a Fully-Fledged Foresight, since it did not involve wider networks.

In this sense, however, both plans embody Chandler’s concept of strategy regarding the establishment of long-term goals and objectives, and the adoption of actions, as well as the allocation of resources, necessary for the accomplishment of these goals. Splitting the concept:

- “strategy can be defined as the determination of the basic long-term goals and objectives of an enterprise”. It is what we know and understand as long-term planning.
- “and the adoption of courses of action and the allocation of resources necessary for carrying out these goals”. It is the traditional strategic planning, or rather, the applied strategic planning, i.e., the adoption of courses of action as well as the allocation of resources are underpinned by the analysis of the organisation’s position (strengths and weaknesses) vis-à-vis the environment (opportunities and threats). These, in turn, are made in light of the long-term planning.
Therefore, taking into account Chandler’s concept of strategy and applying Miles’ concept of “Fully-Fledged Foresight”, this research will propose the development of a parallel idea of a “Fully-Fledged Strategic Planning”, which is the strategic planning cited in Reger’s third generation of Foresight, i.e., a strategic planning based on Chandler’s concept of strategy and applying Miles’ Foresight elements, most notably the involvement of stakeholders from beyond the boundaries of a single organisation.

In this sense, the “Fully-Fledged Strategic Planning” is that model of strategic planning acting as a counterpart to the model of Fully-Fledged Foresight, meaning that it is the category of strategic planning which makes use of the Fully-Fledged Foresight model, as proposed by Miles.

In order to clarify the ideas and avoid confusion between the concepts, the following scheme may help understand this “Fully-Fledged Strategic Planning”, which is hereby proposed in terms of a continuum:

1. Traditional Strategic Planning: The one observed by Mintzberg in the Planning School, which makes use of SWOT analysis (p. 41). It is the Strategic Plan made at Pasteur.

2. Complete Strategic Planning: The strategic planning that makes use Chandler’s concept of strategy, i.e., it is underpinned by a systematic long-term analysis and refers to Reger’s third generation of Foresight. It is the Strategic Plan made at Fiocruz.

3. Fully-Fledged Strategic Planning: It is one step forward from the “complete strategic planning”, and makes use of the Fully-Fledged Foresight. The main difference between this one and the previous model is the fact that the complete strategic planning works only with the networks from within the organisation, whereas the fully-fledged encompasses a wider network of stakeholders, including those from outside the organisation. This new model is proposed as being the Strategic Plan made at Embrapa.
8.4. Answers to the Research Questions

After positioning Fiocruz in terms of its approach to the field, or rather, its identity as a PRO which internalises citizenship as a core value, the supporting concepts to the fieldwork results in answering the research questions have been explicated and explained, and now we move on to a detailed attempt to answer the research questions of this project. The unfolding of the unique Fiocruz experience with strategic planning makes a focus on how and why PROs make strategic decisions a significant aspect of this research, and hence the first question to this Section will attempt to answer.

To recap, the collective results employed to answer the research questions are: The findings from the fieldwork (questionnaires and interviews); the diversity of the organisations; and the archival analysis. These are the points underpinning the discussion leading to answer the research questions, one by one.

8.4.1. Research Question 1: What is the role of collective decision-making in the formulation of strategic planning in a research-led organisation with the complexity of Fiocruz?

The answer to this question draws on the industrial democracy literature, which was found to provide the most appropriate approach for understanding the “democratic managerial administration” model of Fiocruz. Recovering the “atomic model” scheme from Section 2, a further look back at this literature, in light of the findings and the discussion made up to this point, shall raise the elements necessary for the answer. Figure 29 illustrates the core literature this investigation is expected to contribute to.
As seen in Section 2, the literature is vast. Poole et al. (2001) identified three approaches to understand the emergence of industrial democracy, one of these approaches most appropriate to the case of Fiocruz is the “favourable conjecture”, to which they developed a model of analysis that may be useful to answer the question. It provides four variables for analysis: a. Macro-Conditions (external to the organisation); b. Strategic choices of the “actors”; c. The “power” of the actors; and d. Organisational structures and processes at the level of the firm.

The macro-variables include structure variables, such as economic and technical conditions; subjective variables, including cultural values and ideology; plus the legal framework and policy, which involve the government initiatives to promote industrial democracy.

Source: Poole et al. (2001)
Applying this framework to Fiocruz, the favourable conjuncture was given, regarding macro-conditions, by the re-democratisation of the country, the citizenship as a core value among health workers, and the legal framework was the new constitution. These conditions, however, were not an initiative from the government, but a result of the movement of health workers, i.e., the “favourable” conjuncture was the aftermath of active social movements against dictatorship. Therefore, there was no “strategic choice arrangement” from the government, but from the workers, which established the first Internal Congresses as a strategic choice.

Concerning the power of the principal actors, once again the actors here were the social ones, who were represented mainly by the leadership and the ideas of Sergio Arouca, the President of Fiocruz at that time and the President of the VII National Health Congress, the one that led to the health chapter of the constitution, as observed before in the history of Fiocruz.

Finally, the organisational structures and processes which act at the level of the firm, again, is the Internal Congress in Fiocruz, which became officially institutionalised in 2003, 15 years after the first one took place.

This brief exercise, more than locating Fiocruz in the framework given, in fact, tells us that the “favourable conjuncture”, in this case, was given by an adverse situation. Poole at al note:

“some forms of industrial democracy can persist despite, for example, unfavourable political and economic contexts; a situation which can be explained by processes of institutionalisation. In particular historical and cultural periods, then, strategic choices to establish distinctive types of industrial democracy can occur that may then become embedded through institutional processes.”

Poole et al., 2001, p. 5

When the authors mention that industrial democracy can persist despite unfavourable political and economic contexts, they are referring to cases that existed before the context turned unfavourable, i.e., cases that had emerged in the favourable environment as stated by them.

In this regard, the case of Fiocruz seems to be a little different. The industrial democracy in this PRO did not persist despite unfavourable contexts but emerged exactly because of an unfavourable, or adverse, context. In this sense, the “favourability” was the adversity caused by the dictatorship, which engendered resistance that led to the re-democratisation, i.e., the favourable context was built from within the social movements emerging at that time in Brazilian society against military rule, including those health workers at Fiocruz.
In Embrapa, on the other hand, the context indeed was not favourable for industrial democracy. The re-democratisation did not generate the means for such a shift to democratic processes and procedures in that PRO because of the cultural values and ideology and the power of the actors in charge of the project. They were concerned with national security and the need to feed the growing number of consumers in a fast growing country experiencing rapid urbanisation. Moreover, although an old project dating from the ‘30s, the organisation was created by the anti-communist military dictatorship, in the international context of the Cold War.

Nonetheless, if the application of Poole’s model to Fiocruz can be applied to tell us about the determinants that led this organisation to industrial democracy – or why this did not come about (in the case of Embrapa) –, Poole’s model does not tell us what industrial democracy was adopted for, i.e., the role of collective decision-making.

Another approach, Heller’s supportive arguments for participation, may add more information to help answer this question, and it concerns a humanistic angle, which links participation to dignity through personal growth and job satisfaction. This argument is underpinned by one of Dachler’s and Wilpert’s theories of participation: Human Growth and Development, which is related to personality growth, development of individual potential and efficiency, and the mental health of individuals within the organisation (Dachler and Wilpert, 1978). This rationale, however, does not seem yet enough to encompass the ways in which participation was adopted in Fiocruz.

We have seen that literature concerning industrial democracy is related to: a. Participation in administrative decisions; and b. Collective bargaining. Variations on this were observed, including administrative efficiency, popular control and administrative co-determination in the regional and national economy. Once again, the literature helps locate Fiocruz but is not able to point to the meaning of participation in this PRO (or either of the supporting cases in this study).

Those characteristics of industrial democracy, albeit present in the Fiocruz case, do not express the “unfolding”, the meaning of participation in this organisation.

This meaning, the sense of participation for this PRO, as observed in Section 3, shall be discussed in light of the values and history of Fiocruz. As we have seen in the literature review Section, for Fiocruz and those public health workers in general, democracy is health.

When Arouca developed the idea of “democracy is health”, it was a moment of re-democratisation in the country, but the trauma of the violence perpetrated by the State was
alive. The fear was a serious concern and can be regarded as the spark that led to the development of the concept in a country characterised by political instability, coup d’états, and a nation which is the second most unequal in the G20 countries (ILO et al., 2015). It is unlikely, for instance, that this approach would have emerged within Pasteur, considering that democracy and existential threats to it are not as salient in the country of the French Revolution as a young democracy fighting military takeovers, such as Brazil.

Remembering Arouca’s words:

“Living without fear is to live with the possibility of individual self-determination, freedom of organisation, the peoples’ self-determination.”

Arouca, in: Brasil, 1987, p. 36

In fact, when developing the idea of democracy as a health concept, Arouca proposed a paradigm shift. In this respect, Thomas Kuhn originally wrote that when normal science goes through a revolution it is no longer business as usual and we have a new, revolutionary science, or paradigm shift (Kuhn, 1977, 1962).

By adopting the idea of “democracy is health”, the citizen is placed in the centre of the health debate, subordinating all the aspects essential to a dignified and decent life:

“(…) it is social welfare; it is the right to work, to a decent wage, to water, to dress up, to education, to have information on how you can master this world and transform it. It is the right to an environment that is not aggressive, but the opposite, allowing for a dignified and decent life, the right to a political system that respects the free opinion, the possibility of the free organisation, of the free self-determination of a people.” [Emphasis added]

Arouca, in: Brasil, 1987, p. 36

Life, then, is the supreme value, and citizenship is both a means and an objective in this perspective. It is a means because of the potential for empowerment and personal growth of citizens in terms of mastering their destiny, i.e., mastering their lives; and it is an objective because in SUS this “mastering their destiny” means taking an active part in the Health Councils (pp. 56-57). However, it also means therapy at the individual level. The psychosocial rehabilitation programme of the Brazilian Mental Health Policy is one of the most sensitive examples:

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48 Bion in England, Tosquelles in France, and Basaglia in Italy, had pointed to “the therapeutic power of sharing power”, involving the mentally ill in the day-to-day management of their lives, as well as taking part of the
“The perspective of treatment of these people aims to provide them with ever higher levels of management of their lives, ever greater possibilities of autonomy, whatever the measure for them; ultimately, increase their ability to choose.”

