EDITORS’ INTRODUCTION

In assembling this issue of the IJIS, we consciously employ process evocative of the bricoleur—one who collects seemingly disparate objects, meanings, formulations, then places these together to arrive at new understandings. Such “assembling,” however, is neither haphazard nor absent direction. Rather, the bricolage itself is a response both to what is and to what can be.

Readers will find a diverse collection of offerings—reflective of the range of topics which Illich himself and his friends (those who thought along with him) considered. Most notable is the collection of writings (19) authored by Illich friend and collaborator, Jean Robert. Organized and introduced by Sajay Samuel and Samar Farage (“A Pedestrian Thinker”), these essays reveal a kind of scholarship that is at once multi-disciplinary (historical, philosophical, sociological, political) and “grounded”—ever mindful of its implications for people and the places in which they dwell. In this latter sense, we learn from Robert even as we learn about Illich.

Learning and thinking with Illich are themes explored in Carl Mitcham’s essay, “Teaching with and Thinking After Illich on Tools.” As both an account of their teaching collaboration during Illich’s visits to Penn State University in the 1990s and an effort to build a philosophical “bridge” joining West and East—something Illich himself endeavored to do—Mitcham’s account, his “struggles,” provide a much needed and appreciated “thinking after” Illich.
In “Struggling to Live Within the Storm, with Ivan Illich” (Gustavo Esteva) and in “The Elections of 2016: Fears and Hopes of a Brown-skinned Immigrant (Lakshman Yapa), simultaneously commentaries on what has been, what is and on what might be, again we find a “thinking after Illich”—extended reflections on the social transformations, as well as the “reforms”—the turning around of one’s own heart needed in these times of multiple and interwoven crises.

Finally, in Shouse and Bai’s, “Critical Thinking and Convivial Learning in Central China” and Stuchul and Prakash’s, “Joys of Teaching Genius: Walking on Water with Ivan Illich,” themes of learning, of interculturality, and of possibilities beyond social constructions of scarcity bring this issue to a conclusion. We are humbled and delighted to offer this bricolage of possibilities for thinking, for acting, for being.

Dana L. Stuchul and Madhu Suri Prakash

Co-Editors
A Pedestrian Thinker

Sajay Samuel & Samar Farage

Confronted by the writings of Jean Robert, one experiences, or rather, senses the possibility of the derailment of one’s thinking. It is as if, at first, the reader is invited to sample a pleasing smorgasbord of ideas and historical curiosities — the Greek goddess Hestia appears there, Einstein makes a showing here. In one essay, a painting by Turner is proposed as a doorway to understanding the first experience of the railway journey. In another essay, a proportion is set up so that the world of orality is to historical domesticity as literacy is to planned cities. There are some seventeen papers collected here, some published but most unpublished, arranged under broad themes — Architectural Theory, Space, Speed, and Energy—which though distinct are related. Beguiled by these riches on offer, a reader could be forgiven for skimming along the surface of his writings. Yet, when the reader carefully reads these texts, they would pose a challenge, a threat, and an invitation. These essays challenge what we take-for-granted, they threaten our self-understanding, they dare us to think afresh, which is the only kind of intellectual effort worth pursuing. The reader is then impelled to make that exhilarating and perhaps dizzying effort to discover what, if anything, holds these essays together, to uncover the red thread that runs through these writings, to identify the nerve center animating the thought in motion.

We came to know Jean Robert between 1985-1995 during his sojourns at Penn State University. He was then a member of the itinerant group of thinkers and scholars that gathered around Ivan Illich. In one respect, little has changed about Jean in the 25 odd years we have
known him. The shock of white hair atop a ruddy face marked by piercing blue eyes, the lean
frame that could unfurl to an imposing height, and above all the inquisitive and fiery intellect
devoted to recovering the past as a foreign country. Against the grain of a powerful prejudice to
legitimize the present by “retro-projecting” (a term due to Jean) it into the past, Jean insists on
tracing the fractures between now and then. This insistence on unearthing the discontinuity of the
present is not born of a scholar’s conceit. Nor does it reflect the antiquarian’s curiosity. Instead,
Jean suggests there is no better way to be freed of one’s mental prisons than to realize how its bars
were formed. Indeed, even the choice of language in which Jean wrote these essays is an
element in that cultivated attitude of estrangement. He speaks many languages fluently, but
perhaps is most comfortable writing in French or German. Yet, he wrote these pages in English, to
both mark the truth of his distance from the historical realities he writes about and to introduce the
reader to that frisson of strangeness which, at least on occasion, may require him to sound the
texts out loud.

Perhaps this attitude of foreignness to the present was formed when Jean was, as a fresh
graduate of the Swiss Federal Institute of Technology (ETH) in the 1960s, involved in designing
a bank in Zurich. Or equally when a few years later he was engaged with what then passed for an
incipient “urban planning” in Amsterdam. In any case, the post war reconstruction of Europe also
meant the definitive erasure of the historically lived materiality of the European city. A man of
his acute sensitivities could not have been unaffected by the sprawling modernist dreamscape that
was reshaping Europe. But perhaps more poignant must have been the erasure of collective
memory, the drying up of the fount of remembrances that once connected the past to the present.
The war did not only ruin the physical city; it also obliterated the remembered city.

Some men are lead to the foreignness of the past precisely because they don’t feel at home
in the present. Is it any wonder that Jean’s thoughts on architecture run parallel to and feed off the
works of Richard Sennett (Flesh and Stone: The Body and City in Western Civilization), Jane Jacobs (The Death and Life of Great American Cities) and, preeminently, Joseph Rywkert (On Adam’s House in Paradis: The Idea of a Town). The first series of essays in this collection on architectural theory is a remarkable investigation into the coincidence of material culture and modes of perception. But above all, they present a caution to the excesses of an architectural theory that now programs daily life within computer-generated spaces. These essays alert the reader to the profound denigration of man who is coded into a built environment whose first reality is virtual.

In the mid-sixties, working as a draughtsman in an architectural firm in Amsterdam — an Amsterdam suffering the inferiority complex of being pedestrian and desperately wanting to modernize — exposed Jean to the derangement of the modern sensibility. A city full of cars and devoid of pedestrians, a city filled with the roar of buses but emptied of swish of bicycles, is what planners and politicians then wanted. The contrast with the adobe huts and smelly streets of Mexico where he ended up in the early 1970s could not be more stark. And yet, that contrast afforded him a glimpse into the chasm between the present and the past.

What are the assumptions, the cultural warps and wefts, that constitute the foundations of how we think? What are these constructs called space and speed? Are these unhistorical facts — space as the three-dimensional void to be filled and speed as the ratio of distance to time — or do they belong to a specific historical epoch? The set of essays contrasting the plenitude of place against the void of space is not only a trenchant recovery of a historical truth. It is also a call to wakefulness. The seemingly inexorable metastasis of designed spaces, of planned cityscapes (one need only think of China where some “cities” are built even before people live there) is anchored in the void of space. Spaces, argues Jean, are not habitable as are places. We are now led, as in a dream, into the world of non-places imagined by the planners and architects. In a similar vein, he
uncovers the historicity of speed. “Speed” is the hidden fuel that powers a cityscape built around bullet trains, cars, and information superhighways. Along the vector of “Speed” a pedestrian can be compared to a car driver, a mule to a Maserati. In a world built for speed, what is visible is sundered from what is physically possible. The view from the airplane or from behind the windshield of a speeding car is nothing that can be grasped. As Jean says, “speed breaks the overlapping of the visible world with my motor projects.”

The two essays on energy, while the shortest in total pages, are perhaps the most potent of them all. After all, is not “energy” at the center of our collective predicament in the so-called age of the Anthropocene? Industrial man has reshaped his conditions of existence by the use of fossil fuels. And now, clean energy, electric cars, Rio agreements, and Paris accords are some of the ways that earnest folk attempt to forestall the hour of our destruction. Jean spent a great many hours in the archives of the University of Marburg in Germany to unearth the writings of such forgotten thinkers as Sergei Podolinsky. It is by now well-established that neoclassical economics is but an inadequate copy of 19th century energetics. Yet, the effort to construct economics as a physics of society continues apace. Remarkably, what Jean Robert shows is that mid-19th century physics itself must be understood as a naturalization of economics. That is, the queen of the natural sciences was built on the principle of scarcity (think of the second law of thermodynamics), which is but a figment of economics. But more pertinently, a different understanding of “energy,” as for instance proposed by Podolinsky, could have led to a social geography scaled to man’s capacities. At the scale where man is the measure of all things, the Anthropocene could not have come into being. Nothing less than this radical insight lies at the center of these two essays on energy.

Very recently, the physicist Geoffrey West published a widely acclaimed book titled
In it he reports some of his work with Dirk Helbing who is now at the very same ETH that Jean graduated from more than 40 years ago! What these scientists mean by scale is the quantitative relationship between city size and other characteristics of a city. For instance, there appears to be a stable quantitative relation between the number of gas stations and city size measured in population. Regardless of where in the world these cities are, all of them exhibit a systematic economy of scale: the larger the city, the less it needs per capita of infrastructure — pipes, roads, wires, and gas stations — and the more it produces of so called socioeconomic quantities — number of restaurants, professionals, patents and...crimes!

Such desiccated calculations of power laws are certainly not what Jean means by scale when he writes of Podolinsky’s “use of the energy concept as a scale to evaluate and measure human labor...” (emphasis in original). Here, scale refers to the objective proportion between the human body and its capacities and the built world. As such, cities built to scale would be those that are able to carry the imprints of its inhabitants, those that are shaped by the daily activities of its inhabitants, those that express the living power of its residents. Such cities would not be enmeshed in the circuits of production, distribution and consumption that now span the earth. Instead, cities scaled to the living power of its citizens would reflect their efforts to grow what they eat, to build where they live, and their search to find the appropriate relation or scale between what they want and what they can do.

For over five hundred years, many have fought the war waged against their subsisting. The expropriation of the commons is perhaps also the best metaphor of the continued stratagem of power to subdue and harness the essentially indeterminate capacities of the human animal. Historians — from E.P Thompson and Eric Wolf to Mike Davis — have recorded the diverse forms that the uprisings of peasants and poets have taken to combat being managed from afar.

More recently, such struggles against the dispossession of land and labor has prompted a new style of politics: not a politics of office holders, of the articulation of power, of the glorification of laws and rights. Instead, like Jean and the Zapatistas — with whom he thinks and works — these fighters partake of a politics of presence, of attention, of forging in the crucible of mutual presence, a “we” that then constitutes the “you” and “me.” That the forgoing could sound mystical to some ears only underlines the extent to which the contemporary mind has been systematically trained to confuse the completely virtual (“friends” on Facebook) for the extremely concrete.

We began this introduction by asking if any principle or idea or notion holds these essays together. We now have a tentative answer: Jean Robert is a pedestrian thinker. In English, the word pedestrian appears first as an adjective (1619) and only then as a noun (1791). The adjective pedestrian meant then, what it does now — dull, ordinary, slow. It was first used to describe styles of writing — pedestrian writing was prosaic and ponderous, perhaps in contrast to an “equine” style of writing — which was presumably lighter and more exciting. After all, in the everyday experience of the early 17th century, only horses moved faster than people. The noun — pedestrian — refers to the one who walks or even runs. In either case, the pedestrian is a biped whose feet have not fallen into desuetude. We, English speakers, denigrate pedestrians for being slow and backward, we mock pedestrians for being pedestrian. Our denigration marks the extent to which we have been lifted off our feet. Our mockery reinforces the tar and rail roads that separate the ground from our feet. Thinking with Jean Robert requires nothing less from us than letting the scales fall away from our eyes. To read Jean Robert properly and with propriety demands that we shed the half-millennium long prejudice against being pedestrian.
Autonomy and Heteronomy in Architecture Theory: Part I

The Potential Conflict Between the Art of Building and the Act of Dwelling
(2000)

Jean Robert

Again and again, architecture theorists like to quote Adolf Loos’s parable about “the poor rich man.” But, do they really understand the lesson?

As the story goes, a newly enriched man wanted to celebrate his change of status by asking the best architect in town to build him a new house. Everybody worked hard, and after a couple of months, the rich man could move in into his new residence. The architect had thought of everything, for instance, the color of the bedroom’s wallpaper was harmonized with that of the man’s and his wife’s nightgowns, and even with the special slippers that they were supposed to wear in that part of the house.

The rich man was really happy, and, like Emperor Nero in his Golden House, he could have exclaimed: “At last, I feel fully human.” Architectural journals widely publicized the mansion and described its owner as a man who had made a work of art out of his life. In fact, there was not a single act of his daily existence that was not art.

This euphoria lasted until the man’s birthday. At this occasion, his house was invaded by his new adulators who filled the living room with their gifts, all meant to be contributions to the man’s art of living. After they had left, passed midnight, the rich man inspected the gifts and tried to figure out where each of them would fit in his artwork.
Suddenly, the architect emerged from behind a curtain and ordered: “Remove immediately all that trash. You hired me because I am a renowned artist and you wanted me to provide you with a perfect life. Your house with you inside is my major work and I will not let you defile it. Besides, look at your feet: those pink slippers belong to the bedroom, not here in the living room.” The rich man realized at once that what his architect called a perfect life was a life to which he had nothing to add. “I am perfect: I am a finished man,” the poor rich man moaned.¹

When he wrote that joke in 1908, Loos wanted to deride the pretentions of the architects who thought of themselves as “general artists of life” (“Gesamtkünstler”) while allowing their clients almost no vital decisions over their own vital space.

Yet, in spite of that early warning, more than one modern architect played god with their clients. See for instance what happened to poor Mrs Edith Farnsworth, one of Mies van der Rohe’s first American clients. Middle-aged, single and professionally successful (she was a nephrologist at a Chicago hospital), Dr Farnsworth met her future architect at a party in 1945. When she ushered her desire to create a retreat in which to escape the loneliness of weekends in the city, Mies immediately offered her to design it. He would not charge any architect’s fees. Mrs Farnsworth had already bought a piece of land in a place called Plano, 60 miles west of Chicago, near the Fox River. A visit to the site with her architect elated both.

She (in her Memoirs): .”..the effect was tremendous, like a storm, a flood or other act of God.”
He: “I would think that here where everything is so beautiful, and privacy is no issue, it would be a pity to erect an opaque wall between the outside and the inside. So I think we should build the house of steel and glass; in that way, we’ll let the outside in.”

A project was soon done. It was displayed at the exhibition of Mies’s work at the Museum of Modern Art organized by Philip Johnson in 1947. Edith Farnsworth felt proud of the project and

of her role in it. From that point on and for all the three subsequent years, she felt more a patron than a client.

Construction was started in the summer of 1949 and lasted about one year and a half. When Farnsworth finally moved in, in December 1950, nothing really worked: the roof leaked, the heating reeked, and building costs amounted to twice the original estimates. The patron became an ordinary client again, and she complained. The architect answered by claiming owed fees for architect’s and supervisory services, amounting to 20% + 15% of actual building costs. Counterclaims followed claims until the matter was finally settled in 1956. Meanwhile, Farnsworth tried to make a home out of the glass house that one of the world’s leading modern architects had built for her. She confessed to a journalist:

The truth is that in this house with its four walls of glass I feel like a prowling animal, always on the alert. I am always restless. Even in the evening. I feel like a sentinel on guard day and night. I can rarely stretch out and relax....What else? I don’t keep a garbage can under my sink. Do you know why? Because you can see the whole “kitchen” from the road on the way in here and the can would spoil the appearance of the whole house. So I hide it in the closet farther down from the sink. Mies talks about “free space”: but his space is very fixed. I can’t put on a cloth hanger in my house without considering how it affects everything from the outside. Any arrangement of furniture becomes a major problem, because the house is transparent, like an X-ray².

The Farnsworth House was to become an emotional *cause célèbre* invested with meanings that went far beyond matters of architectural design³. Architectural journals, like *House Beautiful, Architectural Forum, House and Garden*, successively publicized the case until it became the object of a national debate on “Good and Bad Modern Houses.” While this publicity eventually contributed to the architect’s fame (he could discuss his ideas with famous architectural critics) it was no benefit to his client. Once the case was brought to the attention of the public, crowds of people came on weekends to look at the house “reputed to be the only one of its kind,” but in reality
“a one-room, one story structure with flat roof and glass and steel outer walls.” In her memoirs, Farnsworth wrote that she found it, hard to bear the insolence and boorishness of those who invaded the solitude of my shore and my home... flowers brought in to heal the scars of the building were crushed by those booths beneath the noses pressed against the glass.

In spite of all, Edith Farnsworth managed to stay nearly twenty years in the glass house, working to make it a home. But she finally gave up: in the early 1970s, she sold the house and moved to Italy. She had been for too long the object of other people’s curiosity, too long a non-conformist. Now, she wanted nothing more than to become invisible: “Now I would prefer to move as the women do in the Old Quarter of Tripoli, muffled in unbleached homespun so that only a hole is left for them to look out of.” Best of all, she said, the world outside would not even know where the hole was.

Last spring, I visited Mies van der Rohe’s Museum of Modern Art at Berlin’s Kulturzentrum. Few works of architecture affect me so powerfully. The architectural promenade through the museum lets you with the sensation that every particular space opens to a half mysterious beyond, that you are on transit to the place where the gods play with numbers and proportions (and, as Mies said, reside in the beautifully crafted details). The Cistercian simplicity of the forms, the clever clarity of the composition, the naturalness of the light, the presence of the garden “in the inside” before it becomes physically accessible, all contributes to a feeling of great complexity, a word that here almost means the contrary of complication. A splendid “leçon d’architecture.”

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2 Quoted in Alice T. Friedman, “Domestic Differences...,” op. cit., p. 188.
5 Quoted in op. cit., p. 187.
True, the architecture is so interesting that you almost forget to see the paintings on the walls. As to the sculptures, they seem to engender their own “Eigenspace” and to modify the “metrics” of space perception. Every time I visit a work by Mies van der Rohe, I discover new aspects of it, am elated by the manifestation of always new intentions. His spaces are literally extraordinary. They are for very special moments. They put you out of yourself.

Would I like to spend my ordinary life (with its apparent disorder, its need for changing arrangements) in them? No. Yet Mies found patron-clients who have been said to appreciate just that: being put out of themselves, estranged from ordinary circumstances, “defamiliarized.” So confirmed Grete Tugenhat, one of Mies first European clients, over the effect her house had on its inhabitants: “A person appears, both to himself and to others, to be more clearly set off from his surrounding.” As to Mrs Farnsworth (obviously not a he-person), she experienced this being set off as a repression of her being a woman. Her house was no real home to her.

What are the lessons of Mies van der Rohe’s “leçons d’architecture”? Let me try suggest these: A home is what you make of the house that has been made for you. A house is “homeable” when it lets you touch it. A house of untouchable perfection is hardly homeable.

How do contemporary architecture theorists understand this lesson of a lesson?

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I found a striking formulation of the synergy of autonomy and heteronomy in architecture in a paper by Prof. Joseph Rykwert: “House and Home” which I will comment on shortly. In this paper, Rykwert writes:

Home is where one starts from. That much is obvious. A home is not the same as a house, which is why we need two different terms. Does a home need to be anything built at all, any fabric? I think not. Home could just be a hearth, a fire or the bare ground by any human lair. That may well be the one thing that nobody can quite do without: a fireplace, some focus. After all, if a home had no focus, you could not start from it.

House refers to an inert object. On the contrary, home refers to a situation, an activity: it is always in the process of making.

Home does not require any building, even if a house always does. You can make a home anywhere: a little tinder, even some waste paper, a few matches, or a cigarette lighter is all you need. But a house must be brick and timber, mortar and trowels, carpentry and masonry, foundation and topping off: and it requires taking thought.

But in Mexico, a home can consist of four poles, some beams and a roof of palm leaves or of tar paper. Or is a shack not a home? House is something that is done for you, home is what you do, by yourself and for yourself, sometimes thanks to, sometimes in spite of the architect.

The Latin word whose meaning is closest to home is domus, from which domestic and

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domesticity stem. *Domus* never means the physical structure, though it is often translated as house. *Domus* is a notion related to the family, and connotes homeliness, and even “peace”: its meaning is social and moral, never material. Home requires stability, spatial and social “recognizableness,” that is orientation, and possession, which demands a relation to the soil (to a piece of land, but “land” is an imperial concept) and so a protection against extradition. For the Romans, a man’s threshold was so sacred that even the emperor could not trespass it. Another Latin word is *mansio*, from *maneo*, I remain or abide, from which the early Middle Ages derived the word *mansus* (OG *huoba*, modern German *Hufé*, words akin to Greek *kepos*, a garden), which connotes a dwelling place by the soil needed to establish it. In the IXth century, the *mansus*’s material complement was called *casa*, a "hut" and was often precarious, dispersed and mobile. The Greek even has a verb for the establishment of such a two-faced dwelling place: *oikodomeo*, I break a piece of land open, for cultivation or building, I found, I edify. That verb combines the root *dom*, meaning to build (or perhaps, only perhaps, to tame?) and *oikos*, the Greek word more akin to home. When the Roman wanted to specify that he meant the physical house, he would say *aedes*, a thing built (hence: *aedifico*, a verb built by learned Romans to translate *oikodomeo*).

The architects’ business is to build houses, not to establish homes. It is “with structure, with physical fabric, with limit, with context.” Perhaps one of the most doubtful effects of the modern movement is the demise of the distinction between house and home. But, as we shall see later, the

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2 Rykwert, op. cit. pp. 3, 4.
3 Émile Benveniste, *Le Vocabulaire des Institutions Indo-Européennes*, Paris: Les Éditions de Minuit, 1969, vol. I, p. 307 (cf. also vol. II, p.90 on *demos*) insists that Lat. *domus*, Gr. *domos* (the physical house as opposed to *oikos*), and Lat. *domare* as well as Gr. *domaio* (Engl. tame) derive from three distinct and irreducible, though homophonic roots: 1. *doma*, to exert a “domesticating” violence, to “tame”, to establish a *chora* or cleaned field (hence Gr. *chorites*, country-man); 2. *dem*, to build (hence English *timber*, Greek *domos*); 3. *dem*-, house, family, group sharing a territory (hence Greek *demos*). In spite of their striking homophony, Lat. *domus* (from *dem-*) and Gr. *domos* (from *dem*) do not have at all the same origin nor do they have the same meaning, since *domus* is the home and *domos* the house. As to *oikodomeo*, though it meant to build in classical times, its original meaning can hardly have been the equivalent of *aedifico*, for such meaning would have been rendered by a (non-attested) “domodomeo.” In spite of all, *doma* and *dom* might have a common origin. In this context, remember that in German, *bauen* means both to build and to cultivate, two activities that required a founding act.
“postmodern” reaction is as questionable.

