# Ecology and Urbanism: About the Deepening of Territories

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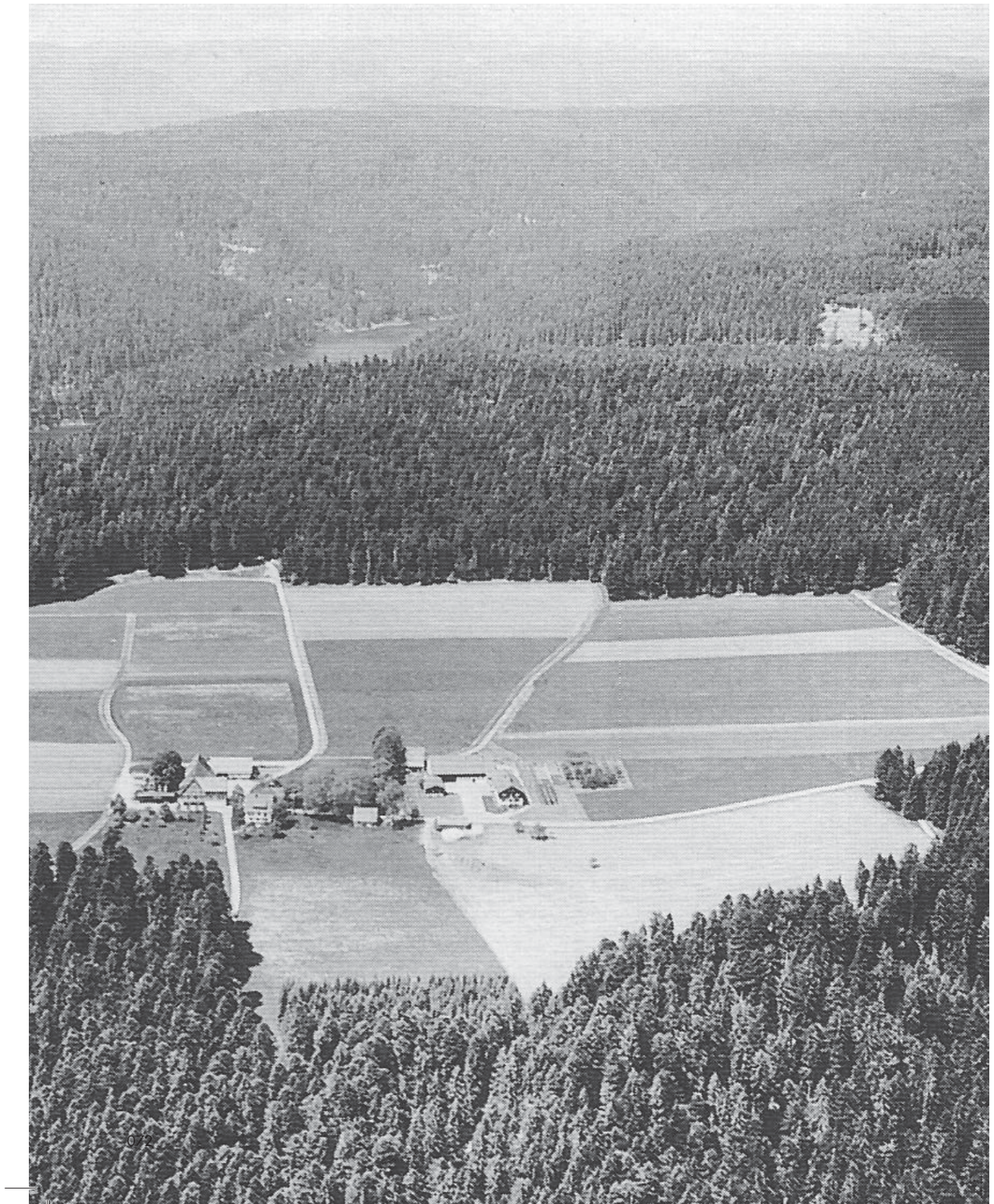
**LECTURE THREE**
SEBASTIEN MAROT







# ECOLOGY AND URBANISM: ABOUT THE DEEPENING OF TERRITORIES

Good afternoon. First let me thank the organizers of this conference for inviting me. It is a pleasure to be here with you, even though I wonder whether I'll be able to answer in any way the question that I've been dealt. « Reading the site through its natural environment », that's how the expected theme of my talk was phrased in the initial program which I received. Wondering what that exactly meant, I gathered that it probably corresponded to the third question mentioned in the program: « How do careful readings of the natural environment cater for an urbanism that connects to the locality and the site specifics?». Mark that this question is about the *how*, and not about the *whether or not* those careful readings of the natural environment do cater for a local and site specific form of urbanism? And hey! Why wouldn't they? Isn't the answer contained in the question? Shouldn't we take for granted that a careful reading of the natural environment naturally leads to more site specificity? And even that it would be the necessary precondition for a site specific urbanism?

## Site

What the question points at, just by being asked, is that there is nevertheless a difference between what is here called the environment, and more specifically the natural environment, and what we call the site, or the local. In order to provisionally sum up the issue, we might say that the natural environment is the non human dimension of the environment, the whole substrate of natural processes (Airs, Waters and Places, to speak like Hippocratus), the ecosystems onto which men and societies have developed and geared their anthroposystems, and that they have turned into anthropic milieux which have themselves evolved throughout history (Fig 1).

A site, we could say, is a piece of the earth's surface that, for natural, visual, social or political reasons, for geographic and historical reasons, can somehow be identified as a place, a more or less distinct or discrete area, a piece of the world, a micro-world, the basic element of collective space-time of which larger worlds, territories, regions, countries are made. A site, in other words is a world monad, a place of dwelling and activities from which the larger world can be envisioned, and in which this larger world is interpreted and reflected. As such, as a micro world, a site has a what we call a "culture", it is the basic spatial element of cultural geography, and it is generally assumed that it has or should have some kind of soul or spirit, what some called a *genius*, an innate or patiently acquired *genius loci*. It is a locality that comes with a culture, some kind of collective scene, stage or persona produced by a long and incremental adjustment to (and conformation of) a substrate of resources turned into a landscape of habits.
Borrowing from Peter Sloterdijk spherology, or philosophy of spheres, I'd say that it is an « anthropogenic island ». Of course it is not as well delimited as an island is, and it is often difficult to say, to ascertain where the limits of a site lay. Limits overlap. In fact, maybe a site is not so much defined by its limits as by its radiating center. Maybe it is less a surface than a foyer, an aura, an *ambiente*, to use a beautiful italian word. I am well aware that we use the word site in many other guises, usually much more reduced, for instance to speak of the place, the terrain, where a building is to be erected, to designate any fixed point on the surface of the earth. And as a matter of fact, it would seem that my characterization of what a site is is very retrospective, or even conservative, very *passé*. Who in the world still lives in such local anthopogenic islands, except in regions of the world which are deprived of any access to communication and transportation networks? Are there any places in our globalized world that could be described as relatively autonomous sites and whose 'cultures' could be sufficiently explained by this patient adjustment, adaptation and conformation of a given landscape of resources, by this coevolution of a society or community with a given territory? Haven't networks, I mean networks of transportation, communication and information, largely won their war against areas, which are like the left over pieces of a puzzle, their value being relative to their proximity to the nodes of those networks? In the atomized society described by both sociologists, economists and geographers, what is the relevance of spaces and areas? What is the relevance of site in the old sense that I recalled? Isn't urbanism now a matter of networks rather than of areas and landscapes? If you think about it, the sites we are most concerned with today, at least in common parlance, are websites, adresses, nodes of connectivity within





the internet, and I wouldn't be surprised if this metaphorical secondary or derived sense of the word should soon supplant the original and topographic sense as the primary one. Of course, since I mentioned Peter Sloterdijk's spherology, this virtual *aufhebung* of the word "site" could be seen as a particularly clear explicitation of the fact that man's relationship to the world, his « in-der-welt-sein », is always mediated, that it operates through spheres, matrixes, orbs of different scales (placenta, domestic cocoon, family, social and professional milieux, etc.) bubbles which aggregate and compose what Sloterdijk has described as foam (Fig 2-3). But the question is whether physical or spatial sites could still today be considered as good representatives of those bubbles or spheres today. Haven't they all coagulated in one big sphere under the processes of globalization? So that the only space fully deserving the word site would be the global village, the earth itself? Between the individual cells and the macro-sphere, there are certainly a multiplicity of social, professional, cultural and collective envelopes or milieux, but can these be really defined, contained, expressed, and represented as physical and spatial sites, areas or regions? Are they not more and more dislocated? Are they not all moved by a tendency to overcome local limits and free themselves from their spatial coordinates? Aren't spheres rounded by the very desire to roll and avoid roots? At best, it seems that sites are only one kind among the variety of spheres within which and through which we navigate.

## Crisis

But let's put this issue aside for a moment and look at the general theme of this conference: Ecology and Urbanism. The context in which this theme has emerged in the debates is obviously the environmental crisis. A global crisis that can be summed up by a few stunning images showing the urban explosion that happens in all the continents of our planet. An explosion in density, as we see on those generic views of Tokyo, or in those hallucinating photos by Michael Wolff showing the façades of huge appartment buildings in China or South-East Asia. Note that these are pure framing, not montage (Fig 4-6). But also an explosion in expansion, as obvious in those no less generic views of the urban landscapes of Mexico, with their endless suburbs, this production line of rows and rows of villas, and these swarming slums which Mike Davis has recently described as a planetary evil, and that you see here in different versions in Cairo (Fig 7-10). An urban and suburban inflation which seems to overwhelm the very notion of "city", and has its counterpart elsewhere, in the growing abandonment and

desolation of entire urban regions (the shrinking and ghost cities of formerly industrial areas). But this environmental crisis is also a global cacotopia whose signs are everywhere manifest: scars in the numerous areas where resources are extracted (as you see here with those gigantic quarries, or on these aerial views of the ongoing deforestation of Amazonia);  multiplication of uncontrolled dumps where toxic wastes and spoils of all kinds are wildly disposed of, and become the third rate deleterious resources of marginalized populations; pollution of the atmosphere, the combined pollution and exhaustion of water resources in many regions where rivers dry up and do not make it to the ocean anymore, where aquifers are deeply infected; pollution of shores and oceans; dramatic erosion and biological exhaustion of formerly agricultural soils (Fig 11-15). If a modern Hippocratus made a new documentary called “Air, Waters and Places”, you can bet it would be a kind of horror movie.[1] And we are not yet at the end of the list, since we must mention the forecast exhaustion of several stocks of fossil energy, but also the depletion of many supposedly renewable resources (such as fish), the famous climate change that recently reached first in the hit parade of environmental fears (a bit akward when you consider the number of other good candidates), the multiplication of natural or so-called natural catastrophies (such as cyclones and tsunamis), the reduction of biological diversity, the growing economic discrepancies between the rich and poor (with their effects on demography), the migratory pressures, the political tensions and international conflicts linked to the securing of the remaining stocks of available resources (Fig 16-20). In other words, as former French president Jacques Chirac phrased it at the Tokyo Conference: “The house is burning, and we are looking the other way” (Fig 21).

At this point - to find out whether there might be a way out of our predicament - one of the questions we might want to ask is: “How did we get there ? How did we put ourselves in such a mess?”

And if I was right to say earlier that territories, and the earth itself, are space-times, we might usefully embark in a very accelerated overview of the history of the human species on the earth, and try to gather the elements of a genealogy and an etiology of the global environmental crisis. I am of course no specialist in that area. But here is, roughly, what I have gathered from my various readings (which I will indicate on the way).





**Colonization**

For more than a million years after the first humans started to stand up in their original clearings of Africa - which is about the time it took their progeny to penetrate in all the land masses of the planet[2] - it seems that the evolution and migrations of humanity over the earth had a rather discrete impact on the latter. These small groups of hunter-gatherers, leading a rather nomadic life on more or less extensive territories, did probably alter the demography of other animal species that they consumed, and maybe caused the extinction of some of them. It is also likely that they intervened in the genetic selection of the plants and fruits that they chose to eat (and thus replanted, acting like bees in their environment). But on the whole, it does not seem that these groups fundamentally transformed the ecology or natural economy of the territories they haunted. Even though they progressively became the species of mammals that had the largest geographic extension over the globe, and slowly developed a whole array of tools, prostheses, and collaborative behaviors that made them particularly efficient in the strife for life and the natural selection of species, their impact on the environment could still be seen as that of a particular animal species interacting with a bunch of others, and adapting themselves to the opportunities offered by the natural environment.[3] As a result, it does not seem that the demography of those nomadic groups, largely checked by and geared onto those environmental conditions, evolved very quickl, quite to the contrary: About 10 000 years ago, when groups of humans started, in different regions of the globe, what prehistorians call the agricultural or neolithic revolution, scientists estimate that the total human population on earth was between 5 and 10 millions. But this is also when things started to change. In those independent foyers, located in different continents, and at a distance of several thousand years, groups of humans started to domesticate plants and animals, and to develop agricultural practices (Fig 22). The progressive sedentarization that ensued led in turn to demographic growth and to an increase of labor division and social organization. From then on, humans and their milieux enter into a phase of coevolution. Aggregating in larger social groups, they start to shape and produce their landscapes, which in turn become more anthropic and artificial through clearings, plantations, terraces, drainage and irrigation systems, etc. It is this burgeoning artificialization of the planet that led prehistorians to distinguish from the Holocene period, which starts at the end of the great ice age, a new age called the Neocene.

**Speculations**

It would of course be naive to think that this evolution was in any way sudden, that it followed a steady and necessary pace, and that all groups of humans, allowing for the differences of their milieux, were equally forced and engaged in this evolution process. In fact, the impressive amount of ethnographic materials accumulated throughout the XXth century shows that among the "primitive" societies that could actually be observed and studied, many had adopted only certain aspects or characteristics of this evolution, and that some were (are) still groups of nomadic hunter-gatherers. Besides, ethnologists, such as Claude Lévi-Strauss, have also shown that if the division of labor was very elementary (and often reduced to sex difference), these so-called primitive societies were nevertheless highly governed by structures of kinship, exchange, codes of behavior, systems of prescriptions and taboos that could be described as different kinds of social mathematics which found their expression in linguistic exchange.[4] In other words, the fact that these rather small groups of domestic production did not have labor or class divisions does not mean that they were not structured and ruled by sophisticated sets of mandatory customs and habits that regulated the relationship and exchange between the members of the group, but also their interaction with the environment, its resources, and the other species of animals and plants that composed it. These rules and customs ensured their coexistence within those anthropogenic islands. Because of our strong belief in progress, we tend to think that these constraining sets of rule translated the very difficult living conditions of those primitive societies confronted to a more or less dramatic scarcity of resources and to the permanent threats posed by conflicts with other groups of humans competing for those resources. And we generally assume that these "rough" conditions and social structures were naturally bound to be improved, overcome and surpassed by the better ones which were progressively offered by the neolithic leap forward, the progress of agriculture leading to a process of accumulation and storage, to a greater division of labor and classes to more rational forms of social organization and soil exploitation, to an increase of exchange, to craftmanship and the blossoming of new tools, skills and techniques, to hierarchical structures of power which provided political stability over larger integrated groups and territories, to the birth of villages (around 6000 BC in Anatolia and Mesopotamia), and cities (around 3500 BC) and to demographic growth. And hey, doesn't the quasi-extinction or marginalization of these primitive societies today retroactively legitimate this view of human evolution? Weren't these new improvements meant to free humans from the constant necessity to survive in more or less hostile milieux? Even though this view is difficult to uproot, and pervades a good deal of the ethnological literature produced in the XXth century, you probably know that it has been strongly challenged by several anthropologists in the past decades. One of the most interesting is Marshall Sahlins. In his exhilarating book published back in 1972, *Stone Age Economics*, Sahlins compiled and confonted an impressive amount of ethnographic data in order to show (sometimes against the intuitions and prejudices of the scientists that had collected them), that the living conditions of primitive societies were on the whole quite far from the harshness that we usually pity them for: that their members' average worktime was far inferior to that of modern men (three to four hours a day on a regular basis), that they enjoyed a lot of leisure time, were rather free to choose and "schedule" their activities as they wished, etc.[5] Moreover, he suggested that their "primitive" social structures and customs were precisely tailored to actively resist and avoid what we usually pity them for being "still" deprived: surplus, labor division, economic and demographic growth, concentration of power, etc. An interesting reversal of perspective which French anthropologist Pierre Clastres backed with his own research on the Guayaki and Guarani Indians, arguing that these primitive collectives did not merely picture a Stateless Society but a Society Against the State.[6]

This suggests that the so-called progress accomplished by the Neolithic revolution was not without drawbacks: farmers got more food but less varied and of a lower quality than the hunter gatherers, they worked a lot more, they became exposed to the hazards of climate, diseases and pests, to the aggression of foreigners, and they now had to endure the growing power of the ruling classes that emerged within them. But on the whole, there is no doubt that the new sedentary lifestyle of the protofarmers was indeed more efficient to accommodate and sustain a growing number of individuals. And that, in turn, leads to a typical hen/egg dilemma: which was the cause of the other, demographic growth, or this new lifestyle that both answered and stimulated it?

