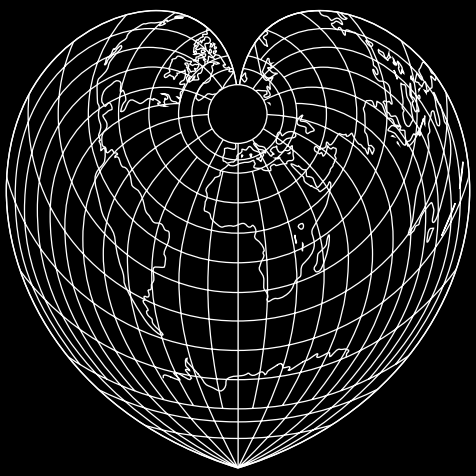
DESIGN THROUGH GRADUATION:



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Notes on the establishment of reality by scale

Graduating the world, things, or beings is a political ordering of reality through design. This graduation is carried out by establishing levels according to a hierarchy.
Two regimes of graduation can be discerned here and where: 1) graduation by scale is understood as a device and 2) graduation by scale is understood as a chain of being. The first returns to what Philippe Descola calls a naturalistic ontology, whereas the second involves the expression of an analogical ontology. Both regimes give rise to specific modes of mapping reality that both administrations and social organizations can use as a basis for their work of establishing reality. Both regimes are also modes of designing reality. However, these modes do not establish the same reality and do not have the same political effects.

The aim of this text is to point out some political and ontological effects of the mode of establishment of reality by scale, according to whether it is naturalistic or analogical. While a naturalistic approach to scale has the effect of effecting scale shifts from the local to the global, and scaling of objects leading to subordinate relationships, an analogistic approach to scale does not necessarily resort to a hierarchical establishment of reality, but instead develops patterns of social and political links that are woven between beings in both a transversal and trans-specific way. The naturalization of scales and the effects of subordination that it is likely to induce are then replaced by a social and political organization that responds to a self-similar structure on an extended scale.

A scale is a degree of spatial or temporal resolution, a unit of time and space that is chosen to observe a phenomenon. A level of organization is an object established by the observer (Allen 1998) in such a way that it can be placed in a class of objects of the same kind. An individual is an element of a population in this naturalistic definition of scale and level, a part is a section of a whole, and a small part that is an element of a large one. A level of organization is, therefore, the product of an architectonic concept that arranges objects in a certain order. Ordered objects, levels of organization – the individual or the population, place, or territory, the simple or the complex organism – can each be analyzed according to different scales that define their granularity, their degree of precision.

A level of organization is a part of a hierarchy of levels of organization in the hierarchical theory of naturalistic cosmology. Thus, small objects (the individual, place, the simple organism) are nested within larger ones (population, territory, the complex organism) and the higher levels exercise control over the encompassing levels (Allen/Starr 1982). In the theory of progressive development in biology, the simple, the inferior, and the primitive – brewers for example – precede the complex,

the superior, and the present, "preferably adult, white and aristocratic" (Balan 1994). This hierarchy is manifest in the synthetic theory of evolution proposed by Julian Huxley in 1942 (Huxley 1942). In this theory we find the idea of progressive evolution, represented by the concepts of anagenesis and rank. Anagenesis is a process of accumulation of evolutionary progress "through an ever better adaptive adaptation of species to their environment", from nucleoproteins to humans, including chromosomes, nucleated cells, and multicellular organisms. A grade is "an anagenetic unit", i.e., "a set of living beings that share the same stage or general evolutionary level" (Tassy 1991: 99-100).

The use of grade or level also manifests itself in geography, subordinating place to territory, or locality to globe. In the modern nation state, the state encompasses the multiplicity of territories and localities. Place no longer means anything in itself, but only in terms of the whole by which it is situated and instituted. It is de-located, de-particularized so that it can, through this abstraction work, lend itself to universalization, monopolization, and the concentration of power (Bourdieu 2012: 351). The locality occupies a subordinate and contingent position within the anthropocene. It can no longer be said that one can "act local, think global" on a planet understood as a system, or that locality is no longer an adequate response to political action: a reduction of local externalities is useless if the concomitant global accumulation of externalities has spun out of control (Federau 2016: 148).

