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DESIGNING AN INTERDISCIPLINARY LABORATORY TO TACKLE GOVERNANCE FOUNDATIONS

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Designing an interdisciplinary laboratory to tackle governance foundations

ABSTRACT

The formal landscape of governance studies is obscure although governance has become a self-understanding practice in very discrepant fields. Our assumption is that governance relies on micro-foundations not captured through disciplinary procedures, which are better shaped for macro-foundations. We propose an interdisciplinary method mixing indirect approach and epistemic rigor. We chose as experimental field the ecosystem of science management, because i) it is one of the most ancient enterprise practicing governance and ii) each member of our team could provide the knowledge of actors, practitioners, managers and scholars using the same experimental device. We built a transient interdisciplinary laboratory using procedures offered by a new epistemic proposal, which opens the disciplinary fields on a generic space and allows the combination of different sources of knowledge with high rigor. In short, governance is considered as an integrative object encompassing a large diversity of dimensions. It is studied using a dynamic matrix crossing sources of knowledge corresponding to the dimensions (variables) with drivers of knowledge exchange (index) within a working community. We defined the minimal model for governance as the ratio of orchestration of collective organization over dynamic knowledge puzzling. We built the matrix with, as variables, the discrepant postures within the ecosystem of scientific knowledge production and as index the epistemic tools best linked to the two terms of the model namely discipline democracy and machinery for knowledge exchange. Each of the authors of the present article filled in the matrix, the cells provided then the scientific data to be processed in our interdisciplinary laboratory. The results are so far the precise description for governance of i) a model, ii) a style and iii) micro-foundations. All together they highlight the landscape in which searching for theories and give the interdisciplinary background as well as impulses to eventually design new ones.

Keywords: Governance; Theory; Interdisciplinarity

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Abstract

The formal landscape of governance studies is obscure although governance has become a self-understanding practice in very discrepant fields. Our assumption is that governance relies on micro-foundations not captured through disciplinary procedures, which are better shaped for macro-foundations. We propose an interdisciplinary method mixing indirect approach and epistemic rigor. We chose as experimental field the ecosystem of science management, because i) it is one of the most ancient enterprise practicing governance and ii) each member of our team could provide the knowledge of actors, practitioners, managers and scholars using the same experimental device. We built a transient interdisciplinary laboratory using procedures offered by a new epistemic proposal, which opens the disciplinary fields on a generic space and allows the combination of different sources of knowledge with high rigor. In short, governance is considered as an integrative object encompassing a large diversity of dimensions. It is studied using a dynamic matrix crossing sources of knowledge corresponding to the dimensions (variables) with drivers of knowledge exchange (index) within a working community.

We defined the minimal model for governance as the ratio of orchestration of collective organization over dynamic knowledge puzzling. We built the matrix with, as variables, the discrepant postures within the ecosystem of scientific knowledge production and as index the epistemic tools best linked to the two terms of the model namely discipline democracy and machinery for knowledge exchange. Each of the authors of the present article filled in the matrix, the cells provided then the scientific data to be processed in our interdisciplinary laboratory. The results are so far the precise description for governance of i) a model, ii) a

style and iii) micro-foundations. All together they highlight the landscape in which searching for theories and give the interdisciplinary background as well as impulses to eventually design new ones.

Introduction: convoking epistemology to design governance theory

Governance has become the most commonly used term in social and political science; it gets even more mentions among scholars than ‘government’, ‘politics’ or ‘democracy’ (Colebatch, 2014). It endeavors an historical transition worldwide, although the actual applications and meanings of governance vary according to the culture –for example it does not cover the same perimeter in English and French- and to the levels of development of civil society and of democracy within the political system (Peters, 2014).). But everywhere “governance” means something else than government or management, it activates other mechanisms and processes. If it is obvious in practice, the contrasts between governance, government and management are however hard to illustrate.