Anyway, the progress of ethnic federation and political integration was slow during the Neolithic, and it is currently estimated that around 2000 BC, some 500 000 human clearings or anthropogenic islands, relatively autonomous from one another, were dispersed on all the landmasses of our planet, most of them comprising an average population of 50 to 100 individuals. A simple multiplication gives a global population of 25 to 50 millions. Apparently, global

demographic growth in the Neolithic period was still rather modest; over a 6000 years period, the total number of humans on the planet had been multiplied by 5. Among those 500 000 "autochthonous" societies, some, especially around the different foyers of the globe where the agricultural revolution had slowly taken place, had already confederated and coagulated into larger social and political entities in a process that would eventually lead to the birth of states and empires.[7]

**Shortcut**

At this point, let's take a space-time elevator, and run up to 14th century Sienna. From the tower of its palazzo pubblico, we can get a wonderful panorama of the city, nestled in its environment (Fig 23-24). But another interesting landscape may be seen below, second floor, on the walls of the Sala dei Novi (also called Sala della Pace) where the several panels of the Allegorie ed Effeti del Buono e Cattivo Governo, painted by Ambrogio Lorenzetti between 1337 and 1340, are displayed (Fig 25). What you may contemplate here is a rather stunning picture of a proto modern anthropogenic island portrayed in two opposite conditions: that of sustainability, and that of unsustainability. In each case, the panels unfold a sectional panorama showing the interior of a walled city on the left (la città), and its rural environment on the right (la campagna). On the side of the buon governo, we see a peaceful city, where stores are apparently full and where citizens seem to be engaged in all sorts of commercial exchange and leisure activities. Outside the wall, the well managed campagna develops in a landscape of gently rolling hills, a beautiful combination of ager and saltus, a theatre of agricultural and pastoral activities where vineyards and fields (sometimes complanted with fruit trees) seem all tended according to the orientations and dispositions of the land. And around this rural scene busy with all kinds of harvesting occupations, you may see, beyond woods which are nestled in the folds of the landscape (and seem to act as a sort of communal frontier), other towns or monasteries perched on tops and slopes of other hills. A continuous flow of people, cattle and goods circulates between the campagna and the citta, obviously portrayed as the pulsating heart of a well irrigated territorial organism. On the panels representing the cattivo governo, the scene is entirely different: a vandalized landscape of desolation, fire and ruins, roamed by bands of ghostly armed men, and an urban theatre of crime, threat and violence (Fig 26-29). We know of course, today as well as in the 14th century, that the opposition between those two situations is in reality not so clear cut, and that the one contains the seeds of the other. But it should come as no surprise





that, a few years ago, a bunch of contemporary philosophers, willing to discuss the stakes of the global environmental crisis, precisely chose to convene in the Sala dei Novi.

**The sustainable clearing**

Another image might help us zoom in this question. Here is an old aerial photograph showing an agricultural clearing somewhere in Germany surrounded by a wooded hedge (Fig 30). If you mentally replace the farm in the middle by a linear village you might get a reasonably good picture of the openfield rural landscapes that structured a good deal of northern and central Europe till the end of the 18th century. What you see with your mind's eye is a street or agglomerated village in the middle, immediately surrounded by a belt of small individual enclosed gardens where each family was free to plant whatever (and whenener) they wished. Beyond that belt, and surrounding it, was the openfield clearing, a totally fenceless collection of cultural masses cultivated in common according to a collective calendar of planting and harvesting practices: three field system, triennal rotation of cultures and fallows, etc. You couldn't visually distinguish the privately owned strips of land that composed those cultural masses all collectively tended and ministered. In the same way, the cattle of the whole community was placed under the authority of a unique shepherd who took it grazing on the fallows and the fields after harvest, according to the same calendar of successive practices, thus insuring the manuring of the ager. And further on, the woods were also part of the ban: a kind of collective property of the community, collectively tended and exploited. As you see, this landscape was produced and maintained by a whole apparatus and calendar of customs, rules or rights (rights of common, of gleaning after harvest, etc.) which solved a problem of land rarity by combining extensive breeding and agriculture on the same soils. This set, this clockwork of customary practices and rights guarantied for centuries the sustainable and durable supplying of rural communities through the careful and concerted management of a landscape of resources. In France, this kind of openfield rural economy, ruled by collective customs, reigned over the rich sedimentary plains of the North-East part of the country (Fig 31). Elsewhere, this strongly communal model was significantly altered or gave way to very different kinds of landscapes: for instance in the south of the country where the topography is more contrasted (between ager and saltus) and where the Roman influence (in terms of agricultural/pastoral practices and in terms of land ownership and management) deeply structured the rural economy; but also in the

West (particularly Brittany) where the much more individualistic and tesselated mosaic of the bocage (a mix of woodland and hedged pasture-lands) prevailed (Fig 32). In the period between the two world wars, when remnants of those three very contrasted rural economies and landscapes could still be studied, many French historians and geographers tried to expose their clockwork mechanisms and to explain what caused their differences. While they came up with all sorts of explanations, either geographical (like the dispersion of water supply in the bocage, the contrast between hilly and flat topography), or technical (horse ploughs versus ox ploughs or swing ploughs), juridical or cultural (roman arboriculture, cadastre and land ownership in the south), social or political (individualistic versus collectivist traditions), they all agreed in emphasizing the essential complicity and complementariness of those explanations; in those landscapes, the natural dispositions of the soil, the distribution of resources, the tools and techniques, the practices, the institutions and customs, everything conspired. These landscapes or territories, their inhabitants and sets of habits were the more or less local fruits of an adaptive *coevolution*.
In any case, all these different landscapes of sedentary agriculture, and many others around the planet, encouraged a rather steady demographic growth. Around 1750, it is estimated that the global human population on the earth was around 800 millions. In less than ten thousand years, it had been multiplied by factor 100.

**Physiocracy**

The narratives left by travellers who took the pain to describe those landscapes are most interesting to read. According to Arthur Young, an English agronomist who travelled through France several times before and after the French Revolution, the rural communities of the North East were on the whole significantly wealthier than the other regions where the collective customs were less strong or less respected. But things, at that time, had already started to change, especially in England, and all the landscapes of Europe were confronted to another pending agricultural revolution, strongly advocated by the Physiocrats (among them Arthur Young himself), which was to make its way in human history as the enclosure movement. People felt, particularly in the areas where the collective customs were seen as a set of old useless constraints, that they needed to free themselves from those communal traditions and collective calendars, and to enclose their properties so as to try out and experiment new ways of cultivating their own lands as they wished. This process, this dismantling of the traditional social structures, which soon gained the wealthy regions where they were





the most strongly established, led to a considerable re-allocation and regrouping of individual parcels which had been so far dispersed in all the different breaks of the cultural clearing, and, therefore to a complete transformation of many landscapes (Fig 33). As JB Jackson suggested, this transformation could be described as the conquest of the ager (the communal clearing of openfield) by the hortus (the enclosed garden where individual were free to plant whatever they wished). Of course, only the reasonably rich farmers and landowners could afford to advocate and undertake such a transformation, while others, who did not own enough soil, and couldn't make a living exploiting the few they had, were slowly forced to sell first their properties, and then their workforce (either to the other farmers or to the first manufactures which needed them). They became labourers. The importance of this revolution which transformed agriculture from a subsistence economy into a market economy should not be underestimated. In my country, the numerous conflicts that it provoked directly led to the French Revolution, but in England and Europe, it more generally prepared and laid the ground for the second larger revolution in the impact of humanity over the earth (after the Neolithic one) which we call the industrial revolution.

**Tragedy**

Let me pause here for a second. The physiocrats and all the people that promoted the enclosures, were most certainly convinced that this transformation of agriculture and the rural world was required by demographic growth, and that it would lead to more rational, responsible and sustainable societies. And to some great extent, they were probably (and provisionally?) right. Actually, the deteriorating communal system they were faced with presents a certain analogy with the global environmental crisis that confronts us, and their case might be extrapolated to our. This didn't escape Garrett Hardin, an early environmentalist and advocate of birth control who, in 1968, published a striking essay called "The Tragedy of the Commons" (Fig 34). In this text, Hardin explicitly compared the growing demands that people and groups place on free (but limited) resources and spaces - such as National parks, public roads, oceans, air and waters - to the process that led to the overkill and ruin of the open and collective pastures of rural communities (their *ban*):

"The tragedy of the commons develops in this way. Picture a pasture open to all. It is to be expected that each herdsman will try to keep as many cattle as possible on the commons. Such an arrangement

may work reasonably satisfactorily for centuries because tribal wars, poaching, and disease keep the numbers of both man and beast well below the carrying capacity of the land. Finally, however, comes the day of reckoning, that is, the day when the long-desired goal of social stability becomes a reality. At this point, the inherent logic of the commons remorselessly generates tragedy. As a rational being, each herdsman seeks to maximize his gain. Explicitly or implicitly, more or less consciously, he asks, "What is the utility *to me* of adding one more animal to my herd?" This utility has one negative and one positive component. 1) The positive component is a function of the increment of one animal. Since the herdsman receives all the proceeds from the sale of the additional animal, the positive utility is nearly +1. 2) The negative component is a function of the additional overgrazing created by one more animal. Since, however, the effects of overgrazing are shared by all the herdsmen, the negative utility for any particular decisionmaking herdsman is only a fraction of -1. Adding together the component partial utilities, the rational herdsman concludes that the only sensible course for him to pursue is to add another animal to his herd. And another.. But this is the conclusion reached by each and every rational herdsman sharing a commons. Therein is the tragedy. Each man is locked into a system that compels him to increase his herd without limit - in a world that is limited. Ruin is the destination toward which all men rush, each pursuing his own best interest in a society that believes in the freedom of the commons. Freedom in a commons brings ruin to all. Some would say that this is a platitude. Would that it were! In a sense, it was learned thousands of years ago, but natural selection favors the forces of psychological denial. The individual benefits as an individual from his ability to deny the truth even though society as a whole, of which he is a part, suffers. Education can counteract the natural tendency to do the wrong thing, but the inexorable succession of generations requires that the basis for this knowledge be constantly refreshed.[8]

For the Physiocrats of the 18th and 19th century, the solution to this problem was largely to be sought in the institution of private property rights and in the market economy. But, as Hardin explained, the modern environmental crisis (with its pollution issues) called for other policies[9]: "a mutual coercion mutually agreed upon" and based upon "the recognition of necessity". And in his eyes, the key problem was clearly population: "the most important aspect of necessity that we must now recognize is the necessity of abandoning the commons in breeding. "But such was not the case at the end of the 18th century. "The morality of an act [and the institution of a policy] is a function



of the state of the system at the time it is performed"[10], and at the eve of the industrial revolution, population and pollution were yet very marginal concerns. In this period known as the Enlightenment, the first body of political economy that was theorized generally considered that the gift of nature was free, and that its generosity was, on principle, limitless. As Adam Smith explained in his *Inquiry into the Nature and Causes of the Wealth of Nations* (1776), the invisible and providential hand of the market would lead individuals, freed from communal constraints, to pursue their own interests and to achieve, thereby, the common good, i.e. the global growth of collective wealth (Fig 35).

There were, of course, a few dissenting voices, such as Malthus's who, in his *Essay on the Principle of Population* (1798), argued that the discrepancy between the linear (or arithmetic) growth of soil products and the exponential (or geometric) growth of population was indeed a worrying matter, and strongly recommended a drastic birth control to check the fertility and multiplication of the poor, and avoid revolution (Fig 36). An anti-democratic stance that would eventually, for later generations, cancel his whole argument as politically incorrect.

The problem is that the very idea of a limit to growth (be it demographic or other) was by nature alien to political economy, and that the development of the free market, which economists promoted to the status of a major political system, needed a constantly growing supply of workforce.

**Free Market Economy**

The emergence and evolution of the free market economy is a complex historical issue which we cannot address here. Of course, markets were not invented by political economists, and Fernand Braudel, in the three volumes of his magnus opus, *Civilisation matérielle, économie et capitalisme, XVe-XVIIIe siècle* (1979), beautifully explained how they developed in the pre-industrial world, alongside other modes and rhythms of exchange in the everyday life, and also how the methods of capitalism already synthesized in maritime business and transoceanic commercial enterprises. A theme that Peter Sloterdijk also addresses when, elaborating upon Carl Schmitt's *The Nomos of the Earth*, he shows how the law of the sea progressively came to prevail over the law of the land (and networks over areas, navigation over agriculture, new forms of nomadism over sedentariness). Now, although it was prepared by a long evolution of commercial institutions and practices,

whose leadership was successively taken by a league of port cities - Venice, Genoa, Amsterdam, London - the free market economy really emerged with the industrial revolution, when the market started to become the frame and model of all kinds of exchanges and social interactions.

In *The Great Transformation* (1944), the book that he devoted to the "fiction" of the free market economy (or market society), Karl Polanyi characterized it by the fact that three things, which had so far been left outside the system of commercial exchange, then became merchandises (Fig 37). The first one is the land which, liberated from the body of collective rights and customs that grieved it, rapidly became a sellable good. The second is the human workforce which people who had nothing else left went selling to those who owned the means of production. And the third is money itself, when all local currencies were progressively made changeable by being indexed on a common standard: gold. By disentangling those goods from their local contexts and milieux, and allowing them to be exchanged at scales that had no common measures with the landscape and the perceived space, this great transformation literally liquefied the material world.