Here we find a figure for the scheduling of the world that occupies the heart of theories of ecology, biology, geography, or territorial administration that subordinates the small to the large, the simple to the complex, and the local to the global. This figure is undoubtedly a secularized version of a theological ordering that attests to a cosmic design.

Another theological ordering could reverse this hierarchical figure, one in which the small is no longer subordinated to the great, but the

great to the small, the complex to the simple, and the powerful to the weak. This schema would reinterpret Paul's phrase from the *Second Epistle to the Corinthians* (12.9) geographically, biologically, historically, and administratively according to which, "my power is fulfilled in weakness". Paul's sentence could then be translated in several ways, which might be stated as follows: my complexity is fulfilled in simplicity; my greatness in smallness. This could also involve returning to two of modernism's principles: "Less is more" and "Small is beautiful". These two principles seem to inherit a great deal from the Protestant ethic; "Small is beautiful" reverses the hierarchies of the administered industrial society, whereas "Less is more" seems to realize its secret program.

"Small is beautiful" is a moral principle that can be found in Diogenes, in Christian hermit practices, in Gandhi's ethics (inspired by John Ruskin), and in the Arts & Crafts movement, or in Marshall Sahlins' famous book "Stone Age, Age of Plenty". It refers to a policy of self-limitation (of working hours, consumption, and administration). "Less is more" is more ambiguous and is one of the emblems of functionalist modernity. It was first stated by one of the directors of the Bauhaus, Ludwig Mies van der Rohe, and it has been translated into a promotion of the standard, a rejection of the ornament, and as an apology for the free plan brought about by reinforced concrete. "Less is more" combines formal minimalism with utility and profitability. The artist Carl Andre once said that "[A]rt excludes the unnecessary", thus taking up the features of ascetic rationalism, of which Protestantism was one of the standard-bearers and which, through Beruf's ideas, formed one of the fundamental elements of the spirit of modern capitalism (Weber 2002). Simplicity, therefore, has two very different social and political-administrative meanings here. The first refers to a political organization that is self-managed by its stakeholders (Small is beautiful) and the second refers to efficiency, to an economy of the apparatus (Less is more).

Translated into political anthropology, this principle would attribute greater virtue to small human organizations, since small size is a necessary condition for democratic organization. Small, also weak, is also the condition for an optimal quality of life (Kohr 1995). Small also makes it possible to escape the collapse of civilizations caused by the rapid and sudden simplification of a society that has become too complex (Tainter 1988). For example, Dennis Meadows, an MIT researcher specializing in systems management and co-author of the famous Meadows Report known as 'Halt to Growth' (1973), after more than 40 years of carrying out various simulations of the Earth system, recently called for the urgent need to train resilient microsystems because of large organizations' inability to rapidly face the challenges presented by the anthropocene (Meadows in Sinai 2013).

A third approach to relations of level, size, and scale no longer start from an antagonism between a zenithal (global) and a telluric (local) point of view, but instead seeks to combine them to achieve multi-level, polycentric governmentality. The notion of multi-level and polycentric governance has been one of the structuring axes of Elinor Ostrom's work on the analysis of institutions, and, more broadly, of the *Workshop in Political Theory and Policy Analysis* launched with her husband in the late 1960s in Bloomington (Fontaine 2019: 257). In his analysis of ecosystems, O' Neill shows that systems are structured by nested levels of organization, each associated with states and processes at particular spatial and temporal scales (O' Neill et al. 1989). Thus, management adapted to a local community may not allow resilience on a more global scale (Walker et al. 2006; Levin/Lubchenco 2008). No system can be understood if it is studied at only one scale (O' Neill et al. 1989; Walker et al. 2004). The panarchy here refers to a set of dynamic systems that are nested at several levels and scales (Gunderson/Holling 2002).

