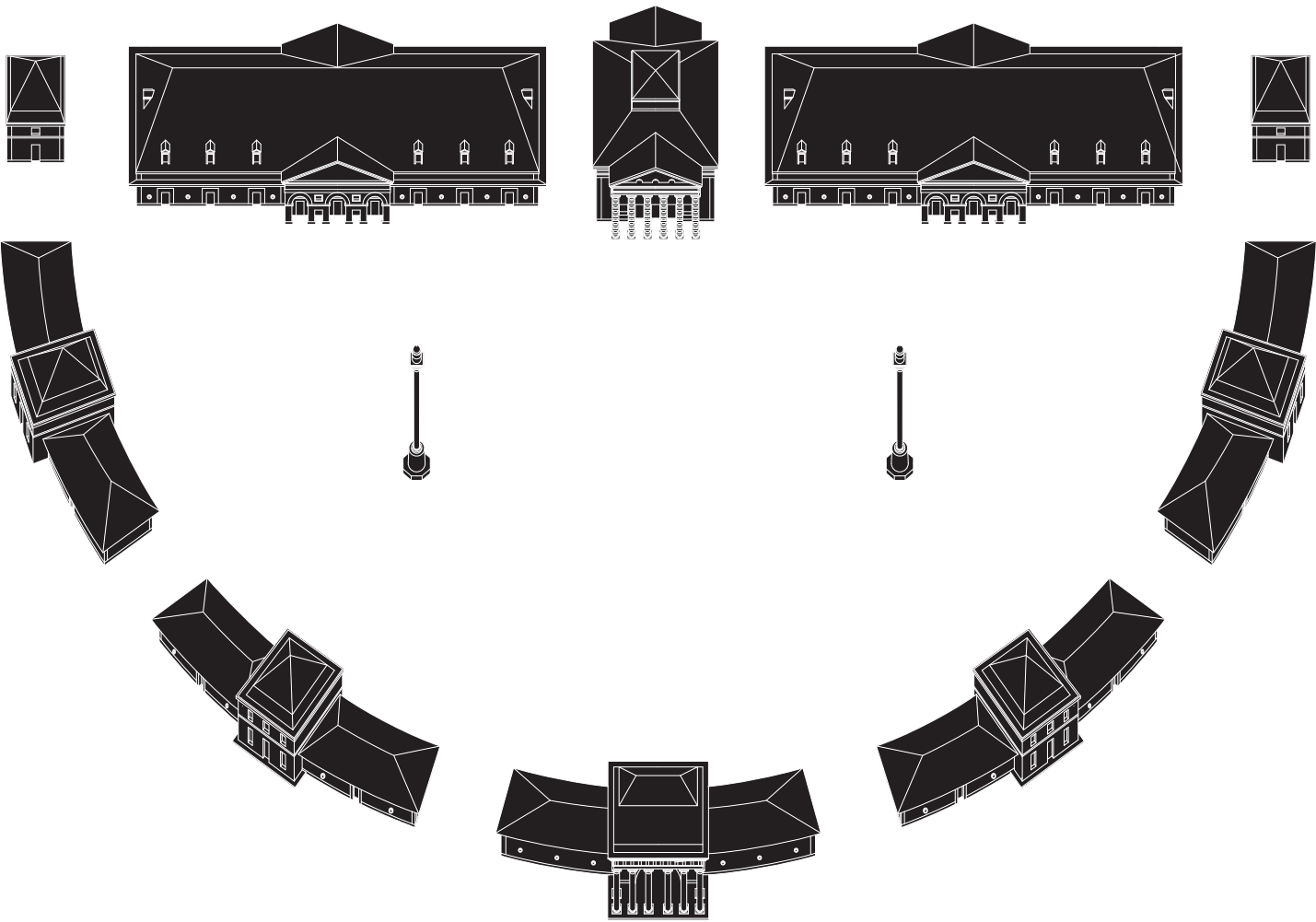


# Managing Natural Selection

Rui Aristides Lebre and Campomarzio

1. Michel Foucault, *The Birth of Biopolitics: Lectures at the Collège de France, 1978-1979* (Basingstoke: Palgrave Macmillan, 2008), 1 – 73.

2. Anthony Vidler has reframed the panopticon interpretation, noting that the actual plan of the saline did not facilitate direct visual access between the director and the workers. See Anthony Vidler, “*The Architecture of Production: The Saline de Chaux 1773-1778*”, Claude-Nicolas Ledoux: *Architecture and Social Reform at the End of the Ancien Régime* (Cambridge: MIT Press, 1990), 74-133.