What surrounds governance is global change and knowledge dynamic. Indeed arrangements between governance and knowledge systems are co-produced (Jasanoff, 2004).and have mutually constitutive relations (van der Molen et al. (2015)). Then we may resume governance as steering in complex, uncertain and transformational environments with well-equipped knowledge systems.

This amplifies the request of raising awareness and knowledgeability of this steering mechanism. According to Peters (2014),), the future development of governance theories will have to be towards refining and extending the use of the concept. But are we prepared to do so?

Governance is practice; what matters is the practice of governing, the action that creates governing. What can then the theoretical framework? On the one hand, theories have

predictive and explanatory capacities to support a broad area of practice such as management, policies, guidance, etc. On the other hand, combining academic rigor with practitioner relevance is challenging: practice uses fragments of different sources of knowledge, coming from numerous disciplines and outside disciplines. For the only strategic management research, 202 theories have been used so far; five of their “top ten” originate from the discipline of management, the other ones are borrowed to the economics, psychology and sociology fields (Kenworthy and Verbeke, 2014).). What will be the count for governance which embeds more variable and complex dimensions than management? The term governance, as the term management are so open, they intricate a large variety of dimensions, which cannot be reduced without increasing the risk of ideologically driven interpretations. Governance has a generic value and specific declinations, none has to be neglected because, as Peters (2014) claims, “governance is for everyone”. How can we handle such large and discrepant dimensions within a common theoretical landscape? Following Colebatch (2014),), we may learn more from looking at governance not as the next big thing in political or management science, but at the way of relocating concerns of scientists within a broader framework for theorizing social action.

Does practice particularly hurts the universal, predictive and explanatory values of theories? Or are scientific practices limited to provide theories with generic values? Epistemology, “the theory of knowledge”, questions the extent to which knowledge pertinent to any given entity can be acquired. Its classical form remains grafted to philosophy: the criteria to acquire pertinent knowledge are built on opposition such as complementarity and continuum, theory and fact, theory and observation, theory and experience, justification and verification. This is in line with the disciplinary apparatus, where scientific knowledge is produced with incremental precision, facts selection, experience designed according to theory... In other words science is qualified within disciplines, disciplines are identified according to their

theoretical contribution, they are hierarchized, according to their theoretical production, mathematics and philosophy lay at the top. Classical epistemology frames a space where macro-foundations clearly appear and quickly become structuring dimensions of the disciplinary apparatus, for the best efficiency of qualified scientific knowledge production. Today, classical epistemology account with difficulty for the multiplicity of contemporary manifestations of science¹, the limits are that i) theories coming from different disciplines are generally mutually exclusive, ii) eventual middle-range or micro-dimensions are shadowed, iii) knowledge outside disciplines is not qualified. “Undiscipline knowledge” demands “a new thought style” (Darbellay, 2015),), which means an extended frame to nuance and surround oppositions, complete the macro-foundation and gain compatibility among the discrepant sources of knowledge. Because philosophy is particularly resistant to foreign elements², it implies that epistemology rely on additional thinking modes and invent.

Concerning management science, Hernes (2014)) suggests that scholars cut loose the shackles of misplaced scientific ideals to focus on the localized, embedded, fluid and contingent nature of managerial work. Foss (2009)) and Kenworthy and Verbeke (2014) point out the importance of the “micro-foundations” for the theoretical production of this specific field of science.

Our hypotheses are:

¹ Models, for example, are in a “no man’s theoretical land”, hypothesis do not have a fixed position regarding scientific knowledge production, science produce objects with no specific identifies or functions and the questions addressed to science are only partially translated.

² This obstacle to philosophical invention and cooperation with other disciplines has been challenged by theorists from various disciplinary backgrounds such as Wittgenstein, Derrida, Bourdieu, Lacan, Simondon, Stiegler or Sloterdijk.

(H1) governance is particularly sustained by micro-foundations, not visible through disciplinary procedures, which are shaped to identify macro and universal foundations

(H2) the theoretical landscape where to formalize theories is radically interdisciplinary.