THE DESIGN OF SCALE AND LEVEL

The design of social organizations, and therefore the design of public action too, aims to manage and govern social complexity by means of order through graduation and hierarchization. The latter will configure infrastructures by means of centralized or speckled, tiered, or distributed frames, each in its own way, which will seek to reduce social complexity: "The formation of opinion and will by means of discussion (...) [is] not complex enough to be able to integrate and process the knowledge necessary [for the organization and management of complex societies] from an operational point of view" (Habermas 1997: 346).

The overcoming of individual or collective cognitive capacities to deal with social complexity, in the name of reducing complexity, legitimizes the subordination of the particular to the general and the more or less radical elimination of contexts, thereby reducing the diversity lurking between the lines, "the very diversity that could upset the order of things" (Tsing 2017: 78). The management of COVID-19 in France has clearly shown such a *modus operandi*, generalizing the same control and public health measures to the whole of France, from the depths of the forests or the uninhabited mountain tops, to public transport at peak times in the metropolitan capital. This way of reducing complexity generates distortions of reality and systemic violence. The generalization of an analysis to an entire territory, carried out on the basis of samples or a particular context taken for a universal model, is caricatural. However, the causes of sustainability problems can be understood as problems of scale and inappropriate scale translations: "[L]arge ecosystems are not simply enlarged small systems, just as small ecosystems are not microcosms of large systems" (Ostrom et al. 1996).

The apparatus for the passage, management, or combination of scales and levels is a political operator. It imposes a mode of management and the administration of heterogeneity.

Criticism of this managerial or administrative simplification has led to a desire to favor the small scale in social and political organizations (Kohr 1995). The social and political determination of what can be understood by 'small' remains the subject of controversy and varies according to the objects that we speak about. André Gorz questions the relevance of 'always impoverishing' community autarky with regards to the relationship between political scale and the scale of production: "The more self-sufficient and numerically smaller the community is, the more restricted the range of activities and choices it offers its members" (Gorz 1980:153).

It is for this reason that Gorz calls for a dualistic organization of social space, one based on an inversion of hierarchies, subordinating one sphere of heteronomy (large scale) to a multiplicity of spheres of autonomy (small scale). Heteronomy is a work of general interest, forced labor ensuring the programmed, planned production of everything necessary for the life of individuals and the functioning of society. Autonomy is free, non-market production in which individuals generate material and immaterial goods and services, either alone or in association, which are not necessary, but which conform to the desires, tastes, and fantasies of each individual (Gorz 1980: 145). This distinction between the political and the productive scales is made necessary in order to preserve everything that has been acquired and developed by the division of labor and that cannot be produced at the scale of a family, a team, or a commune, such as telephones, videos, bicycles, solar batteries, microprocessors, etc.

The problem here is in the combination of the capacities of the different scales of production, both socially and politically. While some lend themselves to autonomous management at a local level, others need to be concentrated to be optimal and lend themselves to heteronomous organization. For example, process industries must be concentrated, given

that this concentration has made it possible to excel in economic performance through the effect of scale (reduction in the quantity of labor and energy per unit produced, etc.). In a local process industry, there would be an increase in energy consumption and a multiplication of high-tech equipment, space, and resources consumed. Localized industry, with its autonomous political organization, does not apply to process industries but to soap factories, breweries, factories of everyday objects, on condition that they do not require too much investment or too many machines. The third category of industry, the network industries (such as water, gas, electricity, telecom, sewerage, and transport) are at the crossroads of scales.

The determination of scales of production, and the consequence it will have on both design and social organizations, is understood here in a certain naturalistic regime in which space and time are structured by a hierarchy of sizes and levels. However, naturalistic ontology can also lend itself to a multi-level and polycentric perspective, in order to escape the effects induced by the priority given to one level over another, be it large or small.