Goldberg, 1996, p. 44

This is the core sense of the idea of democracy as a health concept. At the level of the firm, it means the self-determination of Fiocruz, but also individually it is the opportunity for the employees to engage in actively practising citizenship. In this case, however, it is a different perspective from the therapy. It is not a goal. Rather, it is a means, as if it were a “natural” path that this PRO makes use of to accomplish its mission as a strategic organisation, supporting the State in the obligation to provide health to all citizens, e.g., providing drugs at cheap prices in order to increase the access to them; and hence complying with the SUS law principles of Universality and Equity (p. 56).

Nevertheless, besides this core idea, the democracy in Fiocruz also encompasses all those aspects of industrial democracy, including collective bargaining. Literature, however, links industrial democracy to initiatives from the government, which has the power to forge a favourable conjuncture by establishing the legal framework and policy, for instance. It is not the case of Fiocruz, however, as we can observe.

In respect to this, it may be noteworthy remembering Mintzberg’s (2000, 2009) distinction between deliberate and emerging strategies (Figure 5, p. 41), in order to support the development of our rationale. According to Mintzberg, industrial democracy can be regarded as a deliberate strategy, considering it is a government initiative. However, in the case of Fiocruz, it was not a government initiative, but quite the opposite, industrial democracy was a strategy which emerged and unfolded out of the organisation as a form of resistance to the government. It can, therefore, be defined as an emerging strategy, according to that Mintzberg’s logic. The findings from the questionnaires and interviews conducted at Fiocruz confirm the differentiated role performed by the grassroots staff at Fiocruz and can be regarded as a heritage of that emergence of industrial democracy.

The important role of the grassroots, however, does not mean “blindness” related to the limits of participation, as the fieldwork for this project also revealed. Rather, the questionnaires and interviews indicated concerns referring to the capacity of this democratic decision-making management of the health programmes (Campos, 2007). Certainly, this is the reason why Arouca’s democracy has flourished more easily among them.
process to give meaningful answers in a timely manner, for instance. Nevertheless, none the limits mentioned raised concerns about the pertinence of the democratic model. At most, these are referred to the necessity of improvements to it.

One of the necessary improvements observed, for instance, is related to the star researchers. Although not as powerful as in Pasteur, in Fiocruz there are issues with the fact that the majority of the occupants of positions at director level traditionally originate from biomedical careers, not to mention the majority who hold these positions being men. The profile of the respondents both to the questionnaires and to the interviews pointed these trends.

In 2009, however, the organisation implemented the Pro-Equity Gender and Race Program, an initiative from the federal government to promote equality of opportunity and treatment between men and women in public and private organisations (Fiocruz, 2017). It can be regarded as a signal of the cultural changes the organisation has been undergoing in recent years, i.e., transitional changes (pp. 30-31) towards gender and race equality, but also a tacit change towards career equality as well, expressed by the recent election of the first female President of the organisation, a Sociologist – considering the demographic data of the respondents informed a clear majority of Physicians.

These changes the organisation has been implementing, and others, demonstrate its commitment to citizenship. In this sense, it is possible then to link the answer to this research question to the commitment of Fiocruz to citizenship as the expression of a wide health concept, i.e., Fiocruz makes decisions collectively because it is a matter of health.

This approach can be regarded as a “technocratic” one, i.e., if the organisation “prescribes” the practice of citizenship, then this practice within its premises is supposed to be the evidence supporting this “prescription”. However, it acquires an ethical dimension as well, and in this respect, it is related to the credibility of the organisation, hence its sovereignty, which would be threatened if not capable of putting its mandates into practice.

Nevertheless, there is another dimension to be explored, which can help answer this question more properly, although the practice of citizenship as an expression of health is, by far, what best expresses the answer if it were the case to summarise it in only one sentence.

However, there is another aspect to be explored, and it refers to the strategic role of Fiocruz, which by definition involves, or rather takes into account, the external environment to the organisation, more specifically in this case the Brazilian policy, characterised by successive discontinuities along its history. This trajectory of discontinuities has resulted in a threatening
ambience within Fiocruz due to the uncertainty generated for directors and the grassroots regarding the continuity of projects. The “Massacre of Manguinhos” episode is evidence of how intense an extreme situation can become, which in turn brings us back to Arouca and the idea of health as the absence of fear. As he pointed out, living without fear is living with the capacity of self-determination.

Considering that self-determination implies active engagement in mastering the world around us, then it must necessarily be translated into concrete actions in the reality, including those aimed at avoiding or coping with that which is threatening – the “fear”. In this respect, the measures adopted by Fiocruz over the years were set in place to codify the institutionalisation of collective decision-making processes, officially written into law in 2003.

In this regard, the second dimension of the answer to this research question refers to a series of legal devices set to preserve the integrity of the institution of Fiocruz from external threats and externalities, not committed, e.g., with the reduction of inequalities in the health of the Brazilian population. Health, in this case, is understood as a wide concept, according to Arouca’s perspective, i.e., inequalities in life are to be confronted and improved.

This policy dimension of the answer to the research question is a strategic one, materialised in legal devices aimed at preserving the organisation from a threatening environment. For this reason, we call this set of legal devices a “democratic belt”. It has been observed in the industrial democracy literature, which informs that those organisations that had legal guarantees for their internal processes were more successful in preserving these.

To summarise the answer to this research question, according to the two dimensions identified:

1. Technical: Participation is a matter of health.

2. Policy: The institutionalisation of collective decision-making officially legitimises the process, conferring a protective barrier against the interference of interests not aligned with the principles of SUS – this termed here a “Democratic Belt”.

The first dimension, the “technical”, has two aspects. Firstly, there is the individual level: The active participation of employees in the organisation’s life is encouraged because of individual growth this will engender. Also, there is the institutional aspect, in which the organisation is actively engaged in mastering its destiny, aimed at accomplishing its institutional mission.

The way that this organisation makes use of participation reassures the uniqueness of Fiocruz not only as a PRO but also when compared to those cases in the industrial democracy literature.
In fact, there is a differentiation in the “Fiocruz model” that comes from its origin, which was an emergent strategy in resistance to the national government, rather than a deliberate strategy perpetuated by the government, as observed above.

The literature concerning industrial democracy, however, is exclusively focused on power, on the forms which power is distributed and how power is exercised within organisations. The experience of Fiocruz, albeit linked to power as well, refers us to another sphere of observation. The power sharing which goes along with democratic decision-making, as noted, is a means and not an end in itself, and this suggests the possibility of a new orientation for industrial democracy, in which it is part of a broader objective, rather than merely focusing on the decisions that go on within the boundaries of an organisation, but open to the possibility to transform the society through the right to health, which is the right to life. The supreme right of all.

8.4.2. Research Question 2: How this relates to the long-term planning structures created to support decision-making in this organisation?

In 2009, Fiocruz was called by the Federal government to take part in the efforts for the celebration of the Brazilian Bicentennial in 2022, helping with the health core of the project “Brasil 2022”, to which the government set a series of goals for that year in different areas such as agriculture, transport, and others. In this sense, then, the organisation engaged in activities to support the making of nationwide goals in the health field.

Although the government had long-term initiatives before, such activities were not consolidated in the public administration yet, and in Fiocruz this was also the case, as the findings both from the questionnaires and the interviews have shown. Nonetheless, the initiative sparked interest among managers, who implemented a series of actions, including international seminars, courses in partnerships with universities to train staff, and the launching of the book “Brasil 2030”, along with the website https://saudeamanha.fiocruz.br/, as we have observed before. The landmark was the VI Internal Congress, which for the first time launched its strategic plan based on a long-term analysis, i.e., a “complete strategic planning”, according to the continuum proposed in this study.

In this regard, it was possible to notice, from the findings, that there is an asymmetry of information, for instance, related to knowledge about the existence of a long-term planning department; as well as some hesitation related to Foresight in setting priorities or building networks. Likewise, some responses indicated unfamiliarity with long-term planning. Hence,
the engagement and, moreover, the acceptance of the “Foresight idea” observed in the fieldwork may be more related to the “tradition” of strategic planning in Fiocruz, i.e., to the late efforts to organise the research in particular, and the management as a whole, which might have contributed to forging the “strategic thinking” observed among some leaders, as the findings pointed out (pp. 160-161).

The proposal of adding long-term analysis to the strategic planning of the organisation, similar to the tradition of Embrapa, is therefore sometimes perceived by the staff as inevitable. None of the respondents rejected the long-term planning proposal for the organisation. However, not all of them were convinced about the potential benefits of it either.

One of the questionnaire respondents, however, indicated an important factor to understand the relationship, at first, between Foresight and decision-making:

“Only recently Fiocruz opted for setting goals beyond the period of four years. The Long-Term Plan established challenges and goals by the year 2022. I think the determinant for it was the perception that investments and current decisions impact the future and that the changes indicated in Brazilian demographic and epidemiological levels require immediate effort.”

Respondent 15

Similarly to the answer to the previous research question, it is possible to observe that there is a technical dimension in this research question too, which is linked to concrete factors such as changes in Brazilian demography and its epidemiological profile. In this sense, the long-term approach is imperative, rather than an option.

This technical dimension, however, acquires one other meaning in the case of Fiocruz, and it is the fact that, as an organisation committed to citizenship as a core value, in which health means the people’s self-determination, then the long-term analysis is found to be strategic, if not imperative.

Accordingly, the technical dimension of this answer has two aspects as well, similarly to the answer to the first research question. The first aspect is related to changes in the Brazilian epidemiological profile, and the second one, linked to this, is the capacity of the organisation to deal with the challenges put on the table by an ageing population, for instance.