This means that i) the landscape will be more efficiently identified if the process is not driven by a unique discipline, ii) interdisciplinary procedures has to be invented and iii) theories can be designed outside disciplines if disciplines cooperate. It is known that interdisciplinary projects offer favorable conditions for exchanging fragments of knowledge and consistent concepts (Schmid et al., 2011). They may even be seen as enterprises bringing innovative designs (Hatchuel et al., 2002). But for the purpose of identifying micro-foundations, such “enterprises” will not be driven by any common object. They will have to be shaped with a theoretical ambition and to comply with the highest request of scientific rigor and relevance. In other words, they will harbor epistemic values. Already in 2005, Hatchuel proposed to convoke epistemology to surround design theories because they deal with the process of knowledge formation and exchange (Hatchuel, 2005). Examples of cooperation of design or management scientists with philosophers are rare and confirm that the dialogue is not only of quality, it also raises original concepts (Konda et al., 1992 , Schmid and Hatchuel, 2014). Their theoretical impulsion seems still limited by classical conception of epistemology which are strongly rely on philosophy. None of the classical or modern philosophic proposals welcome the design’s dynamic process, and its way to associate components as heterogeneous as objects, knowledge and concepts.

Generic epistemology is a new proposal. It is an invention extending the limits of classical epistemology. It places epistemology not over of after science, but in science. In doing so, it opens up the epistemological field, which gains vigor and additional rigor through its

anchorage to the context of the scientific activity. Instead of criteria of evaluation, generic epistemology provides procedures.

- The first series of procedures open the generic space, based on the following inventions
 - i) The integrative object: the object is not given, remains partially unknown, linked to the intention of the research team and superposes state of art and of non-art,
 - ii) Collective intimacy: refers to conditions leading expression and share of knowns and unknowns favorable to interdisciplinary regimes; within a device allowing collective intimacy, the integrative object can be translated into a heuristic.

- The second series of procedures maintains the generic space with:
 - i) Operators: such as fiction, future or virtual. They allow the combination of heterogeneous fragments of science and philosophies, their property is to modify the use of disciplinary knowledge and thus to enrich the concepts,
 - ii) The dynamic matrix: is central in generic epistemology. It treats dualities and heterogeneities, adds dimensions and interactions, preserves knowledge heterogeneity, avoids the overlapping of one source of knowledge with another one and warrant the democracy between variables even if those are disciplines.

Our strategy was to build an “interdisciplinary transient laboratory” using experimental methods based on procedures of generic epistemology to produce the compound of knowledge on which the theoretical landscape for governance could be designed. The

“laboratory” was formed at purpose. It gathers researchers from various disciplines to which management has borrowed theory: sociology, philosophy, biology and ecology. Each of us tackles research fields as diverse as work, ecosystems, innovation, scientific organization and epistemology. We have in common to be engaged in producing new concepts in response to the actual stakes of the evolution of working and environmental conditions as well as the extension of scientific production and technical possibilities. Our interdisciplinary “laboratory” merges high philosophical, scientific and social ambitions.

The research activity in our “interdisciplinary laboratory” consists of iterative meetings of 1h30, during which we trace trajectories between our disciplines and scientific actualities, under our hypotheses (H1 and H2) and using the tools provided by generic epistemology. It began 1,5 years ago with no other material than our collective intention, under the auspice of our scientific organizations and the intellectual environment of a chair of Design thinking co-funded by academy and industry.

To function, our laboratory has:

1. as research object: governance considered as an integrative object.
2. as management process, data acquisition facilities, analytical frame: a dynamic matrix
3. as means to ease knowledge exchange (double movement of individuation and genericity): posture and style.

Our scientific method and collective strategy were progressively established. The series of results obtained so far are:

- regarding governance foundations:
 - o a minimal model
 - o a description of the management style
 - o a series of concepts circumscribing the micro-foundations of the theoretical field.

- In addition,
 - o narratives of the posture of each actors of the scientific knowledge production ecosystem.