The *Saline Royale* at Arc-et-Senans, designed by Claude-Nicolas Ledoux, can be considered one of the first architectural expressions of the rise of political economy in the mid Eighteenth Century. Still dominant today, the understanding of government promoted by political economy implies that governmental decisions are taken according to economic principles and truths. This may seem obvious in a world dominated by such notions as G.D.P., productivity, austerity or spread, but it hasn't always been like that. If we want to understand the contemporary sense of financial and ecological instability generated by fears of an imminent - and never resolved - crisis, as well as the consequent demand for sustainability, there is no need to disturb Freud. As Foucault has shown in his lectures at the Collège de France, there is no liberalism without culture of danger and no liberalism without political economy <sup>1</sup>. It is for this reason that we can find a privileged point of observation in the emergence of political economy, roughly in the passage from the Ancien Régime to the rise of modern nation states.

The Saline Royale at Arc-et-Senans, which was built at the threshold of our modern era, has been commonly analysed for the relationship between architecture and modern politics, being interpreted as a biopolitical surveillance apparatus, anticipating Bentham's panopticon. Even though it is Ledoux himself who explains the importance, for the saline director, of observing the workers and of being observed, it could be argued that the decision of placing the director's house in the centre of the complex, and the detail of the ocular window which looks like an eye, are more symbolic than operative <sup>2</sup>. In this sense, if we interpret the rise of modern architecture as the shift from symbolic representation to space management, the house of the director in the saline is more a baroque artifice than the expression of a modern attitude. It is not so different, after all, from the baroque tradition of positioning the statue of the king in the centre of the squares. What is completely unprecedented, in the saline, is something that transcends architecture itself and its still classical language: it is the managerial and moralizing approach to nature and communal life, the pragmatic organization of space and the attention to production processes. In other words, the saline was the result of an approach based on political economy. The architect's role, probably for the first time, was not limited to the issue of form and representation, but was completely involved in the production process and in the attempt to increase market productivity. As we will try to show, this completely new attitude cannot be fully understood without explaining a shift in the perception of nature.

It is crucial to consider that in the metaphysical understanding of the world, which informed western thought from Aristotle's "Physics" to the rise of modern science, the notion of Nature couldn't be separated from the belief in a divine being who was considered to transcend nature itself. Not surprisingly medieval Aristotelianism managed to interpret and systematize Aristotle's Physics in accordance with Christian theology, defining an epistemological system considered universally valid, at least until the modern age. This system could be described as a tripartite conception of the universe composed by the *artificial world* with all the artefacts produced by humans, the *physical world* with all the natural elements and the *metaphysical world* related to the primary source of motion identified in God. Thus nature was clearly separated from the artificial world and composed by two independent and interrelated aspects: the physical and the metaphysical. This system had a coherent representation in the real world. The medieval city, enclosed by walls, was the materialization of the artificial realm. Besides sporadic enclosed gardens, which were a symbolic representation of the Eden, trees and natural elements couldn't be found within the city. Outside the city walls, and clearly separated from the artificial realm, there was the physical nature with all its elements and living organisms. This "visible" nature, however, was only the mirror of the metaphysical nature represented by heaven and God. From a political point of view, this epistemological system was the necessary support for any medieval sovereign, whose power was to be legitimated through God. There was a strict correspondence between *divine laws*, *natural laws* and *moral laws*. Furthermore, the wise government of the kingdom was not enough: the medieval sovereign should manifest a paternal role, helping his subjects to gain salvation in the next world.

With the shift from natural philosophy to natural sciences around the 17th century, the metaphysical investigation of nature is progressively replaced by the scientific method and by the analysis of material and efficient causes that are expressed by the "laws of physics". The previous tripartite subdivision in metaphysical, physical and artificial realms and the correlation between

[1] Axonometric view of the complex

3. Starting from the laws of nature, John lock is able to demonstrate the legitimacy of private property, against the common notion at the time that everything was given by God to mankind in common. Locke, in *"The Two Treatises of Civil Government"* explains that all the things on Earth produced by the "spontaneous hand of Nature" (a sort of anticipation of Adam's smith invisible hand of the market) are intended to nourish all men, and are common to all of them. But every man has the property of his own body. Therefore everything that is produced through the labour of his own body should be considered his property. Through labour men remove things from the state of nature, transforming them in private properties.