Obsessed with the detailed working of the home where every movement was planned, where a bed would never stand under a window and baby-carriages could be stored under the stairs, they forgot that their business was with house and not with home\textsuperscript{5}.

This can be seen as a consequence of the reduction of the complexities of the web of personal interactions called home to catalogues of “functions” meeting standard “needs.” In this respect, Rykwert recalls the lesson that the Austrian writer Karl Kraus tried to instill in architects and planners:

... he said that he expected the city to provide him with water, gas, electricity and working roads: \textit{die Gemütlichkeit besorge ich} - I will supply the homeliness, he said\textsuperscript{6}.

In his article, Rykwert also clarifies an issue blurred by a fashionable interpretation of vernacular building as “architecture without architects” (he is an adversary of the (ab)use of the expression “vernacular architecture”):

Without wishing to digress, I would like to remind you of a very popular slim book, full of beautiful images, published some years ago, which was called \textit{Architecture Without Architects}, as if such a thing were not a contradiction in terms. It suggested that the shelters of monkeys and the dams of beavers were analogous to those of “untutored builders in space and time,”\textsuperscript{7} nomads, peasants and suchlike, whose houses had evolved from those of the animals without any need for deliberation - like the animals, they worked by instinct.[...]

Yet, I suspect that if one were to investigate any of the human dwellings illustrated in Rudofsky’s book, however “instinctual” they may appear, one would soon find that many were produced by specialist craftsmen who could be very articulate indeed about what they were doing. Their notions may have been framed in terms of legends - yet their accounts of them would often contain the word “because.”\textsuperscript{8}

Rykwert further stresses that there is no building that does not involve decision and choice,

\textsuperscript{8} Rykwert, op. cit., pp. 4, 5.
concertation, in short a project, even if it is justified and glossed “in mythical terms, and given some specific legendary weight.” Deliberating, making decisions and choices, and glossing, in short, “taking thought about building” is one of the several useful definitions of architecture—which is where I come in.” In that peculiar respect, there is no specificity of “vernacular architecture” that would oppose it definitionally to “pedigreed architecture.”

Rykwert’s essay ends with an indictment of an architecture that “packages a life-style” without thinking of the context because it has lost the sense of its own limits:

Look at the real-estate advertising in New York papers with this in mind. If a home is offered you on the sixty-ninth floor of a pencil-sharp skyscraper, know for sure that the sidewalks and indeed the surroundings of the building will be the purlieus (if not the homes) of the dispossessed, however many the varieties of the marbles which line its walls, or photo-eyes blink from its cornices.

He concludes:

I must therefore plead with my contemporaries to reassess the conjunction between house and home.

How do other architecture theorists celebrate the conjunction of home and house or ratify their modern and postmodern disjunction?

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Autonomy and Heteronomy in Architecture Theory: Part III

The Disjunction of House and Home
in Contemporary Architectural Theories
(2001)

Jean Robert

Instead of an assessment of the conjunction of house and home, contemporary architecture theorists have raised what they call the question of domesticity. As will become obvious in the following pages, this questions in tangential to that which interests us: it cannot be said that it does not touch it, but it does not settle on it. It rather uses it as an entry to some virtual spaces.

Let’s thus examine how contemporary architecture theories touch the question of the conjunction between house and home. Rather than conjunction, they predicate disjunction, rather than reassessment, dismissal. For example, Marco Diani and Catherine Ingraham write:

The insatiable and complex demand for physical comfort—for the “axis,” which is one of the paths “home”—in all architectural buildings (even the most austere) stands directly against experiments in building, or even thinking, the grotesque, the pluri-dimensional, the ideological, the sublime.¹

It is true that architecture is taking thought about the building of houses, not about homes. But should not a house be the shell of a possible home? Many architecture theorists write as if they were thinking that it shouldn’t. But how do they, personally, live that disjunction?

Besides, I don’t think that the words physical comfort here mean exclusively a state of

¹... as Mrs Farnsworth could indeed testify, see Marco Diani and Catherine Ingraham, “Introduction,” in Marco Diani and Catherine Ingraham, Restructuring Architecture Theory, Evanston, ILL: Northwestern University Press, p. 1.
satisfaction or homeostasis with the surrounding world. It should rather be understood in the verbal
sense of comforting. I understand the search for comfort as a longing for an “axis,” for what
Rykwert calls “focus”: the axis that, through the hearth, relates the underworld to the upperworld,
and that many cultures symbolize by the tree or the column of smoke that brings the flavor of
human libations—fruits of the soil and the underworld—to the gods. Yet, we hear that this longing
stands against experimenting and even thinking in architecture. Is a house the abode of autonomous
dwelling acts by the dwellers themselves (in which case it becomes a home), or is it the laboratory
for the architect’s experiments with “the grotesque, the multidimensional, the ideological, the
sublime,” and hence a space whose inhabitants are submitted to the other’s law (heteronomy)? Most
of the architectural theorists reviewed here favor the latter.

In other words, house and home are disjoined and, as I will try to show, each leads a
separate existence: the building, or for this effect, the house as an object of experimentation, and the
home as the repressed that inevitably resurfaces, as for instance in the search for communitary
security and orientation of the Latin American squatters, or, quite differently, in the staging of a
dismantled “domesticity” by some artists and architects.

Yet, if architecture theory refuses to settle on the conjunction of house and home, where
does it want to head? The answer might be: to some virtual space, beyond all past literary
imagination. But again: is such space inhabitable?

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2 See for instance: Lisa R. Peattie, View from the Barrio, Ann Arbor, MI: The University of Michigan Press, 1968; John Turner,
“Housing priorities, settlements patterns, and urban settlements in urbanizing countries” in the Journal of the American Institute of
Planners, November 1968; William Mangin, Peasants in Cities. Readings in the Anthropology of Urbanization, Boston, Houghton
bibliography, pp. 127-136.

3 For a statement of “postmodern,” dismantled and disembodied domesticity, see Christine Poggi, “Victor Acconci’s Bad Dreams of
Domesticity,” in Christopher Reed, ed., Not at Home: The Suppression of Domesticity in Modern Art and Literature, London:
Thames and Hudson, 1996, op. cit., pp. 237-252. For documentation about the return of domesticity in some contemporary
architecture (often by female or feminist architects, see the end of the article), Sharon Haar and Christopher Reed, “Coming Home, A
Postscript on Postmodernism,” in Christopher Reed, Not at Home, op. cit., pp. 253-273.
The Influence of Literary Theories on Architectural Theories

One of the striking things about architecture theory today is how badly it is influenced by literary theories and philosophy. These influences cannot be explained away as mere consequences of the disenchantment—starting in the sixties—with classical modernism. They are new imports, from domains other than the ones in which modern architecture had taken roots. In the heroic period of modernism, in the time of Bauhaus and de Stijl, architecture would import a formal language from the visual arts, mainly painting and sculpture, as well as forge some legitimizing slogans out of scientific metaphors (think of the theories of urbanism since Ildefonso Cerdà, with their tissues, their arteries, nodes and nervous centers), but it had little use for literature or philosophy. Architects then had their own literary and philosophical stamina, think of Le Corbusier.

Or perhaps would it be more appropriate to say that both contemporary literature and contemporary architecture share an interest in semiology? The following quote from Marco Diani and Catherine Ingraham seems to confirm it:

The implication of the refiguration of representation, which prepares the way for the presence of the past in postmodern architecture, can be seen by noting central insights that emerge in contemporary semiology. Signs, we have learned, do not represent objects or events that once were present. To the contrary, the sign is always the sign of a sign. Forever entangled in the play of signification, we never have access to things themselves and thus can never penetrate naked reality. What we often naively take to be objectivity is actually nothing other than a sign or set of signs whose signature has been forgotten. Inasmuch as we deal only with signs and never with “reality” as such, our knowledge is inescapably fictive. Unlike (almost all) his predecessors, the postmodernist not only recognizes but gaily embraces the fictions among which he is destined to err.


But architecture theory no longer expects from linguistics or semiology the “explanation” of architectural forms.

[The Opposition years have] given way with a noticeable loss of faith in the capacity of the linguistic and philosophical model to explain architecture, and thus a loss of faith in the transparency promised by the “age of textuality.” Perhaps this is because architecture cannot even be thought apart from “form” and formalisms.6

The architectural movement which calls itself “postmodern” vindicates the power to add signs to a world of signs, in absence of a beyond called reality.

Perhaps the literary concept that became most popular among avant-gardist architects is defamiliarization. Here is how Bernard Tschumi, a “deconstructivist architect,” justifies the cooption of that literary idea by architectural theory:

In recent years, small pockets of resistance began to form as architects in various parts of the world - England, Austria, the United states, Japan (for the most part, in advanced postindustrial countries) - started to take advantage of [the current] situation of fragmentation and superficiality and to turn it against itself. If the prevalent ideology was one of familiarity - familiarity with known images, derived from 1920s modernism or eighteenth-century classicism - maybe one’s role was to defamiliarize. If the new, mediated world echoed and reinforced our dismantled reality, maybe, just maybe, one should take advantage of such dismantling, celebrate fragmentation by celebrating the culture of difference, by accelerating and intensifying the loss of certainty, of center, of history. [...] In architecture in particular, the notion of defamiliarization was a clear tool. If the design of windows only reflects the superficiality of the skin’s decoration, we might very well start to look for a way to do without windows. If the design of pillars reflects the conventionality of supporting frames, maybe we might get rid of pillars altogether7.

The term defamiliarization is a translation of ostran(n)enie, a Russian word meaning “making strange,” “unfamiliar” popularized by the Russian Formalists, a school of literary criticism that began in two groups, Opojaz (an acronym) founded in 1916 at St. Petersburg and led by Victor Shklovsky and the Moscow Linguistic Circle founded in 1915. Both groups were influenced by the

linguistic theories of Ferdinand de Saussure. They stressed the autonomy of the text and, more important for our purpose, the discontinuity between literary and other uses of language. They placed an “emphasis on the medium” and analyzed the way in which literature is able to alter or “make strange” common language. They insisted on the predominance of form and technique over content. Proscribed in 1929 in the USSR, the Formalists had nonetheless a great influence in the West, notably through the work of linguist Roman Jakobson. The following example of the use of defamiliarization by an American writer will suffice to illustrate the point:

The mirror reflected what seemed at first a priest. A white robe, which fell from his thick shoulders in crescent folds, circumscribed with diminishing accuracy the ponderous art of his great head, and gave to his obesity the suggestion of vulnerability rather than strength as he sat face to face with the fact of himself. This effect was intensified by the resignation with which he suffered what might have been his acolyte, also dressed in white, either to anoint his flourishing, grey-brown hair as if in preparation for some imminent solemnity or to give it a tonsure.

What you finally get, is the familiar scene of a man in a hairdresser’s chair. Similarly, what you get at the end in “defamiliarizing architecture,” is some public building... or a house. Yet, can I transpose the brief definition of literary Formalism quoted above to architecture and speak of “architectural formalism”? This formalism would, I paraphrase, stress the autonomy of architectural space and, more important, the discontinuity between architecture and common uses of space. It would place an ‘emphasis on the medium’ and analyze the way in which architecture is able to alter or ‘make strange’ common spatial experience and insist on the predominance of form and technique over content.” Is this perhaps the architectural theory of the age of show?

Literature presupposes literacy, that is the fact that a great number of society’s members are

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9 Ivan Illich, “Guarding the eye in the age of show” (work in progress), in Barbara Duden, Lee Hoinacki, Ivan Illich and Sebastian
fluent in the art of reading.\textsuperscript{10} Literacy, and I will say later why the term should be understood as \textit{alphabetic literacy}, has given us what George Steiner called “the bookish mentality” which in turn gave literature the importance it has in our society.\textsuperscript{11}

It is often when an epoch comes to an end that it most obsessively displays the technical prowess that made it possible, as in a sort of recapitulation. Think of the last generations of gothic builders, of their filigreed towers, their quasi flat vaults and their inverted arches. Or think of the clippers, the fastest commercial sailing ships ever designed, that for some decades could compete with the new steamers.

Do we not assist, in literature, to a recapitulatory display of the technical elements of the trade, the letters themselves and their permutative and manipulative possibilities? Raymond Queneau, for instance, published ten sonnets under the title \textit{Cent mille milliards de poèmes} (1961) and invited the reader to rearrange them in the hundred-thousand-billion ways indicated by the title. With \textit{La Disparition} (1969), Georges Perec was able to write a whole novel without using the letter e. Of what cultural changes these games\textsuperscript{12} are the symptom is not quite clear. The omnipresence of screens, as the new, now immaterial, support of the text, the “hypertext,” but on the other hand, the resiliency of the book have still to be interpreted in a broad historic and cultural perspective. I share with Ivan Illich the hope that, if the ethology of reading is changing, this change will induce some to cultivate new forms of communitary reading, around old and new “houses of the book”

\begin{thebibliography}{12}
\bibitem{12} The possibility of such games exists since the dawn of the alphabet, and paleography attests that, since the beginning, such games have been marginally played. Erick Havelock, \textit{The Literate Revolution in Greece and Its Cultural Consequences}, op. cit. p. 191, comments on “the habit of manipulating the arrangement of letters”. However, such manipulations had decorative rather than “semiotic” purposes. They were limited by the predominance of speech over writs in the pre-classical epoch: Havelock also remarks that in \textit{Frogs} Aristophanes’s Euripides represents himself as a poet whose “fluency of diction” is “an infusion stained out of papyri” which may mean that his poetry draws upon expressions favored by the idioms of documental speech, contrary to Aeschylus, whose spoken verse can outweigh not only the corporeal presence of Euripides but also his “papyri.” Aristophanes juxtaposes oral and literate styles to the advantage of the former (p. 286, 7).
\end{thebibliography}
(similarly, I grope for a rebirth of communitary home- and place-making).

Do we not assist to a comparable “recapitulation” in architecture? I am not only alluding to the “ironic” conjuring up of the past, which is overtly the construction of a fictitious “pastness,” but also to the dismembering of the narrative sequences of the *promenade architecturale*, to the influence of cinematographic and choreographic techniques. Meaning in architecture, as in choreography, happens through the body, through what bodily motions conceal and reveal, through the “narratives” that the sequences of these motions construct and deconstruct. In *Summerspace* (1958), choreographer Merce Cunningham ordered such sequences by chance procedures. In *Biped*, presented in New York in the spring of 1999, the sequences and the phrases were arranged at random by a computer.\(^{13}\) “Our knowledge that the scene is not going to develop forces us to view it more sharply. Because A is not flowing into B, we actually see A.”\(^{14}\) A becomes a unique “event.”

Architects who use comparable serial manipulations acknowledge the influence of choreography and cinematography, as well as of writers who, like Queneau and Perec, expected singularity from permutations and rearrangements of the elements of (written) language.

What we have to ask however is, how far we can draw the analogies between architecture and literature. Again, you could object that one dwells in buildings but not in the printed pages, but this is questionable: the bookish man literally carves a home in books—though he does not quite inhabit them bodily. The difference is more subtle and profound. It has to do, more than with writing (and more than with building), with reading (and with making a “home,” with and without quotes). Modern reading—silent reading\(^ {15}\) --is generally a solitary pleasure. Establishing a home is

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\(^{14}\) Joan Acocella, op. cit., p. 86.

\(^{15}\) Ivan Illich, *In the Vineyard of the Text. A Commentary to Hugh’s Didascalicon*, Chicago: The University of Chicago Press, 1993 explores the changes in the technology of writing and the ethology of reading during Hugh of St Victor’s life time, in the XIIth
not.

[H]uman dwellings are always more or less communal. However shabby and casual it may look, a rustic dwelling depends on being part of an articulated (I am even tempted to say an organic) layout; often a layout which was understood as a body with head and members into which the homesteads were “integrated.” I would argue further - that a house, whether it is rural or urban, can only be a true home in such neighborly circumstances. While the lonely hearth will not quite make a home therefore, yet the erection of the home-house into a castle which defies its neighbors, and may be seen as quite separate from the public realm, makes it much less of a home. Or, in other words - an individual can have many houses, but only a person can make a home.16

Perhaps, the primordial reality is relational (the “thou,” the “community”) and if so, the alleged demise of “reality” is but the shadow of a neglect for “relationality”? If it is so, to make a home is a neighborly activity that engenders a reality.

Illich tells us that reading has passed from being a communitary, to being a solitary activity. This is the true crux of the comparison between literature and architecture, between modern, silent reading and home-negating housing. The reader whom Queneau or Perec invites to manipulate letters and words, multiply interpretations and face polysemies is the solitary, silent reader.

Similarly, the “architecture of disjunction” appears to me as a choreography for the “lonely crowd.”17

The question that concludes this essay is of course: can we historicize the “question of domesticity” and its negation? In other words: what remains of the “disjunction of home and house,” if we consider it in the mirror of the past?

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Autonomy and Heteronomy in Architecture Theory: Part V

Architecture Between Orality and Literacy?
(2001)

Jean Robert

Finally, I will drive you home to the hypothesis around which I have been circling. The influence of literary concepts and of philosophy on contemporary architectural theory is not casual. The same kind of recapitulation is at work in literature, philosophy and architecture. The silent and solitary reader of texts and hypertexts on screens is echoed by the traceless solitary resident of the modern apartment.

I suggest that the ongoing historic debate on the conflicting relationships between orality and literacy is not only relevant for literary theory. Home stands maybe to house—or what I call historic domesticity to contemporary anti-domestic architecture—as orality to computer-literacy. And this has been so far overseen by architects and architecture theorists alike. Let’s look over the fence behind which linguists, historians and sociologists discuss a fascinating thesis.

This thesis states that true literacy does not begin historically with Egyptian or Chinese ideograms, Mayan pictograms, Mesopotanian cuneiforms or Mediterranean syllabaries and not even with the Northwestern Semitic consonantic “alphabets” from which the Phoenician, the Hebrew and the Arabic scripts evolved. It starts with the alphabet, invented by the Greeks between 720 and 700 B.C.

True, the inventors of the alphabet built on the experimentations of the Northwestern Semitic scripts, that the Greeks received from the Phoenicians, probably in bilingual Cyprus, where
it was first used to engrave prayers in stone.¹ True also that two forms of writing had been known to
the Greek previously: the Cretan linear A and the Mycenian linear B, of which only the latter has
been approximately deciphered by British architect Ventris. There are no traces of the use of any of
them after the XIIth century B.C., which was followed by the so-called “dark age,” in fact a period
of flourishing oral culture in which the grounds for the classical Greek civilization were laid.

The conservation of memories in an oral culture happens through mnemotechnic formulae
rich in assonances, “rhymes,” voluntary redundancies: pre-alphabetic speech is “formulaic.”
Reading Mediterranean pre-alphabetic writs is like searching the garden’s grass for eggs on Easter
morning: the reader’s eye wanders through the lines, looking for common expressions of speech:
formulae. This cannot be otherwise, because pre-alphabetic scripts were trapped between two
contradictory requirements: simplicity, that is the reduction of the signs to a small number which
can easily be memorized, and consistency, that is the possibility to relate every sign with a sound
with a minimum of ambiguity. Among the old Mediterranean scripts, the Mycenian syllabary called
linear B achieved a remarkable simplicity (about 90 signs) at the cost of consistency: it could only
represent open syllables (syllables ending with a vowel), so that a lot of guesswork was left to the
reader.² Consequently, a “text” could only be a record of what had once been said, and consisted of
formulae well known to the reader and to his hearers. Since reading required this
“recognizableness,” the written documents of the pre-alphabetic period are impoverished memories
of oral utterances. They were descriptive (of practical transactions or of heroic feats) and imitative
of the oral way to bespeak them.

The interesting question is here whether something of this thesis does not apply to
architecture, that is, if there is not an epical, “oral” lore of architectural formulae or archetypes

² In Mycenian syllabic script, this text’s next sentence would approximately read:
whose memory would run through the whole history of architecture. Does perhaps the
contemporary practice of “defamiliarization” frustrate a deeply ingrained, atavic (“epic,” “pre-
literate,” “oral”) desire for architectural recognizableness?