Nevertheless, besides this technical dimension, the answer to this research question requires a policy dimension as well:
“For those who, like me, insist on believing that to build a strong, democratic and equitable nation, it is necessary that the State develop certain social policies. The simple operation of market forces does not solve it.”

Interviewee 1

When the interviewee mentioned the building of a democratic and equitable nation, opposing it to the market forces, he/she was likely referring to episodes such as the compulsory licensing of HIV drugs mentioned in the Fiocruz Section, for instance, through which the Health System provides free drugs for the population, fulfilling the constitutional article which says that health is a universal right and a duty of the State.

In this sense, the “help building a democratic nation” means State intervention to combat inequity, either in an extreme situation that threatens the survival of a programme that keeps thousands alive or, what is more common, through the establishment of public-private partnerships in light of the EIHCC, i.e., aiming not only at the production of cheap inputs for the Health System, enabling a wider access to drugs, but also producing vital fuel for the Brazilian economy, like substituting imports and generating jobs.

However, this very clear perspective concerning the strategic role of Fiocruz not only as a think tank in public health but also its potential to influence a whole macroeconomic system through actions aimed at strengthening the EIHCC is only one aspect of this policy dimension. Another aspect of it is related to the participatory characteristic of Foresight. According to Miles and Keenan:

“Foresight is a systematic, participatory process, involving gathering intelligence and building visions for the medium-to-long-term future, and aimed at informing present-day decisions and mobilising joint actions.”

Miles and Keenan, 2002, p.13

There is a proximity between this concept of Foresight and Chandler’s concept of strategy, which reinforces the perspective of a complete strategic planning as one that encompasses a systematic analysis of the long-term, underpinning present-day actions.

In this regard, it is the long-term analysis that may provide the “amalgam” to consolidate the participative decision-making process at Fiocruz, hence reinforcing the “democratic belt” of rules avoiding the interference of interests not aligned to those of SUS.

This reinforcement, in turn, lies on the power of the technical dimension. It is because an effective and competent long-term analysis, or rather a fully-fledged one, involving networks
both from within and outside the organisation, is technically legitimated, hence in theory this model is less vulnerable to unstable political environments, such as the modern Brazilian political context.

In this respect, the long-term approach comes to fill a conceptual, or rather concrete, gap in the decision-making processes of this PRO, in light of Arouca’s “Democracy is Health”, regarding the self-determination of the peoples. In our case here, the self-determination of an organisation. Therefore, if we agree that “Democracy is Health”, then “Foresight is Health” too, considering that its primary concern is the self-determination, of organisations, systems (health system, educational system), cities and peoples.

There is a symbolic dimension as well, which also contributes to this equation, and fits side-by-side with the technical and the policy outlined above. It relies on the fact that Fiocruz represents an important role in the imaginary of the nation, widely respected as a “good organisation”, concerned with the well-being of the population, expressed in discoveries such as the Zika disease and its association with microcephaly.

Therefore, when adopting a “democratic managerial administration” which applies techniques to scan the future in order to guide the actions aimed at supporting SUS, Fiocruz presents itself to society as an organisation which, despite its complexity, has been managing to self-determine its destiny through a highly participative decision-making process.

It is in this sense, finally, that the first quotation on the last page acquires a different meaning: By demonstrating that it is possible, or rather preferable, to run an organisation through a participatory process of decision-making which aims at mastering its destiny, Fiocruz is a living example of the feasibility of this kind of management. Hence, as an example, this PRO may inspire other PROs, government bodies or companies to adopt the healthy habit of democracy.

That is the “different meaning” that the referred quotation acquires, which represents a symbolic dimension: By practising citizenship within its premises, Fiocruz contributes to “building a strong, democratic and equitable nation” by inspiring other organisations to adopt, or rather, to recognise the power of democracy for health.

In a PRO with the characteristics of Fiocruz however, the usefulness of Foresight goes beyond the technique, reaching the policy dimension. It is the key means of how Foresight relates to this organisation, and the point for it is the amalgam that is missing for the organisation in
terms of “democracy is health”, considering this concept implies a mastery the future, of self-determination.

However, if the organisation had already started a process of long-term planning, expressed in the penultimate strategic plan, is there anything missing? As we have seen, the plan of Fiocruz is located in-between Pasteur’s (traditional strategic planning) and Embrapa’s (“fully-fledged strategic planning”). It is a complete strategic plan and encompasses the long-term analysis underpinning the current actions. However, the making of this plan did not involve a wider range of stakeholders like Embrapa’s, but only health specialists. According to Miles:

“The critical difference from more conventional Foresight is (...) (b) draw on wider sources of knowledge than just an expert group, and often deliberately engage in networking not just to access broader sources of knowledge or to legitimate forecasts (and/or priorities) as stemming from a broad case, but also to enable shared knowledge to enter into the strategies of many organisations across the economy and society.”

Miles, 2008, p. 36

Further on, the author explores this networking aspect a little more, informing the goals of this approach:

a. Enlarging the knowledge base: In recognition that no single body encompasses all the knowledge required to understand future opportunities and how to size them (technocratic rationale).

b. Engagement: With the objective to enhance the democratic basis of future visions, which can give more legitimacy (democratic rationale).

c. Enlistment: Means the mobilisation of the actors involved in the process, in terms of embedding the message of the activity into their own organisations and practices.

It is possible to make a parallel between these goals with the dimensions identified in the answers to the research questions. The first goal can be regarded as a technical dimension. The second is related to the policy dimension, and the third is related to the symbolic dimension.

It is in terms of the goals (a) and (b), however, that Foresight can make a difference in the case of Fiocruz. Nevertheless, this “difference” that Foresight can make is from a new perceptive. The democratic rationale, in this case, acquires a new meaning, or a new use. The legitimacy of the process, including other actors rather than those from the field, or from the organisation, is exactly what can give the best amalgam cited before.
In this regard, although not a “fully-fledged plan”, it is possible to say that the current Fiocruz plan is satisfying, considering that there is an analysis of the long-term. Hence, it is less likely to have the interference of interests not aligned to those of SUS. However, it is not as legitimate as if it had counted on a wider range of stakeholders like Embrapa’s plan.

The path for it, nevertheless, is settled. The website, or rather the project “saudeamanha”, as well as the Centre for Strategic Studies, are already engaged in diversified networks to accomplish their missions. Health, in the end, is a field intersecting with all the other realms of human knowledge.
SECTION 9: CONCLUSIONS

9.1. Contribution to Knowledge

Motivated by an event concerning organisational change that occurred in Fiocruz, this study started with a review of the literature aiming at locating the organisation, a PRO, as well as the phenomenon observed, the democratic managerial administration.

The PRO literature has shown that little has been made to explore organisational change from inside the organisation; for this reason, regarded as a black box for the purpose of this study.

As opening the black box, we made use of Fiocruz as a case study of the single type, with two contrasting cases, Embrapa and Pasteur, for comparison and locating Fiocruz.

In this opening, we analysed the fieldwork and triangulated it with the history and culture of each organisation, also their archives, primarily their strategic plans. From this analysis, the grassroots emerged as a vital asset of the organisation due to its role in the decision-making process, based on Arouca’s concept “Democracy is Health”.

Consequently, the significance of the grassroots in Fiocruz, of the democratic participation in the decision-making process of this PRO, is from a different viewpoint of that “traditional one” from the industrial democracy literature, which associates participation as a matter of power sharing. Instead, the Fiocruz case reveals a peculiar approach to industrial democracy, or rather to democracy itself, as a matter of health.

In this sense, the association between democracy and health is, in fact, a shift set by Arouca for the concept of health, which guides not only the decision-making process at Fiocruz but the SUS chapter in the constitution, meaning it is a deeply rooted perspective, applied, as we have observed, both in the structure of the System, such as the Health Councils, and in therapeutic goals, such as the Mental Health Programme.

Likewise, we have seen that this concept regards not only participation but also anticipation, evidenced in the organisational level by the strategic plan which for the first time was underpinned by a long-term analysis, i.e., democracy as a health concept implying in mastering the destiny. In a PRO, or rather in a company, it can be ideally expressed by a Fully-Fledged Strategic Plan.

Considering this, Foresight is the tool that confers, or rather materialises, the possibility of self-determination, of mastering the destiny; hence, we can assert that Foresight is Health as well,
for giving meaning to the democratic process, including the empowerment of people and the information symmetry between people.

The “nature” of Foresight, however, is diverse. It is a diversity of fields, methods and applications (Becker, 2002; Georghiou et al., 2008; Martin and Johnston, 1999; Miles, 2010; Popper, 2008; Reger, 2001). Therefore, it is likely that this new approach to Foresight as a health concept becomes one more face between the many that it owns (Miles et al., 2008).

Finally, we can argue that, in the case of Fiocruz, the development of all these democratic apparatus was made possible in light of a given political situation, which was the re-democratisation of an oppressive State that was under military dictatorship.

The argument of the thesis, in this sense, is the significance of the democratic managerial administration in a context where democracy is an exception, not a rule. Hence, maybe it is the tendency that those working in the deeply rooted democratic environment of this PRO, and as such their representatives in the staff that took part of the study, to idealise the model of Fiocruz, despite the demonstrated awareness about its limits.

In this respect, it is noteworthy highlighting that the same environment which engendered the rise of this model of management also engendered the rise of a centralised, hierarchic and technocratic model of Embrapa.

Both organisations, as we have seen, are the two most innovative public organisations of the Brazilian State. Each one developed their management model and, similarly, are equally successful in accomplishing their missions in supporting the development of the country, according to their visions.

On the other side we have Pasteur Institute, whose democratic environment is not an exception, but a rule, hence the organisation did not need to strive to convince the government that, after the discovery of the Rabies vaccine, for instance, the population had the right to access the treatment.

In this sense, it is reasonable to infer that, respecting the idiosyncrasies of each organisation, each one of them might have a “degree of idealisation”. The word clouds of the three organisations concerning the strategic decisions, resulting in their names, as well as those concerning the changes that emerged, in which the interviewees from Pasteur reinforced the word “scientist”, can be regarded as a signal of that, considering the discussion in Section 8.
In the case of Fiocruz, the opening of the black box has revealed, behind the debates around becoming a company or not, the aspects of an active and unique type of industrial democracy, perhaps idealized, whose matter is health, expressed through active citizenship in search of quality of life, not only a matter of power, i.e., the open black box revealed us a shift in the approach and application of the concept of democracy, a paradigm shift.