4. Marc-Antoine Laugier, *An essay on architecture* (London: T. Osborne and Shipton, 1755), 248-249.

5. Before the 18th century markets were not considered independent institutions, being controlled either by the King or Church, during mid-century, namely through the debates of the Physiocrats and English liberals, the market is progressively understand as an entity in itself, with its own nature and rules; see Foucault, *The Birth of Biopolitics: Lectures at the College de France, 1978-1979*, 27-50.

6. Vidler, *"The Architecture of Production: The Saline de Chaux 1773-1778"*, 80.

7. Ibid., 77.

divine, natural and political laws are progressively transformed into a dual system. On one side, God and Nature become interchangeable and merged in a rational entity through which divine and natural laws overlap. Thus nature is made accessible to scientific knowledge: the physical and the metaphysical notions of nature are joined into a sort of rational entity or, as Locke put it, a “state of nature” that should be governed by respecting its “truths”. On the other side, as Locke also showed us, men are allowed to take common natural resources from the physical world, transforming these, through labour, in products and private properties: the artificial realm is expanded into the natural <sup>3</sup>.

We can identify here the rise of the modern notion of nature as an ecosystem in which humans have a dominant role. Disturbances in this ecosystem are thus assumed to be the result of human management, and here modern guilt creeps in as the “fittest” start to understand their actions as self-destructive. But because “the state of nature has a law of nature to govern it” and, we humans, are the only ones with capability to understand this law, it falls on humanity the task of managing the equilibrium of nature.

Hence, this understanding of the natural not only promotes a “rationalization” of nature, but also a “naturalization” of all the rational disciplines, as humans must assume the role of nature’s keepers and developers. It is significant that in the most important architectural treatise of this period, the “Essay on Architecture” published by Laugier in 1753, the origin of architecture is also to be found in nature. Moreover, according to Laugier, cities should be considered and “managed”, as forests:

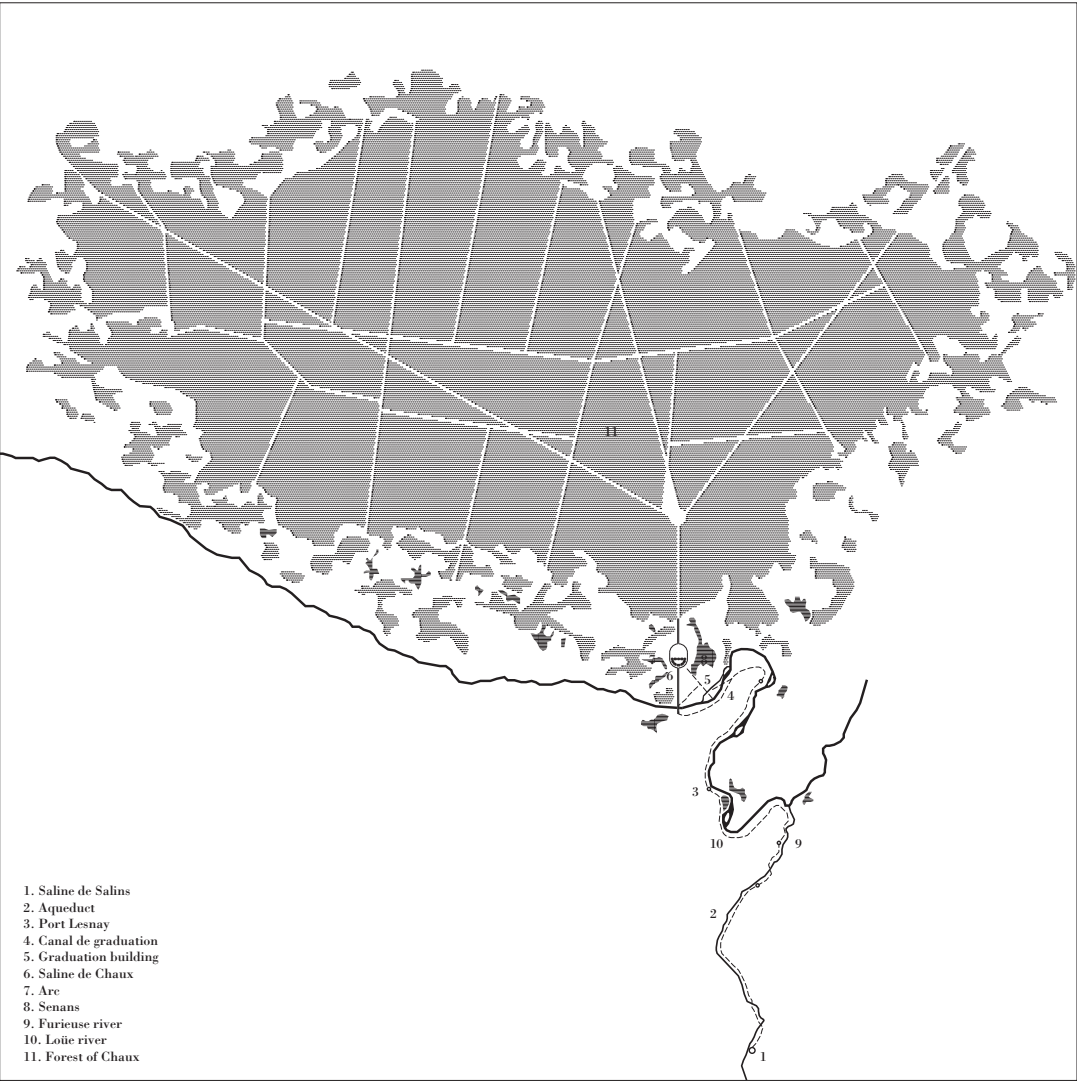
We should look upon a city as a forest. The streets of this are roads of that, and ought to be entered into in the same manner. That which makes the essential beauty of a park, is the multitude of the avenues, their breadth, their direction ... let us make the application of this idea, and that the design of our parks serve as a plan of our cities. There is no question but to measure the ground, and to figure therein in the same taste ways that will be our streets, and cross-ways which shall be our squares.<sup>4</sup>