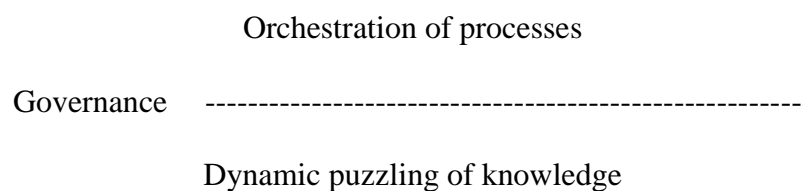
The later results will not be presented here. They were an intermediary step of knowledge rearrangement to render manifest the components directly linked to governance.

Method: the logics and scientific strategy

The steps are as follows:

1. Explore the various dimensions of governance, including the structural and variable ones, and find the minimal model that will encompass as much as dimensions and variations as possible, that may be used as a vector of expression and transmission of the results.

We analyzed the most recent scientific literature on governance, to identify the dimensions of this integrative object and composed the minimal model (see results):



2. Choose as experimental field a sector of activity where governance is practiced for long and to which the members of the laboratory are connected. The experimental data will be the bulk of knowledge convoked by each expert without purpose or a priori and under conditions of collective intimacy. The data are highly heterogeneous.

Scientific knowledge production was the activity chosen.

First, it appears as the oldest enterprise practicing governance. Stoker (1998) has identified five groups of conditions for which governance is mobilized. They perfectly fit with the concerns of deans or CEOs of scientific organizations:

| Stoker (1998) | Scientific organizations, activities of the deans or CEOs |
|---|---|
| 1. Link institutions and actors for decision-making, | Link institutions and actors for decision-making since science is both an international and local activity, |
| 2. Extend roles and responsibilities in response to their blurring, | Extend roles and responsibilities according to scientific advances, external project funding... |
| 3. Take account of power dependence between institutions, | Take account of power dependence between institutions, shape the nature and objects of activities of the organization to make it specific although contributing to global scientific production |
| 4. Consider self-organizing networks | Consider the self-organizing networks that are disciplines and research laboratories |
| 5. Steer and guide rather than command. | teer and guide rather than command, knowledge production can be programmed but hardly commanded |

Second, regarding the activity of scientific knowledge production, we, the members of the interdisciplinary laboratory, are at the same time actors, practitioners, managers, scholars and end-users coming from different organizations and communities, with discrepant backgrounds. We could extract heterogeneous but connected knowledge within our “laboratory”, without any disciplinary supervision, using generic epistemology procedures as underpinning processes warranting quality and rigor.

3. Identify the dimensions structuring the sector of activity that is governed; they are the variables of the matrix. We considered them as to be harbored by the actors of the scientific knowledge production ecosystem which are: researchers, technicians, science managers, end-users, political bodies and civil society.

Generic epistemology proposes operational concepts like posture or style giving a common base for knowledge exchange without affecting heterogeneity and individuation. Posture was used to distinguish actor’s relationship to knowledge production, whereas style sustained the interdisciplinary process. The concept of style has been progressively engaged in the description of scientific and philosophical approaches since 1970³. With the changes of scale and levels provoked by interdisciplinary processes, the compositions between style and objectivity are possible and very actual. The style is engaged in philosophy to combine different sources of argumentations (multiplicity of the right of philosophies). It opens the

³ For the introduction of the style in philosophy, Chaim Perelman et Lucie Olbrechts-Tyteka, 1952, 1958, Jean-Louis Galay, 1983, Gilles-Gaston Granger, 1968. The philosophies of Gilles Deleuze, Jacques Derrida and Jean-Luc Nancy contribute also to the introduction of the style in philosophy. The subject of introducing the style to consider the plurality of scientific argumentation is currently treated by Ian Hacking or Stéphanie Ruphy.

capacity of acknowledging the coexistence of diverse modes of arguing and logical binding.