9.2. Future Studies

Studies have already been made in Brazil concerning citizenship vs health, as expected. They are mostly related both to the organisation of the health system or services, in terms of concepts, social control and others, as well as the clinical aspect itself, mainly in the Mental Health field (Amarante, 1994; Campos, 2007; Goldberg, 1996; Mendes, 1996; Paim, 2013, 2006; Pinheiro and Mattos, 2006; Pitta, 1996; Veras and Caldas, 2004).

These studies encompass Arouca’s perspective. The debates, however, are conducted primarily within the health field, or rather within the public health field and, in this case, restricted to the professionals committed to leveraging the SUS. In this sense, it is feasible to suppose that the “democracy is health” concept lies within a bubble. It is a “bubble concept”, not having extended beyond the boundaries of the field, after all these years.

However, if we agree, though, that this approach to democracy as a health concept is, in fact, a paradigm shift in the way that democracy is addressed, then there is at least one whole field – industrial democracy – that can potentially be re-signified. The literature, concerning democracy as a health concept, has never explored its application to industrial democracy.

The industrial democracy literature, for its part, refers to a very well-studied area, in which all the types and possibilities of the field, the relationships within the organisations, and others, have been investigated exhaustively. All these, nonetheless, referred to democracy as a matter of power sharing.

Similarly, the long-term planning literature. Considering the new face of Foresight as a matter of health, then we can observe potentiality in this field as well, especially considering the aforementioned diverse “nature” of Foresight, which opens a variety of possibilities of investigations.

Other fields, such as ethnography, administration and cultural studies, for example, can also potentially investigate democracy from the health viewpoint. There is, however, at least one
apparent issue related to the engagement into such studies: The lack of sites for the fieldwork, considering that Fiocruz is the only organisation that adopts this perspective.

There are, nonetheless, other sites besides Fiocruz, most notably the Health Councils of SUS, which are supposed to apply the democracy as a health concept in their day-to-day activities. Consequently, sites for investigation are not exactly a problem.

Moreover, there are other Latin American countries which underwent a period of dictatorship as well, like Chile, Argentina and Uruguay, for instance. They all have organisations similar to Fiocruz; hence, they are potential sites of investigation in terms of how the authoritarianism influenced their governance and autonomy.

Finally, there is one specific “field” that this thesis can contribute to, which is the current typology of PROs. As we have seen, in Section 2, the concept encompasses a diverse group of research centres, to which four types were identified: MOCs, PRCs, RTOs, and IRIs (OECD 2011).

In Section 4, we have seen that Fiocruz, albeit classified as a “mix”, has shown characteristics that go beyond than just undertaking research in a specific field aimed at supporting policy making, as a MOC, or beyond undertaking basic and applied research, as a PRC.

In fact, Fiocruz is a type of PRO with a health mission, but with a broader mandate, not previously described in the literature. It acts on behalf of the nation in a variety functions, such as research, “think tank”, professional education, production of health inputs, and others. All this is managed through a highly participatory way, as we have seen, having citizenship as a core value, and this is what distinguishes this organisation: Fiocruz works with its own values.

The opening of the black box, therefore, has shown us that the OECD typology of PROs is limited, and misses relevant dimensions about the way the PRO operates from the inside. In this sense, the thesis evidences that PROs are not just objects within an innovation system but entities with history and values which can be distinctive from one another even within the same national setting.

For encompassing dimensions such as history, culture and values, the thesis provides a new perspective to investigate these organisations. Therefore, new studies unfolding other PROs may potentially result in as many new types as many types of existing PROs.

Maybe, the case of Fiocruz indicates, in this sense, that it is the tip of the iceberg of a whole new classification concerning PROs, questioning the concept of PRO itself. Maybe not, the
case of Fiocruz is indeed unique, adding a new type to the OECD’s classification – “Hub Organisation”.

This type of organisation, the “hub organisation”, as the case of Fiocruz indicates, is primarily engaged in a mission, but acting as a hub, i.e., assuming a broader mandate to accomplish its mission, as we have seen: Research, technological development, production, training, communication, testing, “think tank”, and others. However, what distinguishes this “hub organisation” is the application of this variety of resources into innovation for the leveraging of the quality of life of the population, having the citizenship as its core value, underpinned by Arouca’s “democracy is health”. The “hub organisation” is engaged into the leveraging the quality of life of the population through citizenship.

Therefore, if we agree that Fiocruz is indeed a new type of PRO, then it is feasible to argue about the validity of the current OECD framework.
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Annexe 1 - Questionnaire to the management boards

Please, as responding to this questionnaire, it is important that you do not resort to any source other than your own understanding. The idea is to get your own answers, without any outside consultation. In addition, in order to avoid bias during the research process, it is extremely important that you do not comment your answers to any of your peers.

PERSONAL DATA

1. In which unit do you work?

2. Gender:
   ☑ Female
   ☑ Male

3. Your age group:
   ☑ < 30 years
   ☑ 30 ≤ 40 years
   ☑ 40 ≤ 50 years
   ☑ 50 ≤ 64 years
   ☑ ≥ 64 years

4. Your highest level of study:
   ☑ Undergraduate
   ☑ Master
   ☑ Doctorate
   ☑ Post-doc
   ☑ Other ____________________

5. What is your primary job at Pasteur Institute?
   ☑ Analyst
   ☑ Researcher
   ☑ Teacher
   ☑ Technologist
   ☑ Other ____________________

6. How long have you been a part of the Management Team at Pasteur Institute?
   ☑ < 1 year
   ☑ 1 year ≤ 5 years
   ☑ 5 years ≤ 10 years
   ☑ 10 years ≤ 15 years
   ☑ ≥ 15 years
6.1 How long have you been working at Pasteur Institute?
- < 1 year
- 5 years ≤ 10 years
- 10 years ≤ 20 years
- 20 years ≤ 30 years
- ≥ 30 years

7. Do you occupy any other role/position beyond the one in the Management Team?
- Yes
- No

If No is selected, then skip to ON STRATEGIC DECISION-MAKING IN PASTE...

7.1 Which role/position is it?

7.2 For how long?
- < 1 year
- 1 year ≤ 5 years
- 5 years ≤ 10 years
- 10 years ≤ 15 years
- > 15 years
ON STRATEGIC DECISION-MAKING IN PASTEUR INSTITUTE*

* Decision-making: process of choosing one or more alternatives – action plans – between several of them, considering a particular situation.

8. Concerning the strategic decision-making process in Pasteur Institute, how far:

8.1. Discussions and appraisals are: (use the scale 1 to 7 according to your perception, from highly centralised* to highly participative**)

☐ (1) Highly centralised
☐ (2)
☐ (3)
☐ (4)
☐ (5)
☐ (6)
☐ (7) Highly participative

* Made by the head of the organisation and/or a small group of managers (not much more than 2 or 3 people);

** Spread throughout the organisation - similar to most Universities, resembling that of some trade unions and political parties.

8.2. Final decisions are:

(use the scale 1 to 7 according to your perception, from highly centralised to highly participative)

☐ (1) Highly centralised
☐ (2)
☐ (3)
☐ (4)
☐ (5)
☐ (6)
☐ (7) Highly participative

9. Do you think that a decision-making process conducted in a highly participative way responds well to the challenges of the 21st century?

☐ Yes
☐ No

9.1 Why?
10. Do you think a highly participative decision-making process impedes change?
- Yes
- No

10.1 Why?

11. Do you believe that solutions are better-informed when taking account of the opinions and skills from the grass roots of Pasteur Institute?
- Yes
- No

11.1 Why?
LONG-TERM PLANNING* IN THE STRUCTURE OF PASTEUR INSTITUTE

*Defined here as the exercise made to capture the trends for the next 10-15 years, aimed at guiding the strategic planning of the organisation.

Strategic planning: given an organisation's mission and long-term vision, it plans for the use of its resources - strengths and weaknesses-, in a given environment - opportunities and threats.

12. Is there a department/sector/area dedicated to long-term planning in the structure of Pasteur Institute?
   ☐ Yes
   ☐ No

If No Is Selected, Then Skip To USAGE OF LONG-TERM ANALYSIS FOR PASTE...

12.1 How long has the long-term planning department/sector/area existed?
   ☐ < 1 year
   ☐ 1 year ≤ 5 years
   ☐ 5 years ≤ 10 years
   ☐ 10 years ≤ 15 years
   ☐ > 15 years

12.2 What determines the choice of long-term approach; and what sorts of analysis does it use?

12.2.1 Determination of choice of long-term approach:

12.2.2 Sorts of analysis:
   (in this field, please choose more than one option if that's the case)
   1. Brainstorming
   2. Delphi
   3. Environmental scanning
   4. Essays
   5. Expert Panels
   6. Futures workshops
   7. Interviews
   8. Key Technologies
   9. Literature Review
   10. Questionnaires/surveys
   11. Scenarios
   12. SWOT analysis
   13. Trend extrapolation
   14. Other(s) ____________________

12.3 What triggers the need for Pasteur Institute to use/carry out long-term planning?
USE OF LONG-TERM ANALYSIS FOR PASTEUR INSTITUTE STRATEGIC PLANNING

13. Considering some opportunities below for Foresight to contribute to a complex organisation such as the Pasteur Institute, indicate your level of agreement:

<table>
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14. Is the role of long-term planning in Pasteur Institute an effective one in terms of setting priorities, building networks, or other goals?

☐ Yes
☐ No

If No Is Selected, Then Skip To 14.3 What would it need to be effecti...
14.1 Why?