What is at stake here is a completely different notion of urban planning: the city is no longer originated and built upon a geometrical and metaphysical structure independent from a “state of nature”, as in the case of renaissance ideal cities, but it derives from a given reality, a piece of land or a natural tabula rasa, which is then measured and subdivided into sectors and fragments according to rational principles such as circulation, management, and productivity.

Breaking with the medieval theology of nature and the correspondence between divine, natural and moral laws, this new understanding of nature and human agency produces, in its philosophical and concrete ambitions, a paradigm shift in the notions of enterprise, morality and sovereignty. It is at this point that political economy emerges as a strategic understanding that articulates the new productive relationship between nature and labour – the market <sup>5</sup>– and the management of this relationship through the right measure of governmental action.

If today’s political economy is dominated by fossil fuel scarcity and by the attempt to control oil production, in the 18th century one of the most precious natural resources was salt. Just like oil today, salt needed industrial plants to extract it. Given the variety and quantity of professions that were hired and of materials that were consumed, the royal salines in France were complex factory units that, in some cases, organized whole regional economies. In this sense, two central problems needed to be addressed: first, the poor quality of the salt produced, besides creating deficits of salt production, created a wide social resentment, because the poor were usually forced to use contaminated salt batches; second, the process of extracting salt from saltwater required abundant quantities of wood, which by the time was becoming scarce around existing salines and which also created local grievances due to the deforestation these provoked <sup>6</sup>. Hence, the salines brought about problems that combined regional, and sometimes national, economical, social and political dimensions.

Ledoux was appointed Commissaire des Salines and, as the engineer-inspectors of the École des Ponts et Chaussées, his functions consisted in overseeing the process of manufacture in the royal factories<sup>7</sup> evaluating product quality, production processes and structural adjustments. In other words, from 1771 onwards Ledoux was part of the scientific, technical and administrative body that oversaw and programmed French market production. Converting his responsibilities into an opportunity, Ledoux proposed the design of a new saline between the villages of Arc and



[2] General plan of the forest of Chaux



8. Claude-Nicolas Ledoux, *L'Architecture Considérée sous le Rapport de l'Art, des Mœurs et de la Législation*, translations taken from Vidler, *"The Architecture of Production: The Saline de Chaux 1773-1778"*, (Paris, 1804), 38.

Senans and close to the forest of Chaux, which was the second largest forest of France.

Since the middle age this forest was traditionally considered and used as common property by local populations, communally administered according to their necessities. In the mid-eighteenth century it became important for the royal administration to limit the popular use of the forest, which was becoming unmanageable and politically “instable”, and was not allowing the organization of a more productive wood management.

One of the main promoters of the new saline was the philosopher and economist Jacques Turgot, a key proponent of Physiocracy, which was an early theorization of liberal management. Physiocrats ambitioned a “Government of Nature”: for them the main source of national wealth should be derived from “land development”, that is, from the surplus that labour could extract from production of the soil. Thus, natural resources, in any form, should be made available for economical growth.