This is the question that a recent book by Anthony Antoniades endeavors to raise and in part
to answer.³ He recalls that

...Rykwert made the deepest dissection to date into the origins and creation of the hut, one
of the earliest archetypes. In the process, and furthering his own belief that “... if architecture
was to be renewed, if its true function was again to be understood after years of neglect, a
return to the ‘preconscious’⁴ state of building, or alternatively to the dawn of
consciousness,⁵ would reveal those primary ideas from which a true understanding of
architectural forms would spring...” he created his book On Adam’s House in Paradise,⁶
one of the most revealing “pirouettes” between the days of our mythic origins and the
applications of today [...]. Rykwert’s contribution was an interpretive construct based on
one of the architectural archetypes of mankind.⁷

Antoniades discovers other primordial architectural archetypes in the legend of Gilgamesh,
in the Ramayana, the Odyssey, Beowulf, the Niebelungenlied and the Kalevala, among other
testimonies of oral, pre-alphabetic or early alphabetic lores, and gives, for each of them, illustrated
examples of their survival in architectural forms. This confirms, if it were necessary, that
architecture is a more primal experience than literacy and literature and invalidates Bernard
Tschumi’s aphorism that “there is no architecture without texts.”⁸ This is because architecture is a

⁴ Following Jack Goody, Literacy in Traditional Societies, Ann Arbor MI: Bks Demand Umi, the transition from “prelogical” to
“logical,” or “preconscious” to “conscious” states of minds, from magic to science, from Levi-Strauss’s “savage mind” to
domesticated thinking can be explained more elegantly as changes from orality to diverse stages of alphabetization. Following
Goody’s intuition, I suggest to read “pre-alphabetic” where Rykwert writes “preconscious.”
⁵ Ibid.: “to the dawn of alphabetization.”
⁷ Anthony C. Antoniades, Epic Spaces, op. cit. p.xii.
⁸ Bernard Tschumi, Architecture and Disjunction, Cambridge MA: The MIT Press, 1997. I confess that I have been tempted for a
while to adopt his restriction as an equivalent of the distinction between epic (oral) narrative and literature, that is between orality and
literacy. Tschumi’s suggestion would open to a distinction between preliterate, “epic” built forms and architecture as a literate, read
alphabetic activity. However, I finally rejected the suggestion because, like Humpty-Dumpty, for whom words meant what he
intended them to mean, it does to much violence to linguistic usage: the word architecture recalls the arche-techton, the “head-
carpenter,” by no means a figure limited to the literate realm. Primitive domestic, and epic architectures could be terms that stand vis-
à-vis historic architectural forms as orality stands to literacy.
gesticulatory art: it involves the whole body and is perceived in its movements, while reading immobilizes the body to the benefit of the eye: our bodily “memories” are of a more primitive, “oral,” or, to retake Antoniades’s word, “epic” character than our visual memories. Good architecture could relate modern man to his oral origins, which does not mean that architects should literally “sketch and do ‘huts’,” as some members of the “Postmodern, Historicist” group have understood Rykwert to enjoin them doing.9

The alphabet opened to radically new possibilities. Because of the correspondence of graphic signs and pronounced sounds, it made writing independent from the recognition of spoken formulae. For the first time, things that had never been said could be written. Similarly, forms that had never been built could be thought of, though I surmise that this generally happened much later, perhaps as late as the breach of the great tradition at the end of the 17th century, in the time of “the first moderns.”10 Being a bodily and gestual activity, architecture offered resistance to its utter alphabetization and the oral transmission of architectural knowledge survived far into the alphabetic age.11

Writing slowly became less descriptive and more conceptual. It started to look for the ground of things, behind appearances. For Walter Ong, the fact that the Greeks invented philosophy is less due to their specific genius than to the fact that they invented a unique new way of writing, the alphabet. In Orality and Literacy: The Technologizing of the Word,12 Ong insists that philosophy and all the sciences depend on alphabetic writing. They are not the products of the unaided human mind, but of the use of a technology that has been so deeply interiorized that it

9 Anthony C. Antoniades, Epic Space, op. cit., p. xii.
11 Joseph Rykwert, “The Oral Transmission of Architectural Knowledge,” source lost. “[before the XVth century] there is virtually no record about the transmission of ideas and skills. A great deal must have passed through evanescent gesture; perhaps as much as through graphic records and through words.” (p.1)
became part of the mental processes themselves. And he concludes: philosophy must become philosophically conscious of itself as a technological product. I plead with architects for a similar recognition concerning architectural theory.

The invention that made this “technology” and its interiorization possible is based on an analysis of the speech organ’s working: the vowels represent the vibration of a column of air in the larynx, while the consonants (which only “sound-with,” which are no sounds in themselves) represent the way the tongue and the lips initiate or stop the emission of sounds. Following Havelock, the alphabet is a “table of elements” of speech, a feat that required a high degree of abstraction. All ulterior atomistic ideas, like Democritus’s atoms and Plato’s elementary forms (Timaeus) seem to be metaphors of the letters. But is the functionalist reduction of the home to a place for satisfying basic needs supposedly universal and codified in standards not another effect of the alphabetic reduction of human speech and of the letters’ metaphorical power? And what are the “postmodern” hesitations about functionalism, if not the expression of doubts about the literate nature of architecture, even if they seek answers in a cooption of extremely literate experiments, or further, in the “simulations” of the system world?

Can architecture really settle in a world of pure signs without a real beyond? I think not. I hope that this reminder of the origin of the alphabetic mindset in a “technology” that was interiorized in modern man’s mental processes will contribute to clarify the debate on the nature of architecture. After all, philosophizing architecture theory should also become philosophically aware of being a technological product.

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A Season Among XIXth Century Physicists

I spent part of the winter of 1981-82 on a cold veranda of the library of the Marburg Physics Institute reading books that were no longer part of the curriculum of modern Physics. There, I delved into the intricacies of the surge of the energy concept, or better of its direct ancestor, Kraft, force, and the principle of its conservation. The turning point was a paper of 1842 on the base of which Julius Robert Mayer, a young medical doctor, claimed his priority right on the “discovery” of the principle of the conservation of “force.” I write this essay as an exercise in a style of history consisting in interpreting an epoch according to its own concepts. It means that I’ll methodologically refrain from reading the modern energy concept in Mayer’s formulation:

Two departments of causes can be found in Nature, and it is a fact of experience, that there are no bridges (Übergänge) between them. The first department is constituted by the causes that share the characteristics of “Ponderabilität” (the fact of having a “weight,” or as a professional physicist would say, a mass) and impenetrability; to the other belong the causes who lack these characteristics […] and that are thus named “Imponderabilien” (mass-less entities, that is forces). Forces are thus indestructible and imponderable objects subjects to variations1 (Trad. J.R.).

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Such dual thinking can be traced back from Antiquity to the eve of modern times. It was part of the “background philosophy” of classical physics until its ideological demise around 1890. My contention is that this background philosophy trained scientists to constant intellectual and moral negotiations between poles of reality that have become incompatible: philosophy and science, human decency and scientific reputation, solidarity and power, tradition and modernity. With the present-day imperative to publish or perish, such balances have been broken by the predominance of one pole over the other: philosophy is tolerated as a servant of science, and moral inhibitions are disregarded for the sake of a career in the sciences. Mayer’s claim to the “priority” of the discovery of the principle of conservation of “force”—in reality a simultaneous discovery—is a calculation, and not an experiment performed in 1842. It was more exactly an experiment in thought that, according to the constants relating a volume of gas to its temperature and pressure allowed Mayer to calculate the mechanical equivalent of heat.

Mayer wanted to align physics with chemistry, paying special attention to the cycles, metamorphoses and mutual conversions of immaterial entities that he called Kräfte, “forces,” and which later physicists all too easily read as energy. For him, a single fundamental principle ruled chemistry and physics: “The quantity of their entities is invariable, only their quality is variable.” Unfortunately for Mayer, his discovery was first attributed to an alleged competitor, in fact a simultaneous discoverer, James Prescott Joule, who in an experiment realized one year after Mayer’s calculation, obtained a much more accurate value.

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Force: Free Gift of Nature or “Nature’s Currency”?  

After Max Planck’s definitive mathematical clarification in 1884, a force was to refer to what causes a mass to move or modify its motion, while energy was expressed mathematically as the path-integral of a force or, in technically controlled motions with constant speed and straight trajectory, the product of a force moving a mass against gravity and/or friction by the distance covered by it, whose unit for the engineer is the kilogram-meter. Mayer took that unit—probably from French railway engineers—and magnified it into the paradigm of what remains constant and can be quantified\(^4\) in the conversion of Nature’s forces. He had calculated the conversion rate of heat into mechanical “force,” and suspected that similar conversion rates or “relative values” would be discovered to exist between all the forces of Nature.

Under the term “force,” were still looming evocations of “the natural forces” such as the rain, the nourishing soil or the wind inflating the ships’ veils. By proposing the kilogram-meter as the expression of nature’s free gifts, Mayer submitted them to the law of scarcity, and paved the way to the transmogrification of natural conversions into production processes ruled by money. Unwillingly, he opened the door to “energy accounting,” a reinterpretation of economics along thermodynamic lines. Yet, in his natural philosopher’s decency, he wrote:

> Let’s state it from the start: the rule of the relative values [“conversion rates”] of the different forms of forces is only valid for our earthly economic relations, any application of it to the macrocosm’s economy is inadmissible\(^5\) (Trad. J.R.).

\(^4\) Mayer “quantifies” with moderation, guided by a kind of classical “everything in its place” perception that modern physicists have lost: “In physics, all is Number, in physiology, little is quantifiable, and in metaphysics nothing […] Time is only productive within our time-horizon. God spoke: let become and it became! We do not entirely support our life-world: it grows and becomes more beautiful,” in “Consequenzen und Inconsequenzen der Wärmemechanik,” Naturwissenschaftliche Vorträge von J.R. Mayer, Stuttgart: Cotta, 1871, pp. 3-16. In this conference on the “consequences and unconsequences of the ‘mechanics of heat’ (thermodynamics)” to the General Assembly of Natural Researchers in Innsbruck, September 18, 1869 [where Mayer spoke just after Helmholtz], he added: “A correct philosophy cannot be anything less than a propaedeutic of the Christian religion” (p. 16). As we will see, Mayer would sometimes transgress his ingrained sense of the right proportion for his scientific reputation’s sake.

Energy and Force: Free Creations of the Human Imagination or “Ultimate Realities”?

The extraordinary gifted young Heinrich Hertz (1857-1894) first thought that he would dedicate his life to the humanities. He was proficient in Latin and Greek and never traveled without a copy of Homer in his pocket. He exercised himself as a sculptor and, in at least in one occasion, as an architect. It was Hermann von Helmholtz who lured him into physics by proposing a high-level problem to the auditors of a popular lecture on physics that he delivered at the Berlin University. Hertz, then untrained in the matter, solved the problem by sheer logic and intuition, and that sealed his fate: Helmholtz would not let him go before he had signed his inscription at the Physics department and become his student.

Hertz, the humanist and lover of harmony, simplicity and beauty complained about “the unnatural character of the mingling of the concepts of mechanics with extra-sensorial abstractions.” The founder of electrodynamics and discoverer of the “Hertzian waves” had the epistemological aim of cleansing mechanics from “extra-sensorial abstractions” such as force and energy. According to him, these concepts ought to be renounced “as independent fundamental concepts” since only with their complete elimination could mechanics be reestablished as the science of experience.

The modern certainty that energy is the ultimate “stuff” of everything does not predispose present-day philosophers to appreciate the depth of Hertz’s epistemological reflection. Perhaps their prejudice could be eased if they knew of the lasting influence that Hertz had on one of last century’s major philosophers, Ludwig Wittgenstein:

Both [Wittgenstein’s] old and new philosophy shared an inspiration he had come across as a teen-ager in The Principles of Mechanics by Heinrich Hertz, a German physicist. Hertz had suggested a novel way to deal with the puzzling concept of force in Newtonian physics: the best approach was not to define it but to restate Newton’s theory in a way that eliminates any reference to force. Once this was done, according to Hertz, “the

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6 “Die Prinzipien der Mechanik...,” op. cit., p. 29.
question as to the nature of force will not have been answered; but our minds, no longer vexed, will cease to ask illegitimate questions.’

Ludwig’s big idea was to apply this method to philosophical problems.7

Hertz’s attempt “failed” in the sense that it was not the path followed by mainstream physics. Einstein turned the “vexing” character of force around—being “action at a distance” or “not being located at any point in space”—by reducing it to a local geometrical property of a four-dimensional manifold, but that solution would not have satisfied Hertz, who wanted a reassessment of the relation between physics and sensorial experience. In Hertz’ sophisticated spirit, the project of reestablishing a common-sense view of physical phenomena free of a priori noumena must have echoed the scholastic aphorism nihil potest esse in intellectu si non fuerit prius in sensu (nothing can be in the intellect if it was not first in the senses), whose various forms were traced back to Aristotle by the Schoolmen and ulterior philosophers.8 For a thinker of Hertz’s intellectual stature, “energy” pretends to be in intellectu without ever being in sensu, since there is no direct perception of it, but only of hot or luminous objects, of the speed of the railroad or of electric shocks and sparks in the lab. At the end of the XIXth century, energy was still mainly a principle of equivalence that should not lure a skeptical mind to construe all phenomena as manifestations of an underlying, mysterious, unique reality that nobody, no body will ever perceive with her, his or its senses.

Half a generation younger than Hertz, Einstein endorsed the energy concept, but without the naiveté of most of his colleagues. By “geometrizing” it, he recognized that it is an entity that is in the intellect before [and without] being in the senses and insisted that it is part of these “free

8 One of its last expressions is to be found in F. Jacquier’s Institutiones Philosophicae, Rome 1833: “Nihil esse in intellectu quod non prius fuerit in sensu.”
products of human imagination” that determine, not what we see, but the way we [physicists] see.⁹

The “Science of Experience” Loses Both Its Propaedeutic Language and Its Relation to Perception

In the last decades of the XIXth century, physics was disembodied from common language into one of its own. After the demise of the old linguistic continuity between science and everyday life, the path was open to monism. Scientific monism is the belief that a single principle ought to rule everything without opposition through the utter formalization and mathematization of all forms of once empirical knowledge.¹⁰ It is the dictatorship of one unique form of thought, one unique perception of reality, one unique language, one unique space. It expresses the utopia of a world without conflicts, resistances, distances and dissidences; a world where negotiations, checks and balances, arbitrations between contradictory imperatives, old forms of “coming to terms,” and even politics would have become obsolete.¹¹

Energetism and the Panderage of Tax-payers By a New Synthetic Language

For Wilhelm Ostwald, a longtime redactor of Der Monist, a journal he helped found in 1906, energy was not an “invention,” an “extra-sensorial hypotheses” imposed on experience (Hertz) nor “a free product of human imagination” (Einstein). Energy was now the ultimate and unique “stuff” of which everything was made. In Der Monist, he fought the “fallacious” diversity

⁹ Albert Einstein, “Foreword,” Max Jammer, Concepts of Space. The History of the Theories of Space in Physics, New York: Dover Publications, 1993 [1954]. For Einstein, the mathematical concept of space was one of these “free products of the imagination” that determine how we see (p. xv). Energy was another.
of the phenomena and called for a recognition of a sole imperative, the “energy imperative” to supersede the diversity of moral imperatives. Hence monism was also called energetism. According to Ostwald, “[e]nergy comprises the complete reality”;\(^\text{12}\) it rejects all forms of dualism and no other fundamental concept is needed to describe it. Monism had also linguistic effects. The demise of the physicists’ ability and willingness to explain their ideas, discoveries and theories in a language accessible to a general public had made of physics an esoteric parlance only understandable to close colleagues. Ludwik Fleck has studied how esoteric languages also produce esoteric facts that utterly alter the life-world of modern man.\(^\text{13}\) Lest physicists become philosophical anchorites, only equipped, like young Einstein, with a pencil and a pad, they must beg tax-payers for funding, and for this, a new synthetic language had to be invented. Modern science is a conglomerate of separated and often conflicting thought collectives, each attempting to make its thought style prevail. A scientist has hardly any degree of freedom relatively to his collective: belong or perish.

According to Fleck, the first signal of a new scientific fact is a line of resistance within a given thought style. As long as it has not reached the “public” along a chain of ever less specialized transmitters, the signal is not a “fact.” A scientific fact has always a sociological weight acquired through what Fleck calls the migration of ideas. This migration from specialized to less specialized circles can be called popular science or pop science. Unlike the old propaedeutic language of science, pop science—which for Fleck is sociologically as much a part of modern science as the productions of its most inner circles—does not proceed by careful expositions and explanations. Rather, through apodictic statements, bright colored descriptions, and premature affirmations, pop science makes unquestionable facts out of ideas. The broad

\(^\text{12}\) Wilhelm Ostwald, Vorlesungen über Naturphilosophie, (Lessons on Natural Philosophy), Leipzig, 1901, see particularly pp. 146, 146, 377.

public, most exoteric of the circles, then functions as a mirror that sends a received “fact” back to its circle of origin, where the surprised and flattered scientists tend to accept this sociological transmogrification of their original idea. It is how energy, originally a principle of equivalence between Nature’s forces, an extra-sensorial hypothesis, and a free construction of the imagination became, for the broad public and the scientists alike, an unquestionable fact. The difference here between, on the one hand, Hertz and Einstein and on the other, Ostwald, is that while the formers insisted on how they saw, the latter dumped one brutal fact upon the half-consentient public: there is nothing but energy, a universal recipe for intellectual freewheeling. Monism helped as well channel further funds toward society’s continuous need of ever more Research and Development (R&D) on energy “needs,” energy-related concepts, processes, resources, systems, economies or wars.

**Hugh’s Mechanica and The Blind “Fleck” of Hertz’ Mechanics**

In 1983, in a public talk at the Colegio de México, Ivan Illich analyzed the linguistic differences between a scientific symbol, $E$, and energy, its pop science twin. $E$ has a pure denotation, generally compacted into a mathematical formula, while energy has only connotations of which physicists tend to prudishly distance themselves in private conversations, while anonymously endorsing them, pertinently knowing that these connotations are part of the propaganda by which their profession panders tax-payers for more R&D funds.

Building on that idea, Professor Uwe Poerksen, a German linguist, compared a denotation with the point of impact of a stone thrown into a pond, and connotations with the resulting concentric waves:

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Poerksen discovered with astonishment that energy was part of a new class of words, rich in connotations and as deprived of precise denotation. In his path-breaking book, Plastic Words. The Tyranny of a Modular Language, he identifies how modern society builds its certainties and social theorems through semantic “Lego”-blocks such as energy, information, communication, resource, factor, system.\(^\text{15}\)

While I was sitting on the cold veranda in the company of the old physicists exiled from their science’s new curriculum, Ivan Illich, who had invited me to Marburg to talk about the history of the energy concept at his table of convivial friends, was teaching medieval history at the university. He was attempting to make his students feel how ill-equipped they were, conceptually and bodily, to understand a twelfth-century pilgrim, or even what the philosopher-monk Hugh of Saint-Victor meant, when he said that reading was a *peregrinatio in stabilitate*, a pilgrimage in stability.\(^\text{16}\) In 1980, the author of Tools for Conviviality\(^\text{17}\) and Energy and Equity\(^\text{18}\) had written a short essay to honor Hugh as a colleague he had discovered in the XIIth century.\(^\text{19}\) In this text, Illich commented the *Didascalicon* written by Hugh around 1127-1128, focusing his attention on Hugh’s concept of what he called *mechanica*. In his uniquely radical way, the philosopher of the mechanical arts was interested in the relation between science and society.

Hugh defined mechanical science as the part of philosophy which studies remedies for bodily weakness, when such weakness derives from humanly-caused disruptions of the environment—science, then, is a corrective for an ecological disorder. Asked to clarify


the notion of a new conception of science which underlies the various movements of science by people, I know of no better approach than a confrontation with Hugh of St Victor’s thought.  

Hugh’s *mechanica* was infused with a deep apprehension of sensorial perceptions and their aesthetics and of the fitness of mechanical artifacts to the body. Paraphrasing Joseph Kockelmans, a physicist and a philosopher, I dare say that “modern mechanics is an attempt to say anything meaningful about the physical world without any consideration of the body.” What would be a mechanical art that would start with the body and the relations of mechanical artifacts to the hand, and relate their power to their scale and their radius of action to their distality? How much “abstraction” would it need? It is a contest open to talents.

\[\text{20Op. cit., p. 4}\]

\[\text{21The sentence, with “philosophy” instead of “mechanics” was pronounced by the dean of the Philosophy Department, Professor Joseph Kockelmans, at the occasion of a meeting with Ivan Illich and Barbara Duden at Penn State University.}\]
When he asked me to write an article for the February Special, the editor, Michiel Schaeffer commented on some reactions elicited by the editorial of the 1992 issue. To make a point about the ambiguities facing alternative technologists, he had used the example of a little shoemaker. At the beginning of the story, the shoemaker had a bulb hanging from the ceiling of his shop for some light in evening hours and a three-phasic socket to power his sewing and polishing machines. Though the shoemaker did not specially care to investigate where the energy distributed to him by the Electric Power Works came from, he somehow knew like everybody else that it came from the aging nuclear plant whose frightening refrigeration towers were sometimes visible on the far horizon.

Here we have a small, “ecologically innocent” craftsman who is plugged, together with the worst industrial sinners, to one of the most hazardous forms of energy production. Isn’t it as bad as an Amish farmer using no telephone, no car, but struggling against economic competition with pesticides and chemical fertilizers? For the shoemaker, “salvation” came from a committee of concerned citizens who obtained the replacement of the obsolete nuclear plant by a large scale wind energy project. The energy that fed the shoemaker’s bulb and powered his machines could now come from a cleaner source. Happy end? Listen to what has happened to the little shoemaker:

After the replacement of the nuclear plant, he lost control forever. Subsidies and economic profits went to the ‘big shots’ of the electricity cooperative. Prices went up to finance the new necessary (alternative!) technology transfers. Local electricians lost their jobs to Hilton-groomed alternative technologists from abroad.

This story made me sad: I too had wished a happy ending for the sound political fight in favor of softer energy sources. I have read Armory Lovins, I know Lester Brown’s efforts to clean the energy landscape from useless gigantism, risk, and the relentless erosion of local ecological and cultural matrices.

By the way, the editor wrote me that the story had the following epilogue: A month after this publication, we received an angry letter from an American energy expert claiming that WISE was opposed to the use of wind energy. This was the starting point of a discussion on energy and Power.

The editor begged me to frame my article in such a way that it would at least tangentially address that discussion. Though I gladly agreed to try, I am reluctant on embarking on a casuistic of alternative energy production, “good” in some cases, “bad” in others. Let’s state right away that I find a wind energy plant less bad than a nuclear plant, and wind power worth militating for. I would like to say: always. Shall I go on to analyze the cases in which—given that the intention was good—but the unexpected result being such …, had I known it beforehand…, but if not, then…? Clearly, such casuistic has no place in a general article. Are there perhaps general criteria of judgment? Of course: ecological impact and risks assessments, evaluations of the support capacity of the local ecological or climatic matrix (a term I prefer to the globalizing neutrum, “environment”). All that remains politically valid. But isn’t there more at stake than pollution and risks? The shoemaker’s story obliges me to answer “yes!” Armory Lovins suggests a first decision criterium: To be valid any alternative energy production project should not be content with proposing how to produce a constant quantity of megawatts. It should also contemplate the production of “negawatts.”
WISE subscribers know that Lovins uses that charade to stress the urge for any alternative energy project to present ways of reducing a community’s energy needs. Another catchword for the negawatt idea is “conservation” (a word that is indeed associated with “energy” since this concept’s birth!). Alternatives to hard energy paths should not consist in aiming at the same thing through other routes, but in changing the goals too. Conservation is one of these “other” goals.

If there can be ecologically dirtier or cleaner forms of energy, there is no form of socially quite innocent energy, as, again, the shoemaker’s story shows. But there is still more to that story. While telling it, I “had” to use the word energy 18 times. In less than 2 pages, this is many times. If that had been an exercise in English composition, my teacher would have strewn the margin with red remarks like “repetition!,” “find a synonym!,” “what do you call so, in this context?.” It seems that what can be done with any sound common word cannot be done with “energy.” Try, and then ask yourself: “what are this strange word’s characteristics that make it so resistant to synonymity?.” The German linguist Uwe Pörksen has written a whole treatise to try to explain that phenomenon.