Panarchy can be defined as the theory that integrates economic, ecological, and institutional systems and that explains the situations in which these three types of systems interact, adopting a multi-scale and trans-disciplinary perspective (Gunderson/Holling 2001: 5). This apparatus, which moves away from the antagonism of the particular (the local) and the general (the state), integrates dynamics of change across space, from the local to the regional to the global, and in time scales ranging from months to millennia. In this way, the limited perspectives used in the sciences, which tend to simplify things by concentrating on one scale, are overcome. Panarchy can be understood as a new form of naturalism.

In economic and institutional terms, such a trans-systemic, polycentric, multi-scale, and multi-level approach provides the background

for a new mode of governance of planetary life, a system of systems based on NBICs, mathematical and computer models applied at global scales, and control measures for human and non-human network actors (Gosselin/Bartoli 2020). The political antagonism between the scales of governance is overcome by a system of systems that is capable of integrating all forms of technical otherness (small production plants, constructive autonomy, heterogeneous assemblages of housing, and low-tech neighborhoods) as well as all forms of existential diversity (Vidalou 2020).

GOVERNING SCALES: FROM NATURALISM TO ANALOGISM

The scale is a device which, like any device, has the capacity to capture, orient, determine, intercept, and model the gestures, behavior, opinions, and discourse of living beings (Agamben 2006). The state apparatus as a system of systems is the scaling operator of objects and, at the same time, the apparatus operating the translation from one scale to another.

A mapping of the state can account for such a device. One might perceive – as was the case in a 2006 and a 2019 cartography – the stratification and the ascending and descending graduation as something intended to ensure the governability and productivity of all objects. ○○ FIG.1,2

The state can be defined here by its capacity to operate scale transitions, from local to global, and in the scaling of objects. The mapping of the state suggests the power of normalization and scalabilization, which integrates heterogeneity into a whole that forms a system, and which discriminates between what is inside and participates in the system, and what is outside (what is excluded from this system and that which does not fit in with the state's design and its purposes).