| Knowledge ecosystem | Posture | Style |
|----------------------------|---|------------------------------------|
| Researchers | Disciplinary, management | Interpretation |
| Technicians | Technique oriented, science by fragments | Functionality |
| Science managers | Intersciences management | Anticipation, articulation |
| Users | Production and use of goods, science by shortcuts | Mediation |
| Policy makers | Public goods, science for expertise | Argumentation |
| Society | Social good, science for use | Recall identity and responsibility |

4. Design the dynamic matrix that will support knowledge extraction, by crossing the structural dimensions of governance (see above) and the dynamic ones (index). The later may correspond to tools provided by generic epistemology, like principles or translation of operators in the specific activity studied or principles of generic epistemology, because they will move knowledge exchange and concept production.

We crossed the distinct postures regarding knowledge production with two principles of generic epistemology: i) knowledge from different origins has the same weight (science democracy) and ii) knowledge exchange needs a “device”. They were chosen because they both orient the variations of the numerator and denominator of the model (orchestration of policies and dynamic puzzling).

5. Experts or academics fill in the matrix separately.

Each of us asked him or herself: “what if, given a specific posture, the activity of knowledge production and use was undertaken based on knowledge democracy?” and “what if there was a device activating knowledge exchange?”. We recruited a mix of scientific, experiential, organizational, practical and conceptual knowledge.

6. Extract the content of each cell of the matrices by column and then by row across all matrices. It is a bulk of heterogeneous knowledge and concepts disconnected from their historic, disciplinary or ontological background, but sounding theoretically and in practice. They are the experimental data of the interdisciplinary laboratory to be analyzed and organized.

Results and discussion: Model and theoretical landscape for governance

The types of results

Beside the description of governance as an integrative object, we produced a minimal model of actions encompassed under the term governance.

The results coming out of the matrix are:

- 1) By column: components and concepts mobilized for each posture when considering knowledge democracy and a machine for collective interaction, upon which:
 - a. narratives are built on heuristic maps composed by a logical reassociation of the terms used by the different experts

- b. our model of governance was refined, by selecting processes supporting orchestration of policies and resources facilitating dynamic puzzling of knowledge.
 - c. We identified terms of common sense for each posture, which were considered as the first series of concepts of the theoretical landscape.
- 2) By index: we found properties, actions and values expected from governance:
- a. The terms used to describe the changes linked to “knowledge democracy” were components of governance quality and the ones used to foresee the effects of the “machine for knowledge exchange” were actions expected to be fulfilled. All together, they compose the “governance style”.
 - b. We found terms pointing values common to the different stakeholders of the ecosystem, which may be considered as a second series of concepts of the theoretical landscape.
 - c. We found unexpected connections between concepts which opens original hypothesis and fields of research.

The present paper focuses on the description of governance model, style and theoretical landscape.

Governance as an integrative object

Different facets of governance are revealed by literature analysis.

Governance instead of government or management. The tendency is that the term governance replaces the term government in public administration, corporate organization, international affairs; it replaces the term management for objects as discrepant as project, environment, internet, information technology, family.

Governance as a practice. In short, it is raised by the practitioner as the best description of the orientation, decision-making, organization of complex mixes of public-private-society interests and it is understood as such by the public.

Governance as a norm. It is considered as good or fair when rights and interests of the stakeholders and civil society are respected; it is qualified as bad or unfair when the efficacy and accountability of the key persons to deal with such complex issues is under question.

Governance as a concept. Governance is affiliated to analytical construct, label or concept, which may be generic, operational or even magic (Pollitt and Hupe, 2011).

Governance as a need to shift. The appeal for governance may reflect the need to design means based on principles. According to the Commission on Global Governance, what is mobilized is process rather than rules, accommodation rather than domination, continual interaction rather than formal institution. It denotes the need of closer intricacy between policy, market and society, and of quantum entanglement between end-users, decision-makers and decision-takers.

Governance as an article of faith. The governance arrangements may combine the best of governmental and market-based alternatives in a constructive and efficient way. This claim can be no more than an article of faith.