Re-reading my own prose makes me realize more acutely than ever, that underlying the debate on alternative energy production, beyond or behind the ecological and the social levels, there is the semantic bottom line from which cultural meanings, symbols and social myths all stem. Mainstream ecologists have thus far managed to ignore that ground. It has been a great mistake. It looks as if the first principle of thermodynamics and the word which is its stenographic token (“energy”) has been allowed to be the Trojan horse for a contagion not only by ecologically and socially unsound, but also by culturally and symbolically destructive thought habits. Is perhaps the energy concept—the intellectual cathedral of 19th Century physics—a cultural equivalent of AIDS when it escapes from the lab and invades concrete life? Is the synonym-less word “energy” the vector of an acquired cultural
immunodeficiency syndrome, as soon as it ceases to be strictly a technical term of a well-defined science, thermodynamics⁵?

I pretend to address the question raised by the American reader by inviting him to a tour into the epoch that created the concept energy.

**Can A Scientific Concept Be An Object of History?**

This question has always intrigued me. A decade ago, thanks to a friend’s generosity, I spent two winters at the Physics Institute of the University of Marburg in Germany. More exactly, I sat day after day on the unheated veranda of its library. There had run aground, like on the strands on a lonely island, the wrecks of past generations of explorers. On the Institute’s shelves, I found what remains of the “forgotten grandfathers”: the works of 19th C physicists who are no longer part of the curriculum of standard physics. Half-jokingly, half in a spirit of vicarious revenge of the forgotten, I made a sign that said “Marburger Institut für Papierkorbphysik” (papierkorb = wastebin). It hung on the veranda’s door until I was politely asked to remove it.

One of the two xerox copiers of the institute stood in “my” veranda. Once in a while, I was interrupted by one “Doctorandus” or the other—often a polite German-speaking Japanese—who needed to use “my” machine. I observed that no one ever copied more than five pages, generally concentrating on a single graph or table from a specialized publication. In contrast, I imagined myself snuffling like a scavenger in the landfills of physics. One day, one of the Ph.D. students remained standing near the door and observed me. He exclaimed, “What? You copy whole books!” I confess to that misdemeanor, that disrespect of the modern etiquette! Yet, on behalf of those two winters, I possess the entire conserved corpus of several of the great haemodynamicists of the mid-nineteenth century: Hagen, Poiseuille, Hagenbach, part of O.E Meyer and Plateau, the Podolinskys, father and son and some more.⁶
But these were the few ones whose works were “kopiefähig.” Most of the items piled up in the veranda’s shelves were under a “Kopierverbot.” Not that they contained some top-secret information, on the contrary, physicists considered them discarded stuff (never did I see a student pick up one of “my” authors’ books). These books and booklets were materially so deteriorated, so gnawed by humidity and generations of bookworms that they would have disintegrated in the Xerox-machine. From those, I carefully made hand-notes and copied illustrations. Some of these sketches illustrate this article. I wonder if the dusty works of my friends materially survived the decade that went by since I frequented them.

It is through these friends (“durch sie hindurch,” a Heideggerian philosopher would say) that I will now try to find an answer to the angry question of Michiel Schaeffer’s correspondent. Physics is not a ukase of nature, not a monologue. At its best, it is a dialogue between man’s imagination and nature’s intimations. At its worst, it is an arrogant axiomatic construction warded by bureaucratic Cerberes. Ernst Mach (1838-1916), a forerunner of relativity “malgré lui” wrote once that scientific concepts are the machinery behind the stage of physics. As different playwrights require different offstage arrangements, the type of concepts that a physicist needs depends on the kind of empirical facts that he wants to manifest. For Mach, the facts of physics had their origin both “in the world out there” and in man’s sensorium. Consequently, all physical analysis had to be impirio-critical, that means that it had to consider the way in which nervous sensations are construed as perceptions of physical facts. As a consequence, not the abstract atom, but elementary sensations were the conceptual building blocks of physics.

The energy concept is part of the conceptual machinery depicted by Mach. It did not become a cornerstone of the building before the 1840’s, when the “law of conservation of the ‘force’ (energy)” was simultaneously discovered, or invented, by at least three scientists (Mayer, Joule and Helmholtz) who spent part of the rest of their life claiming their “priority
rights.” I will first concentrate on the ten years (1842-1852) during which the concept of “force” crystallized into what we now call energy. This is also the decade when what we know as the first and the second principle of thermodynamics (the energy conservation law and the entropy maximization law) coalesced. These principles were no pure edicts of nature but rather the result of a *chassé-croisé* between the epoch’s preoccupations, interests, representations, and nature’s “resistance avisos.” Neither is it irrelevant that the energy conservation law was discovered, or invented, a few years after England opened history’s first national market for the labor force (1834), Ricardo formulated a theory of value potentially disembedded from concrete costs, or when Liebig made the soil, once “the plant’s stomach,” virtually obsolete in agriculture by showing that chemicals could substitute for it, when the first railroads and the first electric telegraphic lines were built, photography invented, and when Marx wrote “Das Kapital”! Nature’s intimations entered of course the constitution of the concept, for instance her refusal to be tricked by those who attempted to build machines producing both work and the cause of this work. In fact, the impossibility of the perpetual mobile is a perfect example of nature’s avisos of resistance: in itself, it was not a concept, but a physico-logical constraint acting on the formation of the concept to come. The law of energy conservation was that concept. In relation to the impossibility of the perpetuum mobile, the concept, energy, as all works of the imagination, is “overdetermined,” redundant of societal and cultural meanings. It is, for instance, the product of a time that considered *scarcity*, the fundamental axiom of formal economics, to be *the* law governing social order, much as the gravity law governs the Newtonian universe.

So, the first question I would like to ask the questioner is this: Do you not consider plausible that the industrial enthusiasm that characterized the time of the railroad mania and of the “energy mania” will *nolens volens* taint every social and cultural reality where the concept energy is imported, today? In other words, since it is a constitutive theme—or an
active connection—of its genesis, will not *sarcity* be transferred together with the *energy* concept? And is this not the bottom line of the debate on “Energy and Power” courageously initiated by WISE?

The editor recalled to me the title of a pamphlet I once wrote, “Cow-dung Is Not Energy.” I was thinking then of the Indian villagers who have no other fuel than dry cow-dung. Imagine that a do-gooder from abroad comes to the village with the blueprints of a marvelous bio-digester, importing with them a pop science version of the concept *energy* where people had one hundred words for nature’s forces and gifts. If our alternative technologist succeeds in building his contraption, the villagers who can afford to pay for it will have gas in their kitchen. The poor will have no biogas and no cow-dung left. This can rightly be seen as a result of the transmogrification of cow-dung, a gift of a domestic goddess into an input for alternative industrial production: energy. Though it is scientifically correct inasmuch as it confirms the impossibility of tricking nature, the energy concept is more than a correct scientific statement. It is also a conceptual device that transforms all that it touches into gold for the industrial process. If you don’t want gold, but cow-dung for everyone, you have to let cow-dung remain a free gift and, among ten dozens, use the appropriate word for it. If you aim at protecting the concrete living matrix of real women and men, “energy” is perhaps not an appropriate word.

It is no hairsplitting to insist that, underlying the debate on the appropriateness of technologies, there is the need of another debate on the appropriateness of the alternative technologists’ semantics. In blunders like the one mentioned by the editor or the one just recalled, women are the first victims. So it is not idle either, to ask what the word “energy,” when it evades from the lab and invades social reality, says *about* and does *to* the vernacular gender of the ones exposed to the semantic and technological innovations imported from abroad. And here comes my second question to Michiel Schaeffer’s correspondent: Don’t
you realize that “energy,” the concept underlying most alternative technologies, can be the vector of an industrial bias destructive of forms of local self-reliance founded in a place’s perception of gender? In an attempt to address that question, I will delve again into the “waste basket of physics” in which I scavenged ten years ago. For, if “energy” imports unwanted industrial assumptions, they must be traced back to the epoch that shaped the concept.

“Energy” and Gender

Before Marie Curie’s time, physics was an exclusively and jealously guarded male’s realm. Yet, I do not share the opinion of the American feminist physicist Evelyn Fox Keller. Following her, physics is therefore tainted with a “gender bias” and she claims that it is the female physicists’ duty to cleanse their science from it. I see things differently. Physics, like modern science in general has on the contrary the eminently dis-gendered character of those realms of activity that do not stem from a living interplay between feminine and masculine, masculine and feminine spaces, times and tools. No matter how “macho” an individual physicist may be, the lab is a dis-gendered space because men and women alike are asked to leave their gendered body in the wardrobe in order to become physicists. The history of physics from 1840 to our days does not speak of a more intense dialogue of the genders, but on the contrary, of a steady increase of its dis-gendered characteristics. Yet, be sure that if traces of gendered perceptions are to be found in my old friends’ works, they are imports of their inborn decency, that is of their cultural context or matrix, and not the effect of more feminine presences in physics, since the contrary was true.

Motion, its nature, has always been one of the fundamental concerns of physics. In the history of this science since Antiquity, there are broadly two concepts of motion:

1. the Aristotelian concept, that contemplated all kinds of change and always
viewed motion as an affection of the medium, with this medium actively participating, as in Aristotle’s example of the arrow, and

2. the Galilean concept of the motion of an individual body in a thought void, obtained by “peeling away” the motion’s medium.

What do my friends have to say about that? Was perhaps a less dis-gendered concept of motion at home in physics before this was reshaped as “the science of energy”? I will show that around 1840, two contrasting concepts of motion, both analytically correct were at odds. One was thematically, if not mathematically, Aristotelian since it started by considering the medium’s affections and changes. The other, inherited from Galileo, saw motion as a sheer displacement of individual bodies in a thought void. It only conceived motion disembedding it from its medium and finally succeeded in reducing even this to the individual displacements of “atoms” (till the mid-19th century, physicists called the molecules “atoms”).

The Skinning of Nature

In the construction of the energy concept, a broad movement analogous to that of the social construction of the public fetus occurred. Barbara Duden has convincingly shown how the fetus, now a dominant public emblem, was progressively arrived at by a process of elimination of the motherly body. From the drawings of early 18th century midwifery books showing the correct position of the midwife’s hands and the right delivery gestures that emphasized with all detail the concreteness of the motherly body, to William Hunter’s pictures at the end of the same century, half the way to that disembedding was laid down (Figs. 1 and 2). The other half of the road leads to Life Magazine’s famous picture of the fetus as a small cosmonaut floating freely in amniotic liquid and culminates with our days’
sonographic images (“Hello, I’m Jimmie, I’ll be born in 4 months from now.”). Hunter pictured the dead fruit in a dead motherly body whose fabrics were surgically removed layer by layer to lay bare the dead fruit as fetus. It will take the masculinization of midwifery into obstetrics, X-rays and the sonogram to socially construct the public fetus that we “have” nowadays and that often seems to be the common object emerging from the confrontation between the “reproductive rights” and the “pro-life” movements.

Something very similar to this scanning or skinning process can be observed—at least by the “epistemological eye”—in the genesis and development of the energy concept between 1842 and 1852. One question was of paramount importance in the first sketches of the concept that we now call energy: it was the question of the origin of bodily heat. That is to say that the matter was more a concern of physicians than of what we now call physicists. In fact, the very first known formulation of the “law of conservation of the ‘force’” was due to a modest doctor of the poor, Robert Julius Mayer from Heilbronn in Bad Wurtemberg.

Around 1840, most of the “compound” of German physicists thought that bodily heat was mainly caused by the friction of the blood with itself (internal friction layer upon layer) and with the inner surface of the blood vessels (external friction). The generally accepted explanation was that the mutual friction of neighboring layers affected with different speeds “ground,” so to speak, the body’s heat. The branch of physics associated with this concept was called *haemodynamics*, which was an “internal kinetics” of the blood and, by extension, of every fluid that happened to be affected by internal, also called *molar-*motion. There was, for instance, a “haemodynamical” meteorology in search for some ordered patterns in the majestic, but seemingly haphazard celestial landscapes of towering cumulus, whirling nimbus or raveling out stratus clouds.21 *Haemodynamics* was the branch of physics in which, before 1845, a young physicist had more chances to illustrate himself and gather the laurels of academic awards. (Besides speculating about the origin of bodily heat, haemodynamicists
also gave the first precise mathematical formulations of a liquid’s viscosity coefficient and of
the dependence of this on temperature22).

In contrast, by 1850 all the odds were in favor of the opposing school, which
postulated that an oxidation of the food’s juices taking place in the blood was the cause of
bodily heat as it was of muscular “force.” This new physico-physiological doctrine was called
“die Wärmelehre” (the “doctrine” of heat). Its adoption of the steam engine metaphor and of
the mechanics’ technical terms—viz. the kilogrammeter23—as well as its reconceptualization
of internal motion as occurring in a thought void was to originate the postulates of what we
now call thermodynamics.

On the subject of bodily heat, haemodynamics was partially wrong and
thermodynamics was right in part, by default. The last haemodynamicists had to retire or to
convert to the tenets of the new doctrine. The “thermodynamical truth” had won over the
“haemodynamical error.” Was it really so? Though it of course corresponds to the victors’
perception, this is a naive view of the “progress of science.” In fact, a complex change
occurred that an observer, Ferdinand Rosenberger has expressed in the following terms:
At the beginning, almost every experimental physicist followed on the path that was his
(before the invention of the energy concept), dedicating himself for some more years to the
same tasks. However, these tasks were subtly inflected by the new theory, often without close
notice of the concerned worker himself (sic) ....24

This particularly applies to experimental haemodynamics. After an eclipse around
1845, it flourished again in the 1850, as if the “late haemodynamicists” had wanted their
theory to usher in an ultimate thematic protest against the growing grasp of atomicism on
physics.

The rise of the thermodynamical view of the body, and of the world, was an
epistemological landslide that gave the Young Turks the occasion for breaking off with old
authorities. Along with the haemodynamic conception of bodily heat, the “vital force”\textsuperscript{25}, the separation between a “translunar” world of ideal realities expressed in pure concepts (see Lagrange’s mechanics) and a “sublunar” realm of birth, growth, corruption and friction as well as the concept of the soil as the plant’s stomach succumbed. Since its very beginning, “\textit{die Wärmelehre}”—soon to be rechristened “mechanische Wärmetheorie”—was much more than a way to “correctly” explain the origin of bodily heat. Not unlike heliocentrism in Galileo’s time, it was part of a worldview for which some, new Brunos and Galileos, suffered a true martyrdom and, more often, vilified their adversaries\textsuperscript{26}.

We have seen that thermodynamicists conceive first motion as \textit{motion in a void} “peeling away” its concrete earthly matrices (e.g. the atmosphere) and then eventually ask the lubrication and the hydro- or aero-dynamical lab to re-introduce “the medium’s constraints”\textsuperscript{27}. Haemodynamics had sustained itself on a contrasting worldview for which everything was \textit{embedded in concrete, terrestrial matrices}, rejecting explicitly Galileo’s abstract view of motion along with atomicism.

Such an opposition between two worldviews embodying thematic bundles is what Gerald Holton has called a Q-Q confrontation.\textsuperscript{28} Such confrontations use to end up with the victory of one theta or thematic bundle, with the “valid tenets” of the loser—e.g. the superior analytical skills of the haemodynamicists—being subordinated to the victor’s paradigm. Exactly that happened with haemodynamics, whose “valid tenets,” rechristened “fluid mechanics” are still an important but accessory branch of industrial physics (like research in the lubrication department of the transportation industry is today subordinated to R.& D. on engines and fuels). Haemodynamics lost first its short-lived hegemony on physics and then its epistemological autonomy to its victor. Since the epoch was imbued with the notion that the “law of scarcity,” the founding axiom of formal economics, was the cause of all social order,
energy, the concept that arose from the confrontation, was a reformulation of the forces of nature under the assumption of scarcity.29

The victor’s interest in economic rentability—translating into the concept of a machine’s duty!—became an implicit tenet of 19th Century physics. Concomitant with the emergence of the energy concept occurred the mathematization of the language of physics30 and what Ferdinand Rosenberger already described as a specialization that did no longer allow inter- and intra-disciplinary conversations. Some of the most dangerous tendencies of 20th century physics (its blind specialization, its thorough surrender to industry and the military, its lack of recognized meta-physical authorities, its disdain for concrete matrices like the atmosphere) can already be detected, as if it were “in the egg” in that change.

The “Gender of Physics”

The German haemodynamicists of the 1830’s called the internal motion of the medium “molare Bewegung” (molar motion), using an adjective that is very appropriate on three different grounds:

1. until the end of the 19th century, molar denotes physical processes “relating to a mass of matter as distinguished from the properties or motions of molecules and atoms” (Webster, vol. II, p. 1454): the haemodynamicists were convinced continuists, which means that they did not ignore, but actively rejected the atomistic hypothesis on the ground of their belief that matter was continuous until the infinitely small31;

2. “molar” connotes a sense of grinding inherent to its Latin origin: let me recall that molar motion was described analytically as the mutual “grinding” of the medium’s layers through which internal friction converted mechanical motion into heat (fig. 3);
3. from its (casual?) homonimity with molar as “related to a uterine mole” (Webster, ibid.), the term seems besides to have been endowed with an implicit uterine connotation.

Insofar “Galilean” motion is disembedded from concerns for the medium that it affects and derives its themes from ballistics, it can be termed “phallic.” Here is the core of the thematic difference between the Galilean and the molar sense of motion: molar motion is “uterine,” if this means that it is completely embedded in the terrestrial medium of which it is an affection and describes concrete “matrices of physical existence” rather than their raping, transformation or annihilation.

Beyond these gender metaphors, I ask the reader to make the effort of imagining this alternative as a line of radical epistemological rupture: around 1840, a physicist could still either choose to consider motion in the Galilean, disembedded way, or he could stick to a molar sense of motion that starts with the consideration of how it affects its terrestrial medium. Though physics in the broad “modern” (= post scholastic) sense was born with Galileo’s decision to disembed motion from its medium and ignore secondary qualities, the other path remained theoretically walkable and analytically describable in the sublunar world. It was the path—thematically if not analytically more akin to Aristotle’s, against which Galileo built his kinetics—that haemodynamicists chose to go.

The emergence of the energy concept is contemporary and concomitant with the closing of that path, as if the thermodynamicists had re-written Galileo’s Dialogues Concerning the Two New Sciences (1638) taking the haemodynamicists for their Simplicios (Simplicio, the Aristotelian physicist, was the laughing stock of the Dialogues). Only that the haemodynamicists of 1840 were extremely well skilled experimenters and that their analytical descriptions (their math) were highly sophisticated and generally flawless. An
epistemological gulf separates these “two new sciences.” As Gerald Holton would say, the thematic origins of both scientific approaches are heterogenous. The first is “trans-lunar” in the sense that it is fit for the description of frictionless motion occurring in the thought void of outer space. Applied to terrestrial, “sub-lunar” motion, it first has to reduce it to an equivalent of the motion of the ethereal spheres, reintroducing stochastically certain terrestrial factors like friction as constraints (as in Stokes’ and Langevin’s versions of Newton’s equation of friction and of the stationary speed of fall of a body of given dimensional characteristics in a homogenous viscous medium at constant temperature).

The second method is physical in the original sense: it takes terrestrial motion for what it is: a relation between a moving mass or mole—which can be part of the medium itself—and a medium affected by it.

**Epistemological Reflections**

Did haemodynamics contain the seed of an alternative understanding of energy and entropy? Such a question can of course not be answered, all what can be granted is that the haemodynamicists’ concept of motion, their “active connections” in general, were distinct from those of the thermodynamicists. As to the obtention of the viscosity coefficient, and of the analysis of the average stationary speed of fall in a viscous medium, it can be said that it makes them retrospectively forerunners of Stokes, Langevin or Painlevé, but again, that would miss the point of their epistemological specificity.

Haemodynamics could have reached an independent formulation of the law of energy conservation—and even more, of entropy—if it had given a full analytical description of Joule’s experiment of 1845 (fig. 4). It failed to do so. What happened in reality is that, once agreement was reached about the “exchange rate” of the “bank of nature,” this rate (confirmed analytically and experimentally in one sense and only experimentally in the other)
was simply used both ways in all the physicists’, and physiologists’, equations and experiments to come. Clausius elaborated the entropy concept in order to deal with the experimental fact that friction can convert all the mechanical work (energy) imparted to a medium into heat, while a thermic engine can only convert a relatively small part of the caldron’s or cylinder’s heat into useful mechanical work.

The controversy was closed by the victory of a “mechanische Wärmetheorie” that associated atomicism and the Galilean disembedding of motion with an insistence on economically useful energy conversions (viz. the “useful” conversion of thermic into mechanical energy) and considered the opposed conversions as nuisances to be minimized (friction, residual, “useless” heat, “entropy”). This economic bias has become such a built in thematic part of the energy concept that many physicists pretend not to notice it. I suspect that it is because their whole worldview is imbued with the notion that the cosmos is ... a scarce place (in that respect, the whole “heat-death” ideology of the late 19th Century, its echo in a physiological theory of fatigue and of social degeneration that became the subject of novels, and the speculations motivated by the ambiguities of the entropy concept would deserve a psychoanalysis). As the conversion of heat into mechanical work (the economy of the steam engine) became the stereotype of all conversion processes, in organisms as well as in machines, it metaphorically transformed nature into a giant “arbeitende Maschine” (economically working machine).

Instead of the expression of nature’s “idleness,” that is of “cosmic” scarcity justifying economic assumptions, the haemodynamists of the mid 19th Century, a time when the energy concept was still “in flux,” discovered that the conversion of mechanical work into heat in a viscous fluid generates patterns of molar motion of which many of Plateau’s experiments in the 1850’s expressed the visual aesthetics. In other words, a concept that has been taken as a paradigm of chaos (entropy) would have found a complement in an order-manifesting
principle (fig. 5). The crucial difference between both schools is beyond error or correctness. Its essence lies in a radical difference in intellectual interests (Fleck’s active connections) concerning nature.

I hope to have encouraged the reader to recover a sense of the fluidity of the energy concept in the decades in which it coalesced. However, our reflection must now concentrate again on the transfer of the energy metaphor as a Trojan horse for pre-, trans- or meta-scientific themes. If I am right, it will export scarcity together with thermodynamical rationality to cultural contexts in which it was not a dominant perception. It will besides contribute to break the asymmetric complementarity of the genders.