**The geography of capital**

To fully appreciate the effects of the free market economy on the landscape, lets consider the example of Chicago where they could develop on a gigantic territory without meeting any resistance, as they did in Europe, from local customs more or less durably inscribed in the soil. How come a tiny frontier town of thirty houses in 1834, located on the shores of Lake Michigan, could become, in less than sixty years, one of the largest metropolises and market places on the planet, proudly inviting the world at its Columbian Exhibition (1893) so as to admire its overwhelming success? This is the question that historian William Cronon investigated some twenty years ago and eventually answered in a book called *Nature's Metropolis: Chicago and the Great West* (Fig 38). Basically, his thesis is that Chicago, notably because of its geographical situation, at the break of rail and water transportation modes, managed to become the hub, the major urban transformer, the turntable of the complete metamorphosis that the organization of the farming, breeding and logging markets imposed on the ecology and landscapes of the Midwest. The central part of the book ("Nature to Market") is composed of three chapters, respectively devoted to Grain, Lumber and Meat. In the first one, Cronon shows how the native grasses as well as the grain and vegetable crops that the Indians had bred for millennia (and which the first generations of settlers had marginally used), were rapidly replaced by corn and wheat: "The dozens of species that together defined the prairie ecosystem quickly gave way to the handful of plants that defined the farm."[11] But most of all, he explains how the development of railroads (and telegraphs), coupled with the invention of the steam-powered grain elevator and the adoption of a standard grading system, radically transformed a mosaic of local and episodic markets (based on physical face to face exchange) into a gigantic network of "golden streams that flowed like water" toward the metropolitan markets and their central institution: the great hall of the board of trade where the stocks could be freely negotiated as paper receipts or bonds, in all sorts of gambling speculations on the "futures".[12] In this global and abstract market, farmers became increasingly specialized and increasingly dependant on the metropolis (and its catalog manufactures) for the supply of all kind of products, including their tools of production. The same process by which "all that is solid melts into air", and all the natural resources of the land are transformed in a flow of commodities is evidenced by Cronon's stunning analysis of lumbering activities as they developed in and around XIXth century Chicago. In this case, "the Wealth of Nature", the extraordinary and apparently inexhaustible accumulation of natural capital represented by the pine forests of the Great Lakes region, was literally drained in log piles towards the metropolis along a fantastic calendar network of skidways, rivers and railways (Fig 39). A chronicle of logjams which fed Chicago's immense lumber district and ended up creating the Cutover: the abandoned ghost landscape of those backstage regions. "From the wealth of nature, Americans had wrung a human plenty, and from that plenty they had built the city of Chicago. Chicago's relationship to the white pines had been exceedingly intricate, emerging from ecological and economic forces that for a brief time had come together into a single market, a single geography. The tensions in that market and in that geography finally destroyed the distant ecosystem which had helped create them - but then it no longer mattered. Perhaps the greatest irony was that by surviving the forests that had nurtured its growth, Chicago could all too easily come to seem a wholly human creation."[13] But XIXth Century Chicago is even more remembered for its (in)famous stokyards and meat-packing district than it is for its grain elevators and miles of logpiles. The legend of Buffalo Bill has of course made us familiar with the way the herds of bisons wildly roaming the Great Plains were slaughtered by the settlers (for the skin trade) who ended up shooting them from the windows of their train wagons (Fig 40). Here again, the

interest of Cronon's book is to show that this extermination of native mammals was but a prelude to another complete transformation of the ecosystem which was orchestrated by the metropolitan market. New species of livestock, such as Texas longhorns, were imported by ranchers on pastures which they progressively fenced, and then on feedlots, radically transforming the Plains, and their flora, into a second nature. "Called into being by the same urban markets that had sent the hunters scurrying across the plains in the first place, the new herds would be tied to the cities by the same iron rails that had turned the plains into a slaughterhouse."[14] Soon enough, those new herds of beef and hogs, driven from the remotest parts of the country, converged toward the killing and packing plants of Chicago where the "disassembly line" and the vertical integration of the meat market reached their maximum efficiency, and where the techniques of refrigeration (in insulated warehouses and railroad cars) allowed to overcome the traditional space-time boundaries of the trade in flesh and perishable goods (Fig 41). An "annihilation of space" on an unprecedented scale. "The packer's triumph was to further the commodification of meat, to alienate still more its ties to the lives and ecosystems that had ultimately created it. Transmuted by the packing plants into countless shape-shifting forms, an animal's body might fill human stomachs, protect human feet, fasten human clothes, fertilize human gardens, wash human hands, play human music - do so many amazing things. The sheer variety of these new standardized uses testified to the packer's ingenuity in their war on waste, but in them the animal also died a second death. Severed from the form in which it had lived, severed from the act that had killed it, it vanished from human memory as one of nature's creatures. Its ties to the earth receded, and in forgetting the animal's life one also forgot the grasses and the prairie skies and the departed bison herds of a landscape that seemed more and more remote in space and time. The grasslands were so distant from the lives of those who bought what the packers sold that one hardly thought of the prairie or the plains while making one's purchase, anymore that one thought about Packingtown, with its Bubbly Creek and its stinking air. Meat was a neatly wrapped package one bought at the market. Nature did not have much to do with it."[15] The first interest of Cronon's book is thus to show how the metropolis, its markets and entrepreneurs, were the active processors of a gigantic deterritorialization, how they literally digested the Wealth of Nature offered by the Great Plains. But it also explains how the metropolitan beehive soon became, with its department stores, their catalog, advertising and merchandising techniques, the main provider of the tools and equipments that reshaped the rural world into a





"geography of capital", and, ultimately, how Chicago became, around the time of the Columbian exhibition, a laboratory where new models of nature were synthesized that could eventually replace the ruined native hinterland and turn it into a suburban domestic, bucolic or tourist amenity.

If I chose to dwell a little on this excellent book, it is not only because it dissects and evidences the geographical and environmental mutation that was brought about by the industrial revolution and the free market economy, but also because it sheds an instructive light on the architectural and urban miracle that took place in Chicago, and provides a background that allows a better understanding of what the work of Burnham, Sullivan, Olmsted and others actually meant. The "Chicago Frame" (Colin Rowe) needs to be recontextualized, and replaced in a broader frame. In 1970, Alvin Boyarsky published an exhilarating essay called "Chicago à la Carte: the City as an Energy System", in which he documented through postcards the fantastic urban mutations that transformed the city into a new kind of synthetic environment (Fig 42). You may know that this text, its content and method, were one of the direct influences that pushed the young Rem Koolhaas to embark, during the first oil crisis, into his own research on New York and its "technology of the fantastic", which he presented in his own book as an urban surrealism, a super-urbanism that could solve the issue of "reality shortage". The urbanistic equivalent of nuclear supergeneration (Fig 43).

**The industrial revolution**

But let's get back to the industrial revolution. In his book, Cronon incidentally challenges the typically American idea that the amazing industrial boom and development in this country was due to the genius and energy of its boosters and entrepreneurs. Against this view, he holds that Americans, unlike Europeans, were mainly in a position to tap into a fantastic accumulation of natural capital: these Pine forests and herds of bisons, a wealth of wilderness which in fact was the ruin of a cultural landscape left unchecked for two or three centuries after the native Indians had been decimated by the colonial viruses (which had penetrated in the continent much faster than their human bearers). But this remark could be extended to the industrial revolution in itself, which would hardly have happened anywhere if fantastic resources of fossil energies, lying underground, hadn't been suddenly put to use. In a few significant steps, coal, gas, oil, which had so far been very

marginally used, allowed producers to progressively free themselves from the patient and prudent techniques of management that they had developed till then, based on the self-renewability of the resources they exploited (Fig 44). Within a few decades, even agriculture would end up functioning thanks to the extraction of those fossil stocks, this capital of energies, accumulated by the Earth, without human work, for millions of millenaries (since the carboniferous era). To emphasize that shift, to evidence the demultiplied footprint of human activities over the biosphere that it occasioned, historians have proposed to distinguish the period that the industrial revolution inaugurated as a new era of the earth, different from the Neocene, which they baptized the Anthropocene.

**Lunatics**

Although no individuals in particular were responsible for this global shift which rapidly spread its net around the planet, we should never forget that the industrial revolution was somehow foreseen, meditated and prepared by several think tanks, groups of learned people (enlightened aristocrats, proto entrepreneurs and economists, philosophers, scientists, architects, engineers and inventors of all kinds) who freely convened so as to share ideas and concerns about the common good and the means of improving life conditions. Several clubs of that kind burgeoned in 18th century England, such as the Lunar Society of Birmingham, so called because its members (among them Matthew Boulton, James Watt, Erasmus Darwin, Joseph Priestley, Josiah Wedgwood, etc.) chose to meet during the full moon, "as the extra light made the journey home easier and safer in the absence of street lighting". It is ironical to think that those individuals who were among those who laid the groundwork of the industrial revolution were mockingly referred to at the time (including by themselves) as the "lunarticks", a pun on lunatics. Which means that it takes a few lunatics to envision a revolution.

**Urbanism**

What we call the industrial revolution can be dissected into several phases corresponding to the successive fossil resources that were put to use, to great technical and managerial inventions that transformed the world, and to as many new ways and infrastructures of social interaction, commercial relationships, transportation, communication and life support. In his many books, Lewis Mumford is certainly among the historians who described the most seriously and the most obstinately those different mutations (paleotechnic, neotechnic), their considerable consequences on the evolution of cities, landscapes, and the environment at large, and the ways in which they prompted the curative and homeopathic innovations of urbanism and urban design (Fig 45). By laying the foundations of an environmental history of of design, Mumford helped us to understand urbanism, since the term was coined by Cerda in mid XIXth century, as a discipline, a series of progressive or culturalist moves and ideas more or less aimed at planning, structuring, checking or controlling the extension of cities, and their dislocation in the environment. The great transformations achieved by Cerda and Haussmann, Olmsted's park system, the works of Unwin, Schumacher, Prost and the likes, the utopias and realities of the garden city or the greenbelt, the planning of new towns, all these achievements, plans and policies can be thus replaced in a broader perspective: that of the successive environmental mutations provoked by the industrial revolution, which encouraged a substantial demographic growth. By 1900, world population had already reached 1.8 billions, which means that in 150 years it had more than doubled.

It is interesting to note that Mumford is more and more considered a very important figure by contemporary environmentalists. In a book called *The Landscape of Reform: Civic Pragmatism and Environmental Thought in America*[16], a young professor of environmental ethics recently stated that an extremely fertile tradition of pragmatic environmental thought (a kind of dialectical midway) had been unduly neglected by modern environmentalists in favour of two other and opposite trends equally leading to dead-ends: deep ecology and utilitarianism. His take is that Aldo Leopold, usually claimed by deep ecologists as their father figure, was in fact a pragmatist. But he singles out three other figures, usually overlooked by specialists of the environment, as key representatives of this pragmatist vein. The first one is Liberty Hyde Bailey, a botanist and horticulturist, champion of the rural cause, who even coined the term ruralism as a necessary complement to urbanism, and who, back in the early 1900s wrote numerous books to advocate the necessity for a more careful and more responsible stewardship of the "background", the soil and the environment. The second is Mumford himself (who long planned to write a biography of Bailey), both for his books and his work within the Regional Planning Association of America. And the third is Mumford's colleague and friend Benton McKaye, forest engineer, conservationist and planner who was the creator of one of the largest project of landscape architecture ever made: the Appalachian Trail. The thesis

developed by this book is very good news for urban designers and landscape architects. It means that, in order to take up the challenges of the environmental crisis, they should not only open their eyes, ears and minds to what other disciplines or sciences have to contribute to the understanding of the world's situation, but also revisit the fantastically rich jurisprudence of their own disciplines and traditions. Obviously, Mumford (as well as Bailey and McKaye) is one of the authors that the environmental crisis urges us to read with new eyes (Fig 46-49 ). But in the same line of thinking, let me mention, in passing, one or two other references, which both fed and prolonged the work of Mumford. One is of course Patrick Geddes, the Scottish urban thinker whom Mumford considered his spiritual father (Fig 50). Geddes, as you probably know, thought that all design disciplines such as architecture, landscape design and urbanism were as many species of a mother discipline which he called geotechnics and defined as the "applied science of making the Earth more habitable". In his view, the basic instrument of this applied geography was the regional survey, aimed at revealing the characteristics, potentials and predispositions of the territory's living organism. From his Outlook Tower in Edinburgh to the Collège des Écossais in Montpellier, Geddes' amazing trajectory and theoretical work should still be mined and explored today for stimulating ideas regarding "an urbanism that connects to the locality and the site specifics". But other figures among his contemporaries should also be revisited, such as the anarchist Peter Kropotkin who strongly advocated a greater territorial autonomy (particularly in terms of food production) as an essential condition for peace and social integration (Fig 51). A stream of thought that directly leads, downstream Mumford, to the work of landscape designer Ian McHarg and to the very influential book which he published in 1968: *Design with Nature* (Fig 52).

**Scenarios**

As we all know, the marketing and technical mobilisation of space did steadily develop along lines and modes which Mumford had well exposed. And the generalization of individual automobiles and communication networks has consecrated the overall suburbanization of the world, a process of deterritorialization in which agriculture itself, with soilless cultivation techniques and the most cynical application of fordist industrial methods, is about to become the economy the most alien to local resources and identities. In this respect, I do not find the fun of visions such as MVRDV's Pig City particularly rejoicing.





As French Green representative Alain Lipietz suggested in a book whose title paraphrases Karl Polanyi's, today's environmental challenges, far from calling for cosmetic plasterings (duly labelled "sustainable"), could well place us all - architects, urban designers, etc. - in front of another "great transformation", urging to scout the margins, faults and contradictions of the global market institution, and try other ways, other futures. Of course the emergence of environmental concerns did not happen just yesterday, and they did percolate into the spheres of architecture, landscape and urban design (thanks to Mumford, Buckminster Fuller, McHarg and Banham among others), but they should have taken, at least since 1972, a new and greater importance (Fig 53-55). I say 1972 because it was the year of the Stockholm Conference, but also and most of all because it was when the first report commissioned by the Club of Rome was published. That year, world population was around 3.5 billions. It had doubled in 70 years.

The Club of Rome is the contemporary equivalent of the Lunar Society, the lunatics who meditated the industrial revolution. Its initial members are the lunatics of the 3rd revolution which will be called the sustainable or environmental revolution if, as we may still hope, it actually happens. As the lunatics, the members of this Club of Rome, so named because its first important meeting took place in this city, are enlightened industrials, educated members of the civil society, scientists, senior officials of international institutions, who started to convene in the mid 60s to share their concerns about the global state of the world, and its problematic future. In order to clarify the picture, its founders (among them Aurelio Peccei and Alexander King) commissioned the lab of System Dynamics at the MIT (led by Jay Forrester) a report on the "world problematique", a dynamic model that would exhibit prospectively the behaviour and feedback loops between a number of crucial variables such as world population, birth and death rates, services, food and industrial output per capita, consumption of non renewable resources, and persistent pollution.

A team of young scientists and researchers worked assiduously on this model (World 3) and the report came out under the striking title of *The Limits to Growth*: a series of prospective scenarios which all (except one) converged toward the verisimilitude, the high probability of a global economic collapse in mid XXIst century, due to the overshoot of renewable and non-renewable resources, a congestion of pollution, and the overall disintegration of life conditions (Fig 56). The book was an immediate bestseller, translated into 30 languages, but five or six

years later, the end of the oil crisis, which many people had initially misinterpreted as a confirmation of its thesis, led to its dismissal as just another example of catastrophist or millenarist ideology.

In 1987 though, it fell to the report of the UN World Commission on Environment and Development (chaired by Gro Harlem Brundtland), to fire, this time most officially, the alarm bell; and it is this report, entitled *Our Common Future*, which introduced and defined the notion of "sustainable development": a model of development "that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Fig 57-58). But this convincing report, which heavily insisted on the absolute necessity to reduce the economic and educational gap between rich and poor countries, if only to achieve its environmental goals, will be considered too radical by many (including the French Minister of Environment at the time) who did their best to downplay its conclusions and recommendations.

Five years later, in 1992, the authors of The Limits to Growth, who had kept improving their model and datas, published a twenty year's update of their initial report. The book was called *Beyond the Limits*, clearly stating that, according to their analysis, the global economy had by then grown beyond the carrying capacity of the planet, and was therefore burning its capital (Fig 59). And because they never gave up, these same guys (Dennis and Donella Meadows, Jorgen Randers) came back again in 2004 with a thirty-year's update which, in my view, is an absolute must read (Fig 60-63). All the scenarios that they expose are ran over a two hundred year period (from 1900 to 2100). Scenario 0 is a standard run or "business as usual" hypothesis in which the behaviours of the different variables as they developed throughout the XXth century are expected to follow their natural tendencies in the XXIst. This basic scenario leads, as the authors confirm, to the probability of major global collapse somewhere around 2040. The book insists the model does not resemble the real world, which is an arena of conflicts between rich and poor countries, powerful and more fragile regions, etc, all realities that the model does not take into account. As such, the model nevertheless exposes the global evolution that the real world will have to confront and deal with. In all the subsequent scenarios, the authors examine how the model would behave if any one or couple of those variable or were altered: what if the natural reserves of non-renewable resources were in fact twice as important as what we think they are? What if humanity, thanks to technical improvements or inventions, became much more efficient in its use of available resources? What if demographic growth was checked by drastic birth control policies? What if people became globally much more frugal in their demands? Etc. What the book shows is that, according to the model, all these hypotheses, taken separately, might delay the collapse for a decade or so, smooth (or even aggravate) its violence a little, but that they would all ultimately fail to secure a sustainable world. In other words, none of these hypotheses can be considered the solution, as they all equally lead into the wall. The only scenario that the book presents as possibly sustainable is the one in which all of them would be actively combined and simultaneously pursued.. the sooner the better. It seems to me that this conclusion is the one that commonsense would naturally reach if it was not actively obscured and confused by all kinds of denial and repress mechanisms: A problematique such as the environmental crisis doesn't call for any one solution, but for a revolution in the fullest sense of the word.

Today, as predicted by the Club of Rome in 1972 in its standard run scenario, the total human population has passed 7 billions. It has doubled in less than forty years.