This means that the project of the saline was a strategic economical management at a territorial scale, appropriating not only the forest, but also the river, and projecting the reorganization of labour around these resources. Turgot chose a private contractor called Monclar to administrate the construction of the factory and the whole infrastructure required. The forest, until then used as common resource by the local community, was transformed in the private resource of an economical and political liberal strategy.

Being aware of the importance of wood for the saline, Ledoux convinced the administration that “it was easier to make the water travel than to transport a forest in pieces”<sup>8</sup>, even though this implied the construction of a fifteen-kilometer long aqueduct. The core of Ledoux’s project was the forest, not only because of this economical “truth”, but also for ideological and political reasons. Not only giving a body to Laugier’s idea of the city as a forest, the project would articulate the economical and political stakes of this new territorial management, much in the same

way, we might say, that political economy articulates power and market.

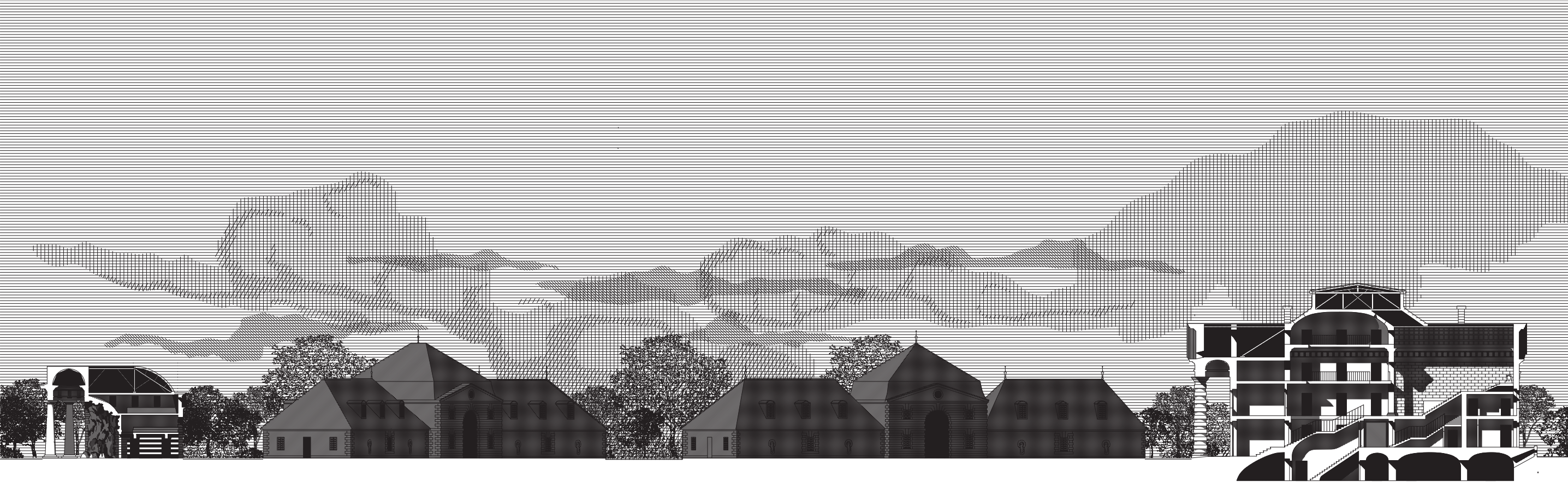
More than 9.000 of the 20.000 hectares of the forest were reserved for the saline production. In 1778 a polygonal network of allées was cut into the forest - in the same way described by Laugier - to allow an easier circulation within the forest and to divide the area in different districts (triaux) to be cut. The new complex of the saline was developed around one of the key nodes of the polygonal network of streets connecting the forest. Instead of grouping the programs into a unified-courtyard building, a common typology at the time<sup>9</sup>, Ledoux separated the various programs into isolated pavilions placed around a semi-circular courtyard. Even though the complex maintained its self-sufficiency and the necessary enclosure, its ambition was territorial. Radial streets, departing from the director’s house at the center of the semi-circle, were thought to extend to the neighboring territory, structuring lines for future urban growth. The two main axis of the complex, one perpendicular to the main body of the factory and another parallel to it, grounded the structural relation of the saline with the territory. The perpendicular one defined a straight avenue from the river to the director’s house and, starting from the back of the director’s house, established an avenue through the forest of Chaux that allowed the control of its productive organization; the parallel one, passing in the back of the factories and director’s house, connected the villages of Arc and Senans.