Podolinsky: A “Molar,” Matricial ... or Easteuropean View On Energy

Would a concept of motion (and hence of “energy”) genuinely respectful of living matrices because it shares their embeddedness have more benign social consequences when it evades from the lab than the thermodynamicists’ motion in a void and its conceptual aftermath? The question is concretely whether the energy concept—and in this case: which energy concept?—can be used in a judo-like fashion to limit the destruction of self-reliant communities by the industrial package of which “energy” is always a part. This is in my opinion the intellectual project that Sergej Sergejevichtch Podolinsky succeeded in formulating if not in realizing. In his attempt to enroll the energy concept for the protection of communities embedded in a cultural tradition, rather than for their exploitation or transformation, I found many fundamental molar intuitions. It is no wonder if one knows that Podolinsky’s interests were haemodynamical and that he learned thermodynamics relatively late.

Yet, Podolinsky has been thus far depicted as a pioneer of “ecological economics, of “social energetics” or of “energy accounting.” I think that more can be read in his work.
Social energetics has regained actuality in the 1960’s, since it was seen as a possible antidote to a destruction of nature not quite wrongly ascribed to monetary economics. The concept of “energy accounting” was then presented as the truly ecological way of bargaining with nature, reckoning its forces and assessing the ecological costs of economic development. For a reading of Podolinsky in that light, I recommend Juan Martinez-Alier’s seminal paper, which introduced the “green academia” to Podolinsky as a forerunner of Lotka, Cottrell, Leslie White or even Georgescu-Roegen.45

I will not repeat here what Martinez-Alier has so competently said. I will rather focus on one aspect that has thus far not been sufficiently highlighted: it is Podolinsky’s use of the energy concept as a scale to evaluate and measure human labor and to limit it when it becomes industrial.

It is nowadays trivial to recall that: Every square meter of land receives daily between 2000 and 5000 kilocalories of solar energy. Some of it is conserved by the plants in the form of “affinity energy” (chemical energy), which constitutes the first circle of biological energy conservation, of which coal—Podolinsky does not speak of oil yet—must be considered an integral part. Animal life can be visualized as a smaller cycle “feeding” on the first and conserving energy as carbohydrates and proteins. Man contributes to conservation in both cycles, not only in agriculture and the raising of life stock, but also through the making of clothes, shoes and heated and well-insulated houses. Within this circle, man needs 1500-2500 Cal a day to keep himself alive and can transform one tenth of it into useful work. Yet, unless one tolerates the death of the soil—and Dutch-style industrial hydropony on dead soil—he has to remember that man ultimately derives his alimentary energy from the soil. So, as economics is scaled by the measure of a man’s work output (some 200 Cal/day), social geography must be scaled by the amount of cultivated land required to feed one person (about one acre in intensive agriculture). No wonder that Podolinsky pretended to have unified the
views of the Physiocrats, of the Marxists and of the thermodynamicists! Yet, man’s labor can contribute either to the conservation or to the dissipation of energy. It will inevitably do the latter if his industry is based on the exploitation of fossil energy. But the evaluation of his work as conservative or dissipative depends also on the knowledge of his immediate or mediate relation to the soil that feeds him. Following Podolinsky, man’s activity only deserves the name labor if it is conservative.46 Dissipative activities do not deserve that name and must be sanctioned as undue withdrawal of a common good from a community’s existential matrix. Heavy industry, which rely on conserved solar energy in the form of fossil organic compounds exhausts a common good and is not sustainable in the long run. As the over-exploitation of the soil, it is not legitimate labor and must therefore be sanctioned.

The question that Podolinsky did not address directly is how illegitimate work must be sanctioned. Ulrich von Weizsäcker has recently suggested that all forms of tax raising ought to be replaced by a single tax on energy conversions. In other words, all “labor” that involves an industrial conversion of energy must be taxed in proportion to that conversion’s intensity. I think that it is a practical complement to Podolinsky’s embedded view of energy and the use of it as a factor of proportionality to evaluate man’s productive activities.47 Under the shield of this radical protection of self-reliant communities, their commons and their ecological-climatic matrices, an economy in the true sense of “administration of one’s own house” could flourish again. A sustainable world of austere hedonistic activities, freed from the energy-entropy form of the obsession with scarcity, in which the soil would be the generator of plant life, wheat would again be allowed to be the substance of our daily bread, and cow-dung to be a goddess’ gift.
NOTES

2. For a list of the Worldwatch papers edited by L.Brown, write to Worldwatch Institute, 1776 Massachusetts Ave., NW. Washington, D.C. 20036, USA.
8. This position was violently attacked by Lenin, V.I., Materialism and Empiriocriticism. Saint-Petersburg, 1908.
10. Merleau Ponty, Jacques, “La découverte des principes de l’énergie: l’itinéraire de Joule,” in Revue d’Histoire des Sciences 32. 1979, p. 315-333. Insists on the invention character of Joule’s itinerary. Truesdell, C., The Tragicomical History of Thermodynamics 1822-1854. Heidelberg: Springer, 1980. Einstein, in a letter of January 6 1948 to Besso: “I see [Mach’s] weakness in this, that he more or less believed science to consist in a mere ordering of empirical material; that is to say, he did not recognize the freely constructive element in the formation of concepts. In a way, he thought that theories arise through discoveries and not through inventions (quoted in Holton, Gerald, Thematic Origins of Scientific Thought. Kepler to Einstein. Cambridge, Ma: Harvard University Press, 1973, p. 231). Thaddeus J. Trenn, in his preface to the reprint of Fleck’s Genesis and Development of a Scientific Fact. op. cit.: “The conceptual creation of science, like other works of the mind, become accepted through a complex process of social consolidation. These thought products, and the thought style under which they arise, are never finalized but can undergo transformation through intra-collective or even inter-collective interaction whereby symmetry is democratically preserved between the esoteric circle of the experts and the exoteric circle of the wider society, and marginal men participating in diverse thought collective can create something new from the conflict.” (p. xiii) Not long ago, Michaela and Augusto Odone, the inventors of “Lorenzo’s oil” gave a striking demonstration of the truth of this last sentence.
11. I know that strictly speaking, the unity of force corresponds (now) to the dimensional expression C1 G S-2 while the unity energy has the dimensional expression C2 G S-2. But this distinction was not clearly admitted before 1887, after the Beneck Foundation of the
Göttinger Fakultät had invited, in 1884, to a competition whose program was phrased in the following words: “Since Thomas Young (Lectures on Natural Philosophy, London 1807, Lecture VIII) many physicists ascribe to the physical bodies a property called energy. Since William Thomson (Philosophical Magazine and Journal of Science, IVth Series, London, 1855, p. 523), the notion of a principle of the conservation of energy valid for all physical bodies has gained acceptance, which seems (emph. mine) to correspond to what Helmholtz had understood under the name ‘Principle of Conservation of the Force.’” The Beneck Foundation asked to answer the question whether Young’s and Thomson’s concept of “energy” was equivalent to what Helmholtz called “force.” There were two entries, but no first praemium was awarded. The young Max Planck won the second praemium with a book-length essay entitled “Das Prinzip der Erhaltung der Energie,” Leipzig: Teubner Verlag, 1908 (1887).


15. Polanyi, op. cit., on Edmund Burke’s and Jeremy Bentham’s belief in a “law of scarcity” governing society more efficiently than any political law, p. 117: ‘To the question ‘What can the law do relative to subsistence’ Bentham answered ‘Nothing directly’.”


17. This is true for the 19th Century, the century during which physics became a profession. It is not quite true for the 18th Century, when enlightened aristocratic ladies performed physical experiments in theirs salons.


22. This was the feat of Meyer, Oskar Emil, “Ueber die Reibung der Flüssigkeiten,” in J.C. Poggendorf, Annalen der Physik, Vol. 113, Leipzig, 1861, p. 55 ff., 193 ff and 383 ff (experimental results). Meyer (with e!) is a “late haemodynamicist,” long reluctant to convert to the tenets of the opposing school. He however did so around 1875 and was as successful as in his haemodynamical studies, since, as a precursor of Perrin, he gave the first sketch of what is now known as the “Avogadro Number”: Meyer, Oskar Emil, Kinetische Theorie der Gase, Beslau, 1877, p. 232. His brother underwent a similar “late conversion” and, before Mendeleiev, gave the first blueprint of what had to become the periodic table of the elements. About the Meyer brothers and their dramatic change of “philosophy of matter,” see Rosenberger, Ferdinand, Die Geschichte der Physik, 3rd part, Brauschweig: Vieweg, 1887-1890. Notice that the passage from haemodynamical to thermodynamical views generally implied a shift of interest from the internal kinetic of liquids—with the mutual dependence of neighboring infinitesimal layers—to the kinetic of gas molecules conceived as individual Galilean bodies on a kind of 3-D “billiard board.” I suspect that the motif for such changes of “matter philosophy” lies in the lack of a “scaling element” in continuistic considerations, probable reason of the haemodynamicists’ failure to give a full mathematical analysis of the caloric equivalent of mechanical work.
23. The following, incredible statement by Mayer must be quoted in the original: “Den unproduktiven Druck haben wir umsonst, die Kraft aber, oder das sogenannte Kilogrammeter kostet immer Geld. In noch höherem Grade, womöglich, als für die Physik, ist für die Physiologie, welche bekanntlich in der Wärmelehre ihre wissenschaftliche Grundlage erst gefunden hat, das Kilogrammeter ein notwendiger Lebensbedürfnis” (Mayer, R. J., Kleinere Schriften und Briefe. Edited by Weyrauch, Stuttgart, 1893, p. 419.


26. See in this respect the incredible performance of Dühring, when he passionately took side with Mayer, “the true German physicist”—not like Joule, a stranger, and unlike Helmholtz, (the “Bismark of physics”), free of “English ideas”! The old German-English “Prioritätsstreit” became three-national in the 1880’s, as France entered the arena with Hippolyte Carnot brandishing an old sheet of paper meant to prove that his brother Sadi had already calculated the mechanical equivalent of heat before 1824. Dühring, Eugen, “Robert Mayer, der Galilei des neunzehnten Jahrhunderts,” Chemnitz: Ernst Schmeitzer Verlag, 1880.

27. Applied to social matters, the thermodynamicists’ Galilean recipe reads: “Disembed from the context. Make abstraction of its reality. Re-introduce it as controllable abstract constraints.” No wonder that outside the lab, such practices could only lead to the A-bomb and to the climatological catastrophe, which in the strong sense is a negation of the atmosphere and its climatic horizons. For an ambiguous attempt to take the atmosphere and a place’s climate at face value and as the starting point of all ecological discussion, see Murota, Takeshi, “Heat economy of the water planet earth: an entropic analysis and the water-soil matrix theory” in Hitotsubashi Journal of Economics, vol. 25, no 2, Tokyo: Hitotsubashi University, December 1984. The strong part of the Japanese theory of the soil-water-air matrix is its repeated reference to the historical climatic concept of fudo as scaling element of geography.


29. See Illich, Ivan, The Social Construction of Energy. op. cit. “I am interested in the history of ‘energy’ because I discover in the emergence of this notion the means by which ‘nature’ has been interpreted as a domain governed by the assumption of scarcity, and human beings have been redefined as nature’s ever needy children. Once the universe itself is placed under the regime of scarcity, homo is no more born under the stars but under the axioms of economics.”


31. This is not so extraordinary, if one thinks that as late as in 1913, Mach wrote: “I gather from the publications which have reached me, and especially from my correspondence, that I am gradually becoming regarded as the forerunner of relativity. (...) I must, however, as assuredly disclaim to be a forerunner of the relativists as I personally reject the atomistic doctrine of the present-day school or church” (quoted by Holton, Gerald, op. cit., p. 230).

32. Quoting Alexandre Koyré, Gerald Holton writes: “... Galileo’s work was an experimental proof of Platonism as a methodology of science ( ‘La découverte galiléenne transforme l’échec du platonisme en victoire. Sa science est une revanche de Platon’). The scholastics had
always been able to point to the two main failures of Platonism: on the one hand there was no good theory of terrestrial motion (...) and on the other hand there was no successful mathematization of quality. (...) What of the second challenge? The mathematization of quality had proved possible for such qualities as motion and size, but not for others, such as taste, the sensation of heat, color (though most of these subsequently were indeed also found to have quantifiable aspects). Galileo’s decision was simple: to banish (emphasis mine) the unquantifiable qualities from science—or more properly, to withdraw the attention of science from the realm of the unquantifiables” (Holton, op. cit., p. 439).


34. One of the humidity and worm-gnawed documents I could save during my “trip to the grandfathers’ country” was a handwritten version of Painlevé, Paul, Leçons sur le Frottement. Paris, 1895.

35. It has not been sufficiently noticed that Haller’s haemodynamics, as exposed in his Physiology was the main source of inspiration of Joule’s first experiments. The young Joule quoted Haller in the following terms: “... the hypothesis that blood is heated by friction in veins and arteries would account for that part of animal heat which Crawford’s theory had left unexplained.” See: Wobmann, Peter, “Albrecht von Haller, der Begründer der modernen Haemodynamik,” in Archiv für Kreislaufforschung, Vol. 52, Fasc. 1-2, 1967, p. 96-128.

Haller, Albrecht, Physiology, vol.ii, p. 304. In 1845, Joule built a machine in which the conversion of a liquid’s molar motion could occur practically without heat losses, what allowed an experimental measurement of the calorific equivalent of mechanical work: Joule, James Prescott, “On the calorific equivalent of mechanical work” (communicated by Michael Faraday, Foreign Associate of the Academy of Sciences, Paris, &c. &c. &c.) in Philosophical Transactions 1850, Part 1, p. 298 ff. “In 1843, I announced the fact that ‘heat is evolved by the passage of water through narrow tubes’ and that each degree of heat per lb. of water required for its evolution in this way a mechanical force represented by 770 foot-pounds. Subsequently, in 1845 and 1847, I employed a paddle-wheel to produce the fluid friction, and obtained the equivalents 781.5, 782.1 and 787.6 respectively from the agitation of water, sperm-oil, and mercury.” A question that historians of science have thus far not answered with due precision is this: why did the haemodynamicists repeatedly fail to formulate analytically the calorific equivalent of mechanical work (= to describe Joule’s experiment mathematically without starting a priori from the inverse of the mechanical equivalent of heat), while Mayer, who was by no means a skilled mathematician succeeded in giving a conceptually—if not numerically—flawless analytical formulation of the mechanical equivalent of heat? The reason is this: nature is “scaled,” which means that every creature is morphologically related to its size. The haemodynamicists failed to identify the scale at which a “mole” of liquid will necessarily cease to grind heat between its layers. Some still thought, like Leibnitz, that “the ‘force’ can disappear from particular bodies (falling into the ‘abysses of the infinitely small’) without being lost for the universe”: “Etsi enim pars potentae ab impedimentis absorbeatur, non destructa tamen, sed in impedimenta translatae est, quae in effectum integrum computatur.” In other words, Leibnitz thought that friction can occur ad infinitum between smaller and smaller moles, the “force” not disappearing, but being unlimitedly fractalized, as if we would change good money for cents and these cents for hundredths of cents and so forth, until, without having “less” we would no longer have anything that means something in monetary terms. Wouldn’t it be interesting to open a forum for those who will attempt to do what the haemodynamicists were impeded to complete by the victory of the opposing school? The epistemological wager of the exercise is this: While it is impossible, within one school or “theta” to disentangle the active from the passive connections, it is possible, knowing nature’s resistance avisos, to compare the active and the
passive connections of two schools engaged in a ?-? controversy. Wise could provide the mail-box. Please, don’t try alone!

36. It was only stated much later that, in the conversion of a liquid’s internal mechanical work into heat, there must always be a remnant of macroscopically observable mechanical motions, named—after the Scottish botanist who observed them around 1840—Brownian motions. These are explained by stating that, for a very small body floating on a liquid’s surface or in suspension within it, the resultant of the pressures on the body’s immersed surface at any moment due to the shocks of the liquid’s molecules’ haphazard thermokinetic motions, is generally not zero and greater than the resultant of the resistance factors like inertia and friction. As a body of increasing dimensions is considered, these shocks tend to statistically equate themselves, leaving at any moment a resultant that can be neglected in relation to the body’s inertia and the surface interactions (capillary adherence, friction). Einstein, Albert, “Über die von der molekularkinetischen Theorie der Wärme geforderte Bewegung von in ruhenden Flüssigkeiten suspendierten Teilchen,” in Drudes Annalen der Physik, Vol. 17, May 1905, p. 549.


42. His son’s commitment with the idea of protecting the Russian mir—peasant commune with its commons—by defining its horizon and legally limiting what could cross it both ways can be seen as a striking application of his father’s ideas. A member of the Ministry of Agriculture led by his cousin Pyotr Stolypin, Podolinsky jr was the intellectual author of the tsar’s last agrarian reforms. Podolinsky, Sergej S., Rußland vor der Revolution: Die Agrarsoziale Lage und Reformen. Berlin: Berlin Verlag, 1971.


45. Martinez-Alier, Juan, “Energy accounting and the notion of ‘productive force’,” Barcelona, Berlin, 1984, manuscript. Isn’t it symptomatic that this work about a thinker from a region of the industrializing world that was despised as “marginal” was first published in Catalan? See also: Martinez-Alier, Naredo, J.M. and Schinepmenn. K., “Research Project: Energy Analysis and Economics - Studies on Neglected Interdisciplinary Currents of Thought,” Berlin, 1984, manuscript.

46. Podolinsky, Serge, “Menschliche Arbeit und Einheit der Kraft” in Die Neue Zeit. Stuttgart, 1883, p. 413 ff.. The most important passage for my interpretation is: “We hope to have succeeded in burying the so-called doctrine of abstinence or ‘negative labor’ [of the
capitalists]. For labor is always a positive concept denoting the expanse of mechanical or psychical energy for the sake of energy conservation” (p. 423).

47. Another modern complement to Podolinsky’s alternative “social energetics” comes from Bettina Corves, who has recently written a thesis in which she shows the clash between East-European and West-European ideas in the formation of the energy concept. The victory of the utilitarian-thermodynamical paradigm attests the predominance of West-European, pro-heavy industry conceptions. Corves, Bettina, “Energie in der westlichen Industriegesellschaft. Geschichtliche Entwicklung des Begriffes und die Bedeutung in der Umweltdiskussion,” Nürnberg: Wirtschafts- und sozialwissenschaftliche Fakultät der Friedrich-Alexander Universität, 1986.

In an old essay, Georgescu-Roegen, who had been himself an agrarian activist in his native Romania, deplored this catastrophic Western predominance and saw it as a threat for socialism: Georgescu-Roegen, Nicholas, “Economic Theory and Agrarian Economics” in *Oxford Economic Papers*, 1960, 12: 1-40 (on this theme there is an older, more interesting paper by G.-R., a statement of the “agrarian specificity” of East-European socialism which I was unable to retrieve in my files).

Clausius’ response to Podolinsky is a striking illustration of the rightness of Georgescu-Roegen’s point over the Western despise for East-European agrarian practices and theories: Clausius, Rudolf, *Ueber die Energievorräte in der Natur und ihre Verwertung zum Nutzen der Menschheit*. Bonn, 1885. “We now live in a marvelous period with respect to the consumption of mechanical energy. In economic relations, it is usually taken as a rule that of anything, only as much is consumed as can be produced in the same period (...). In reality, we go about in a totally different manner, having at our disposal under the earth stocks (...) formed in periods compared to which all historical times vanish. These we are now using and we behave just as the happy heir eating up a rich legacy.” The tone of the several references to Podolinsky to be found in the Marx-Engels correspondence is in tune with Clausius’: there are no reasons for limiting industrial progress in its tapping of nature’s forces: “What Podolinsky has completely forgotten is that the laboring man is not as much a conserver of present sun energy as he is a waster of past sun energy.” Marx, Engels, *Lettres sur les Sciences de la Nature*. Paris: Editions sociales, 1972, p. 109. The book contains 4 pages of comments on Podolinsky, the largest from Engels, dated Dec. 1882.
Though shadow-less space overwhelms me, I still dwell among traces of lost boundaries. My flesh—the flesh of my “lived body”—still does not coincide with the charts of anatomy. Though a light imperative soaks the epoch, I cherish shadow.

The tracing of a bounding circle is the first act of founding a place to dwell. A “place” is not a portion of “space” enclosed by an arbitrary frontier. A place is “where it began” (cf Greek archein). It is a local, peculiar and unique union of landmarks and skymarks. I live among the traces of broken boundaries. Can I still trace boundaries?
We were lying
deep in the macchia, by the time
you crept at us last.
But we could nor darken over to you,
light compulsion reigned.\(^2\)

To my ear, the title, “Place in the Space Age,” has the same ominous ring as this excerpt from a poem by Paul Celan. We groped for obscurity, but we were struck by light. A light that does not admit its contrary would be unbearable. The very idea of day without a night, of a sun without moon and stars, of light without shadow, makes me shiver and painfully reminds me of the vulnerability of my inwards: such must be the light of the dissecting room. But I feel that the \textit{Lichtzwang}, the light compulsion of which Celan speaks is still more frightful. Against it, the dragon of the Book of Revelation is a naive metaphor for an unspeakable horror. The dragon hit the stars with its tail and turned them off. I feel that, to understand Celan’s intuition, the apocalyptic image must be exactly reversed. The poet speaks of the extinction, not of light, but of darkness. As if the carrier of a merciless, global light would now threaten to erase all zones of shadow, all shades that protect tender, local existence.

I wrote this essay in the conviction that \textit{space} has become the carrier of a conceptual light that exposes the hidden and the not yet, equalizes the interior and the exterior, and penetrates every

\(^1\) This paper was originally shared at host Oakland Mayor Jerry Brown’s Oakland Table, June 23, 2001.
nook of my home and my heart. It ends with a question: Where shall my friends and I find the
courage to make our places in the age of space?