**Jurisprudence**

To the environmentally sceptics, that those scenarios will leave unmoved and cold-blooded, I would willingly suggest the reading of Jared Diamond's books (particularly *Collapse: How Societies Chose to Fail or Succeed*) which gather an impressive jurisprudence of historical cases of resource depletion leading to social collapse or political restructuring (Fig 64). Like Diamond, many other historians are currently revisiting entire chapters of world history, such as the fall of the Roman Empire, the colonization of America etc. from an environmental point of view (Fig 65). What they reveal is that those major events were always highly determined by issues of natural resources and the way people and societies dealt with them. The combined efforts of those scientists and scholars, who ingenuously solicit all kinds of disciplines (particularly genetics), and the progress of dating techniques (dendrology, glaciology), are slowly delineating a new discipline, environmental history, that reconnects, in a dialectical way, the chronicles of humanity with geography and what used to be called natural history. These historical investigations are extremely important and instructive in a time when environmental issues have become global and inescapable. They provide us with a jurisprudence, a series of case studies of collapse and survival which, to some extent, may help us to understand the intricate nature and complexity

of our environmental predicaments, and to address them in a more responsible way.

**Measures**

To help evaluate environmental costs, in an attempt to relocate economy within the ecosphere, some scientists have evolved since the early 90s a measuring tool, called the ecological footprint (Fig 66-67). Its principle is to translate into a given terrestrial surface (measured in acres or hectares), the goods and services that we (an individual, a collective, a city, a country..) use and consume. Even though its calculation implies a rather complex set of equations and approximations (for instance to appreciate in terms of surface a given use of fossil energy, or fish resource), it clearly shows that the portions of the earth's surface that people actually use are extremely varied between the rich and poor regions of the world, but also that the sum total of these 7 billions individual footprints now exceeds the actual usable surface of the planet. In a world where the usable surface per capita constantly diminishes with demographic growth (around 2ha today), the average individual footprint steadily tends to augment. If the standards of living now adopted in the most "advanced" countries of the west (which many other regions of the world actively emulate), were to be universally shared, we would need 3, 4 or even 5 planets to satisfy them. I know you are probably familiar with these figures, which clearly stress the unsustainability of our world. But there are two things I would like to emphasize here. The first one is that the ecological footprint points to an abstract and dislocated surface, a constellation which, in most case, has nothing to do with the idea of site as a more or less consistent and cohesive area or landscape, a geographical theatre we would identify with and share with a collective of neighbours. And the second is that this disconnection, this divorce of the ecological footprint with real sites might be one of the greatest issues, urging us to reconnect, and give a certain measure of locality and site specificity to some of the goods and services that we use.

**Spectrum**

Nowadays, the major contributions to the environmental debate range on a wide spectrum. Many seem relatively confident in the capacity of the global Market to progressively appreciate and distribute goods and services, and allow a better use of the earth's resources, especially if its fiscal and incentive mechanisms are reformed in this sense. This is, for instance, the philosophy which underlies another famous report to the Club of Rome which was published 10 years ago by two Institutes for environmental research and prospective: the Wuppertal Institute in Germany and the Rocky Mountain Institute in the US. The book demonstrates that it would be possible today, thanks to technologies that already exist and could be made widely available, to double the production of goods (and therefore economic growth), while using only half of the resources we currently consume. Hence the title of the book: *Factor 4* (Fig 68). And it proposes a series of incentive, legal and fiscal measures which, if adopted, would encourage market economy to build up a more sustainable world. For instance, the authors suggest that the honoraria of architects and engineers should not be indexed on the total cost of construction but instead on the economies of production and functioning that their design would allow by comparison with a standard estimation. Contrary to what the authors of *Limits to Growth* suggested, you see that the emphasis is clearly put here on technological progress and efficiency. The idea is that technology and invention, stimulated by a slightly reformed market economy, will be able to meet the main environmental challenges of our times. This same point of view may be found in many other books, including Lester Brown's powerful Plan B which proposes a detailed budget for a global restoration of the planet (Fig 69).

At the other end of the spectrum - if we neglect the deep ecologists who intend to protect "nature" in its own right - we find the advocates of degrowth and frugality who strongly oppose the idea of "sustainable growth" as a mere oxymoron. Their father figure, economist Nicholas Georgescu-Roegen (who is clearly claimed by the authors of the Ecological footprint) has criticized neoclassical economy for being based on principles derived from Newtonian Mechanics (Fig 70). In his view, political economy should adopt a thermodynamic model instead, that would take the whole ecosphere into account, with its cycles of resource consumption and waste. According to this view, largely shared in the anti-globalist nebulae, the planet is engaged in an entropic process which humans cannot stop but may either accelerate or delay. Hence the necessity of self restrain and an active search for local alternatives to the global market economy.

Note that the opposition of those two poles is partly rhetorical, and that all kinds of dialectical positions may be found in between. Particularly interesting (though quite puzzling) in this respect are, in my view, the philosophical and constructivist attempts to overcome the "modern" conceptual divide between nature and culture, and explore the bio-

engineering of the human environment. Peter Sloterdijk's spherology is one of them, which describes the human condition as the progressive construction and climatization of anthropogenic islands, and human life as a navigation between spheres of different scales forming foam-like structures. And another is Bruno Latour's actor/network theory which leads him, in *The Politics of Nature*, to cancel out the very concept of Nature and replace it with the idea of a hybrid Collective of humans and non-humans whose constitution would be perpetually in the making, debated, and adjusted: a stimulating way of envisioning the real interactions and collaborations of sciences, politics, economy and ethics in the light of the actual environmental controversies.

**Architecture**

This being said, the major contributions from our fields to the environmental debate can be grossly placed along the gradient drawn between those two poles. Most of the environmentally concerned architects naturally embrace the technological and prospective faith underlying Factor 4, by enrolling and developing new technologies for the insulation, ventilation and lighting of their buildings, which minimize the use of energy or even produce clean energies. A technological faith that leads some of them - such as Ken Yeang with his "bio-climatic skyscraper" - to turn architectural types deemed environmentally dubious into eco-compatible figures. At the scale of urban design - and beyond the universal quest for less consuming transportation and infrastructural systems - a certain measure of localism is coupled with technology in the planning and design of sustainable neighbourhoods (BedZed in London, ecoquartier Vauban in Freiburg, etc.) or even eco-cities such as Masdar in the Emirates and Dongtan in China (Fig 71-72).

Other and more culturalist architects rely to what Kenneth Frampton once identified as critical regionalism. As Glenn Murcutt did in Australia, Hassan Fathy in Egypt or Balkrishna Doshi in India, they combine modern technologies with more archaic low tech or passive devices rooted in the local building traditions. Still others combine their concern for the passive functioning of buildings with an in depth reflection on the whole construction channel, from the extraction and elaboration of the materials up to the organization of the building site so as to minimize the cost in grey energy. The work of Thomas Herzog on wood, or that of Gilles Perraudin, who built his own office (coupled with a winery) in dry joint-masonry with massive blocks of stones





extracted from a local quarry, are quite exemplary in this respect. And the collective experiment led by the architects of the Vorarlberg region in Austria, in close connection with the development of a local industry of woodwork, is by now an established reference.

**Landscape design**

But it looks as if - and the very theme of this conference shows it clearly - some of the most promising design contributions to the environmental challenges were currently coming from the field of landscape architecture. For now more than twenty years, we have witnessed the growing emergence of landscape architects and landscape issues in theoretical debates on the stakes and challenges of urban design, and catch phrases such as Landscape Urbanism or Ecological Urbanism have contributed to catalyze this steady requestioning of the goals and methods of urban planning. The reasons for this are quite obvious. Ecology, Botany and Natural sciences in general are (or at least should be) part of landscape architecture's background and culture: a landscape is the visual matrix of an environment produced by (and sustaining) an interaction of humans and nonhumans. Dynamic systems, processes of flux, flow, germination, growth, decay, regeneration, self-renewal, symbiosis, material exchanges, evolution, etc. are in many ways the very matter of landscape design: a discipline aimed at curating locally "the parliament of things" and its potential evolution. But this is not all: by the very nature of their commitment and culture, landscape architects have traditionally been called upon, at least throughout the XXth century, to digest the casualties of urban expansion and to intervene, as a kind of ambulance, in the in-between or leftovers, problematic situations shaped by the negative externalities of the globalizing metropolis and its economic mutations. Contemporary references such as Peter Latz's Emscher Park in Duisburg or James Corner's Fresh Kills project in State Island, NY, are sufficiently telling in this respect, as is also the current involvement of many of their colleagues with the dramatic phenomena of shrinking cities in the past industrial regions of both Europe and the US (Fig 73). Landscape architects have thus developed an intimate familiarity with the environmental consequences and externalities of the economic and infrastructural mutations which have marked the history of urbanization. This experience makes them particularly able to inspire new agencies that could orient the planning of metropolitan territories as was recently shown in the international competition for the Grand Paris, where their different contributions were quite remarkable (Fig 74). But it should also enable them to reflect on the equivocal agency of sites

in the post-urban condition, when the great challenge, in my view, is not so much the extension of cities (for which the concept of urbanism was coined 150 years ago), but the deepening of territories. I have elsewhere argued that landscape design has been, historically a rather meta-programmatic undertaking, a poetics of preparation, reparation, revelation or scenography, mostly in sites, often suburban, which were no more, not yet, or not quite urban: a *sub-urbanist* poetics in which the site takes priority over the program, and almost becomes, with its particular resources and potentialities, the program or the infrastructure of the design.

**Localism**

As an illustration of the other end of the spectrum - they are not so many in our fields - I must evoke here the original and rather extreme position developed by Italian urbanist Alberto Magnaghi in a book called *Il Projetto locale* (Fig 75). Magnaghi delineates a clearly political alternative to the global economic model, and distinguishes his own localism from both the "functionalist" approach (the theory of eco-compatibility), based on a technological faith that can only provide correctives to a more fundamental problem, and the "bio-centric" approach which, focussed on nature as such, ambitions to protect it from effects whose causes are not tackled.

Stressing the limits and relative superficiality of those two strategies, Magnaghi advocates a "territorialist" agenda. His local project ambitions to considerably "re-territorialize" the economy at the scale of the commune or the region, to re-root economic and social activities into the dispositions of the area, which are described as the accumulated legacy of a long history, as a cultural and environmental capital that should be carefully reinterpreted and managed by a collective composed of all those who seek to challenge locally the homogenizing and erasing globalization. This militant book, which reactivates the very Geddesian idea of the regional survey as a dialectic instrument to institute a nuovo municipio, clearly states its inkling for a kind of inventive recession into a new Middle-Age "between concrete utopia and strategic scenario". Lorenzetti's painting of the effects of the Buon Governo resurfaces here as an environmental project, that of a greater territorial autonomy where, thanks to the careful management of the local and cultural ecosystem, the chains of production, consumption, recycling, water and waste treatment, etc. would be significantly reduced and visibly rescaled within the





communal landscape or ambiente. It is of course highly improbable to dream today of a world that would present itself as a patchwork of anthropogenic islands, a mosaic of socio-environmental niches where the ecological footprint of each community would ultimately coincide with its actual landscape. But on the other hand, it would also be highly adventurous to bet that today's environmental problematics will automatically solve themselves at the global scale without being addressed and made legible locally, i.e. without introducing a higher measure of local responsibility towards the specific environmental and cultural resources which construe our living milieux, spheres, landscapes or territories.

**3 landscapes**

This brings us back to our starting point. I must say I have nothing very strong to offer in terms of conclusion. But I do think we need to devise a deeper and more complex notion of what landscape means today. To explain, let me refer to one of J. B. Jackson's books which I find very stimulating. It is called Discovering the Vernacular Landscape, consists in a well organized collection of essays, and was published back in 1984 (Fig 76-77). I particularly like the first and the last essays. The opening one, that looks for a good definition or the term "landscape", is called "The Word Itself", while the last is entitled "Concluding With Landscapes". This, in itself, is quite interesting: here is a book that starts with a singular and ends with a plural. In his concluding piece, Jackson explains that his lifelong experience as a visitor of landscapes in Europe and the United States has led him to distinguish 3 kinds of landscapes (Fig 78-80). Landscape 1, he calls either the medieval or the vernacular landscape. In his view, it has (or had) two characteristics: it was very local, made largely with the materials and resources that were ready at hand, and centred on the community that managed it. It was a mosaic, a patchwork of such locally managed areas, and Jackson compares these medieval or vernacular landscapes to the vernacular languages (the different patois that were spoken very locally in these areas). But it was also an ever changing landscape because of the three-field system, with its rotating fallow lands, etc. Nothing (constructions, limits, etc.) was really fixed and established once and form all. Then comes landscape 2 which Jackson qualifies either as the classical, the political or the aristocratic landscape: again this hesitation between a chronological and a typological classification. From what he writes, we understand that Landscape Two is the one that progressively took over in Europe starting from the Renaissance and reigned in the 18th century. But the Roman centuriatio or the grid of

Jefferson are also typical of that second kind. For Jackson, landscape 2 is in every way the opposite of landscape : it is not specifically local but makes sense and reigns on a much larger territorial scale: its extension (and convention) is equivalent to that of vehicular languages. And while Landscape I was ever changing, Landscape 2 is on the contrary a landscape of fixed limits, axes and conventions, a landscape of stable constituents. This classical landscape of property, permanence and power, writes Jackson, « sets great score on visibility », it is « landscape as a work of art, as a supergarden ». And probably the great classical gardens created in Europe between the Renaissance and the early eighteen century were both the laboratories, the foyers and the masterpieces of this second and canonical kind of landscape.

And finally comes Landscape 3. Although Jackson offers no name for it, it does not mean that it is unnameable. We understand from the title of his book that it would be a new form of vernacular. This Landscape 3 started to appear during the industrial revolution but really took over after second world war, burgeoning along the strips and transportation networks of America. And it is to that ever changing landscape of drive-in, parkings, commercial signs, provisional buildings, etc. that Jackson devoted most of his studies and writings: « As I travel about the country I am often bewildered by the proliferation of spaces and the uses of spaces that had no counterparts in the traditional landscape: parking lots, landing fields, shopping centers, trailer courts, high-rise condominiums, wildlife shelters, Disneyland. I am bewildered by our casual use of space: churches used as discotheques, dwelling used as churches, downtown streets used for jogging, empty lots in crowded cities, industrial plants in the open country, cemeteries used for archery practice, Easter sunrise services in a football stadium. I am confused by the temporary spaces I see: the drive-in, fast-food establishements that are torn down after a year, the fields planted to corn and then to soya beans and then subdivided; the trailer communities that vanish when vacation time is over, the tropical gardens in shopping malls that are replaced each season ; motels abandoned when the highway moves. Because of my age my first reaction to these new spaces is dismay; they are not the kind of spaces I was accustomed to in the Landscape Two of my youth. But my second and (I hope) more tolerant reaction is that all this is part of our culture, that it can be treated with respect and that here is a new and challenging field of environmental design.»





## Hyperlandscape

What interests me in this text is not so much the distinction of those 3 landscapes as the hesitation of Jackson in naming them. Chronology? or Typology? Should we consider them as three periods in the history of landscape or as three kinds of landscapes? What if those different landscapes or « two dimensional languages » (and we could still imagine other types or sub-layers) were not only successive but somehow contemporary in the world we live in? Not only juxtaposed but very often overlapping, superimposed onto each other as physical dimensions, cultural layers or mental floors? Of course, I am well aware that this « what if? » is not really a demonstrative (but only a suggestive) form of argument. But I have several reasons to put it forward. First, I do think that this meeting, juxtaposition, overlap or interpenetration of different syntaxes is a very common experience nowadays and that it often explains our feeling for certain situations and « landscapes » : the charming accidents produced by the casual encounters between the classical orders and the patterns of the older vernacular (the cow watching the train, the irregular division of rural parcels still readable in the layout of a neoclassical city, etc.) are the ancestors of a great variety of contemporary situations where this superimposition of scales and languages is only more crude, more complex and less defined or less solved. Second, this overlapping, or what could be termed a verticalisation of the idea of landscape, strikes me as being precisely what a lot of artists and landscape observers seem to be exploring and translating in their work nowadays. Think of those painters, photographers and filmmakers in particular who are chasing not only the edges (the situations where a world meets another world) but the interpenetrations or equivocation by which a landscape survives among or under another one, or else deepens into several landscapes floating on top of each other. Finally, I would add that this condition of overlap could quite fairly summarize the phenomenon of contemporary *suburbia,* where both the superposition of totally different syntaxes and the clash between the solid and the provisional, the permanent and the ephemeral, are the most dramatic. What I am suggesting here is that most contemporary landscapes are in fact complexes of landscapes, or what we could call hyperlandscapes.