14.2 How useful is this information, i.e., put into practice by Pasteur Institute?
- Completely
- Most of it
- A good part of it
- Half
- Some part of it
- Little part of it
- Nothing

If any of these Is Selected, Then Skip To 15. Considering your experience, do you…

14.3 What would it need to be effective, in terms of management support?

15. Considering your experience, do you think that long term analysis can help organisational change?
- Yes
- No

15.1 Why?
Annexe 2 - Face-to-face interview questions

1. How long have you been working at the organisation?

2. Which is your role/position at the moment?

2.1 For how long?

3. Gender

4. Age

5. Highest level of study
   - Undergraduate
   - Master
   - Doctorate
   - Post-doc

6. What is your primary job at the organisation?
   - Researcher
   - Professor
   - Technologist
   - Other:_________

7. How strategic decisions are made in the organisation?

8. In your opinion, which were the five major strategic decisions at the organisation in the past 15 years?
   (both numbers are a reference, i.e., can be more or less five and more or less 15)

8.1 Did you take part of them?

8.2 Why do you consider them as major strategic decisions?

9. Literature points that some decisions are likely to trigger resistance processes in organisations. Considering this, about “so-so proposal” at the organisation:

9.1 What were the factors/interests that lead to more or less change?

9.2 What sorts of changes came up as a result?

10. Literature and argumentation suggest that long-term analysis is used (and/or takes different forms) under various contingency circumstances.

10.1 Can we validate this?

10.2 What are the mechanisms that prompt this?
10.3 In case of the organisation, what triggers the need to use/carry out long-term planning?

11. Considering your experience, do you think long-term analysis can help organisational change?

11.1 Why?
PARTICIPANT INFORMATION SHEET

You are being invited to take part in a PhD student project. Before you decide it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information carefully and discuss it with others if you wish. Please ask if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part. Thank you for reading this.

The research is conducted by Valdir Sergio Ermida, who is a MBS PhD Student at the University of Manchester (Manchester Institute of Innovation Research, Manchester Business School, Booth Street East, M13 9PL). The research title is *Foresight for Neglected Diseases: Strategic Planning and Decision Making in a Public Research Organisation*.

The supervisors are Prof. Ian Miles, from the University of Manchester, and Dr Carlos Morel, from Fiocruz. The research questions are:

- How strategic decisions are made in a public research organisation?
- What sorts of analysis do they use, and what determines their choice of approach?
- How can and do research organisations use long-term analysis for their strategic planning?
- Will the use of foresight approach inform deliberative aspects in decision-making in a complex organisation?

In summary, the aim of the research is to know how public research organisations make their strategic decisions and the role of Foresight in this process.

You are being invited to answer this because you take part in the Management Team of Pasteur Institute.
It is up to you to decide whether or not to take part. If you do decide to take part, you will be to sign a consent form. If you decide to take part, you are still free to withdraw at any time without giving a reason and without detriment to yourself.

Your participation in the research will be greatly appreciated.

Contact for further information:

Valdir Ermida
Manchester Institute of Innovation Research
Manchester Business School
The University of Manchester
Email: valdir.ermida@postgrad.mbs.ac.uk
Celular.: +44(0)7840543890

If a participant wants to make a formal complaint about the conduct of the research they should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL.
Email: pgresearch@mbs.ac.uk
CONSENT FORM

If you are happy to participate, please complete and sign the consent form below

1. I confirm that I have read the attached information sheet on the above research and have had the opportunity to consider the information and ask questions and had these answered satisfactorily.

2. I understand that my participation in the research is voluntary and that I am free to withdraw at any time without giving a reason and without detriment to any treatment/service.

3. I agree that my participation is anonymous in terms of the usage of the data of this questionnaire to the aims of the research as well as its results.

I agree to take part in the above project

Name of participant: __________________________ Date: __________________________ Signature: __________________________

Name of person taking consent: __________________________ Date: __________________________ Signature: __________________________

Valdir Sergio Ermida
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APPENDIX
Overview of Brazilian History

a. Introduction

The idea of making a summary of the Brazilian history follows two objectives:

1. Demonstrate that Brazil is an “Oppressive State”, hence providing the environment in which democracy emerged as a health concept.

2. Demonstrate, empirically, that the concept of “partial democracy” (Section 2) in fact refers to a “disguised authoritarianism”.

b. The History

b.1. Introduction

For the purpose of understanding the history of Brazil, it may be useful to start with a comparison of its colonisation origins with the origins of the English colonisation of North America. Whereas the latter were basically settlement colonies, in which the settlers were engaged in creating a new world, a new place to live, the Portuguese colony in South America was engaged in the exploration of the region, for economic resources and exploitation of the land and the indigenous peoples for the benefit of Portugal. Creating a “new world” was not part of this plan1 (Ribeiro, 2014).

b.2 Colonisation

The colonisation of Brazil, started by the Portuguese in 15312, was an enterprise of the colonial government in partnership with private investors. Based at first on sugar production, but soon joined by the growing and picking of the tobacco crop, colonising Brazil demanded huge amounts of money and was labour-intensive, which was supplied by slaves for many years. It led to a huge social inequality, which would mark Brazilian society for centuries, between the mill owners and the rest of inhabitants. By the time Brazil became independent, in 1822, the aftermath of colonisation was a country of marked stratifications; an illiterate population, a slavocrat society3, a monoculture and a landowning economy (with their own laws), and an absolutist State coupled with private power (De Carvalho, 2001).

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1 It is noteworthy that there is no “New Portugal” region, city, or anything similar, in the old Portuguese colony.
2 The Portuguese found the land in 1500. Until 1531, the activities were the trading of wood (“pau-brasil”, which named the country) and patrol.
3 Brazil was the destiny of at least 40% of the Africans taken to the Americas between the XVI and XIX centuries. From these, around 60% entered through Rio de Janeiro, i.e., around ¼ of the whole slaved Africans in the Americas, making Rio de Janeiro the largest slave harbour in the history of mankind (Brasil and Rio de Janeiro, 2016).
b.3 Independence

The independence of the country was precipitated by several significant conflicts spanning two years in different parts of the territory, but overall it was predominantly an agreement of government among elites, rather than the bloody processes that took place in the rest of the Americas. There was a fear of fragmentation of the territory, such as that which came to pass in the Spanish ex-colonies or a slave riot like that seen in Haiti during 1791-1804, where the white elites were expelled (the new country of Brazil depended deeply on slaves, and two-thirds of the population were mixed-race). Also, as part of the independence negotiation, the monarchical system remained, maintaining the same dynasty as Portugal\(^4\) (De Carvalho, 2001).

The constitution of the new country was set in 1824 and was quite liberal considering the standards of the period. All men above 25 years old could vote\(^5\), even if they were illiterate\(^6\), as long as they earned a certain wage level, which was reasonably low so that virtually all men were eligible to vote, however, women and slaves were excluded. The post-colonial Brazilian elections were indirect and in two rounds. In the first round, the population eligible to vote (the “voters”) chose the “electors” in the proportion of one elector per 100 domiciles (census vote)\(^7\). In the second round, the electors chose the representatives (deputies and senators) for the parliament. The governor of the province was not elected by the local population but chosen by the central power of the country (De Carvalho, 2001).

Despite the “liberal” rules, or because of them, the local elites (government, landowners and traders) wielded much control over the voting population. The polls were not a right of citizenship – there was no offering of such privileges on the part of an enlightened liberalism of the State concerned with the destiny of the country, rather, giving virtually all male citizens of age the vote was a means of local political domination. The elections used to be a time of turmoil and violent events; voting was dangerous. It was an act of forced obedience or, at best, an act of loyalty and gratitude. Electoral fraud was rife, and several means were used to cheat

\(^4\) During the colonial period, in 1808 the Portuguese royal family escaped from Napoleon’s troops to seek refuge in Brazil, raising the colony (formally a “state”) to the category of kingdom in the newly created “The United Kingdom of Portugal, Brazil and Algarve”, whose headquarters were in Rio de Janeiro. When the royal family returned to Portugal, the prince D. Pedro was left ruling the kingdom. It was he who led the movement for independence of the country.

\(^5\) The limit dropped to 21 years old in the case of householders, military officers, graduates, clergy, and civil servants. Decades later, in 1881, the law changed: illiterate men could no longer vote, only one round of elections with direct votes (no more census vote). Also, voting was not mandatory anymore. This led to a massive decrease in the number of voters but mainly because of the exclusion of illiterate men, which represented 80\% of the male population at the time.

\(^6\) It was not rare to have illiterate landowners.

\(^7\) The wage of the “elector” had to be the double of that of the “voters”, and was reasonably low as well.
the ballot box, from vote rigging to fraudulent votes by proxy, bribes from elite groups (via money, clothes, food, and animals) to threats to ensure certain voters stayed away. Depending on where the elections were taking place, most notably in urban areas, the vote was considered merchandise for sale to the highest bidder. It was an opportunity for making easy money (De Carvalho, 2001).

b.4 The First Reign

The first years of the Brazilian monarchy were troubled. Due to pressures both from inside the country and from Portugal, the first emperor had to resign and hand over the throne to his son, who was only five years old and return to Portugal in 1831. The new “emperor”, however, could not take the throne because he was not yet 18 years old. Due to these circumstances, the country was governed first by a junta of three senators (regency trina) and, in the end, by only one regent (regency una), elected exclusively for the purpose of the interregnum government (Schwarcz, 1998).

Just before the resignation of the former emperor, the Brazilian parliament, formed by representatives of the local power, had passed legislation aimed at reducing the troops of the army as part of the pressure to weaken the power of the emperor. During the regency government, the “National Guard” was created in 1831, whereas the troops of the army were decreased still further. The regents were fearful of the republican aspirations of the Army, and the National Guard was, therefore, set-up as a tentative substitute to the Army, which assumed a secondary role after this (Sodré, 1965a, 1965b).

The guard was composed virtually by the same people eligible for voting and was also a means to co-opt the rural landowners and traders, who would become the local commanders (De Carvalho, 2001; Sodré, 1965a). It was a kind of militia and the local commanders, in the military ranking, were colonels, reinforcing the power of the landowners. This has become known in Brazil as “colonelism” and would be a power structure to last throughout that century, and even after the guard was extinguished into the century after, reflecting Brazilian culture until the present day, with the remnants of “colonelism” culture still visible, albeit mainly in the rural areas of Brazil (Leal, 2012).