Governance as not an easy escape. Shift from centralized government to governance modes needs specific means to be handled because i) it is not easy to escape the assumption that governing is done by the government given that the constant subdivision of its workforce is described in terms of its functional concern for matters to be governed (Foucault, 1986),

Governance as failure. ii) governance without government may lead to shadow hierarchy, dilution of authority and blurring of responsibilities (Peters, 2014) and iii) shift from hierarchical to non hierarchical regimes is accompanied by the multiplication and combination of governance modes, decentralized, interactives and self-governed. This suffers

too from failure unless the modes are adapted to objects, objectives, context and circumstances (Howlett and Ramesh, 2014).

The model

The minimal model

We depart from Hecló’s (1972) description of governing as being accomplished by a continuing interplay of official and non-official forms underpinned by the collective puzzling.

continuing interplay of official and non-official forms

Government = -----
--

collective puzzling

to anchor the various dimension of governance as they appear when it is considered as an integrative object. We then expressed the minimal model as : governance being is a consistent and oriented orchestration of policies, management, guidance, processes and mechanisms of decision-making underpinned by the puzzling of heterogeneous and dynamic knowledge, interests, intentions and trajectories:

Orchestration of policies, management, guidance, processes, mechanisms of decision making

Governance = -----

Dynamic puzzling of heretogeneous knowledge, interests, intentions and trajectories

The refinement

Means to orchestrate policies

We identified means, existing or innovative, which sustain the quality of governance process.

They rely on:

- Collective organizations such as professional associations and knowledge communities
- undertaking specific activities such as learning by exploring and experimenting
- within specific devices such as laboratories and platforms
- where processes have simultaneously the following features : local, formal and informal
- where knowledge conjugates and iterates among the different professions, common objects being occasions
- with an open government
- with the aim to design, incubate, treat, cure activities and organizations
- developing dynamic plans
- in and alter-stituting.

Ways of dynamic knowledge puzzling

Within areas orchestrating policies harbouring the features previously described the following effects can be inferred:

- Knowledge exchange undergo trajectories instead of articulation
- Technics are multiplied
- The choice becomes collective
- Careers are more mobile
- Collective identities are built
- The alliance between science, industry and society is intensified.

The style

What is expected from a « good governance » is :

- If the head of the organization has the following skills : intuition, discernement, intention, engagement, political sense, scientific culture
- Then the activities promoted in the organization may be: deliberating, conjugating, inventing, designing, prototyping, instituting, alterstituting, empowering, treating, curing

The theoretical landscape

The concepts that we have identified are mobile within the different disciplines, where they have different meanings and address specific dimensions.

- | | | | |
|--------------|-------------------|-------------------|--------------|
| - Prediction | - Middle-range | - Political sense | - Mutual |
| - Resilience | theory | - Autonomy | respect, |
| - Genericity | - Management | - Collective | - Collective |
| - Science | philosophy | identity | appropriatio |
| driven | - Science for all | - Collectively | n |
| | - Epistemic | designed | - Collective |
| | responsibility | goods | action |
| | | - Generic ethics | |

Some are already considered as concepts in different disciplines, others are new ones. It has been, for us and so far, impossible to agree on categories in which we could rank or organize the different concepts. Describing each of them is almost impossible in a regular publication because of the number of disciplinary fields and volume of literature concerned. However, first, we found that the list of concepts as a whole reveals a theoretical landscape of interest to scholars and practitioners willing to position, visit or extend the theoretical background of their action. Second, if macro-foundations are linked to and provide a certain degree of homogeneity, micro-foundations have certainly to be searched within a background composed

of multiple dimensions. Therefore, we decided to preserve the heterogeneity of the so-called landscape.

Research subjects

We discovered relationships among notions or concepts that may shed a new light on macro-concepts moved by governance practice, such as property, exploitation and responsibility.

This movement is of prime importance. At the same time, it gives at the same time the value and arguments to devaluate governance practice because it leads to shadow hierarchy, dilution of authority and blurring of responsibilities.