## Theatre

But let's get back to Jackson. The final point of his essay was to say that we needed to free ourselves from the canonical model of Landscape Two, still prevailing in our minds, so as to devise a new definition of

landscape that would "include both the mobility of the vernacular and the political infrastructure of a stable social order." Actually, Jackson had already addressed this point in another essay placed right in the middle of his previous book, *The Necessity for Ruins and Other Topics* (Fig 81). In this dense little piece called "Landscape as Theatre", he stated that the strong and operative metaphor through which the classical landscape was envisioned and produced was that of the theatre: a landscape was a scene, a static stage-set visually organized from a few vantage points, or a sequence of scenes.. an image which dies hard and, despite its growing one-sidedness and unrelevance, has considerably framed the way we still look at landscapes. Jackson insisted on that: to him, the great problem of landscape studies and landscape design nowadays was that we are still under the spell of the classical metaphor of the theatre, trying to envision and shape our environnements through its lense, although this representational matrix has ceased to be operative and efficient for now more than two centuries, and is thus unable to translate the complex structure of the world we live in. Only another operative metaphor (i.e. not just a mere analogon), more suited to what our world has become, could free our minds from this inaccurate (out of date) representation and enable us to really come to term with (challenge, engage) contemporary landscapes. But this other and badly needed metaphor, Jackson concluded, is precisely what is not yet there: « we are still searching ».

"All that we have so far come up with is an analog of one sort or another, borrowed from biology or ecology or communication theory. When it is a matter of controlling or manipulating the environment, analogs can be extremely helpful; yet if we are again to learn how to respond emotionally and esthetically and morally to the landscape we must find a metaphor - or several metaphors - drawn from our human experience. The fact that we have so far failed to do so is no cause for despair. As history should teach us, and particularly the history of art, it is largely a matter of a chronological perspective. It was only in the 19th century that men perceived the rightness of the theatre metaphor as applied to the 16th and 17th century concept of landscape. It is only now that we are acquiring sufficient perspective on the 19th century to understand that landscape in terms of a metaphor of growth and decay and evolution. It is still too early to understand the next 20th Century Landscape. We can best rely on the insights of the geographer, the artist and the philosopher. They are the most trustworthy custodians of the human tradition; for they seek to discover order within randomness, beauty within chaos, and the enduring aspirations of mankind behind blunders and failures."





**Palimpsest**

If we accordingly turn ourselves to philosophers to see what they have to offer, we may get Peter Sloterdijk's "spheres" or "foam" or Bruno Latour's "actors-networks" and try out those metaphors to decipher landscape 3. But what if, instead of focusing strictly on the emerging layer, or on the new landscape as emerging, we would embrace the whole stratification that construe our environment? What if the new metaphor we are after should correpond and apply to hyperlandscapes? Could geographers and artist help us here? In fact, I can think not only of one but of two candidates that might then seriously apply at replacing the theatre in its leading representational role. Indeed, both have been already identified and proposed by scholars and designers. The first one is the famous palimpsest, a concept which has had an incredible fortune in the debates on urban design in the past twenty or thirty years (Fig 82). A palimpsest, we are told, is a thick piece of parchment which was reusable, a bit like a blackboard is today, but with this remarkable difference that the texts successively inscribed on its surface were less easily erasable, so that they would often remain as traces, partly decipherable behind or between the newer lines or layers of text. A palimpsest is thus a two dimensional writing board that deepens into a three dimensional matrix of signs, inscriptions and texts overlaid on one another: a handy metaphor of the territory which is thus equated to a deep surface being endlessly written, partly cleared through scratch, and then rewritten upon. As André Corboz puts it in his famous essay « Le Territoire comme Palimpseste » (1983):

« Le territoire n'est pas un emballage perdu ni un produit de consommation qui se remplace. Chacun est unique, d'où la nécessité de 'recycler', de gratter une fois de plus (mais si possible avec le plus grand soin) le vieux texte que les hommes ont inscrits sur l'irremplaçable matériau des sols, afin d'en déposer un nouveau, qui réponde aux nécessités d'aujourd'hui, avant d'être abrogé à son tour. Certaines régions, traitées trop brutalement et de façon impropre, présentent aussi des trous, comme un parchemin trop raturé: dans le langage du territoire, ces trous se nomment des déserts. »

**Hypertext**

But the ability of the palimpsest to constitute a real metaphor for today's landscape(s) could be questioned. Unlike the theatre for the classics - which was obviously an effective representational matrix,

an operative way of seeing, staging and framing both physical and mental realities - the palimpsest is not exactly a tool that we use in our everydaylife, but rather a sophisticated image, an elaborated analogon of this other matrix that has maybe so pervasively replaced and digested the theatrical and panoramic one that we are hardly able to expose and describe it. It is thus no wonder that André Corboz himself, ten years after proposing this first metaphor, and along with many other thinkers, moved toward another one which has everything to do with the idea of the palimpsest, but is also much more operative in the shaping and organization of contemporary mindscapes and environments: the hypertext. Unlike a given single text, the hypertext is literally unreadable: it is rather a network, a means of linking, relating and articulating a number of discrete textual resources or visual documents. In other words, it is a tool, a vehicular system or protocol that allows one to navigate between those different resources - all relatively independent and standing for themselves, all deploying their own syntaxes, orders and meaning - without virtually imposing any given hierarchy or sequence to the semionaut's travel. By saying this, we do not mean of course that this network or system has no order nor hierarchy but that it stages, celebrates and empowers the freedom of the user to shift and slide at will from one resource to another and to improvise bridges or stairs between distinct layers of meaning and information whose relationships are not a priori fixed nor mapped. In a way, the hypertext could be compared to an indefinite book without binding, or to a superpalimpsest made almost as transparent as sky or water: the 4th dimension as if you were there, and not subject to gravity.

All things considered, I would willingly combine those two analogs (the palimpsest and the hypertext), rather than choose one against the other. While the palimpsest contributes a much needed dimension of materiality, givenness, gravity, inertia and care which the hypertext lacks by itself, the latter conveys notions of potentialities, links, relations, user-friendliness, free navigation and choice without which our palimpsestuous territories would freeze into as many antique shops. In other words, if neither the palimpsest nor the hypertext are by themselves the new metaphor we are looking for, their combination might well indicate what this new metaphor should achieve: a deeper and more vertical understanding of landscapes and territories, allowing to combine a higher degree of environmental autonomy and consistency at the local scale with openness, porosity and interconnection at the regional and global scales.. a confederation of quasi-worlds. What I mean to say is that the global environmental challenges might urge us to no less than envisioning our landscapes and territories as four-dimensional monads or matrixes.





**Fourth dimension**

You may remember that many artists in the early twentieth century, inspired by mathematical speculations on hyperspace, actively sought to represent four-dimensional figures in painting, sculpture or even architecture. The "analytical cubists", but also Kupka, Gris, Duchamp, Kandinsky, Bragdon, Kiesler and Matta, were all engaged, at some point, in that fantasy (Fig 83). Their quest could be summed up by the following question: If a point is the section of a line, a line the section of a surface, and a surface the section of a volume, what is a volume the section of? One of those artists, namely Marcel Duchamp, spent literally his life tackling playfully this question in all kinds of erotico-pataphysical speculations, and his most intriguing legacy in this respect is certainly his Large Glass entitled « The Bride Stripped Bare by her Bachelors, Even" (Fig 84-85). Here it is: a window made of two large glass panels mounted onto one another, and separated by a thick steel bar which Duchamp called "the Bride's Mantel". Below is the domain of the bachelors with its nine "malic moulds", its water mill and chocolate grinder, a whole machinery rendered in cold perspective as if it was actually seen through the glass: the bachelors, who "grind their chocolate alone", are captives in the straight coordinates of their 3D world. Above is the Bride's domain where a strange insect or larva seems to float in some kind of abstract space, as if it was an infra-thin organic and translucent section taken into the glass: the bride blossoms in an other dimension. As you see, if the obvious theme of this puzzling piece is the mechanics of sexual desire, the Large Glass also entails a meditation on the "perspective hinge", or the north-west passage through which a landscape becomes a hyperlandscape.
A little comparison might clarify what I am trying to suggest. Here is a classical representation of the landscape as theatre: an engraving showing the three natures perspectively aligned: the first nature in the background, untouched, the second nature, agriculture, in the mid ground, and the third nature, or garden, in the foreground (Fig 86). We have here a gradient of the dialectics of nature and art, and a clear expression of the *integrazione scenica* that the classical garden sought to achieve, by sublimating within its limits the various features and ingredients which were visible outside: a whole game of emblematic correspondences. If you look carefully, you will see that a thick abstract line (probably a haha) separates the garden, which occupies a good half of the image, from the rest of the landscape. This dark stripe, which actually looks like a tennis net, neatly distinguishes

the garden as representation from the landscape represented. It symbolizes the perspective hinge which articulated the here and the elsewhere in the extension of the classical landscape. As you know, the picturesque movement eventually erased that limit, allowing the garden to blur with the landscape. Two centuries later, when the total conquest of the earth's surface or extension is practically achieved, this thick abstract line reappears in the Large Glass (the Bride's Mantel), but as an internal frontier or horizon vertically distinguishing our three dimensional machinic and infrastructural landscapes from their possible extrapolation into the fourth dimension. As if to suggest that, henceforward, the other and the elsewhere should be searched for and integrated within the site itself. Duchamp himself encouraged such an interpretation of his work when, thirty years after completing the Large Glass, he did a little drawing (Cols Alités, 1959), showing a landscape of gently rolling hills appearing in transparency behind the apparatus of the glass, thereby linking the two distinct domains of the bachelors and the Bride. I do not know whether the ecological revolution will happen or not but it seems to me that it will depend from our ability to accomplish such a mental rotation or verticalization, and to envision, treat, manage and deepen our territories as hyperlandscapes. Let's be lunatics.

## Notes

[1] In fact, several versions of that documentary have already been made, such as *Biutiful Cauntri*, a film that relates the way toxic wastes are savagely disposed of by the mafia in the countryside near Naples, a terrifying problem that Roberto Saviano has also addressed in his famous *Gomorra*.

[2] A shorter period (between 150 000 and 70 000 years) if we consider the so-called homo sapiens sapiens species only. In any case, it seems that the last continental mass to be reached by humans was South America some 10 to 12 000 years ago (although some scientists now suggest that this might have happened as far back as 50 000 years ago). It is interesting to note that (in the first hypothesis) the neolithic revolution (the emergence of agricultural practices with domestication of plants and animals) coincided, or shortly followed this total colonizition of the earth's landmasses (the first step in the process of "globalization").

[3] In this line of thought, I cannot but strongly recommend the books of André Leroi-Gourhan, the great French paleontologist and ethnologist, particularly the two volumes of *Le Geste et la parole* (I: Technique et langage, 1964; II: La Mémoire et les rythmes, 1965), but also those of *Évolution et Techniques* (I: L'Homme et la matière, 1943; II : Milieu et technique, 1945, both revised in 1973). A fascinating parallel study of the evolution of the body and brain of humans and the evolution of their tools and techniques in relation to their material and living milieux (the processes of "spatial integration").

[4] See Claude Lévi-Strauss, *The Elementary Structures of Kinship* (1947), *Structural Anthropology* (1958) and *The Savage Mind* (1966).

[5] Marshall Sahlins, *Stone Age Economics*, 1972.

[6] Pierre Clastres, *Chronicle of the Guayaki Indians* (1972) and *Society Against the State* (1974).

[7] Of course this slowness and apparent modesty in the rhythm of "progress" and "growth" only makes sense when compared with its subsequent acceleration. Leroi-Gourhan very clearly explained this.

[8] Garrett Hardin, « The Tragedy of the Commons », *Science*, 162 (1968).

[9] Ibid.; "The tragedy of the commons as a food basket is averted by private property, or something formally like it. But the air and waters surrounding us cannot readily be fenced, and so the tragedy of the commons as a cesspool must be prevented by different means, by coercive laws or taxing devices that make it cheaper for the polluter to treat his pollutants than to discharge them untreated. We have not progressed as far with the solution of this problem as we have with the first. Indeed, our particular concept of private property, which deters us from exhausting the positive resources of the earth, favors pollution. The owner of a factory on the bank of a stream - whose property extends to the middle of the stream - often has difficulty seeing why it is not his natural right to muddy the waters flowing past his door. The law, always behind the times, requires elaborate stitching and fitting to adapt it to this newly perceived aspect of the commons. The pollution problem is a consequence of population. It did not much matter how a lonely American frontiersman disposed of his waste. "Flowing water purifies itself every ten miles," my grandfather used to say, and the myth was near enough to the truth when he was a boy, for there were not too many people. But as population became denser, the natural chemical and biological recycling processes became overloaded, calling for a redefinition of property rights."

[10] J. Fletcher, *Situation Ethics* (Westminster, Philadelphia, 1966), quoted by Hardin in ibid.

[11] William Cronon, *Nature's Metropolis: Chicago and the Great West*, Norton, New york, 1991, p. 99.

[12] Ibid., p. 120: "The changes in Chicago's markets suddenly made it possible for people to buy and sell grain not as the physical product of human labor on a particular tract of prairie but as an abstract claim on the golden stream flowing through the city's elevators."

[13] Ibid., p. 206.

[14] Ibid., p. 218.

[15] Ibid., pp. 256-257.

[16] Ben Minteer, *The Landscape of Reform: Civic Pragmatism and Environmental Thought in America,* Massachsetts Institute of Technology (2006).

## ILLUSTRATIONS

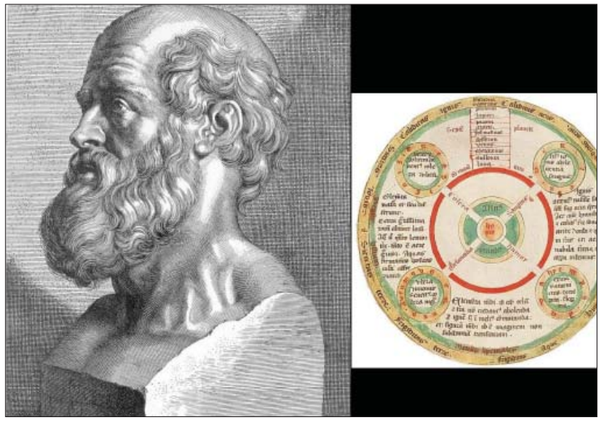


Fig 1

Fig 2

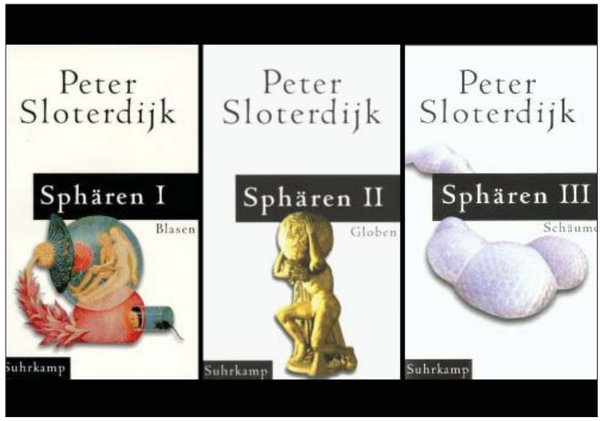



Fig 3

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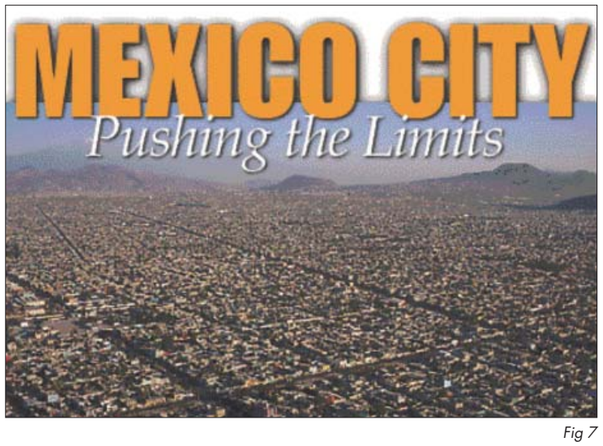