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8 The internal pressures were from Brazilians unhappy with the Portuguese influence, especially the decision to treat the kingdom as a colony again. The Portuguese pressures were due to the threat of the dynasty losing power in that country. Some say the real independence was only after the resignation of the emperor.

9 The guard was subordinate to the local judges, the president of the province and to the Minister of Justice, but these were, in turn, representatives of the landowners (Sodré, 1965b, 1965b).
b.5 The Second Reign

Despite the National Guard (or because of it), riots seeking independence took place from north to south of the country over the years, threatening the unity of the young country. The solution was to promote the young emperor to his majority at the age of 14, by changing the law in 1841\(^\text{10}\). The symbolism of a central power represented by the figure of the emperor helped to restore calm, but the fast-tracking of the majority of the Emperor was regarded as the first coup d’état in Brazil: “The Majority Coup” (Schwarcz, 1998).

The Second Reign as it became known, was a period of reasonable political stability. The emperor was beloved by the population and engaged in a policy in which he managed to guarantee the support of the landowners (De Carvalho, 2001; Schwarcz, 1998).

Slavery, then, remained the driving workforce of the country and as a deeply rooted culture throughout Brazil. Many groups within the population had slaves, not only landowners. Even ex-slaves had their slaves. Also, some fugitive slaves who had managed to escape their life of bondage created communities called “quilombos”, out of reach of the landowners, but which replicated the hierarchical social class structure existent in Africa at that time, with kings, generals and slaves again at the bottom of the social ladder (Libby and Furtado, 2006).

b.6 Republic

It was not a coincidence that the monarchical regime fell one year following the abolition of slavery in Brazil. It was not the only reason for the fall of the emperor’s regime, but the dissolution of the bedrock of such a socially ingrained culture had indeed hastened it. Two laws had recently passed, slowly bringing slavery to an end\(^\text{11}\). However, this change in society met with great resistance by the conservative slavocrats, so that the law finally ending slavery saw landowners opposing the government\(^\text{12}\). One other important factor was the army. Brazil had recently taken part in the Paraguay War (1864-1870)\(^\text{13}\), the largest war the country faced in South America. Brazilian officials, unhappy with the loss of prestige they had suffered because of the war, were convinced by the landowners to join the conspiracy. There were also some

\(^\text{10}\) The regent governments had promoted the decentralisation of power, which was regarded as a threat due to several separatist riots. The figure of monarchic authority was seen as capable of bringing back political stability. It did achieve this aim, although not immediately.

\(^\text{11}\) Besides the laws, in 1884, slavery had been extinguished in Ceará and Amazonas, two provinces of the empire. The two laws were: 1. Concerning the freedom of the new born; 2. Concerning those above age 60. The second law was regarded as a slavocrat law, since it allowed slave owners to get rid of elder members of their slave household.

\(^\text{12}\) The emperor faced pressures from England over the years and was himself against slavery, however the large landowners ruled the parliament.

\(^\text{13}\) A coalition between Brazil, Argentina and Uruguay.
important religious issues, besides positivist philosophers in the government committed to republicanism, but the determinant factor was the loss of support from the landowners due to the abolition of slavery. The proclamation of the Republic in 1889 was the second coup d’etat in Brazil. Once again, this was a political movement of the ruling elites. There were no concrete or objective issues related to the regime itself the “revolutionaries” wanted to change. Brazil had a free press, and the fallen monarchical regime was more popular than ever among the population, especially because of the recent abolition of slavery (De Carvalho, 2001; Schwarz, 1998).

b.7 The First Republic

Despite the new constitution launched in 1891, the new regime did not transform the political system as would be expected from a change of this magnitude. Everyday life did not change in fact: the news about the new Republican regime reached some parts of the interior of the country months after this change and the excitement surrounding it. In fact, the modification of the regime was to maintain, or rather to increase the power of the rural oligarchies, which were under threat due to the newfound liberty of Brazilian slaves. An important move towards this had been made a few years before, in 1881, when a new law introduced direct voting, eliminating the first round of the elections. Thus, the old “voters” were “dismissed”, but the “electors” – those elite groups running the elections behind the scenes - remained. Voting became optional and illiterate men were forbidden from taking part. Also, the wage voters were required to earn in order to vote doubled (keeping the standard of the “electors”). The result was that under the old law voters represented 13% of the free population, but the implementation of the new law decreased the share to 0,8%, representing an almost 90% cut in the voting population. This was a landmark of the new regime, which became known as the “First Republic”, or the “Republic of the Colonels”, or “Old Republic”, which meant the alliance between local power figures with the presidents of the various states of Brazil, and between these and the president of the Republic (De Carvalho, 2001).

The First Republic period was characterised by the government of regional oligarchies, most notably the best organised and strongest ones, such as São Paulo, Minas Gerais and Rio de

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14 A slavocrat conservative MP said a sentence which became famous when he complimented the Princess Isabel (she is the one who signed the law of liberty, maybe a political manoeuvre from the emperor, who was abroad at that moment): “Your Majesty has redeemed a race, but just lost the throne.” (Lacombe, L.L. In: Pedro II et al., 2003, p. 227)

15 Only 15% of the population was literate; or 20% of the male population.
Janeiro, in the south-east of the country\(^{16}\) (De Carvalho, 2001). The power alternated between these oligarchies until it was ceased in 1930 when for the first time an “elected” president did not assume power. It was because the losers did not admit the loss. Accusing the winners of fraud and with the help of the army\(^{17}\), a movement assumed the power in the “Revolution of 30”. Similarly to the Proclamation of the Republic, the military high command temporarily assumed government and transferred power to a new group of political leaders (De Carvalho, 2001; Skidmore, 2010).

The leader of this movement, Getúlio Vargas, was from Rio Grande do Sul, a state in the south of Brazil, out of the “Coffee and Milk Policy” axis, and ruled the country for 15 years\(^{18}\). In the “Vargas Era”, the industrial revolution finally reached Brazil, and several features both of the old administrative structure and the political system were reformed. Until then, the country was a “big farm”, with about 90% of the population living in the interior. The “era” consisted of two phases: the “Second Republic”, from 1930 to 1937 and the “New State”, from 1937 to 1945 (De Carvalho, 2001; Hentschke, 2006; Skidmore, 2010).

b.8 The New Republic

The “Second Republic” started with the provisional government, which began a series of moves that led to an extraordinary concentration of power in the hands of the President. Differently from the First Republic, when the central government was dependent on local powers, Vargas diminished the power of the coffee interests by distributing them more broadly throughout the country. The constant postponement of new elections, however, made the state of São Paulo rebel against the “provisional government”; demanding new elections and a new constitution in the “Constitutionalist Revolution” of 1932\(^{19}\). The government defeated this movement but called elections\(^{20}\) for a new Constituent Assembly, which launched a new constitution in 1934 (the third one for the country) (Burns, 1970; Skidmore, 2010).

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\(^{16}\) This period became known also as the “Republic of Coffee and Milk”, which meant that the majority of the presidents were representatives either of the coffee producers (São Paulo and Rio de Janeiro) or the milk producers (Minas Gerais).

\(^{17}\) The army assumed a role of “referee” in these conflicts.

\(^{18}\) The movement was supported, however, by Minas Gerais and Paraíba, the latter a state from the Northeast of the country.

\(^{19}\) Initially a liberal revolution the movement was joined by separatists, losing the support of other states who were equally unhappy with the status quo.

\(^{20}\) Observers agreed this poll was extremely valid when compared to those polls which had taken place before 1930. For the first time women voted and the vote itself became secret.
b.9 The New State

After the constitution of 1934, indirect polls in the National Congress elected Vargas the new constitutional President. New direct elections were expected for 1938, but a case of fraud prolonged this schedule, frustrating the democratic period which had just begun. The basis for the fraud was a frustrated attempt at a communist coup in 1935\textsuperscript{21}. Taking this into account, the army forged a false communist “plan” for a new “revolution” in 1937. Although false, it was the alibi that Vargas needed to remain in power, through a coup d’etat once more supported by military forces, setting the “New State” period at the end of 1937\textsuperscript{22}. The dictator President closed the national Congress, drew up a new constitution (“Constitution of 1937”, the fourth one of the country, the third in the Republic), censored the press and repressed political opponents, both the communists and the “integralists” (right-wing and fascist groups). Although promised, no elections happened during the “New State”. In fact, a civil-military dictatorship instead manifested, although paradoxically this then turned into the welfare state of the people, with the provision of a minimum wage and new labour laws, which have remained in place until the present day (Skidmore, 2010).

The manner Vargas governed became known as “populism”, and was characterised by the state-led industrialisation and state-controlled unions which served as a political basis for the President (Cammack, In: Potter et al., 1997). By the time World War II began, however, the dictatorship began to unravel. Brazilians realised the contradiction of fighting for democracy abroad whereas representing a dictatorship within the country (Burns, 1970)\textsuperscript{23}. A referendum set in the constitution of 1937 was agreed to countersign the constitution in 1943, but this was postponed supposedly because of the war, and slowly some protests started, despite censorship imposed in the country. New riots, now led by students, started spreading and the dictatorship government announced a political amnesty in which several political prisoners were liberated. The date for new elections and re-democratisation was set. Along with these, the government issued an antitrust decree, which displeased both national and international (American) companies. Some other decrees and acts concerning the elections annoyed opponents of the dictatorship, but generally the Army high command, who had supported the “Revolution of 30”, was displeased and finally deposed Vargas from the Presidency in 1945. Therefore, this

\textsuperscript{21} It was a civil-military coup, led by an army officer, and catalysed by the murder of army officers while they were sleeping in their barracks. This determined the aversion of the army to communist groups up to the present day.

\textsuperscript{22} Considering the “Revolution of 30” might have been a revolution and not a coup – which is controversial – this was the third coup d’etat in Brazil.