I have to confess that I have been a believer in a strange natural religion that doesn’t worship
Ge, Ra, Helios, Tonatiuh or Ouranos, the earth, the sun or the sky, or any of the elements, but space
itself, as if it were the primordial element. The brand of believers in the religion that seeks ex-
stasis—literally: a stand outside of any concrete inside—in space are called architects, or at least
were they called so in my days. They designed houses as if seen from a distant shore; they built
them as enclosures for universal beings that would maintain particulars at bay; they eliminated as
vain ornaments all what was not as universal as space itself. They did not satisfy the desires of
concrete persons, but the needs of human beings, as one of them, Le Corbusier said, “the same
everywhere and in all times.” They first reduced persons to the role of clients, the subjects of needs,
and thought that this \textit{reductio ad absurdum} exhibited Man’s true primary relation to the world. Like
the paintings of Mondrian, the architects’ pet painter, their designs eventually captured, beyond all
accidents and singularities, the ideitic plastic powers of pure space. This caused them, again in Le
Corbusier’s words, “so intense an emotion that it could be called unspeakable,” a state that, for him,
was one of the roads to happiness. Can one say more clearly that, for this and other oracles and their
Pythons, being muted by space was a religious experience?

Some of the space-struck guardians of the masters’ teachings became in their turn my
masters.\footnote{Tom Wolfe, a non-architect but a talented ironist has made fun of these defenders of the sacred oracles and their claim to
infallibility, calling their guardians or “Pythons” the \textit{compound}, so I will try to spare offended susceptibilities. Wolfe, Tom, \textit{From
Bauhaus to our House}, New York: Farrar, Straus, Giroux, 1982.} I was initiated in the sixties, at the “Sektion Eins” of Zurich’s Federal Polytechnical
Institute, the ETH. To tell you how the initiation process began, let me report on one of the first
exercises. Provided with plans of a building by one of the Great Masters (beside the superstars F.L.
Wright and Le Corbusier, these included Mies van der Rohe, Alvar Aalto, Walter Gropius, Max Breuer, Gerrit Rietveld and a handful more, down to the more local Max Bill), future initiates had to construct a hardwood reverse model of it. A reverse model is the three-dimensional equivalent of a photographic negative, an object in which the void appears as full and the full as void. This exercise and others of the kind had been devised in one of the highlands of Modern Architecture, the Bauhaus. All such exercises were meant to teach neophytes that space, and only space, was the substance that they had to learn to knead. Later, much later, meditating on that dissolution of matter and materialization of nothingness helped me understand why some architects of that tradition could not only feel at ease in American balloon-frame architecture, but even praise its material vacuity in their books!\(^4\) Obviously, it is the closest thing to pure, immaterial space that the history of architecture can offer. However, I was not long to be intrigued by another recurrent question that no master could ever answer: why do certain clients of the architects develop such a genuine and profound hate for the space they had purchased, sometimes at rocketing monetary costs?\(^5\)

As a common man, I was repeatedly confronted with situations that questioned my teachers’ space worship and made me see again matter as full, and void as empty. I spent part of the years 1963 and 1964 in Amsterdam, as a draftsman in an architectural firm. Something remarkable, sad but strangely joyful happened. There were almost no cars in the city in those years, a “backwardness” for which Mayor van Hall felt ashamed in front of his European colleagues. He and the municipal council behind him (he had been a hero of the Dutch Resistance) wanted to catch up with Essen, Frankfurt or Milan: build roads to irrigate the city with vehicular traffic, a sign of

economic development. This impending threat gave Amsterdam an atmosphere of delicate vulnerability, a quality that it was about to lose forever. I have not ceased to meditate about that awareness of an imminent loss, of something unique that would soon be gone forever, which pervaded the city during the hot summer of 1964. My colleague Hajo van Wering took me for nostalgic walks after work. One evening, he would lead me under a bridge from where we could catch a glimpse of the encounter of quiet pedestrian life with water, stone and sky that must have inspired Ruisdael. The next day, he had me climb on a church steeple to see how deftly the bell player hit the keys and hear how the crystalline music fell on a city still free from the racket of motorized traffic. It is Hajo who told me about the name by which very old families still refer among each other to their beloved city—Mokum, a corruption of the Hebrew word makkom, meaning a place where God has spoken His word, or a refuge for threatened folks.

In a joyful atmosphere of precarity, young people began to make things happen in the streets. One group called themselves Provo and wanted to provoke the municipal authorities into avowing their anti-pedestrian bias. To demonstrate the uselessness of cars, they put free, public bicycles in all street corners and were arrested for this. Another group compared Amsterdam with an apple and asked people to gather at its center. Several centers came into being through the ensuing gatherings. Alas, that popular resistance was crushed by Progress’ war against people’s commons, and Amsterdam ceased to be a makkom for pedestrians. I felt as if I were becoming schizophrenic. While I was initiated as a believer to the ecstatic powers of space, I was also increasingly seduced by the delight of streets, by smelly, shadowy, vibrant and, as I had just discovered, vulnerable street life. Full it was, but not of the hardwood fullness of the reverse model. And what should I think of car traffic, after what I had lived through? Was it not the unavoidable
corruption of “unspeakable space”? New questions assailed me: What is there in architecture that destroys streets? What is there in space that destroys places?

I finished my initiation and became one of them: an architect. Most of the places I had to make unspeakable can still be visited in the Swiss-French city of Neuchâtel, and the street that fell victim to my art is called Rue des Épancheurs: a mono-functional bank now stands where there had been the diversity of unspoken relations of mutual support among close neighbors. But I had given myself a limit. If I had not solved my riddle in two or three years, I would do something, perhaps take a trip.

I landed in Mexico in 1972. I rediscovered matter in the form of Mexican adobe, the unburnt, sundried brick of clay and straw. I was especially delighted to discover that, in the best adobe, the “straw” comes as donkey droppings. Lo, I first took adobes for primitive bricks! Self-made they were, but also more repair-intensive than the ones burnt in an oven until they turn red; unwieldy and heavier than hollow cement blocks, cheaper but less durable. It took me long to free myself from the reverse model. On one occasion, I dematerialized them into something—a space?—unspeakable for my neighbors’ solid common sense. Well, I made an architect’s house out of them. Su casa, mi casa.

It took me some time to grasp that these frail, irregular elements of most Mexican village houses wanted to engender a kind of place of which no one had talked to me at the ETH in Zurich. When I touch the walls of my house I still feel the oozing of their lament, but now, I try to listen. I came to realize that it was a violence, almost a rape, to use adobe to generate space.

The whimpering adobes made me sensitive to the abuse of the word “politics,” “city-” and even “community-building” when these activities transfer the merciless light of global space into people’s places. I spent some time in libraries with my questions in mind and soon discovered that
the belief in space is not only the myth of architects and city-planners. It has become the endemic superstition of the most modern, rational persons, one of the sueños de la razón that generate monsters of which Goya spoke.

I welcome this unique opportunity to come to terms with an old but rarely bespoken dilemma and to do it publicly. Perhaps it may help pose a new question: what happens to politics when and where space is prevalent?

The Historicity of a Modern Certainty

Space is a historical critter. “One hundred years after Newton, space was taken for an a priori, while, one hundred years before him, nobody had known it.” If these words of the German physicist and philosopher Carl Friedrich von Weizsäcker are true, Kant was wrong: space is not a universal a priori. It is not something evident that was present everywhere from the beginning. Euclid did geometry without knowing space.

Weizsäcker’s claim is startling. Here is a professional physicist who tries to convince us that before the birth of modern physics, a certain event took place and that event is nothing less than the birth of space! Expressed in a less dramatic and more technical fashion, he argues that space is a historical construct; he defends the thesis of the historicity of space.

However surprising it might sound, space, strictly speaking a perfectly homogeneous nothing, is a historical construction. As all historical constructs, it had a beginning and it might soon

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7 Euclidean geometry is about the properties of figures traced on a surface, not about that surface or any other constructed space. Since Euclid did not know space, it is anachronism to speak of Euclidean “space.” Space is “retro-projected” into Euclid’s geometry by stating, first that, in this geometry, the shapes of figures remain constant under motion and, second, that any “space” in which the shapes and functions of objects remain constant under motion is “Euclidean.” For an example of this use of the term “Euclidean space,” see Heelan, Patrick, Space-Perception and the Philosophy of Science, Berkeley: University of California Press, 1983, especially p. 41.
reach its end. These, at least, are the ideas that I propose to explore in this essay. But my arguments in favor of the historicity of space will also lead me to ask three lancing questions about the space-dominated society we have lived and still for a great part live in:

1) I want to understand how the notion of homogeneous space became a crucial element to develop modern management as it is taken for granted in technological society.

2) I will ask how the belief in “space” as an a priori of all perceptions has affected the much older notion of “place.” A citizen’s “home” meant the place beyond the threshold of which the commons started. Home stood to commons in a qualitative relationship that vanished when the threshold was reduced to a mere boundary that separates two domains of the very same “space.”

3) Further, I want to recognize in which way the formal, abstract a priori of space affected the ethical and political perception of place as the outcome of reciprocal recognition and mutual devotion; as the atmosphere people create when they dwell together in a spirit of hospitality.

These questions are generally met with stubborn resistance by most people who have spent more time sitting in schools, in traffic jams or behind computers than talking to their neighbor. They have learned to think of space as the ultimate enclosure. For them, existence is a routine in planned spaces and freedom is an unlimited expansion of these spheres. In 2001, when a computer freak says “space,” he might well mean the multilayered container of hypertext in electronic nowhere. But for most alphabetized commoners, space still means background space, the universal background

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8 Schild-Bunim, Miriam, *Space in Medieval Painting and the Forerunners of Perspective*, New York, 1940. Modern background space—the mental machinery behind every painted scene—was absent from antique and medieval paintings. Even the Pompeyi painters, who knew various sophisticated techniques to evoke depth and farness, ignored it. These techniques, thus, are not antecedents of perspective. The words “absent” and “ignore” should not suggest that premodern painters did not know something
of all particular existence, separate from them and yet ever-present in and behind them, somehow like the blank page behind the letters. What they call “space” has become so much part of the mental machinery that informs their perceptions that they lack the necessary distance to question it.

A Historical Critter...That Might Come To An End

As I already suggested, the realization that space is historical implies that it had a beginning and therefore might now approach its demise. This idea would hardly have upset people a generation ago. It would just have seemed ludicrous to those who had labored at high school math and abstruse to those who commuted between home and work. By the twentieth century, the reality of Cartesian, three-dimensional space within which all movement happens had become a “given.” This made it impossible to recognize space as an epochal critter.

However, at the dawn of the twenty-first century, the innocent certainties about everything’s enclosure, or, as Foucault would say, renfermement in space, is no longer as absolute as it was at the time of Sputnik. Since then, the status of space as a natural given has started to become questionable. Doubts have arisen from two sides. On the one hand, the transition from instrumental to informational techniques, from the government of people to the management of populations has weakened the intuitive certainties supporting “modernity.” On the other hand, historians have assembled much evidence for the thesis that abstract, a priori space only became part of popular wisdom long after Newton’s time. This two-pronged threat to the belief that space is the natural box

that was discovered later. They rather adhered to their world in a radically different manner than modern men do. To this, Veyne, Paul, “The Roman Empire,” in Philippe Ariès and Georges Duby, History of Private Life, vol. 1, states that no man could glare at the naked background behind the scenes that he was inhabiting. For there was no backdrop. Bochner, Salomon, “Space,” in Dictionary of the History of Ideas, New York: Charles Scribener’s Sons, 1973, v.5, pp. 294-306 analyzes several ancient words for “place,” “divinely protected place,” “openness,” “cleared land,” “void,” “freedom of movement,” “absence of limits and hence of form” and concludes that classical premodern languages have an abundance of terms to designate “placeness” and “breaking away from a place,” but none for what we call “space.”
that contains all that exists can either invite me to a new liberty or strengthen a new tyranny. It can free you from the naive dream that space can be made inhabitable—that is, that women and men can found their dwelling in planned space—and make it easier to stress the perversity of any nostalgia for a comforting cage. But it can also make me crash into a virtual “space” in which the far and the close, the center and the periphery, the self and the other, collapse into a wired erewhon in real time.

The “something” still called “space” has no tactile qualities, no orientation, no smell, no taste, no memories. It is immune to the colors or shadows, the rhythms and sounds of anything immersed in it, while it strips both things and persons that it encloses of their aura. Yet, I attempt to persuade you that this no-thing is a social construct that characterizes a period of history—modernity—a period that I propose to dub “the space age.” The space age is the epoch in which the Cartesian coordinates of mathematics and physics have become the ultimate beyond of all reality. It is the period of history in which schools and highways have induced most people to reduce the world’s inexhaustible perceptual richness to a system of measurements of relative distances.9

Let’s summarize: space that Kant took for an a priori of perception, is a relatively recent mental construct. That means that there is a “before” and an “after” its invention. The invention of space is perhaps one of the great watersheds of history: modern men cannot recover the perceptual modes of the men who lived before that invention, nor could these possibly understand the vision of the generations who came after. How deeply strange our space age is to the premodern mentality is manifest in the visceral rejection of its enclosures by people recently engulfed by it. For instance, a Mexican peasant’s confidence that any object that has touched the soil is free to be taken as a

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9 Poincaré, Henri, La Sience et L’hypothèse, Paris, 1968, pp. 77-94. At the dawn of the 20th Century, this mathematician and physicist expressed his conviction that the “Euclidean” (or better: Cartesian) space of classical mathematics and physics is not identical with the “spaces” of our perceptions. Cartesian space is a highly artificial construct.
commons, often survives long after he has become a mason in the capital; hence the so frowned upon custom of many urban migrants to let whatever they no longer need fall to the ground to be picked up by others. Finally, for the modern mind, universal background space is the non-transcendent beyond of all reality.

**Disciplined Agnosticism and Asceticism**

To pursue this inquiry into a modern certainty, I had to practice a discipline that I name *space agnosticism*. By this term, I mean an ascetical effort to disentangle myself from the aggregate of notions and perceptions foisted by the enclosure of all realities into the homogeneous space of science and management. In a world of highways, airports, educational precincts and penitentiary wards, this enclosure is *technogenic*—either generated or enforced by technology. It is why the practice of agnosticism among the certainties of the space age calls for an asceticism with its technologies. While I cannot abstain from being involved with motorized wheels that numb my feet, with wires that cancel distance, with TV that looks everywhere from nowhere, I still can cultivate a skeptical attitude and resist becoming their slave.

I am by far not the only doubter, but it has become necessary to distinguish doubters from one another. Indeed, space skeptics are of two kinds. On the one side, the irreflexive net-surfers, science fiction addicts, New Age mystics and system managers wired to virtual reality have abjured the space age without even being aware of it. On the other side, those whose skeptical view on space is rooted in historical study have been my guides.

Patrick Heelan, a philosopher and a physicist is one of them. According to him, the still dominant concept of the twentieth century, space, is a product of technological mediation and visual
education. He argues that great painters like van Gogh and Cézanne have understood that nobody naturally sees in the space of linear perspective, but rather in a strange geometry that “curves” all straight lines and is perhaps non-Euclidean. Heelan also explains why space agnostics are so few: educated modern man fiercely resists the revelation of the arbitrariness of his certainties.

The philosopher of science Yehuda Elkana claims that every form of thought is “space specific”, e.g. that it is determined by the kind of “box” within which it was generated. He examines how different spaces—the lab, the emergency ward, a museum, a cinematographic studio—generate characteristic forms of knowledge and he understands that these spaces all stem from the same “universal and context-free institutional assumptions,” which, for him, ought to be the main theme of research into the illusory obviousness of space. However, Elkana seems unaware of the fact that any space planned for a modern professional institution, be it medicine, education, government or social service is radically heterogeneous to any place created by the very act of inhabiting it. For instance, he is insensitive to the radical difference between a monk’s cell and a lab. The first is a place engendered by daily gestures fitting a community rule, while the second is a technogenic space needing professional control. In contrast to most modern precincts, the monastic cell, the guild chapel and the little red school-house are eminent examples of places that owe their existence and atmosphere to the stance and relation of persons.

Space agnosticism takes still another form with Ladislav Kvasz. For this mathematician,

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10 Heelan, Patrick, A., *Space Perception and the Philosophy of Science*, Berkeley: University of California Press, 1983. The visual space is not Euclidean. It is rather “hyperbolic” or “Lobachevskyan.” But, what is Euclidean space if Euclid knew no space but figures?

11 Contrary to what happens in Euclidean geometry, motion (and changes of size) in non-Euclidean space affects the shape of figures. According to Heelan, the visual space is such. See Heelan, *Space-Perceptions...*, op. cit., pp. 41, 57-77, 98-128, 281-319.


physicist and epistemologist, space is inseparable from the concept of “projective equivalence.” Imagine that, sitting at your table at night, you observe a cup and its shadow under your lamp’s light. As you near your eye to the source of light, the shapes of the cup and of its shadow tend to overlap. If you could see them from the exact point occupied by the lamp, their overlapping would be perfect: the cup and its shadow would then be projectively equivalent. In general, two figures are said to be projectively equivalent if there is any point from which they can be seen to overlap. This point is called the “center of the projection.” Its construction, Kvasz argues, always defines a special subjectivity. For instance, if one of these figures is a real object and the other a drawing on a surface, the center is the eye of a Renaissance painter practicing linear perspective. From this subjective vantage point, Renaissance painters constructed an ideal space in which they computed point by point the projection of real objects and then pretended that what they had drawn was what their eye had really seen. This is how linear perspective could become the paradigm of the visual representation of reality and even of objective observation for centuries. It inaugurated a thought style for which only what could be compressed into a constructed space was real. According to Kvasz, all further applications of the principle of projective equivalence are examples of the diversity of mental boxes in which space can enclose reality. He comments on Gérard Desargues’s projective geometry, Lobatchevsky’s non-Euclidean geometry and then the way Beltramy, Cayley and Klein successively verified it in projectively equivalent Euclidean surfaces. For Kvasz, every one of these conceptual feats bears the seal of an epochal form of subjectivity.

The Dutch philosopher Jan Hendrik van den Berg, creator of a radical form of phenomenology that he calls “metabletics,”14 the doctrine of changes, is interested in the form of subjectivity that, he suspects, accompanies every kind of space. Since the same specific subjectivity

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informs an epoch’s construction of space (if there is one!), the style of its architecture and the kind of illness that people suffer (sic), broad connections can be traced between these apparently separate realms. So, van den Berg sees a correlation between the demise, starting in the eighteenth century, of the inside-outside relationship that was typical of the Baroque style in architecture, the emergence of non-Euclidean geometries, and, at (about) the same time, the first clinical description of a neurosis under the name, “the English malady.”

Catherine Pickstock, a theologian, approaches the modern obsession with space from a completely different side. She interprets it as equivalent to the sophistry that Socrates denounced in the Phaedrus. While they were walking along the river Ilissus, outside of Athens, young Phaedrus pretended to entertain Socrates with a discourse on love that he had learned by memory from a scroll. Socrates teased him into confessing his sham and had him read instead of feigning to converse. Then Socrates improvised two discourses, one that mocked the Sophists who reduced speech to an equivalent of written language and another, genuinely spoken, that celebrated the *logos* as an ana-logy of love. Contrary to the first, the oral discourse of Socrates established a concrete relation with Phaedrus and also with a well in which they bathed their feet, the nymph that inhabited that well and the season’s perfumes.

In 1574, in the introduction to his *Logike*, Peter Ramus wrote that his “lytle booke” was to be more profitable to the reader than all the years spent studying Plato. What he proposed was a “calculus of reality” in which all topics were divided in successive and ordered stages, beginning

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15 The date of the first publication on non-Euclidean geometry is 1829. It was a work in Russian by Nikolay Ivanovich Lobachevsky, followed in 1837 by a work in French (“Géométrie imaginaire”) and, in 1840, by a book in German (*Geometrische Untersuchungen zur Theorie der Parallellinien*). Lobatchevsky was rector of the University of Kazan. His ideas were rooted in his opposition to Kant, who maintained that such ideas as “space” and “time” are *a priori*. For Lobachevsky, space was an *a posteriori* concept. He thought that he could evidence it by demonstrating that different axioms can generate different spaces.


with the most general and progressing towards the more particular. These stages were mental boxes that immobilized objects in their definitions and excluded the comprehension of knowledge “as an event which arrives.”\textsuperscript{18} According to Pickstock, Ramus’s calculus of reality is the subjection of logic to spatial thinking. Space, she points out, has become a pseudo-eternity which, unlike genuine eternity, is fully comprehensive to the human gaze, and yet supposedly secure from the ravages of time. Without genuine transcendence, space \textit{must} be absolute. This absolute is also the result of an attempt to bypass human temporality and subjectivity, and yet, it generates its own phony time and subjectivity. “Sophistic spatialization” propagates the illusion of an unmediated apprehension of facts and has, as such, become normative in science and, above all, in its vulgarizations. The mechanical manipulations made possible in Cartesian space provide modern man with an all too seductive \textit{facility}. If he takes this facility for “the real,” he is led to imagine that the ease and predictability of operations within that artificial sphere exhibit his true, primary relationship to the world.

Every one of these space agnostics focuses on a certain aspect of the historicity of space. Space, for Heelan, is a product of visual education and technology. Once constituted, according to Elkana, it confines people into mental crates whose remarkable differences mask the fact that no matter how diverse the rules governing their construction, they are boxes that box them in. This form of enclosure leads to the spatialization of thought: according to Kvasz nothing that remains unenclosed is considered real. Since space includes the self, the distinction between interiority and the exterior collapses. In the analysis of van den Berg, through this collapse, a new form of subjectivity comes into being, a subjectivity that knows no interiority, that is “soulless.” Finally, Pickstock claims that space functions as a pseudo-eternity: to people uprooted from soil and place, it

\textsuperscript{18} Pickstock, Catherine, \textit{After Writing...}, op. cit., p. 51.
provides the phony insurance that something will remain when everything else has passed away.

Seen by these authors, the invention of space seems to be concomitant with the birth of the modern sense of the self and its relation to the other. But they say little about the steps of this invention.

**An Idea and Its Proto-ideas**

The origin of modern scientific concepts often loses itself in a magma of non-scientific ideas that some philosophers of science call *proto-ideas*. The task of tracing phylogenetic lines of the concepts back to their sundry *proto-ideas* is often an exercise in inspired guesswork. For example, Ludwik Fleck sees a proto-idea of the Wassermann reaction (a blood test invented in 1906 to diagnose syphilis in the lab) in the premodern belief that the “carnal scourge” was a corruption of the blood.\(^{19}\) I confess that I have sometimes dreamt of searching history for proto-ideas of space and I present here some of my guesses. In the best case, every one of my findings summarizes a specific aspect of the improbable assemblage that was to become space.