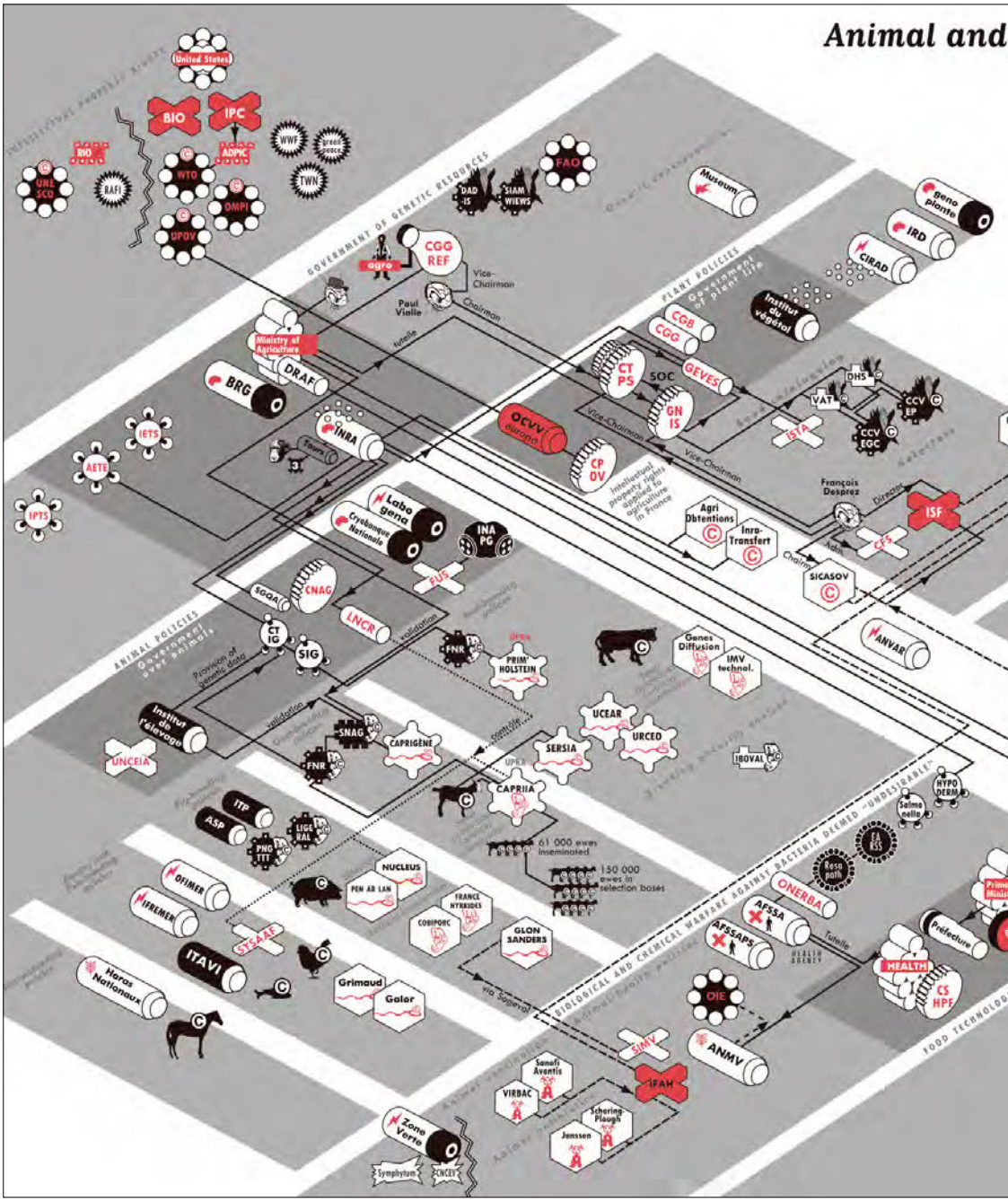
This line of demarcation intersects with another between two modes of production of scale; this can be traced back to the distinction made by Philippe Descola between naturalism and analogism where scale is understood as a device (a tool that aids the state in its activity of administration and government) and where scale is understood as a living order. The latter meaning of scale is found in analogism.

Analogical societies differentiate beings by their interiorities and physicalities, but weave between them correspondences (analogies) that give them the same substratum. One of the figures of such a cosmology is the chain of beings (Lovejoy 1966). One of its formulations can be found in Aristotle's De anima, for example, which states that nature gradually passes from inanimate to animate forms, according to their degree of perfection. The scale of beings is not a unified doctrine or philosophical system, but a complex and heterogeneous aggregate.

Historically, one can distinguish between a scale of beings that responds to a hierarchical social order and a scale that responds to a republican order. The first is manifested notably in Christian analogism, where power extends God's jurisdiction. The king is the shepherd who leads the flock of men on the path of bona vita and salvation.

The secularization that took place with the French revolution replaced this regime of incarnation with a regime of representation, in which the king is the substitute for the highest person on earth. However, it maintained a principle of hierarchy, simply substituting an earthly monarchy for a celestial one. The republican scale of beings can also move the matrix.

In the republican scale of beings, there is an articulation of a natural right, a political right, and a political economy according to the physiocrat Dupont de Nemours' 'Philosophy of the universe' (1793). Political economy and natural history are not two separate objects. Metempsychosis is the vehicle of a trans-species



● FIG.1 ▶ Animal and vegetal programming.