\textsuperscript{23} Brazil took part in the WWII, joining the allies in 1942.
dictatorship did not come to an end through the power of civil opponents or riots in the streets, but rather by a decision from the army high command to seize control (Burns, 1970; Skidmore, 2010).

b.10 Democracy

New elections were held in 1945, and a new constitution (the fifth in the country’s history and the fourth of the Republic) was brought into law in 1946. Similarly to the 1934 constitution, the new one set a series of guarantees for free elections and civil liberties, such as votes for women and all those above 18 years old were now able to vote. It was a period in which systematic elections began, as well as the consolidation of a national system of political parties, with ideological programs which identified with the electorate (Ferreira, 2010).

Nevertheless, the communist party was forbidden and other left-wing leaderships, including unions, were repressed. Although elected for a mandate of six years under the constitution of 1937, the new President, the army general Eurico Dutra, stayed in power for five years, due to the constitution of 1946, which limited this mandate. In 1950, Getúlio Vargas assumed the Presidency again, but this time winning via elections, in a formal democratic period (Burns, 1970; Skidmore, 2010).

The new government of Vargas had a new face; willing to soften its dictatorial image. Although elected, the President had created several opponents from different sectors of society during the years of his dictatorship: the “anti-getulists”, hence there was a strong opposition when he assumed the Presidency again. Also, the Brazilian society of 1946 was quite different from the one of 1930. The fast industrialisation and urbanisation of that period strengthened three sectors: industrialists, the urban working class, and the urban middle class, although none of them yet had a “class consciousness”, in Marxist terms. The local domination of the “colonels” slowly started loosening due to the growing urban electorate. The President then assumed a “nationalist” policy, accusing foreign companies of fraud and excessive profiteering. Inflation was high, and the proposal for an increase in the minimum wage triggered suspicion by industrialists. The army at this point was split: Half being left-wing nationalists and the other half hardline anti-communists. The “anti-getulists”, in turn, were highly supported by the press and a huge campaign to overthrow the president was underway, accusing the government of corruption. Under pressure, the President then received a letter from the military commanders demanding him to withdraw, which he indirectly did by committing suicide in the year of 1954 (Levine, 1998; Skidmore, 2010).
In his testament letter, the President blamed his suicide act on the pressures both from national oligarchies and international economic groups. Because of his popularity, his death generated riots within Brazil’s populace, which postponed the coup-d’état threatened by the military for ten years. After an interim government, the next Presidents inherited Vargas’s industrialised and diverse electorate. The first of these Presidents, Juscelino Kubistchek, a popular politician elected to the Presidency in 1955, who built the new capital, Brasília, was an economic developmentalist. The one elected after him in 1960, Jânio Quadros, resigned from the Presidency just seven months after his tenure, blaming “terrible forces” conspiring against him (Skidmore, 2010).

Quadros’ successor was the Vice-President, João Goulart (aka “Jango”), who was seen as too left-wing by the military, which was afraid the armed forces could be “infiltrated by communists”. The military ministers wrote a manifesto against his tenure, whereas the Congress – pressured by the military – proposed a “parliamentarian solution” by changing the regime, so that the Vice-President could take office, but would not rule the country. Nevertheless, the Army was split between those against the “communist Vice-President” and those in favour of the constitution, called “legalists”. In this context, in 1961 a radio network was launched by the governor of Rio Grande do Sul, Leonel Brizola24, called “legality network” which reached thousands of people and created a huge resistance, supported by the army branch in that state, to force the President out of power. With a split army, the military leadership supporting the coup held back once again. The President went on to complete his full tenure, but with limited powers due to the parliamentarian system recently implemented (Gaspari, 2002; Machado, 2011).

b.11 Civil-Military Dictatorship

Part of the “parliamentary solution” established a referendum for 1963, in order to choose the system between Parliamentarianism and Presidentialism, and the latter won. Hence, Jango recovered his powers, but the conservative military did not change their opposition to him. This time, however, counting on active conspiracy from the USA government in the context of the Cold War, via supporting chaos in the country in all its guises, the military set about undertaking a successful coup d’etat in Brazil in 1964 (Gaspari, 2002; “The Day That Lasted 21 Years (2012) - IMDb,” 2016). Differently from earlier moments, when the military had acted mostly as a “referee”, this time, they imposed a dictatorship by force, one among several

24 From the same state of Vargas, Jango and Brizola were brothers in law and inherited Vargas’ electorate.
others that took place in Latin America during the ‘60s and ‘70s as has been argued was the plan of the clandestine “Operation Condor” (McSherry, 2012)\textsuperscript{25}.

The military dictatorship lasted for 21 years: via the censorship, torture, and murder of opponents of the regime (Coimbra, 2001a). With help from the USA, the country managed an “economic miracle”, with high growth rates boosting Brazil’s further industrialisation and the living standards of those already in elite social positions continuing to improve. Hence, the growing wealth did not mean a shared economic miracle for everyone. The concentration of wealth made inequality rise during this period, rather than boosting living standards for the population as a whole (Fishlow, 1972; Toledo, 2004).

In 1967 the military government set yet another new constitution (the sixth of Brazil’s history and fifth of the Republic) in order to legitimise the dictatorship. However, by the end of the ‘70s and beginning of the ‘80s new groups of people, new actors, emerged on the political scene in Brazil. These appeared out of the context of a “political opening” of the military; from the merging of liberation theology, Marxist intellectualism and the “new unionism” (Sader, 2001). These groups formed a “new left”, different from the traditional unionism, which was created in essence during the Vargas Era to be a popular basis which his government could develop and utilise (Hentschke, 2006; Sader, 2001). Uninvolved with the armed struggle and guerrilla fighters against the dictatorship, these new actors were responsible both for huge strikes in the metal-working areas in São Paulo and for a new burgeoning political consciousness among many Brazilians.

b.12 Re-democratisation

Finally, in 1985, beset by riots demanding democracy and economic crises, the dictatorship fell. An amnesty for both sides of the conflict was agreed\textsuperscript{26}, as well as the indirect election (through the Congress) of the first civil President after 21 years of open authoritarianism. The new President, however, died before reaching full tenure because of a medical condition. The Vice-President took over and set elections for a Constituent Assembly, which built the new constitution of 1988 (the seventh one of the country and the sixth one of the Republic), the “Citizen Constitution” (Paim, 2013). Besides this constitution, new direct Presidential elections were scheduled for 1989.

\textsuperscript{25} Operation Condor was an agreement, with the help of the CIA, between some countries in South America in order to chase and terminate left-wing regimes and those communists escaping from one country to another.

\textsuperscript{26} The amnesty has been questioned since then, because it equalled the government (torturers) and the resistance (tortured). All criminal charges against everyone was dropped.
After 29 years the Brazilian people were directly choosing the President again. This first free election in the formal democratic regime was actually the result of a significant manipulation by the media, particularly one influential TV station – Globo, which years later admitted its responsibility for this election result. The media-friendly candidate Fernando Collor was elected President in 1990 (Miguel, 2000).27

The manipulated polls elected a President that would not last two years in power. Due to several indictments of corruption, the first President in the formal democratic regime was impeached in 1991. His Vice-President took over the tenure and managed to finish the mandate in 1994.

Currently, in 2016, Brazil is in the longest formal democratic regime since the Proclamation of the Republic, lasting now 31 years of a very young democracy (which had been interrupted in its first years in the ‘40s, then again in the ‘60s).

The highlights on the word “formal” in the last paragraph finds its best expression in the impeachment of the last elected President Dilma Rousseff. For some, she is a criminal for masquerading the budget (which was not confirmed by the Senate peritia); for some, the impeachment was a parliamentary coup d’état.

b.13 Remarks on the History of Brazil

The history of the country, hereby described, is an empirical denial of the concept of “partial democracy” as stated by Potter et al. (1997), rather it is the reiteration of a “disguised authoritarianism”. Over the centuries, democracy, or anything resembling that, has been used to dissimulate an authoritarian regime that has been reinventing itself along the long arc of history, and it is not exaggerated to affirm that Brazil is, in fact, an “Oppressive State”.

In the beginning, as a private investment, there was no commitment to the land by the first explorers, as well as no commitment to the people. After the independence of the nation, virtually the whole male population could vote (except slaves), but that was far from any democratic inspiration. The voting system was a mere formality, a cover-up for local landowners to maintain their positions of power.

By the proclamation of the republic, the system was “improved”, with Brazilian oligarchies controlling the elections and taking their turns in central government. The “Revolution of 30”,

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27 The world’s fourth largest network TV is Brazilian, which has grown during the military dictatorship as its most important mouthpiece – as a reward the network gained more concessions and power (Herz et al., 2009). An important documentary about its power was made by BBC: “Beyond Citizen Kane” (http://www.imdb.com/title/tt1356393/) and can be seen here: http://bit.ly/2yExTvT.
although ceasing a flawed political system, in the end, led to the first named authoritarian government, paradoxically committed to the welfare of the people. This commitment had a dual effect: improvement of the living conditions of the people as a means to remain in power.

After being expelled from the Presidency, however, Vargas accepted the democratic game and went further in the empowerment of the population, which did not please the army, finding his capitulation to the people too left-wing. Therefore, he was pressured to leave and, after a short period of regular elections, the democratic process ceased again by the military dictatorship, with generals taking turns at the Presidential prize for the next 21 years.

Counting only the Republic period, Brazil has had six constitutions, which means an average of one new constitution every 21 years. Since WWII only three elected presidents managed to finish their mandates, two of these in the last 22 years. Likewise, during the Republic period, there has been an average of one new coup d’état every 25 years.

Democracy is a young regime in Brazil, and it has been facing important issues and challenges for its survival and prosperity, particularly ones related to the slavocrat culture and the “neo-colonelism” so ingrained in Brazilian history as has been discussed. The former landowners now have the company of the rentiers, the industry, the media and other elites of the country. It is almost a redesigned “oligarchic colonelism”, adapted to the characteristics of the 21st century, i.e., in addition to the persistence of the old literal large land properties, now there are “colonels” in the communication “large properties”, for instance, and others like industry and health.