The relationships were as follows:

- Epistemic responsibility with collective intimacy
- Exploration with exploitation
- Property with common sense

They reinforce and open new ways for tackling the evolution of such macro-concepts and impulsion of further interdisciplinary research on these difficult subjects.

Conclusions: ways to pursue

In our transient interdisciplinary laboratory, we have highlighted and gathered background material in which micro-foundations of governance theory may be searched. The fact that 1) it constitutes a dense and heterogeneous landscape which coordinates are known and new concepts and 2) it opens research questions on responsibility, exploitation and property, gives credit to the hypothesis that governance is particularly sustained by micro-foundations.

Because the results are radically interdisciplinary, they are open to research in numerous disciplinary fields. They add the constrain or impulsion of studying the subject knowing its situation in other dimensions that will not be experienced.

The method set up in our transient interdisciplinary laboratory was efficient enough to raise a bulk of results largely heterogeneous; they have implications far beyond the sum of our disciplinary fields. The present manuscript opens the discussion in each disciplinary and professional field concerned. The specific perspectives of our “transient interdisciplinary laboratory” is to design the next steps of our method that will lead to the scientific expression of the micro-foundations. We are currently exploring the possibilities of tracing the trajectories of the set of the outlined concepts (like a “high density” image of the theoretical landscape) within each of our disciplinary fields, through regular iterations between our common laboratory and our usual working communities. These trajectories should be composed of fragments of existing theories (of macro-foundations) and of new material.

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Annex

Table 1: Matrix filled in drawing upon an experience in biology

| Postures | Disciplines | Techniques | Intersciences | Management | Good production and uses | Public good | Social good |
|-----------------------------|--|---|---|---|--|--|---|
| Epistemic principles | | | | | | | |
| Knowledge democracy | Opening out to other knowledge Acknowledging the state of non art Prediction, future | Mirror of the future of sciences Science and discernment at the heart Highlighting dogmas and | Generic epistemology Impact evaluation Context considered Transformation of disciplinary | Multiannual plans Transformation of project management Enrichment of indicators through | Heuristic objects Integrative objects Human values | Other meaning for property Common sense | Political sense Cooperation reflex Well-being at work Responsibility and autonomy Professionalization |

| | | | | | | | |
|--------------------------------|--|--|---|--|---|--|--|
| | Plural evaluations Resilience Middle range theories | intentions | knowledge (revision, enrichment of concepts) | plurality Routine evolution Quality Durability Economy Proximity | | | |
| “Treatment” Machine | Network Knowledge communities Distinction of dimensions, fundamentals and disciplines, Autonomy | Platform Learning through experimenting Share communities | Laboratories Conjugation of temporalities and iterations From context dimensions to stake vectors | Co-Design Incubation centre « Treatment », « curing » | College of the unknown Design dynamics | Science boutiques Observatories Alliances | Matrix organisation of the administrative and social support Open governance |

Table 2: Matrix filled in drawing upon an experience in ecology and management science

| Postures | Disciplines | Techniques | Intersciences | Management | Good production and uses | Public good | Social good |
|-----------------------------|--|--|---|---|--|--|---|
| Epistemic principles | | | | | | | |
| Knowledge democracy | De-hierarchisation of disciplines (i.e., not consider some of them as fundamental or superior anymore) | De-hierarchisation of techniques; new combinations of techniques (ex. s types) | New articulation, new relations between disciplines | Re-balance of disciplines, and subsequently of manpower and funds in research | Openness to new uses of good (towards shared or multi-purpose goods) | New relationships between science and public policy; toward collectively designed public goods | New views of democracy, of shared goods and collective issues |

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|--------------------------------|--|--|--|---|--|--|--|
| | New frameworks to integrate disciplines | | | | | | |
| “Treatment” Machine | Technical and knowledge platforms; networks; shared data bases; shared and integrated research infrastructures | Technical platforms; shared instruments or technical infrastructures | Places and events to favor informal and formal exchanges | Facilitate interdisciplinary careers; adapt research evaluation modes | New devices and organizations to increase design capabilities; Education | Enlarged vision of the collective interest; support to local and citizen initiatives | Mutual respect; increased participation in sciences, design and policy |