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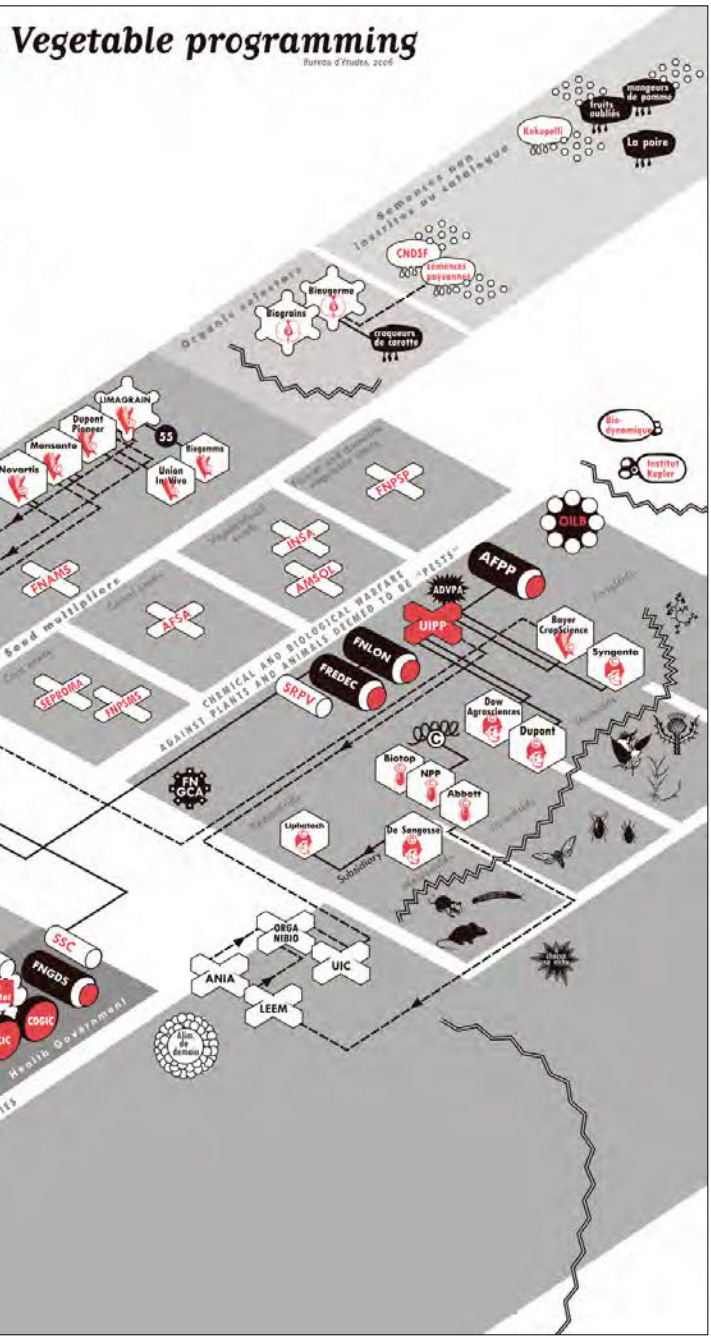