In Brazil, radio waves and TV broadcasts are “public” permits. In the best example of modern and reshaped “colonelism”, the majority of the regional radio and TV concessions are owned by local politicians, many of them federal congressmen, which grant concessions to one another. Once they own the main local media and are linked to the major TV network, they have the most strategic means to remain in power or to put whomever they want into that position.

Regarding the Brazilian inheritance of a culture of slavery, one concrete artefact of this comes from architecture: the modern flats of Brazil inherit the spatial characteristics of the old landowner’s houses. Separate from the “big house”, the slaves lived in the “senzala” (slave

28 These two were re-elected, totalling reigns of 16 years (eight years each).
29 Not counting on the “Revolution of 30” itself, considering its characteristics (fraudulent elections that triggered the movement), but counting both on the New State coup in 1937 and the latest parliamentary coup to rock Brazil in 2016.
house), and the access to the “big house” was not through the front door, but the back door, with access to the kitchen and, from there, to the rest of the big house. The verticalization of living conditions in urban areas of Brazil adopted that spatial logic so that every flat and building has a “service entrance”, and this is because most of the middle and upper classes keep the habit of having a maid at home, doing work similar to that formerly done by slaves, with a meager wage. The maid or any other worker in the building has a service door and lift to use, separate from the “social” doors and lifts (Lara, 2013).

The result from years and years of such a ‘slavocrat’ culture and a chronic lack of democracy? Brazil is the second most unequal society in the G20 countries (ILO et al., 2015) and this can be evidenced both by the number of favelas (slums) and by the enormous difference of their living conditions. The colour of the people living in the favelas vis-à-vis the people in the middle and upper class areas clearly illustrates the inheritance of the stratifications of Brazilian slavery, so that the favela is known as modern “senzala”, where the majority of the people are black, live in poverty and violence, with precarious access to water, sewage, and services, providing the more privileged classes with a cheap workforce.

The “Oppressive State” can also be evidenced in contemporary Brazilian society by current data such as the highest number of homicides in the world in 2012 (Amnesty International, 2015), which is 2,5 times higher among the black population when compared to those who are white (Waiselfisz, 2015).

In 2014, 10% of the homicides in the world, in absolute numbers, were Brazilian (Cerqueira et al., 2016). In the same year, 15,6% of the homicides in Rio de Janeiro were caused by policemen as a consequence of the unnecessary and excessive use of lethal force. It is made both by extrajudicial executions on the pretext of the “war on drugs” and by “death squads” and militias, which are composed of current or retired policemen/firemen, as well as those who had been expelled from the forces (Amnesty International, 2015).

The death squads act in the favelas and peripheral neighbourhoods as a collaboration of shopkeepers, business owners, politicians, and others, in order to eliminate social groups considered undesirable. The militias take it upon themselves to provide “security” in neighbourhoods supposed to be under threat from criminal activities. They charge a “fee” for

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30 The maids did not have the same rights as the rest of the ordinary workers until 2015, when a law addressing this inequality was launched. This law – incredibly – triggered protests from the middle and upper classes.

31 The majority of drug selling points are located in the favelas.
this “protection”, and also for providing alternative transportation, selling gas cylinders and illegal cable TV services (Amnesty International, 2015).

Besides homicide, Brazilian violence historically perpetrated by the agents of the State finds its most cruel face in torture, of course overwhelmingly against the disadvantaged population, most of whom are black. It is the worst inheritance, besides murder, of the practices from the military dictatorship\textsuperscript{32} (Coimbra, 2001b).

There are, however, other more “subtle” forms of violence, such as the black population having a wage that is 58% the wage of white Brazilians, and the continued wage gap of Brazilian women, whose wage is 74% the wage of men (IBGE, 2014)\textsuperscript{33}. These are merely the first examples of such violence. The most subtle, however, being “symbolic violence” (Souza, 2015).

Symbolic violence, however, is not a Brazilian privilege. It is related to dominant ideas which are shared and repeated by society, but in reality, these ideas “select” and “distort” what the eyes see and hide what shall not be seen (Souza, 2015). In his book, Souza invokes Weber (1930), who argues the wealthy not only want to be well off but to have the “right” to wealth, hence the (unfair) privileges of their class need to be legitimate.

In the past, these privileges were open and religiously motivated. Nowadays the privilege cannot be so explicit but masquerades as a “merit”, and this depends exactly on the distortion of reality. The reproduction of this misrepresentation of the social world depends on “persuasion” rather than “violence”: This is what the author calls “symbolic violence”, and this is why elites own journals, publishing companies, universities, TV stations and everything that is decided in political parties and the courts (Souza, 2015).

Similarly to other places, in Brazil, it is the right wing intelligentsia which permits this false rationality, e.g., that the problems Brazil faces do not stem from the huge inequality of the society, but from “State corruption only”. It is possible exclusively through the “kidnapping” of the “Brazilian intelligence”. The few people who control everything need this group of intellectuals as much as the old “colonels” needed the militias (Souza, 2015).

\textsuperscript{32} Torture has been part of the tactics of repression since the time of slavery and was reinforced, even made banal, during the military dictatorship. The first time it was legally banished from the country was through the Constitution of 1988 (the last one).

\textsuperscript{33} Both indicators have been increasing along the years. In 2003 the wage difference between women and men was 70.8% and the wage difference between blacks and whites was 48.8%.
The Weberian rationality was used, at first, to justify the big difference between the advanced societies (western Europe and the USA) and those societies seen as backwards (Latin America). Then the scheme was used by peripheral societies, like Brazil, to explain their policies of class preservation. In the case of Brazil, seminal intellectuals idealise the USA as the “paradise on earth”, the land of the pre-capitalist Protestant, with abundant social justice and equal opportunities, serving as a critical counterpoint for the Brazilian situation, in which man would be the captive and prisoner of bodily passions, leading to a vile, unreliable and tendentiously corrupt social character (Souza, 2015).

That is the perception underlying the thinking of the Brazilian elites, which, just as in the past, identify themselves with foreign peoples and regimes (mostly American), rather than their own people. These elites do not have a commitment to the land or to the population, who are seen as merely a means of keeping the privileges of the status quo. Moreover, it is not rare to observe some people from the upper classes denying Brazilian culture as if it were minor and less worth celebrating than the cultures of foreign States, although this behaviour has been declining in recent years.

Brazilian elites are used to ruling the country by manipulating institutions in order to remain in power. Historically, whenever the privileges of these elite groups have been threatened, as happened to Vargas in 1954, to Jango in 1964, and indeed to Brazil’s last democratically elected President Dilma Rousseff, these elites have found ways and means to change the government to one more attuned to their interests, in no way respecting the democratic mandates of the Brazilian population or the ideals of democracy as a system of law and order.

Finally, it is important to highlight the role of the armed forces along this fraught history, which has been decisive in shaping the country. The roots of this influence can be traced to the creation of the National Guard when the army struggled not to lose prestige. It is what underpinned the Army’s support of the “movement” for the Proclamation of the Republic.

Since then, when the first President was from the military, the status of the armed forces rose to ever greater heights. There are several episodes in-between those already narrated, but certainly, the spectre of a communist coup in 1935, in which military officials were killed, was a determining factor in cementing the aversion the armed forces have towards left wing regimes and personnel until now.

34 This is so deeply rooted that even a conservative intellectual named it as the “mongrel complex”, in which some Brazilians voluntarily put themselves in an inferior position to the foreign, as if everything from abroad is intrinsically good and everything Brazilian is bad (Rodrigues, 1993).
In the present day, however, probably due to the wear and tear of 21 years of bloody dictatorship in the name of democracy, and despite the anti-communism still present in the troops, military leaders have been apparently loyal to the constitution, which clearly established their role and their submission to civil power and authority.
REFERENCES


POST-SCRIPT

By the end of 2016, in November, Fiocruz elected a new President, according to its statutes, which establishes that a list of the three most voted candidates shall be sent to the President of the Republic, who selects whoever he/she prefers, as we have seen.

Since the establishment of the triple list system, more than 20 years ago, all the Presidents have respected the choice of Fiocruz employees, by nominating the mostly voted candidate. This time, however, at the turn of the year, a news note informed that the President of the Republic would choose the second most voted; and the nomination was supposed to happen on January 2nd.

The note generated a bustle among the employees which, despite the holidays, initiated a massive movement with the partner networks, including the international ones, which rapidly responded. Dozens of entities protested, and petitions were created. Fiocruz, in turn, published a letter asking for the President to respect the democratic process of the organisation.

After a meeting with both candidates, the President refrained and nominated the most voted. However, in the meeting, he negotiated for the second candidate to suggest two names for two out of the five Vice-Presidencies, in a clear intervention on the autonomy of the organisation.

This episode can be regarded as a confirmation of this thesis when stating the democratic belt as a protection against interests that are not the interest of SUS, of the State, despite the government of the moment. Fiocruz is a State organisation, not a government organisation.

To understand this event properly, it is noteworthy that the current Brazilian President and his government assumed power through a very controversial situation which split the country. In fact, he was elected Vice-President, and the controversy is on the impeachment process that took the former elected President off the power. For some, she was a criminal, and for some, it was a “parliamentary coup d’etat” aimed at implementing measures not backed by popular vote.

Whether a coup or not, there is a deep political crisis going in the country, along with the economic one. The austerity politics adopted by the government is threatening the survival of organisations like Eletrobras, the Brazilian company responsible for 40% of the energy and 60% of the transmission lines of the country, whose privatisation has just been announced.

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35 The list usually comprises two names, depending on the number of candidates.
In this scenario, the theme of the VIII Internal Congress set to happen on the second semester of this year is “Vision of Future”.

Provided that institutions are minimally preserved in this shock doctrine era (Klein, 2008), a fully-fledged strategic plan, based on a highly participative debate like the Internal Congress, may help guarantee the survival of Fiocruz; hence, guarantee the survival of the citizenship values of this unique PRO and, ultimately, the survival of SUS as it was established by the Constitution of 1988.
REFERENCE