Table 3: Matrix filled in drawing upon an experience in epistemology

| Postures | Disciplines | Technics | Intersciences | Management | Goods-producing | Public good | Social Good |
|-----------------------------|--|--|---|---|---|--|--|
| Epistemic principles | | | | | | | |
| Knowledge democracy | Decompositions of a discipline, organization of knowledge, interpretations | Dumping in a field other than technical, articulation of disciplines | Creation of a generic space, disciplines put at the heart | Management as a discipline among the others, Matrix of issues | Retained trajectories, dynamics of the involvement of the pluralities | Sharing of the values, a science for all | Assumed scientific responsibility, Collective intimacy |
| “Treatment” Machine | Loss of smugness, supplies variables | Multiplicity of the technics, articulations of the variables | Metascience is a science as the others, multiplication | Multiple stakes, equal dignity, principle of equivalence of | Mediations, chinks, shortcuts | Equal dignity of the values, shared values | Transformation of the responsibilities, the diversity of |

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| | | | of the dimensions | the underdetermina tions | | | the postures |
|--|--|--|----------------------|--------------------------------|--|--|--------------|

Table 4: Matrix filled in drawing upon an experience in management science

| Postures | Disciplines | Techniques | Intersciences | Management | Production of products and services | Public Good | Social Good |
|-----------------------------|---|---|--|---|---|--|---------------------------------------|
| Epistemic principles | | | | | | | |
| Knowledge democracy | Relaxation of disciplines, Creation of divergences in common | Exploring the potential of a new technology, Acknowledging the instability of the techniques | Acknowledgement of the generic space, Disciplinary engagement to a cognitive breakthrough | 1) In-stitution of new techniques, relationships, roles 2) Alter-stitution by constraining the validity of | 1) Integrative goods (products and services) 2) Expressive development of their identity | Collective appropriation Recomposition of knowns and unknowns | Generic Ethics Collective intimacy |

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| | | | | already established rules | | | |
| “Treatment Machine” | Intuition/ Phenomena/ “Following one's curiosity” | Learning by exploring, Inventing techniques for one's expression | Parallel movement: 1) Expanding the generic space in common, 2) Multiple consolidation of new concepts by a return to disciplines | 1) Transformation of established organisational schemes, managerial philosophy and technical substrate 2) Temporal and spatial | Creation of new identities Introduction of new values | Gatherings Subjectivations | Vulgarisation Provocation |

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| | | | | suspension of current goals | | | |
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Table 5: Matrix filled in drawing upon an experience in sociology

| Postures | Disciplines | Techniques | Intersciences | Management | Production of products and services | Public Good | Social Good |
|-----------------------------|--|---|--|---|---|--|--|
| Epistemic principles | | | | | | | |
| Knowledge democracy | Disciplinary professional association National or international evaluation and journals Territorial coexistence of | Participation to the systems of disciplinary peers/Interdisciplinary working groups | Common objects are occasions of exchange | Collective choice through common deliberation and elaboration | Science-industry-research-production alliance | Democratisation of knowledge and debates vs. experts governing through the formalisation of indicators | World transformation and appropriation in a common scientific culture vs. social acceptability |

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| | disciplines Election vs. co-optation | | | | | | and ESR |
| “Treatment Machine” | Territorial specification of disciplines Interdisciplinary identity of the working place | Elaboration of call for proposals according to common disciplinary axes in the research institution | Cross publications, seminars, surveys | Incubation of common projects | Innovation, demonstration, prototype Link between exploration and exploitation (researchers, engineers, technicians and workers) | Evaluation prospective, investment (material et symbolic) and training vs. management and resource control | Capacity building, Work improvement and employment creation vs. value creation for shareholders and cost reduction |