Focusing on special things looking forward, the body protected or hidden, as in a cave or a bush, might be the hunter’s prototypical posture. Selecting a field of vision in which something special is expected to surge reenacts, in a way, the hunter’s directed gaze.\(^{20}\) When this act is performed by a person sitting in a chair in front of a page, as I am in this moment, it is sometimes called “research.”

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\(^{20}\) Wartofsky, Max, “Sight, Symbol and Society: Towards a History of Visual Perception,” in *Annual Proceedings of the Center for Philosophic Exchange* (SUNY) 3(1981):23-38. “One may argue that seeing things in front of one is hardly a cultural or historical phenomenon, since binocular vision throughout the vertebrate kingdom is in the main forward-looking. That is true. But the visual posture which is culturally and historically derived from this biological constraint is the unnatural one of watching from a fixed position. [...] The determination of a scene as a frame visual plane becomes a dominant object of visual activity only with the historical introduction of pictorial and theatrical representation in a certain form. Moreover, I would suggest that the introduction of drawing and painting on a *surface*, i.e. a two-dimensional representation, is a radical means of transforming human vision into the pictoralized mode. For what becomes the object of vision is then what appears as if on a picture plane: the world comes to be seen as picture-like; and the variation of pictorial styles then acquires a general purchase on the shaping of visual perception.” (p. 34)
Comparable to the protection of the body's rear part, but laden with its original symbols, is the act of looking through a window. Another proto-idea of space might be the capacity to describe a territory without acknowledging any contiguity between a “there” and the describer’s “here.” In other words, map-making must entail an essential aspect of the space idea. While pondering this, remember that Roman and medieval “cartographers” did not draw maps in the modern sense, but itineraries. Itineraries speak of successive steps on lines of contiguities and not of the surface of territories represented as seen from above.

Among the Antique proto-ideas of space, the horizon deserves a special mention. Though it designates an individual’s subjective view of the limits of her field of vision, it has its origin in the local and communitary perception of the “world’s limits.” These limits defined, inside, a homogeneous realm of familiarity, the domain of a “we,” while whatever lay beyond or outside them was in a way or another considered taboo. Koschorke has shown how the subjective notion of a limit of the visual field that moves at the walker’s pace resulted from the progressive disemboding of people from their native boundaries. According to L. and R. Kriss-Rettenbeck and I. Illich, it was a call to the experience of “spatial heterogeneity”—a lived contingency in God’s hand that launched the great medieval pilgrimage movement—and contributed to make the

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22 An itinerary or itinera is a description of the relevant features of the road between here and there with indications of the time it takes a walker to go from one to the following. Itineraria have no “depths,” they do not attempt to represent a territory. The best known Roman itineraria were the itineraria Antonini and the itinerarium Alexandri. The Peutinger table is a 13th Century copy of a lost Roman map. 
23 Named after the Greek verb horizeo, I separate, I divide, recalling the crest of the mountains that separates the small world of our valley from the others, the horizon was originally a world limit. Koschorke, Albrecht, Die Geschichte des Horizonts. Grenze und Grenzüberschreitung in literarischen Landschaftsbildern, Munich: Suhrkamp, 1990. 
subjective experience of limits, walking with the walker, everybody’s experience.

For some space agnostics, the invention of linear perspective is the true birth of space.

According to Koschorke, perspectivist space was engendered at the end of the fourteenth century by the introduction of the horizon into the womb of Renaissance painting in Northern Italy.\(^{25}\) The pictorial “horizon,” however, was no longer the crest of the mountains or the bottom of the heavenly vault but the abstract line of the points at which the viewer’s eye would meet his feet, were he to reach them, an impossible feat. In other words, the horizon was now the mathematical construction of the infinite on a finite surface.

In the twelfth century, words on parchment had started to be separated by clear intervals, an innovation that made silent reading possible. The new hiatus over which the eye had to jump from word to word is perhaps another proto-idea of space. Isn’t it thinkable that the hollowing of the density of the written page by these regular gaps opened the way to the idea that the letters are mentally detachable from their material support that now looms between them? In other words, did this technical innovation lead to the later idea that the text and the page are separable?\(^{26}\) In fact, it did not take scribes very long to detach the now separated words from the rugose and smelly skins that had been their supports for millennia and to transfer them to the more sterile surface of paper pages.

However, it took long for the space idea to seep into popular language. Until the time of Shakespeare, “space” was still emphatically a lapse of time. It indicated a reprieve or one more opportunity. It also designated expanse: the openness of ground, sea or sky, or the room still left for you in a crowded place. People lived in a world that God had created by separating Heaven from


Earth and Day from Night without needing a box to hold them.

It seems that “space” could not become a universal container until the concentric transparent planetary spheres of Antiquity dissolved into elliptical orbits, routes along which planets moved around the sun and the sun itself became just one more star in a dimensional universe. Space could not become predominant before the harmonic cosmos dissolved into the world system. But then, it took just a few generations for this drab abstract critter to be taken for granted, embellished by poetry and exalted as an attribute of God. *Space* had become the crate of the world, the supreme enclosure.

**The Ultimate Enclosure and The Propagation of Scarcity**

When I think of enclosure, what comes to mind is the enclosure of pastures that turned commons into private space. Or I think of the specialized spaces where children, the sick, and the mad are put to be among themselves. However, all too often, people forget that the replacement of self-governed commons by managed space provides the ultimate rationale for this fundamental aspect of modernity. The enclosure of being itself within space is at issue for us: the historical event in which space came to be conceived as an *a priori*.

The enclosure movement has alternatively been dubbed a “war against subsistence,”27 the “tragedy of the commons,”28 the “demise of people’s moral economy,”29 or the “social construction of scarcity.”30 All these definitions also apply to the enclosure of all enclosures: space. Space impoverishes local realities up to the point of perceptual starvation; it expropriates people from their

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common sensual apprehension of the world; it severs the economy (oikonomía = the ruling of a house) from all concrete oikos (house); it contributes to the propagation of scarcity as the prevalent modern experience. Yet, the fact that space is the acquired perceptual deficiency syndrome at the root of the experience of scarcity\textsuperscript{31} has still not been publicly recognized.

An important historiographical truth has been overlooked thus far: the invention of space is the other side of a yet untold history. While historians celebrate the successive achievements that made the modern mastery of space (and the control of people by that mastery) possible, another story, one of successive losses, must also be told. Sometimes, when I try to tell this story, I have the impression that a priori space is an endemic disease. It is a strange malady, because those who are infected by it in turn affect reality, render it shallow, cause it to dwindle and fade, make it uninhabitable for themselves and for others. Above all, I get the impression that things and people lose their relatedness to each other and fall apart.

**Inquiries into the Obvious**

I have started out on an inquiry into something that most of my contemporaries consider much too obvious to be questioned. It has led me to follow the reasoning of half a dozen thinkers especially skeptical of the given, “natural” character generally attributed to space. In doing so, I have untangled some of the steps by which this mental artifact came into existence. Yet, does the acknowledgement of its historicity drive it back into inexistence? In other words, is space agnosticism the belief in the non-existence of space? No, space cannot be wished away any more than scarcity can. Airports, highways, hospitals, educational enclosures, supermarkets, jails, city

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\textsuperscript{31} That scarcity is the symptomatic modern experience has been argued by: Dumouchel, Paul, “L’ambiguïté de la rareté,” op. cit. and Achterhuis, Hans, *Het rijk van de schaarste. Van Thomas Hobbes tot Michel Foucault*, Baarn (Netherland): Ambo, 1988. Nonetheless, none of these authors has seen that the history of scarcity runs parallel, or better, “anastomosically,” to the history of space.
halls, the radical monopoly of vehicles on urban streets, up to suburban residential areas and their well mown lawns are all outcomes of space management. Planned spaces are scarce by definition. Space, virtually the ultimate field of deployment of the market forces has become “projectively equivalent” with the economy and the viewpoint from which they are seen to overlap is scarcity, the iron law of modernity.

Erewhile, we have looked at several of the possible historical ingredients of the space concept and called them proto-ideas. I invite you now to a diametrically different exercise. The space concept has reorganized aspects\(^{32}\) of a perception that, in other times and places had been configured in radically different manners. This new organization is so specifically western and modern that I am almost ready to argue that it is a nutshell for all that is western and modern. I see it as a radically unique way of fragmenting, configuring and monopolizing experiences which in other times had been part of the human condition that is of an essentially localized existence.

Is there a way to name these localized experiences which does not subject them to the monopoly of spatial thinking? And if so, does the chosen name stand for something that can claim some ancestry of space? Or on the contrary, would such a claim be illegitimated because it would cloak the Western specificity of the space concept? Faced by this conundrum, I have decided to give this experience the name, places.

Fully aware of the many dictionary meanings of place, I also know that German Ort, Platz or Fleck, French lieu, endroit or localité, Spanish lugar, sitio, ámbito all have their own,

\(^{32}\) Fuchs, Thomas, Die Mechanisierung des Herzens. Harvey und Descartes - Der vitale und der mechanische Aspekt des Kreislaufs, Frankfurt a/M: Suhrkamp, 1992. Contrary to Kuhnian paradigms and Fleckian thought styles, aspects can be seen as being in or of the things themselves. The multiplicity of possible—and even contemporaneously perceived—aspects is an expression of the perceptual and conceptual inexhaustibility of reality. However, to fully adopt the Fuchsian, “Chinese” view of simultaneous aspects would lead us to a non-linear exposition resembling Ts’ui Pén’s endlessly bifurcating novel in Borges, Jorge Luis, “El jardín de caminos que se bifurcan,” in Prosa Completa, Barcelona: Bruguera, 1985 (1953), pp. 163-173.
characteristic fields of meaning and that no two overlap. Consequently, I understand that, by using the English word *place* as I do, I coin a technical term.

The use of an old, meaningful word to designate something which stands in contrast to a new certainty is almost unavoidable when researching the birth of the obvious, especially when these are undertaken on the basis of historical distancing. An example is the adoption of *gender*, a term that until two or three decades ago had a meaning in grammar and only there. Then, *gender* started to be used to name a reality that was so much taken for granted that it had needed no name: the fact that there are women and men. *Gender* has thus been used to stress a historical perception of this fact that is radically different from modern *sex*. Sex, universal and contagious, is a secondary characteristic, noticeable as protuberances in the jeans or under the blouse, affecting standard human beings. Gender, vernacular and local, different in every valley, is an interplay of feminine and masculine domains, of masculine and feminine activities that engender unique styles of living. Is, perhaps, place to space what gender is to sex?

**Recovering a Sense for Place**

Remember that I wanted to tell a still untold story. Or to retrace the history of the losses that accompanied the conceptual conquest of space. This history is made of stories about vanished places. Yet could it be, or is it too farfetched to hope, that the telling of the story can also lead to a certain recovery of the lost sense for place?

Imagine that you step back in history in the manner of a crawfish and see the ingrained certainties of modernity wane at your sides. When the certainty of *a priori space* becomes hazy, what are you going to see? To answer “places!” is just to name. What is there, under the name?
Liberty of movement and openness are certainly going to be there, but also orientation and limits, without which there is no orientation. The essence of these experiences is perhaps the frequency of complementary pairs of opposites: open and closed, far and near, free and bound, visible and hidden, now and not yet. Many of these pairs mirror the human body’s asymmetries: right and left, fore and back, up and down. Or relate my body to the world: the center of the world under my feet, and the horizon. Others are material: the firmness of the soil versus thethinness of the air.

Still others become manifest in motion. Mechanical locomotion in space unleashes a succession of fleeting images in a never-ending dream, like the “landscapes” through a train window. But walking from place to place unveils the substantial depths of the visible world, brings things into my body’s presence “in the revelation of their materiality.”33 The walker’s movements bring existence which was at best potentially there (in thought or in memory) into the realm of his perceptions. It is by my movements that objects facing me reveal their hidden face and become seizable and that things presently behind the horizon will unveil themselves. Conversely, natureseizes me in her motions. The world is an experience of mutual seizure, Bachelard wrote, and this mutual seizure of two vis-à-vis is another aspect of being in places.

What I see is complementary with what I can, Merleau-Ponty added.34 What I see cannot be disembedded from what I can reach, seize, taste, smell, hear; no ideal image can be abstracted from these powers and their challenges by nature’s moves. It is only by a kind of ellipsis that one can say that the senses “overlap” in a joint action, for they were never severed in the first place. In this joint perception or synesthesia, things are present before any hypothetical reduction of their perception to

separate “sensorial data”: eyes eavesdrop, words enlighten, feet see and the nose touches the body’s aura. Synaesthesia is another aspect of the perception of places.

Histories of Places

I could now multiply the stories of places, each illustrating a certain aspect of what it means, to be in a place: asymmetrical complementarities, mutual seizure, synaesthesia. Some would be meaningful for you but I fear that others would be so remote from your experience that, instead of evoking possible places, they would just sound weird. I confess that, for years, I have searched the works of such authors as Mircea Eliade, Georges Dumézil or Joseph Rykwert for stories about the founding of places in ancient times. I believed that the effect of estrangement of these intimations from lost worlds would be to stress, in comparison, the strangness of modernity. See, for instance, this account of a founding ritual around 1500 B.C. as recorded by the Rig-Veda, India’s oldest book of religious precepts: “He who wanted to found a place had first to start a fire with embers taken from a peasant’s hearth. This fire—the fire of the earth, of the peasant or of the house-lord—had to be round.”

Then, the Rig-Veda goes on, the founder stepped eastward. When he stopped, with stones he marked a square on the soil: the hearth for a second fire. The round and the square fires are in a relationship that conjures up the one existing between the earth and the sky. If the first fire is round, it is not because the earth is a globe, but because the line of the horizon is approximately a circle in the middle of which one stands: the visible earth is a circle. The same in all directions, a circle cannot orient. A cross in a circle expresses the union of earth and heaven. Then the founder steps backwards as a crawfish until the middle of the distance between the two fires, counting his steps.

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He then faces the South and makes again as many steps as he has made backwards. There, he establishes a third fire, smaller than the first two and which, the Rig-Vida expresses, “must be formless.”

This story reflects the way immigrants from the Iranian plateau in what is now India engendered dwelling places more than three millennia and a half ago... or at least how Georges Dumézil understood it in the twentieth century A.D. I have loved this story and, above all, the way Dumézil told it, showing how the three proto-Hindu fires foreshadowed the three main castes of Hindu society, and, beyond, the division of the prototypical (and hypothetical!) Indo-European society into three basic orders: the priests, the warriors and the cultivators. However, trying to tell it at the first Oakland Table made me wake up from these historical reveries: I came to realize that it was as strange, there, as an okapi in Jack London Square. Interesting story if well told, but about as familiar as the living chimera (part giraffe, part zebra, part donkey) would be there.

More than a millennium later, the Greek and Roman versions of foundation rites were like dromedaries. Still too bizarre to really surprise, as the sight of a camel in Harrison Street would induce passersbys to think that a circus is arriving in town.

The Greeks called the primordial figure of a cross in a circle *temenos*, the Romans called it *templum*. It was the original orienting device resulting from an act of foundation. In Rome, the *haruspex* contemplated the templum of the future city in the sky, somatized it and expectorated it on the soil, where it became the visible sign (also called “templum”) of the union of heaven and earth (a *hierophany*) that instituted an inhabited place. A place was limited in extension but opened to the cosmos, it touched the heavens like a tree with its branches and had roots in the underworld: it was a *topocosm*.

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But displaced okapis and dromedaries are meant to be seen in zoos and menageries, not in an Oakland neighborhood. The danger of illustrating the characters of places with such remote examples is that they might induce the listener into antiquarian nostalgia or, worse, into the belief that ancient rituals can be revived under modern myths. Any attempt to reenact place founding rites in space is like establishing a reservation for the last Ohlones behind the Mayor’s house. Nonetheless, doesn’t the following story ring a distant bell? It is about the Greek gods Hestia and Hermes, the gods of dwelling and of hospitality.

In its polarity, the couple Hestia-Hermes\(^{37}\) expressed the tension which is proper to the pre-spatial asymmetrical complementarity. This needed a center, a fixed point from which directions and orientations could be defined. But it was also the locus of motion, and that implied the possibility of transitions, of passage from any point to any other. Hestia and Hermes were the gods of the domestic domain. They were also the symbols of the gestures of women and men and of their interplay. One could only be understood through the other. For instance, it is only in relation to Hestia that all the different aspects of Hermes’s activity became coherent. Hermes made mobile, Hestia centered. Hestia’s place was the hearth, whose deeply rooted stone was a symbol of constancy. Hermes’s place was near the door that he protected from his companions the thieves. Hermes’s characteristics and activities are the asymmetrical complements of what Hestia is and does.

But, no more okapis or dromedaries. The places that interest us here are the ones that can be saved from the monopoly of spatial truths. The ones that can be established in inconspicuous niches and protected from the contagion of space. Humble, without folkloristic appeal, they have nevertheless most of the characteristics that places have and space does not have.

So let us dedicate this essay to Jerry’s table. Let it be a place. From such a place, three or four can question the radical monopoly of space that transforms people into packages to be transported, citizens into clients to be served, neighbors into numbers.
Hestia and Hermes: The Greek Imagination of Motion and Space (2001)

Jean Robert

“You live among men’s and women’s beautiful dwelling places”

On the foot of the big statue of Zeus in Olympia, Phydias represented the twelve Olympian gods. Between Helios, the sun and Selene, the moon, he arranged them in six couples: Zeus-Hera, Poseidon-Amphitrita, Hephaistos-Charis, Apollo-Artemis, Aphrodite-Eros and Hermes-Hestia.¹

Hestia and Hermes are not husband and woman, nor brother and sister, nor mother and son either. They are neighbors, or better: friends. Where Hermes loiters is Hestia never far. Where Hestia stays, Hermes can appear at any moment.

In its polarity, the couple Hestia-Hermes expresses the tension which is proper to the archaic representation of space. Space needs a center, a fix point from which directions and orientations can be defined. But space is also the locus of motion, and that implies the possibility of transitions, of passage from any point to any other.

Hestia and Hermes belong to very archaic, pre-Hellenistic representations. Hestia is the hearth. In modern Greek, istringstream still means the hearth or the household. The name Hermes comes from herma(x), hermaion or hermaios lophos, heap of stone. Before he became an Olympian god, Hermes was the personification of lithoboly, the gesture of throwing stones on tombs. He was the heap of stone or the wooden pole on a grave, but also the phallos. Hermes unites death and fertility in one figure.

Hestia and Hermes, personifications of the hearth and of the protecting grave are the gods of the domestic domain. They are also the symbols of the gestures of women and men and of their interplay. Through that interplay, the house becomes a unique place in the world, a *topos* in a *cosmos*. Hestia and Hermes allow us a glance into Greek domesticity. In their interplay, we can understand something of the Greek household and its works and of hospitality. “You live both on the surface of the soil, in the beautiful dwelling places of men and women, and you are filled with mutual *philía,*”\(^2\) said a Homeric hymn.

Hestia and Hermes are the *Epichthonian* gods, the gods of the dwelled soil. They are everywhere where people make fire, trace limits, build walls and a roof over their heads. Together, they are the gods of orientation and of the tracing of limits.

Hestia sits in the middle. She stands still, but she is ubiquitous. Hermes, the quick one, can never be caught, like Mercury. He never appears where he is expected and reigns over the space of travelers. Hestia embodies the gestures of settling down, of enclosing and of keeping. Hermes manifests the gestures of opening, trespassing, and speaks of mobility and of the encounter with the other. He is the god of transitions.\(^3\) He keeps guard on doors and limits, the entrance of cities as well as crossways and has for this reason many heads: Hermes *trikeyphalos, tetraykephalos.* Since graves are doors to the underworld, he is in necropoles and cemeteries. He accompanies the souls of the dead to the Hades: Hermes *psychagogos, psychopompos.* He is the protector of thieves, but he also protects houses from thieves. He is the messenger between gods and humans: Hermes *angelos.*

All those different aspects of Hermes’s activity become only coherent in relation to Hestia’s. Hermes makes mobile, Hestia centers. Hestia’s place is the hearth, whose deeply rooted stone is a symbol of constancy. Hermes’s place is near the door, that he protects from his companions the

\(^2\) Jean-Pierre Vernant, op. cit.

thieves: Hermes pyloros.

Hermes’s characteristics and activities are the asymmetrical complements of what Hestia is and does. Hestia personifies the charis, the force or the “spirit” of the gift. Since “gifts make friends” and facilitate the encounter with strangers, should not Hermes, instead of Hestia be the god of gifts?

Hestia reigns over the cycles of festive meals within the oikos. During these meals, the oikos was, so to speak, closed upon itself. The ones who sat at a common table were often called homokapoi, the ones that breathe the same smoke. Strangers had no access to it, and it was said that the food taken during these Hestian festivities was poisonous for them. But there is a verb which is formed after the name Hestia: hestiain, which means to receive a stranger into the closest circle of the house, there, where no stranger can be accepted. The guest had to squat before Hestia, the hearth, and through this act he ceased to be a stranger. He was taken into the hierarchy of the oikos.

Yet, there was another, “equalitarian” form of hospitality which was placed under the sign of Hermes. The Greek name that refers to it is xenos, which means the same as the Latin word hostis: the one with whom gifts and countergifts have been exchanged and who is therefore “equal.” Xenos is the stranger who is not integrated into the domestic hierarchy, but received as an equal. Originally, it’s an oriental, not a Greek concept, proper to a world of caravans and itinerant merchants.

**Asymmetrical Complementarity**

At every step of our analysis, we have acknowledged a polarity, or better an asymmetrical complementarity between constancy and change, center and periphery, the closed and the open, the
interior and the exterior. That complementarity shapes all places, as well as the condition of their occupants. We are introduced into a world where by telling me which place you occupy and how, you tell me who you are. Neither term of the polarity can be understood alone, but always only in complement to the other.

The tension between these two poles mirrors itself even in the definition of everyone of the terms: there is a Hestia in Hermes, a Hermes in Hestia. As we have already seen with the paradox of hospitality. Hermes’s activities can always be interpreted in a Hestian light, and vice-versa. In this Hestian light, activities like bartering, buying and selling, which are Hermes’s prerogatives, can be seen as extensions of the logic of the gift, over which Hestia reigns.