Fig 7

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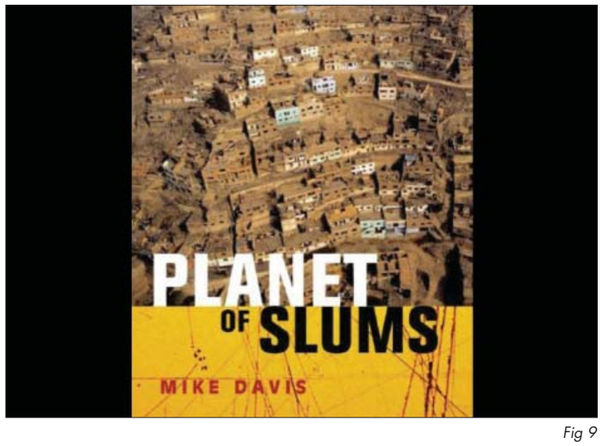


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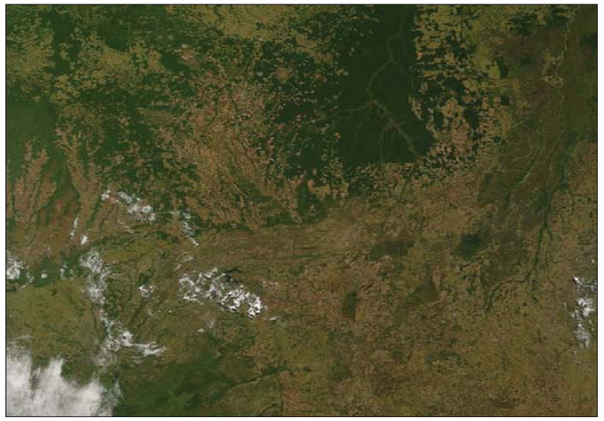

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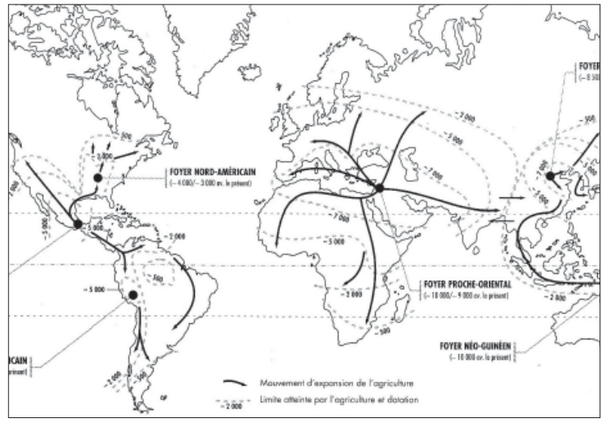


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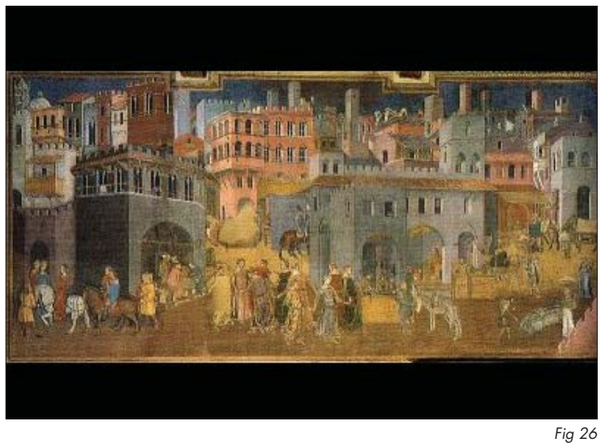

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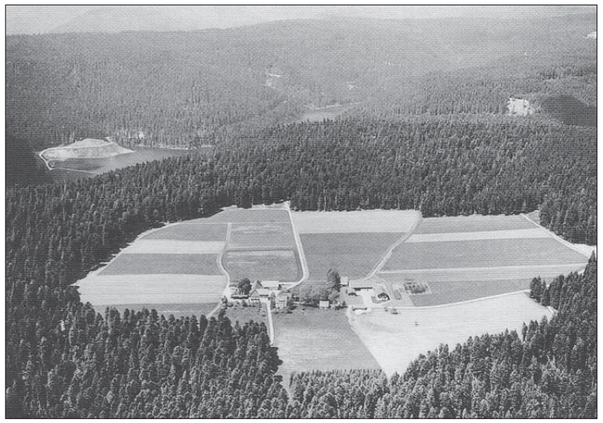

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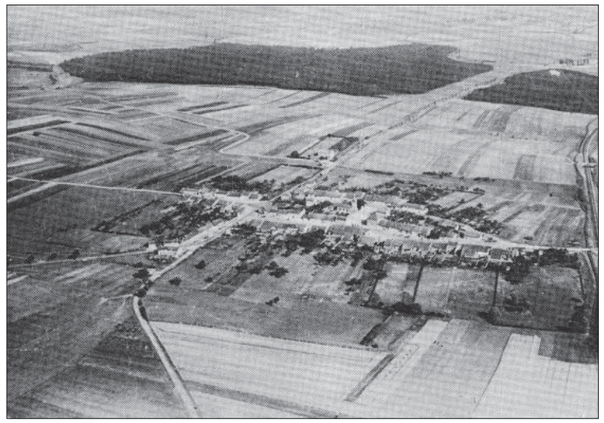

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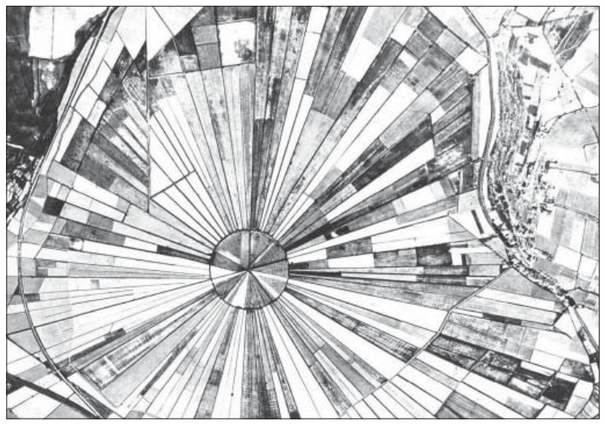

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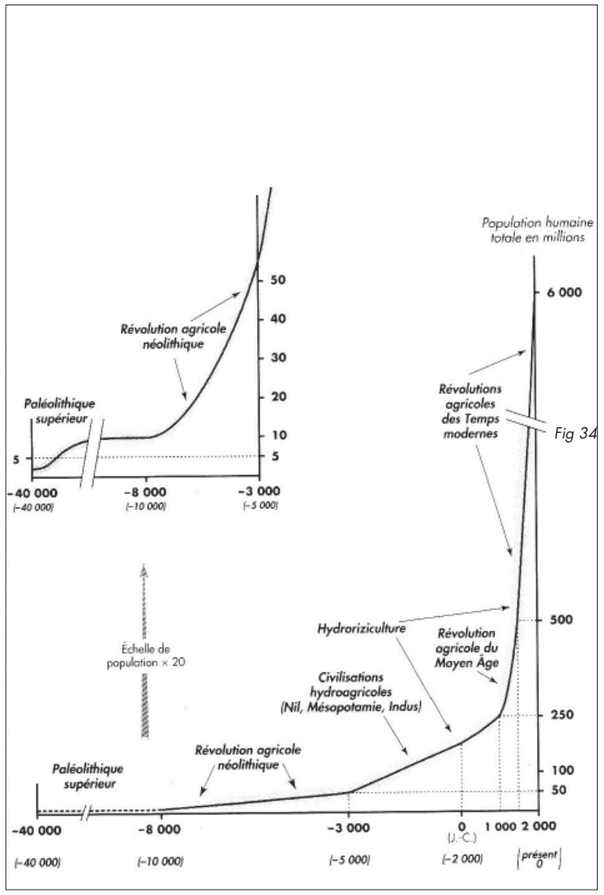


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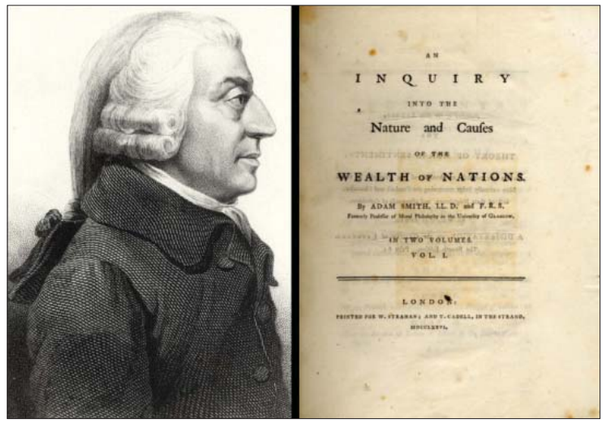


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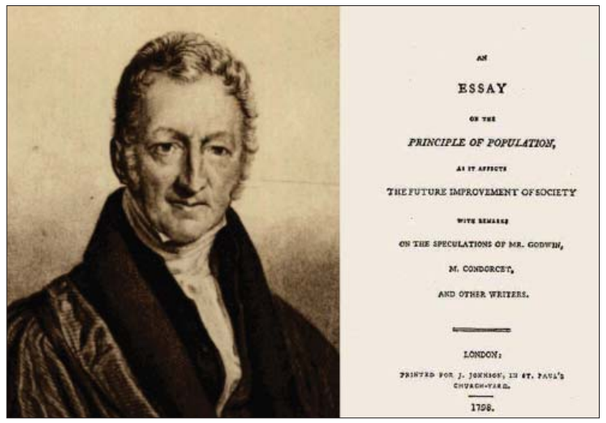


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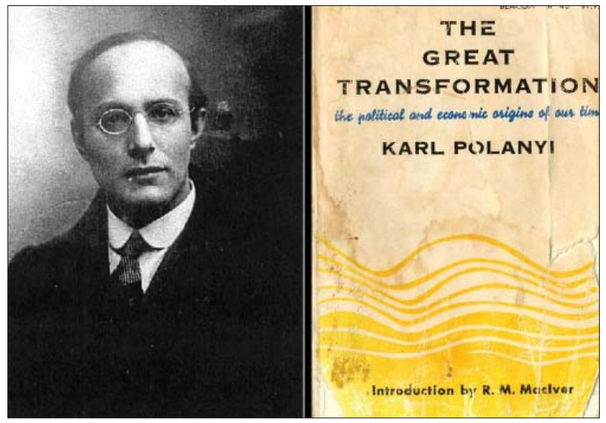


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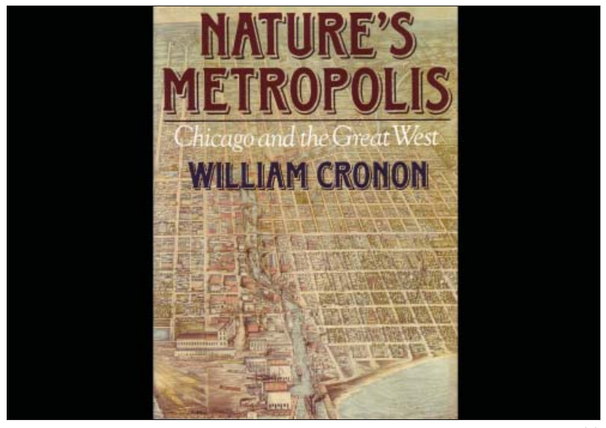


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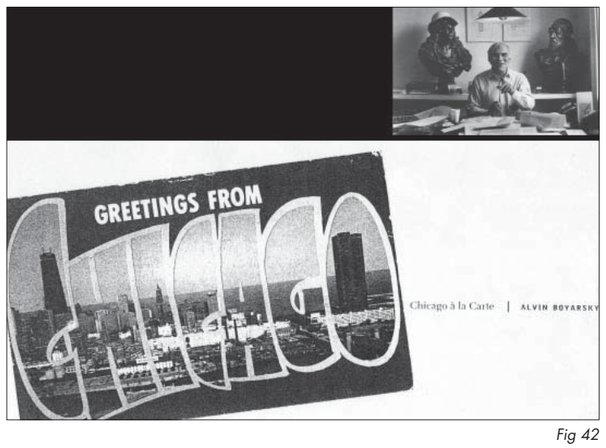
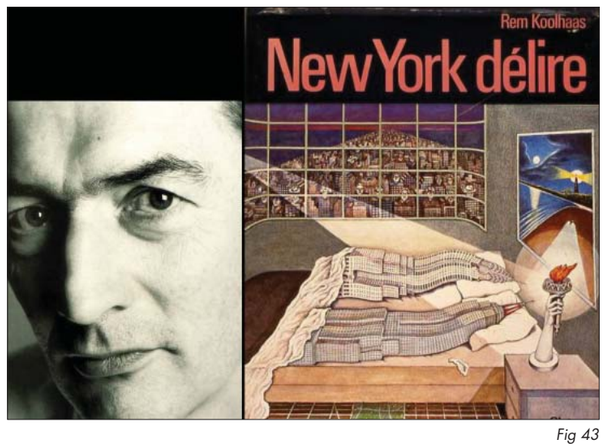



Fig 42

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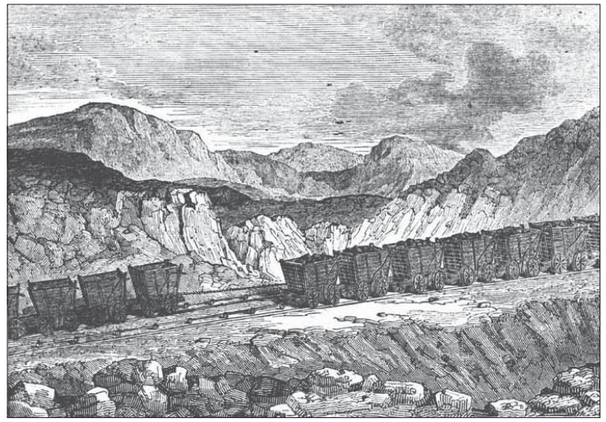

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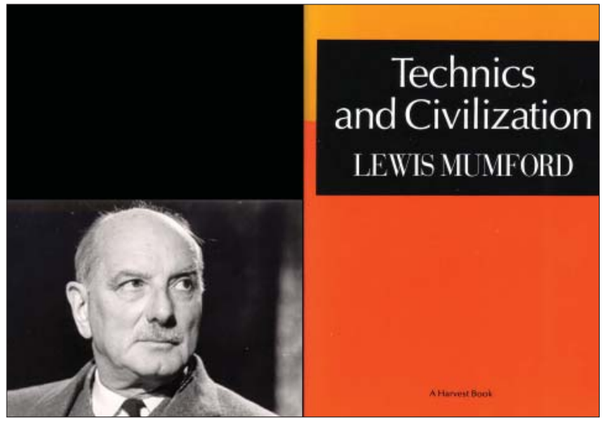


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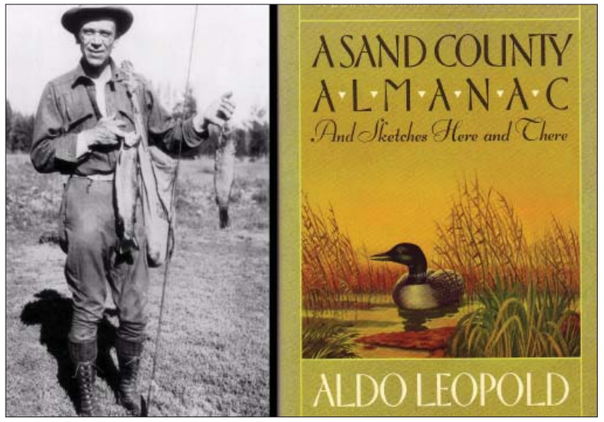
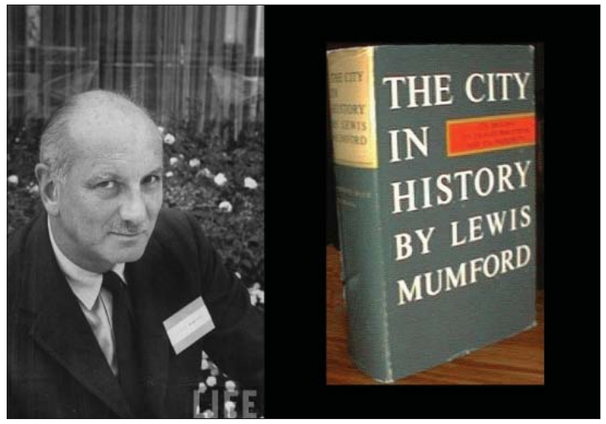