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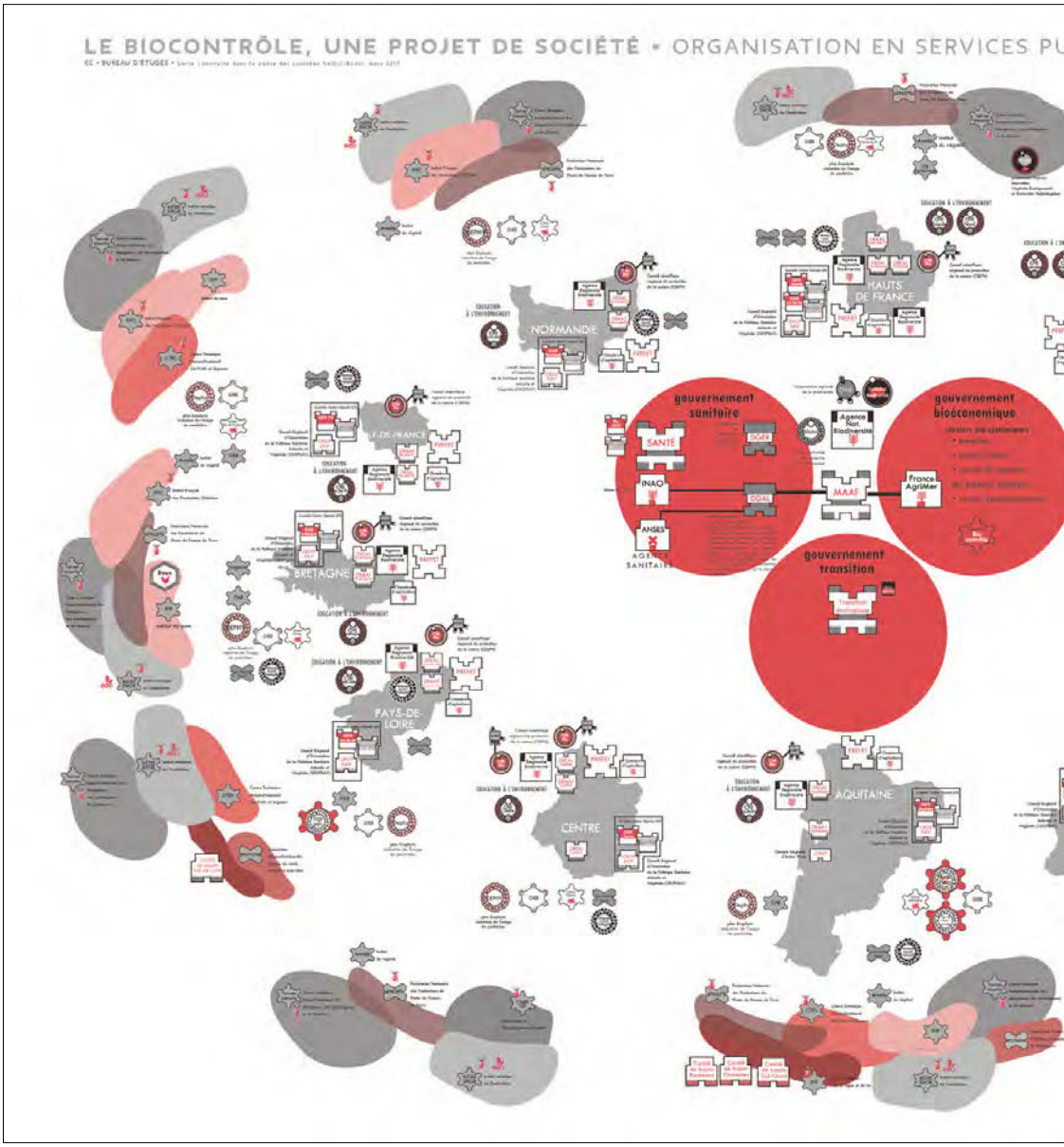

● FIG.2 ▶ Sketch of the territorial administration of agriculture in France.