One look at the birds-eye view drawn by Ledoux and the idea becomes clear: the semi-circle of the saline was the centre of a new territorial city, in which natural and artificial elements would merge. If the semicircle is an evident reference to the layout of a theatre - a “theatre of production”, using Vidler’s words<sup>10</sup> - we might say that the privatization of the huge forest of Chaux is the hidden - but at the same time essential - backstage of that theatre, the machine that allows the display of that spectacle. But if we accept this interpretation, there is another aspect to be understood. If at the centre of the stage we find the pavilions for the production of salt and

9. A typology applied in a first plan for the saline accomplished by Ledoux in1773.

10. Vidler, *"The Architecture of Production: The Saline de Chaux 1773-1778"*.

[3]  
Section between the entrance  
and the director's house



11.  
Ledoux, *L'Architecture Considérée sous le Rapport de l'Art, des Mœurs et de la Législation*, 111.

12.  
Carbon offsets are imaterial commodities sold to private companies in the form of sustainable projects, that enable these companies to balance their limitations on greenhouse-gases (GHG) production with ecological capital. Carbon offset trading as a market of its own, for a detailed analysis read Adrian Parr, *The Wrath of Capital – Neoliberalism and Climate Change Politics* (New York: Columbia University Press, 2013).

the director's house, the director should be considered an actor who takes part to the spectacle of production as all the other workers. Maybe he is just a first actor. What cannot be seen, as in any other spectacle, is the dramatist, the one who has written the play, in our case the architect. But if we read the playwright's text we can find that the division of the factory in isolated pavilions is not only intended for better air circulation and economical reasons, but also to produce a specific life; a life in which the inhabitants of this factory-city can live closer to the "laws of nature". Both the workers and the director's pavilions are independent pavilions with their own gardens not for the mere economy of it, but because they produce a habitat which creates an attachment to nature that is supposed to be simultaneously moral and productive; implying a "cultivation" of the essentials of life, where the inhabitant finds "the consolation for his afflictions, the gathering together of his needs; nothing forces him to expose his days to the unregulated time that harvests only imprudence and indiscretion"<sup>11</sup>.

The workers, no longer allowed to work the forest on their own account, were thus rewarded with an ideal city, where pastoral space of nature-nurturing and productive enterprise will accommodate a healthier and morally edifying life, following the "laws of nature". And here we see how the playwright was not only concerned with the new economical attitude – physiocratic –, but also with the moralization and socialization of this new economical attitude, creating by design a set of manageable life habits, that is, proposing techniques of government. These, however, would never be built upon. Within a liberal understanding of power, the architecture of Ledoux's ideal city of Chaux governed too much, it shaped too much a market and its government.

In our own time, this liberal attitude has incorporated ecological concerns, as in the case of the Mount Elgon reforestation project in Uganda, initiated in 1994, which violently dislodged the Benet people in order to create thousands of hectares of carbon offsets<sup>12</sup>; or in the case of recent privatizations of national parks for fracking activities, which are marketed as a more sustainable face of the energy market. Confronted by these examples, and many more, we can trace the unravelling of this ecological liberalism in the proto-liberal context of the saline de Chaux, and thus resume that, while ecological concerns have an autonomous history, one cannot consider ecology without liberalism, that is, beyond a liberal art of government of the "state of nature", both natural and human.

Hence and given that today ecology is the result of the modern relationship between economy and nature, grounded on the proto-liberal debates of Locke and the Physiocrats, what is architecture's role in producing an ecological government? On the one hand, as the saline shows, a given economy of resources and means comes with a determined moral construction of life or a process of socialization of guilt and redemption. We can observe how today's architecture is being paraded as green or sustainable, enforcing a notion of generic guilt that is solvable through, either the technical progress of habitats – the scientific progress of the market – or by green marketing. So the moral and social engineering by design, identified with modernist practices and present in Ledoux's saline, is not an historical ruin, a citation from another time, but a concrete and contemporary practice of design. Postmodernity didn't bring any redemption to the priestly role of the architect, only stale mists and shadows; architecture cannot be considered without its ideological functions. On the other hand, if architecture always has a role, ideological and material, in the formation of the rationalities and strategies that form market and government, then what we can learn from Ledoux is that architecture can go further than those strategies. It responds to callings of increased productivity and market growth but, simultaneously, it can create a set of concrete habits, programmes, conditions that return those callings to their collective dimension, that is, to the communal space, namely the city.