Fig 46

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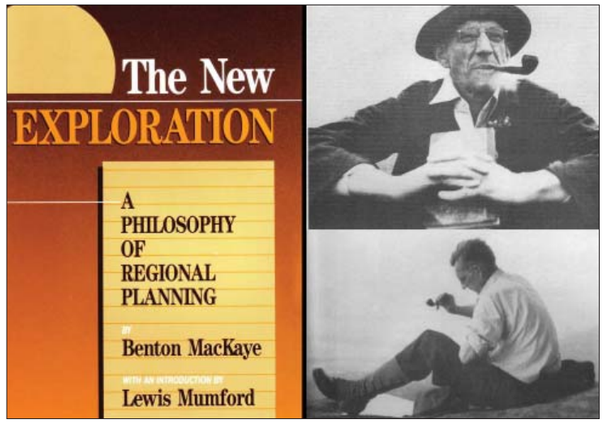


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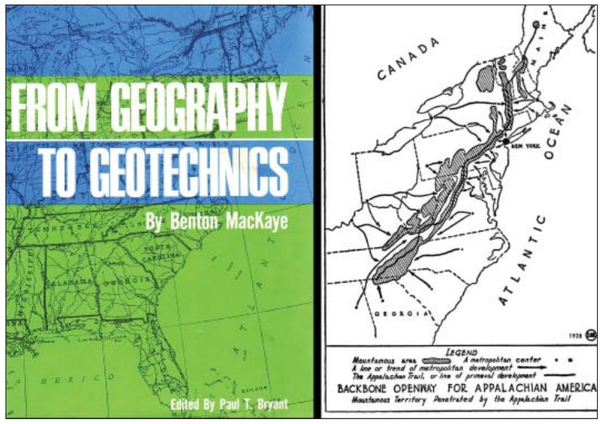


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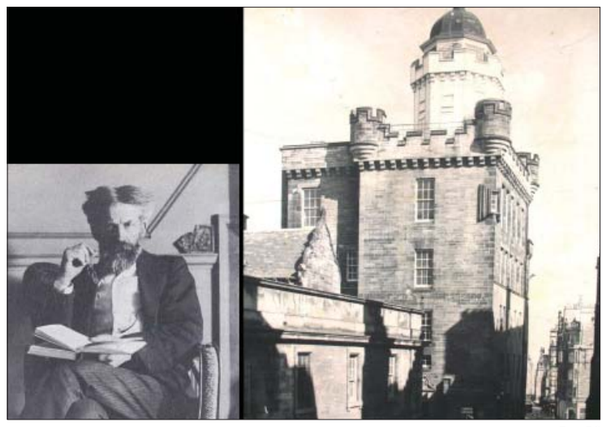

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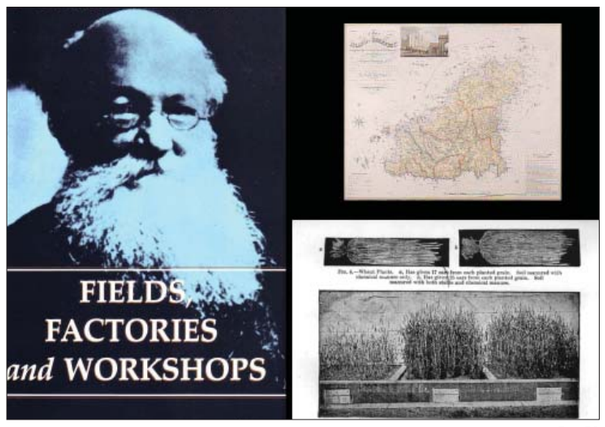


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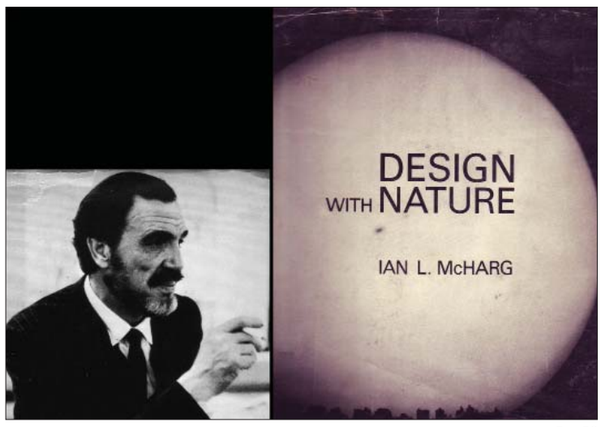


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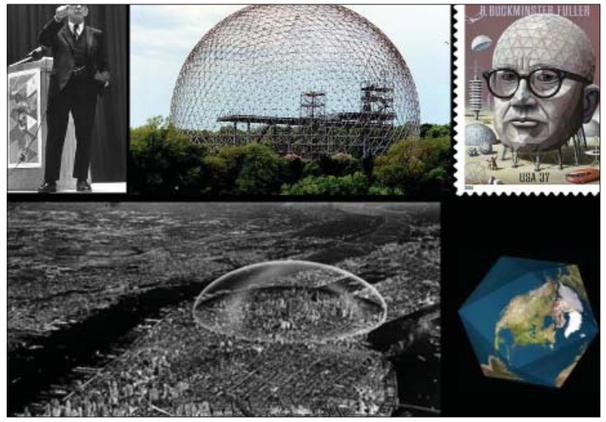


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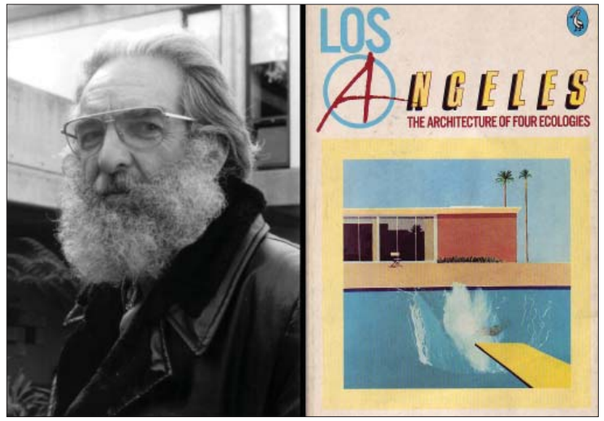


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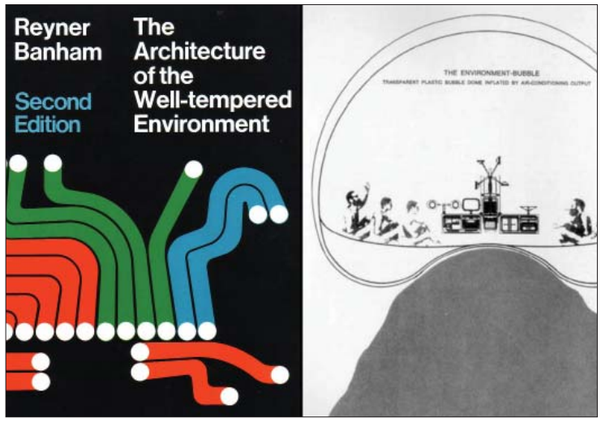


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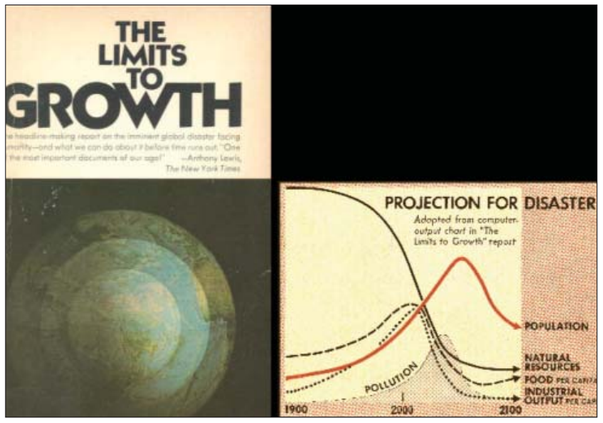


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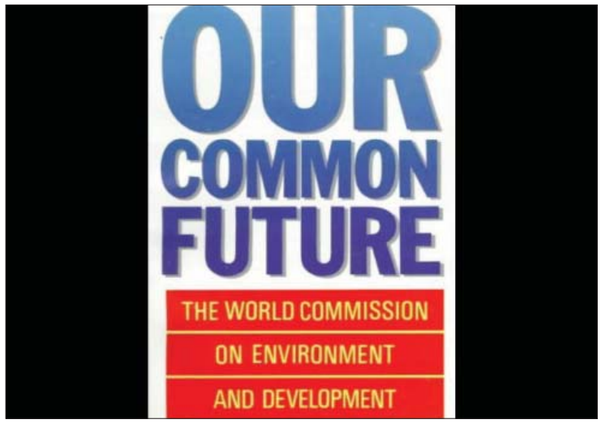


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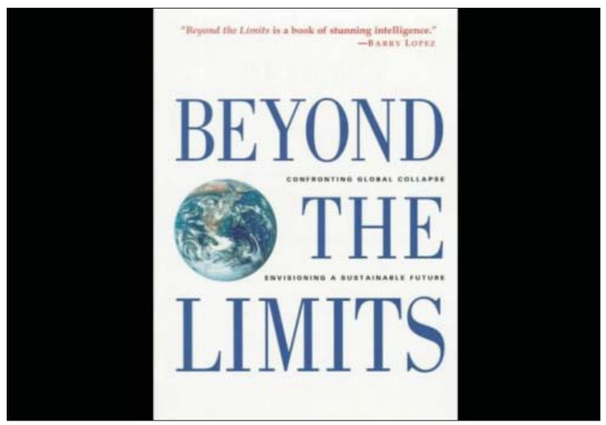


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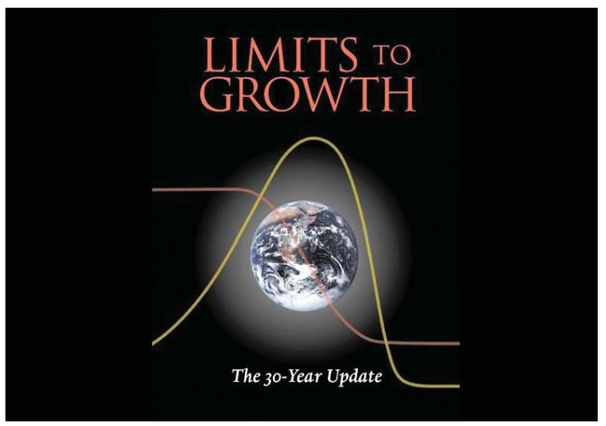


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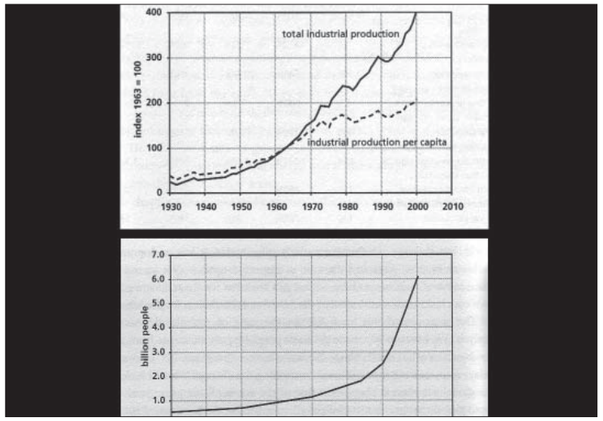


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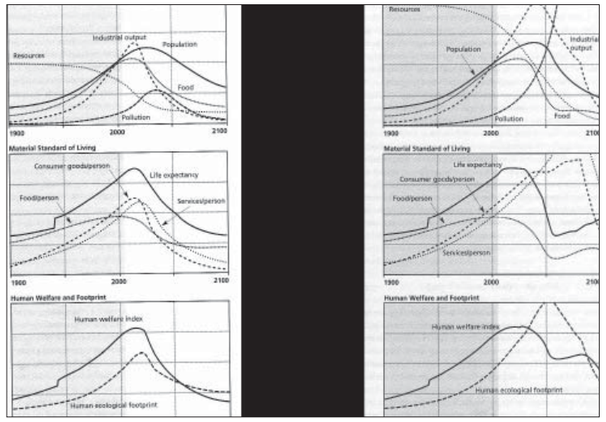


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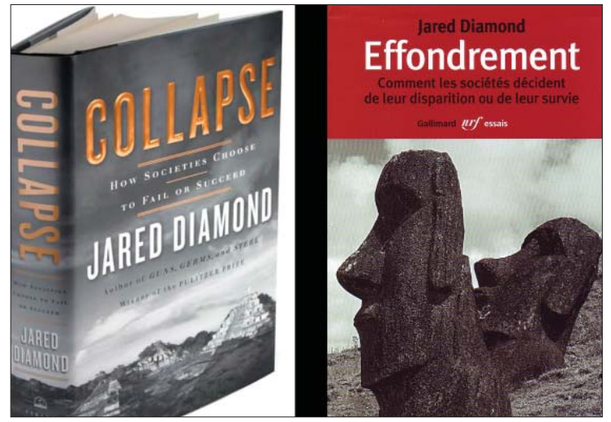


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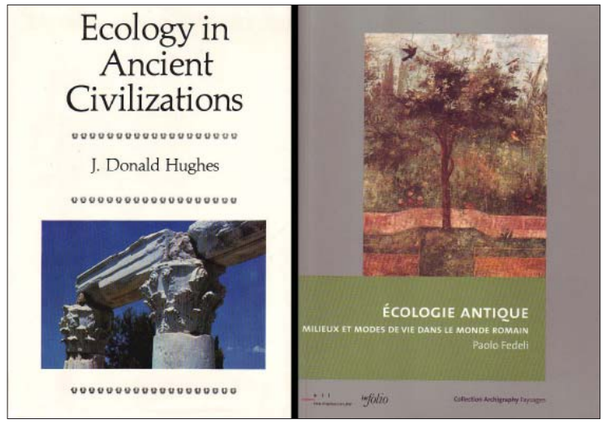


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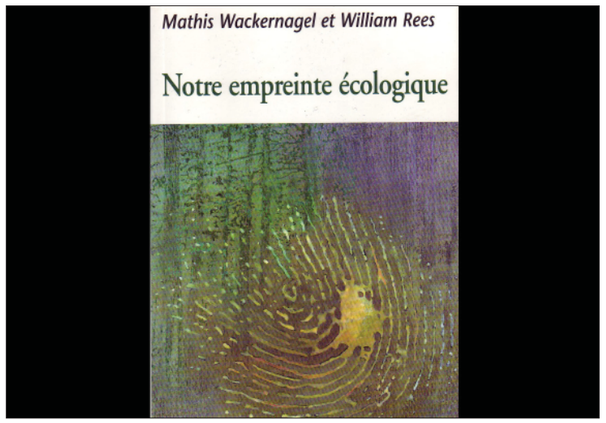


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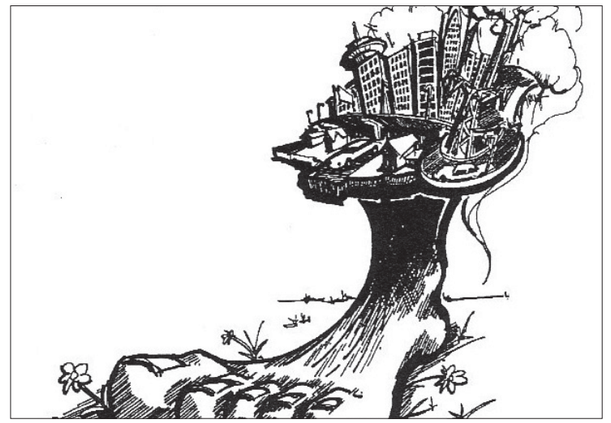

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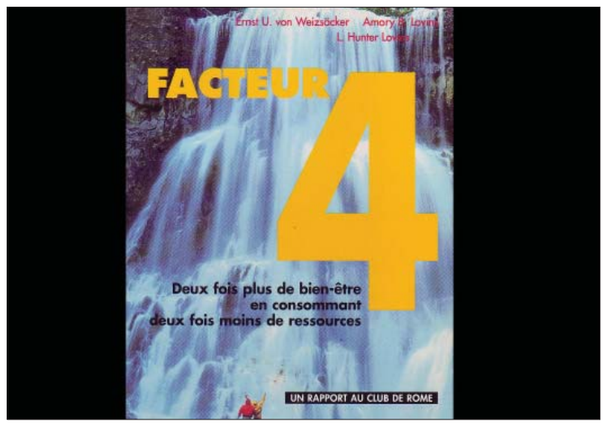