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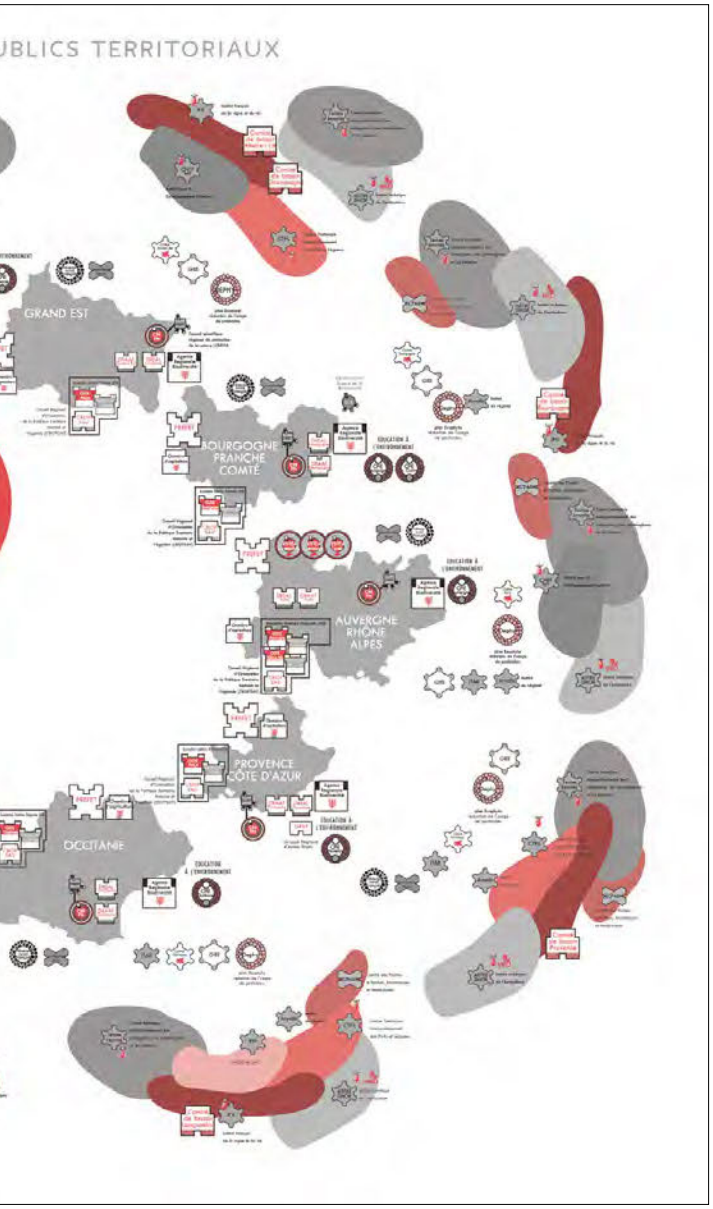

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morality in which species are susceptible to progress according to their capacity to domesticate their environment and forge alliances with other species (Vincent 2018).

What differentiates the analogical scale's regime, as formulated by Dupont de Nemours, from that used in naturalism can be seen in the aforementioned relationship between form and function. Form follows function in one case and in the other function follows form. There is an architectural concept in both cases, but it functions in a very different way. The distinction between these two ways of thinking can be seen in the distinction between the concept of function in the work of naturalist Georges Cuvier and that of form found in the work of Geoffroy de Saint Hilaire.

Cuvier has used the concept of an 'organizational plan' to account for the relative disposition of an organization's different constituent parts: "All being organised forms a whole, a single, closed system, all parts of which correspond to each other and contribute to the same definitive action through reciprocal reaction" (Cuvier quoted in Gould 2006: 415). The function here determines the structure: "If there is coordination and correlation between structures, then the functions are interrelated in a hierarchical organization" (Gould 2006: 414). In a functional organization, one can give the pre-eminent place either to the element (the individual, the cell, the locality), or to the whole (the population, the complex organism, the globe). Alternatively, we can also adopt a multi-level and polycentric approach to functional organization.

In Saint Hilaire's work, on the contrary, there is a structural constraint: "Form has priority both in logic and in time over function. (...). Function does not create form; in fact, it is form that finds a function (...) Parts of the anatomy may expand or contract according to their use, but the topology remains unchanged, and the archetype can be reconstructed on the basis of the invariance of the distribution of anatomical elements in space" (Gould 2006: 420).

Geoffroy de Saint Hilaire's form or archetype has no scale, only a topology.

This distinction gives rise to two very different types of social organization. In Cuvier's functionalist schema, we find the configuration of the administered state, as noted above, which both discerns parts and a whole, and different modes of hierarchization and interrelation between functions or individuals. This organization's configuration would depend on the conditions of existence. This is a kind of naturalization of the administration of scales. The configuration of the state, its anatomo-physiological scheme would correspond to its conditions of existence. We find a very different social and political organization in Geoffroy de Saint Hilaire's structural scheme, one which would instead correspond to a primordial form which, like the commune in Tocqueville, would have a self-similar structure on an extended scale.

→VIDEO LINK

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