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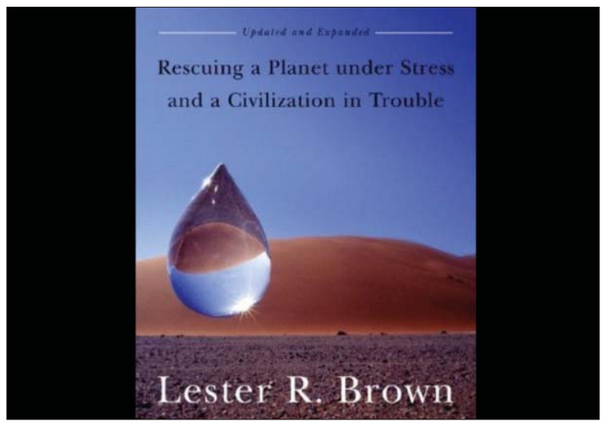


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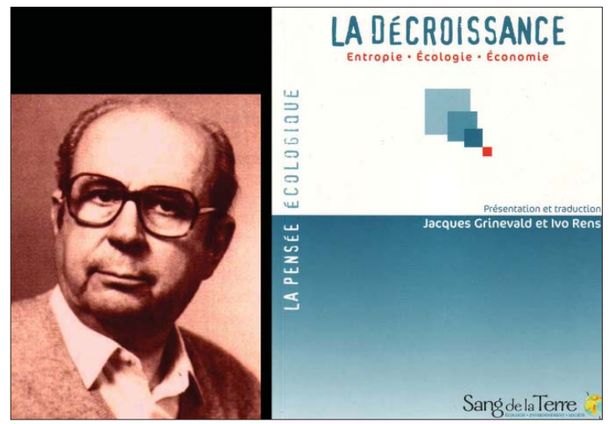


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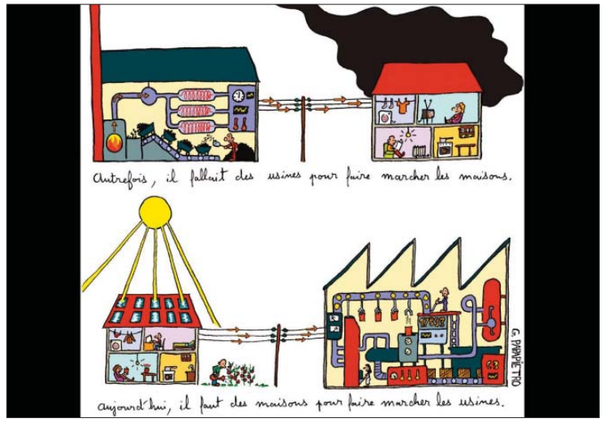


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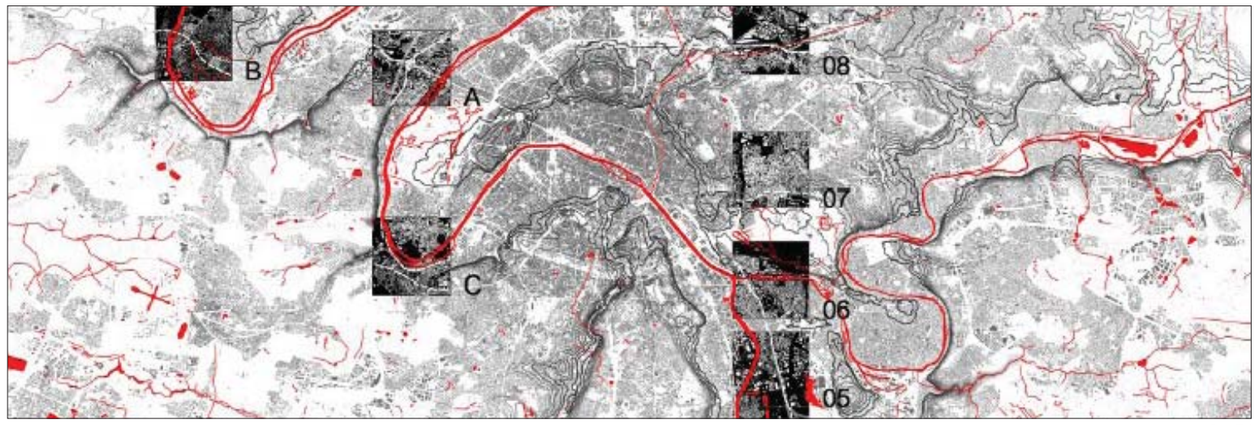


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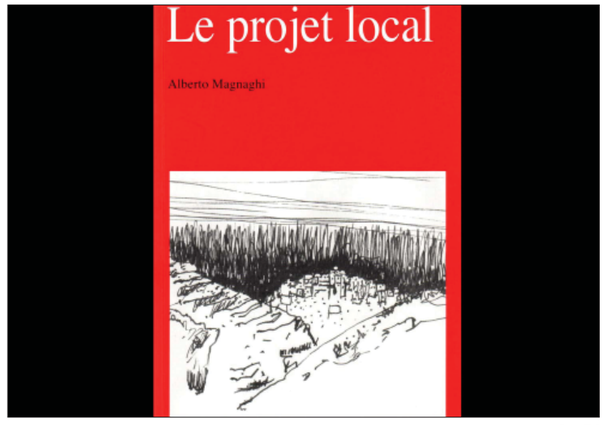


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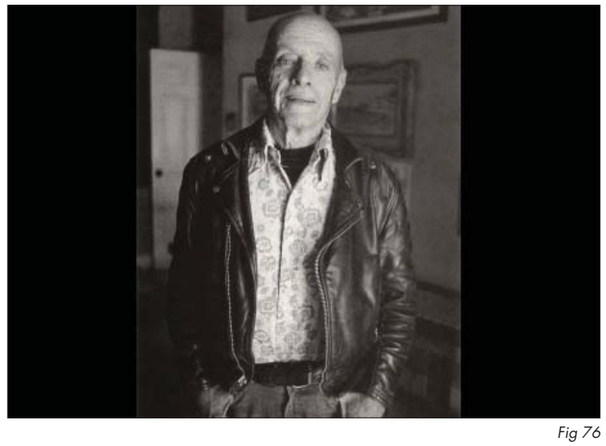

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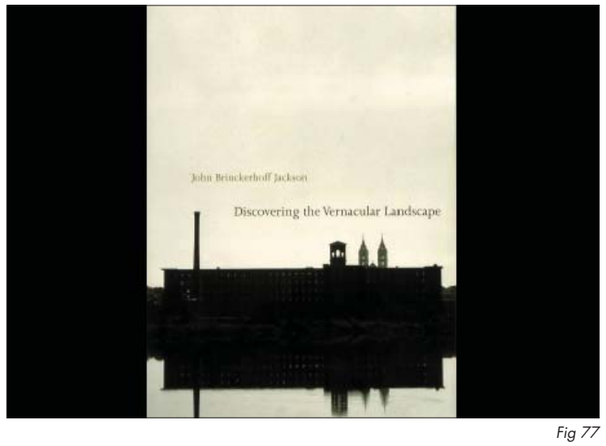


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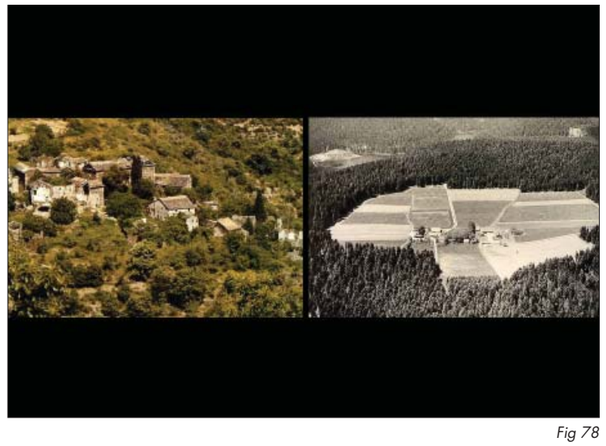

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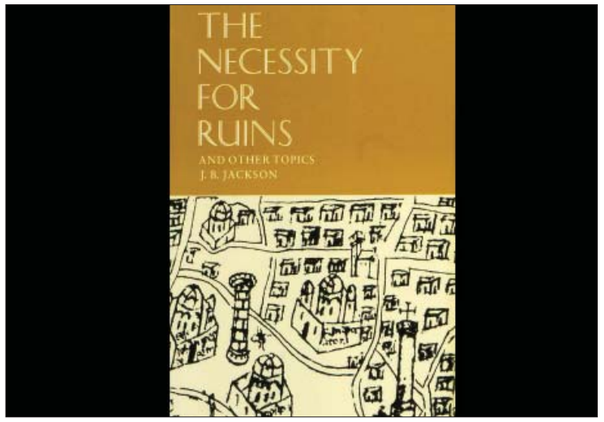


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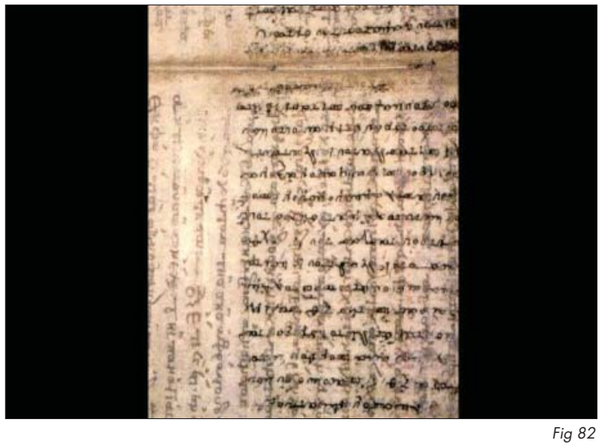

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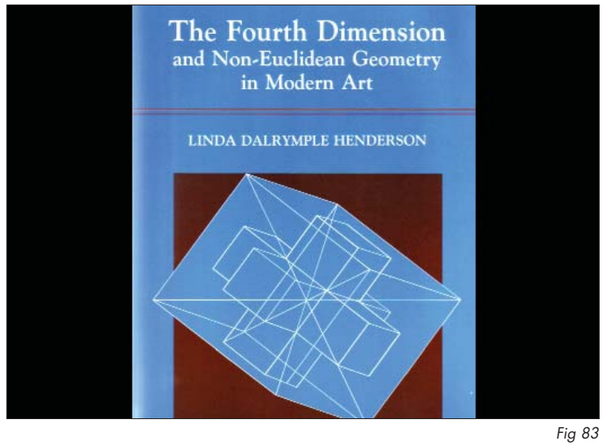


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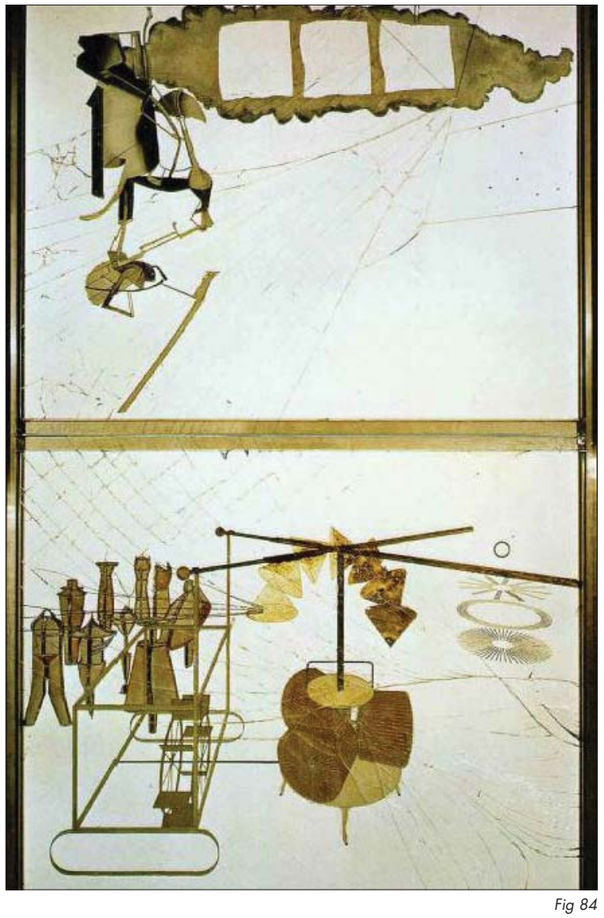

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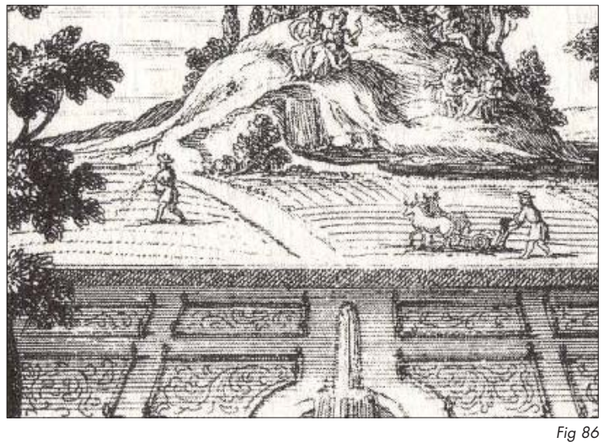

Fig 86

# BIOGRAPHIES

## Susannah Hagan

Susannah Hagan is professor of architecture at the University of Brighton (UK) and director of the interdisciplinary group Research into Environment and Design (R_E_D). For ten years she ran the Masters program Sustainability+Design at the University of East London. Her work with R_E_D centers on environmentally led urban design and the social and economic benefits it can bring to cities with environmental pathologies, whether shrinking or exponentially growing. She has written and lectured extensively on the theory and practice of environmental design in relation to contemporary architecture and urban design. Her written work  includes the books Taking Shape: the new contract between architecture and nature (Architectural Press, 2001), and Digitalia: architecture and the environmental, the digital and the avant-garde (Taylor & Francis, 2008).

## Kelly Shannon

Kelly Shannon is professor of landscape urbanism at the University of Leuven (Belgium) and member of the research group OSA/RUA (Research Group Urbanism and Architecture). Her research is at the intersection of urban analysis, mapping and new cartographies, design and landscape urbanism. Most of her work has focused on the evolving relation of landscape, infrastructure and urbanization in South and Southeast Asia (Vietnam, Sri Lanka, Bangladesh and India). She writes for a number of European magazines and she is co-editor (with Bruno De Meulder) of Explorations of/in Urbanism and Urban Fascicles, two book series published with SUN (Amsterdam) and she has co-authored The Contemporary Landscape of Infrastructure (with Marcel Smets, published in 2010 by NAI, Rotterdam).

**Sébastien Marot**

Sébastien Marot is a philosopher and a critic in architecture and landscape design. He teaches at Ecole Nationale Supérieure d'Architecture de Versailles (ENSAV) and at Ecole d'architecture de la ville & des territoires Marne-la-Vallée in Paris. He has been a guest-professor at the Institute of Landscape Architecture at the ETH in Zürich and he has also been program director of the Société Française des Architectes in Paris and chief editor of the French periodical Le Visiteur. His researches and writings are particularly focused on the exploration of the temporal texture of sites and situations and the ways these may be addressed, expressed and constructed through design. His research aims at a theory of sub-urbanism. Examples of his work include Sub-Urbanism and The Art of Memory (London: AA Publications, 2003) and The Reclaiming of Sites in Recovering Landscapes (ed. by James Corner, New York, 1999.

**Center for Urban Planning**

The conference *Ecology and Urbanism* was organized by professor Jens Kvorning and PhD student Victoria Sjoestedt from the Center for Urban Planning at the School of Architecture in Copenhagen. The Center for Urban Planning has as its primary task to collect, organize and disseminate knowledge on urban planning practice and research, as well as to carry out independent research projects in temporary national and international research constellations. Main focus areas are globalization, urban restructuring, sustainability and strategic urban planning. Jens Kvorning is head of Center for Urban Planning and professor of urban planning at the School of Architecture in Copenhagen. Victoria Sjoestedt is an architect and industrial PhD student at the Center for Urban Planning and at Schmidt Hammer Lassen architects. The topic of her PhD project is sustainability in relation to residential planning in China.