Inversely, Hestia reigns over keeping activities in the house. In Hermes’s light, these activities look like an accumulation, an interpretation that became widespread in classical times, where the granaries of the polis, managed by men, were called the Hestia Koinê. So Xenophon compared Hestia with the bee queen, “that stays in the middle of the beehive and sees that honey be well kept.” He gives the cells of the beehive the same name that was given to the chambers in which precious goods were kept: thalamoi. As Hestia Koinê, Hestia becomes the symbol of the accumulation of power of the city and of the union of their inhabitants around their granaries.

**Hestia and Hermes in Greek Philosophy**

Plato gives us a striking example of the absorption of Hermes by Hestia. Hermes is, you remember, the stone heap, the wooden pole on graves. As such, he personifies the central pole of a house, the stem of the big tree in the house patio or the phallos. Hestia is the stone of the hearth, that roots the house into the soil, but also the column of smoke that relates the underworld with the sky. Plato lets the two figures merge into one. Hestia is for him the axis of the world. He plays
with—etymologically not quite founded—homonimities, allowing himself to compare Hestia with the pillar (histié), the mast of a ship (istós), the woman at the loom, whom he called histia. In the Republic, he compares Hestia with the spinning Goddess Anankē, who sits at the center of the universe and whose spindle’s motion regulates the revolution of the heavenly spheres. Anankē also means necessity, or the erected phallus. Plato even invents two poetic etymologies for Hestia: ousia, the essence, and hosia, motion.

Hestia, who is originally the principle of stability, becomes here the principle impetus of all motions, as if she would give birth to Hermes himself. Hestia’s philosophical priority reminds us that the peculiar place which the house can only be brought forth by the woman, because she is it, who gives birth to the living body. Since myths are much older than philosophical ideas, this predominance can be a reminder of a time which gave women a kind of prominence.

For the Greek, space and motion were not the neutral concepts that they are today. They were loaded with the asymmetrical complementarity between female and male domains: they were gendered.

**The Historical Interpretation of a Myth**

Now we can go to ancient Greece, and try to interpret dwelling relations in terms of the asymmetrical complementarity that we saw at work in a fundamental myth, rather than in the light of the neutral space of modern planning. But before this, we must reflect on the use of myths in the interpretation of social realities. Beate Wagner-Hasel, a German historian, writes in this respect: “...the analysis of myths never ‘allows to draw conclusions on effective relations’ but only to interpret the leading symbols of a society.”

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Yet, this interpretation of symbols can prevent us from colonizing the past with our
certainties. We must avoid, B. Wagner-Hasel writes, to co-opt the past as the model or the origin of
the present. On the contrary, we must meet it in its otherness and be ready for the almost
unimaginable.

The unimaginable is a society shaped by gender, a category that Ivan Illich choose as the
title of a book (...) and by which he means an articulation of social spaces following
gendered categories, without stipulating \textit{a priori} hierarchies and relations of submission.\footnote{Beate Wagner-Hasel, op. cit.}

When one looks at society through the prism of gender, he is led to speak of the relations
between men and women in a way that does not reduce them to a discourse about their position but
rather considers “the gendered occupation of spaces.”\footnote{Ibid.}

\textit{Relations of domination} can arise, but they must be studied on the background of gendered
spaces. They must be considered different from the \textit{power relations} which characterize modern
disgendered space. The moments in which relations of domination are instituted or transformed
must again be matched with changes in the gendered occupancy of spaces and of its symbolic
meaning. Such moments are for instance the introduction of the alphabet or, close to us, of
motorized transportation, which is the foundation of modern forms of power.

This understanding opens, following B. Wagner-Hasel, to a new conception of old history,
namely to “a conception of society which is not organized following the categories of law,
economy, politics, the religious and the social, private vs public.”\footnote{Ibid.}

In another essay, we will check this by contrasting the homeric house with the house of the
classical \textit{polis} in the 5th century. In the mean time, the meaning of alphabetic writing underwent a
fundamental change.

\footnote{Beate Wagner-Hasel, op. cit.}
\footnote{Ibid.}
\footnote{Ibid.}
The myth of Hestia and Hermes allows us to look at modern space as it were from the other end of the glass. We begin to glimpse by means of which go and fro between the present and the past, ‘to-day’ can be a matter of historical inquiry.
References


A Sense of Place:

Some Historical Symbols, Myths and Rituals of “Placeness”
(2001)

Jean Robert

He who wanted to found a place - the Rig Veda tells us - had first to start a fire with embers taken from a peasant’s hearth. This fire - the fire of the earth, of the peasant or of the houselord - had to be round.

Then, the founder stepped eastward, making as many steps as his ‘rank’ or varna allowed him. When he stopped, with stones he marked a square on the soil: the hearth for the second fire. The round and the square fires are in a relationship that conjures up the one existing between the earth and the sky. If the first fire is round, it is not because the earth is a globe, but because the line of the horizon is approximately a circle in the middle of which one stands: the visible earth is a circle. The same in all directions, a circle cannot orient. The implied meaning of that, is that nobody (no body) can gain orientation from the earth alone. He needs signs in the sky. The square fire is the fire of the sky. It is not equal in all directions: it has four corners. Between them, the two median lines draw

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got. wisan, ‘sein, bleiben’. (Abstract: The word hestia - Greek for hearth - would derive from the Indoeuropean root ues-, ‘to abode’, which also gave the archaic Greek word for city and town, asty, and perhaps the old Germanic word for ‘to be’: wisan - viz. popular Dutch: wezen).

perpendicular axes: a cross, whose branches indicate the cardinal points.

A cross in a circle expresses the union of earth and heaven. The Greek called such a figure 

temenos\(^3\), the Roman called it templum\(^4\). It was the original orienting device resulting from an act of foundation. Let us suppose that the templum is drawn now, exactly between the two fires: the west-east line is the inversion of the sun’s path in the sky, the north-south line is the partition between earth and heaven. Like the founder’s body, space knows now back and fore, up and a down. But the templum cannot be just drawn by the hand. It must be ‘acted out’ by the founder’s body.

Indeed, the story could almost finish here: very roughly, a place has been established, or, shall we rather say that a sense of ‘placeness’, on earth and under the sky has been embodied? The west-east axis recalls which relationship is prior to all the others. With the two primordial fires, the two poles (the ‘up’ and the ‘down’) of any place have been, so to speak, ‘thrown together’\(^5\). A place on

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\(^3\)François Anatole Bailly, *Dictionnaire Grec-Français*, 1904 (1899), p. 1913: temenos. 1. primitif, portion du territoire qu’on réservait au chef, enclos servant de résidence. 2. Portion du territoire avec un autel ou un temple. (1. Primitive meaning: part of the territory that was allotted to the chief, his precinct. 2. Part of the territory occupied by an altar or temple).


\(^5\) Georges Dumézil, op. cit., pp. 308 - 9 “Les deux feux axiaux, qui se trouvent sur une ligne ouest-est, séparés par des distances variables selon le varna du sacrifiant, ont des missions et des signalements distincts. L’un, appelé garhapatya, ou feu du grhapati, du ‘maître de maison’, représente sur le terrain le sacrifiant lui-même, avec ses attaches familiales et économiques. Il est l’origine et support de tout; c’est à partir de lui que sont allumés les autres feux et, s’il s’étient, le sacrifice ne peut être continué, alors que, si l’un des autres feux s’étient, il peut, lui, servir à le réanimer (...). L’autre feu axial, à l’est du premier, est appelé ahavaniya ou feu des offrandes, proprement ‘(ignis) aspergendus’, et c’est lui dont la fumée porte aux dieux les dons des hommes(…)” (Abstract: The two axial fires, the first round and the second square, were called respectively garhapatya (or fire of the grhapati, the householder), the other ahavaniya, fire of the offerings. The garhapatya was the primordial fire from whose embers the others had to be started).
the earth - Greek ge - is rooted in the deep soil - chthôn - and open to the sky - ouranos. ‘To throw together’ is what the Greek verb symballein means, from which our word symbol comes.

Most symbols for a place combine an intimation of rootedness in the deep soil with a hint of openness to heavens, an image which can almost literally be inversed in openness to the deep soil, rootedness in the sky. One such symbol is the powerful tree, whose trunk conquers the height and unfolds a crown of endlessly ramifying branches which are like roots in the sky. Sucked by the earthly roots, the juices of the deep soil climb through the trunk and imbibe the sky. Or inversely: the ‘roots of the sky’ collect the sky’s powers and bring them down to earth, so two opposed flows cross themselves, so to speak in the trunk, ‘symbolizing’ a double dependency between earth and heaven.

The straight climbing smoke column of the sacrificial fire, that conveys the smell of libations to the gods is an immaterial tree and another symbol for a founded place. Abel’s sacrifice was blessed with a straight column because it was agreeable to God. His brother’s column could not rise, and the envious Cain killed Abel. The Hebrew tradition made of the cursed sacrifier the founder of cities and of agriculture, so to found a city and to domesticate nature (both actions are expressed, in Greek, by the verb oikodomeo, to tame, to domesticate or break a land open for building or planting) is always a precarious enterprise, threatened by the world’s essential contingencies.

In the gentile traditions in change, cities were to be founded by certified founders and the brother that died was the one who had failed to perform the rite. While Yahweh was prayed for his grace, the gentile gods were acted upon by precise rituals.
Yet - the Rig Veda goes on - the earth-sky relationship, though complete, is not stable in itself. It is exposed to internal and external dangers: the north wind or an enemy from the south, or inner dissention between brethren. Weather and war: it is to that double danger that Hobbes still referred to with the word ‘warre’, the war of all against all, which settles in grim times (in the dies mali), “like bad weather,” says Hobbes.

So, after the first sacrifice on the sky’s square fire, the founder steps back at mid axis and then goes as many steps to the right as he has gone backwards. He starts a third fire which, according to tradition, must be ‘shapeless’ and is generally vaguely reminiscent of a crescent. It is the fire of the weatherward, of Ares and of Mars.

With that last act of orientation, space has not only a back and a fore, up and down, but right and left. Right and left are fundamentally asymmetrical. The right (south) is warded, so your right side

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6Pokorny, op. cit., I, 81, ff.: au(e)-, auc(i)-, uc-, ‘wehen, blasen, hauchen’. Gr. aou, uc-dro-, vermutlich in anord. verdr, ‘Wind, Luft, Wetter’, as. wedar, ‘Witterung, böses Wetter’ (The word weather - German Wetter - supposedly comes from the Indoeuropean root au(e)-, meaning ‘to blow’, from which ‘wind’ also derives).

7Pokorny, op. cit., I, p. 1133: uois, ‘drehen’ auch bes. für flechtbare Ruten, daraus gebundene Besen und dgl.; uois-, Rute. Aisl vichr’, Wirbelwind (*uesura-, lit. viesulas ds., russ. vichat”), ‘erschüttern, bewegen’. (The word ‘war’ supposedly comes from the Indoeuropean root uois, meaning ‘to whip’. Though not deriving from the same root, the words weather and war both express the same idea: to whip, wipe violently, shake, disrupt a balance - see also the root of Gr. polemos, same meaning).


9Pokorny, op. cit., I, p. 337: eres-, ‘zürnt, will übel, benimmt sich gewalttätig’, ‘ist neidisch’. Arès= Gott der Rache. (Pokorny suggests that the name of the Greek war god Arès’s could come from the Indoeuropean root eres-, meaning to act violently or be envious. Arès is so the god of vengeance. The proximity to arèn, the lamb, of course suggests also an association with the sacrifice).

10Pokorny, op. cit., I, p. 1175: uet-, ‘jährig’, in Ableitungen auch für jährige, junge Tiere. Gr. fetos, heuer. Viteliù, Italia, woraus durch unilat.-gr. Vermittlung lat. Italia, eigentlich ‘das Land der Itali (junge Rinder)’, nach dem Stiergott Mars. (As to the Italian war god, he is originally the Mediterranean bull god. The “bull” associates to Italy via the Indoeuropean root uet-, which gave Gr. fetos, from this year (viz. the new lambs) and Lat. vitellus, calf. Italy is the land of the vitelli. A sacrificial association is not excluded).

is protected. When the third fire was lighted, the Roman said “fas est,” it has been pronounced
(favorable). By contraction, the expression became fastus, favorable. Is it not logical to think that
the right (side)\textsuperscript{12}, warranted by an oral pronouncement, is the forerunner of the ‘right’ in the sense
of French ‘le droit’ or Spanish ‘el derecho’ (but also of the law, lat. \textit{lex})? If we take that origin
serious, before any written law, there is an oral meaning of the right as ‘the settled side of life’.
Historically and, as I will argue, philosophically, the ‘fas est’ is prior to the ‘scriptum est’ and
cannot be reduced to it.

If the main axis were a rope on which the founder progresses like a rope-dancer, the fire of the
right would be his pendulum.

The left is left\textsuperscript{13} unprotected, it has no ward. From there blows Aquilon, the Northwind, winter
announces itself\textsuperscript{14}, danger looms, perhaps in the form of a storm, of an enemey, the
impredictable.

So life in a founded place has two sides: the protected right, side of rectitude, order and
continuity, of settled things about which one ‘came to terms’, and the unprotected left, side of
danger, bad omens, the threat of rupture and discontinuity. Apart from heraldics, sinister (from one
of the Latin words for left, the other being laevus) has lost the denotation and kept the connotation.

But the left is also the side of the heart: the impredictable ‘torridity’ of passions, weighing the cool

\textsuperscript{12}Pokorny, op. cit., I, p. 854: \textit{reg-}, ‘gerade, gerade richten, lenken, strecken, aufrichten (auch
unterstützend, helfend)’. (‘Right’ has its origin in the Indoeuropean root \textit{reg-}, meaning ‘straight’, to
‘stretch’, but also to ‘support’. Because of a frequent transformation of \textit{r} into \textit{l}, it is possible that the
Indoeuropean roots \textit{reg-} and \textit{leg-} (whence \textit{lex}, ‘law’) are originally one).
\textsuperscript{13}Greek \textit{lai̯os}, lat. \textit{laevus}: Pokorny, op. cit. I, p. 652: \textit{laiuo-}, links; ursprünglich krumm?; vielleicht Sinn
von ‘verkrümmt’, schwach (unbeholfen?, verlassen?); cf angels. \textit{lyft}, schwach, mndl. ‘luft’, ‘lucht’, link,
ofries. \textit{luf}, ‘schlaf, müde’. (The word ‘left’- Gr. \textit{lai̯os}, Lat. \textit{laevus} - could derive from the Indoeuropean root
\textit{laiuo-}, left but perhaps originally ‘distorted’, ‘weak’, ‘abandoned’).
\textit{wato} (vgl. mit Lat. \textit{unda}) wahrscheinlich Got. \textit{wintrus}, asil \textit{vetr}, ags. \textit{winter}, als ‘nasse Jahreszeit’ (The word
‘winter’ would come from the Indoeuropean root \textit{udro-s}, meaning originally an aquatic animal; the name of
the ‘wet season’ would also derive from the same root as ‘water’. Why not?).
reason of the shady right (keep in mind that, in a valley, the north is the coveted sunny side, and think that in Latin, torridus expresses extreme warmth or extreme dry coldness). So, the bilaterality of left and right also reflects the basic tension of time: regularity and rupture, equinamity and tension, German Zeit and English tide (from a root meaning regularity) and time (tension and rupture), following the double root of the Indoeuropean words for ‘time’. With that, the newly founded place has time, a history begins. Mars, the ward of the right, god of the weather and of war is also, internally, the keeper of social stability. He summarizes the two dimensions of time that account for history: the repetition of the same and the emergence of the unexpected, security and danger. As the personification of bad weather and war (as Mars proper), he has an answer to trouble makers (and he more than often starts stories of his own). As Quirinus (the name comes from quiris, ‘common man’, member of the *co-viria), he keeps internal peace, eventually sacrificing (like Romulus, who also took the name Quirinus) the brother that breaks the rule. Quirinus, sometimes called the internal Mars or the peacekeeper is the god of the rules of good habits and cohabitation, the protector of custom, the keeper of customary ways, corresponding, in the Greek and the vedic traditions, to the keeper of the èthos and of the dharma. His designation as ‘the common man’ (the vedic grhapati), speaks about the oral, prelegal meanings of any ‘right’ that is settled by the ‘coming to terms’ of common men.

We now tend to understand rights as faculties warranted by law rather than by custom. This is relatively new. MacIntyre15, for instance, shows that this was hardly the case before the 15th century, and that, previous to our century, this ‘literate’ and legalistic meaning of the word right was restricted to Europe, a judgement confirmed by the OED. The asymmetry of left and right in founding rituals allows us to make the people the subject of ‘rights’ and to understand these as the

15MacIntyre, Alasdair, After Virtue: A Study in Moral Theory, Notre Dame: University of Notre Dame,
security arising from ‘having come to terms’.

In the act of foundation, the union of earth and heaven, which is the essence of orientation, passes through the body. Ge (orgas in archaic Greek) and ouranos are made one by the soma (body). In Rome, city founders relied on certified technicians, augurs, and haruspices, who generally were Etruscans. The Etruscan haruspex practiced the most extreme form of condensing earth and the sky. He incorporated them into his flesh by the contemplation of an ideal templum in the sky and by its projection into the landscape and then, he ‘expectorated’ both, united into the image of the city to come. Founding was an act of marriage and birth. The organ of that union, gestation and birth was the liver. The haruspex is a form of divination from the inspection of a liver (the root from which ‘harus’ comes means inwards, see German Garn). The haruspex expelled his own liver and read, on its rugose surface, the contours of the new landscape resulting from the union of earth and heaven. This - and not just earthly topography - was the landscape in which the city had to be found. Since it resulted from things of several realms (chthonian, epichthonian, that is earthly, and celestial), ‘thrown together’, this landscape can be

17 Ivan Illich, H2O and the Waters of Forgetfullness, Dallas: The Dallas Institute of Humanities and Culture, 1985, p. 13: “..neither the vocation of a founder nor a mandate from the oracle at Delphi nor even the actual settlement of a site suffices to make a locality into a town. The intervention of a recognized seer is required, an augur who creates space at the site discovered by the founder. The social creation of space is called in-auguration.”
19 Ivan Illich, Im Weinberg des Textes. Als das Schriftbild der Moderne entstand, Frankfurt a.M.: Luchterhand, 1991, p. 35: “Für unsere Generation, die mit Freud und Jung großgeworden ist, ist es fast unmöglich zu begreifen, was das Symbol bedeutet hat. Das griechische Wort symbal(1)ein bedeutet ‘zusammenbringen, -werfen oder -setzen’. Es kann die Nahrung meinen, die die Teilnehmer zum Mahl am festlichen Tisch mitbringen. Es ist etwas Zusammengefaßtes, dinglich Bedeutsames, das erst in der Spätantike zum semeion, Zeichen, wird.” (Our generation can hardly understand what the symbol has meant. It comes from a Greek word meaning ‘to throw together’ and evoked something concrete, resulting of an act of composition - think of a meal. Only in Late Antiquity did the word come to mean semeion,
called ‘symbolic’. Since it united the topographic features with the cosmos, the landscape in which the founder operated - and that resulted from his operations - can also be called topocosmic, a word coined by Bourdieu\textsuperscript{20}. It was not a ‘map’, a ‘plan’ or a ‘blueprint’, but a somatic image of a place in a cosmos and, as we will now see, of a cosmos in a place: it was, we could say, both a topocosm and a cosmotope. The templum (heaven and earth, united) is shorthand for this topocosm-cosmotope. Among other indications, it defines the perpendicular directions (Latin \textit{regiones}) to be given to the new city’s main streets.

One year after Rome’s foundation, Romulus offered the gods the first-fruits of the city: wheat, fruits, flowers, the newborns of all the herds. He ‘threw them together’ into a hole in the center of Rome, a natural or an excavated cove. This cove was called the \textit{mundus}. Mundus, here, does not mean the world. The word comes from the Indoeuropean root \textit{meu}\textsuperscript{21} (or, perhaps from \textit{mei-}\textsuperscript{22}) and its basic meaning is clean, or orderly. In French, this sense survives in \textit{immonde}, unclean, not worth of belonging to the mundus, doomed to elimination, to be thrown away beyond the city limit. In Spanish, we have the word inmundicias, things to be swept away. A similar kinship exists in Greek:

\footnote{\textsuperscript{20}Pierre Bourdieu, “La maison ou le monde renversé,” in \textit{Esquisse d’une théorie de la pratique}, Genève: Droz, 1972. Defines the Berber house of South Marocco as a topocosmos: a place in a cosmos or a placed (oriented) cosmos, or still a “monde renversé.”}

\footnote{\textsuperscript{21}Pokorny, op. cit., I, p. 741: meu-, mu-, feucht, moderig, unreine Flüssigkeit (auch Harn), beschmutzen, aber auch: waschen, reiningen. \textit{Mu-n-dos} in der Bedeutung von ‘gewaschen’, auch lat. mundus, ‘schmuck, sauber, rein, nett’, Subst. ‘Putz der Frauen’, Weltordung, Weltall (nach Gr. kosmos). Holl., niederd. mooi, Gr.: kosmos. (Pokorny hypothetizes that the Latin word \textit{mundus} and the Greek word \textit{kosmos} both have their origin in the Indoeuropean root \textit{meu-}, which in turn acquired its meaning of ‘clean’ through a strange inversion. Pok. thinks that the root \textit{meu-} meant originally humid, dirty liquid, and even urine and that the inversion occurred thanks to the notion of ‘washing’. Dirty things are in need to be washed and so the root came to stand for ‘washed things’. Ingenious, isn’t it? Yet look at the following note: it seems to me that an etymology of the \textit{kom-moini-} type is not to be excluded, think of \textit{kosmos}).}

\footnote{\textsuperscript{22}Pokorny, op. cit., I, p. 710: mei-, ‘wechseln, tauschen’, daraus Tauschgabe, daher gemeinsam; moi-ni-, Leistung, kom-moini-, gemeinsam, osk. múunikad-, umbr. muneklu, ‘munus, Sporteln’. (In the hypothetical ‘Ursprache’ called Indogermanisch by the old German philologists, it is possible that there was a root, \textit{mei-}, meaning more or less ‘to exchange gifts’. Why not think that the word \textit{kosmos} could derive from the idea of an order resulting from gifts and countergifts and have so the same origin as ‘common’ (hypothetical Indoeuropean \textit{kom-moini-}), and ‘the commons’? Could it be? Isn’t it a nicer hypothesis than the previous
kosmos; the derived adjective kosmetikos meant clean or orderly long before it became kosmikos.

The mundus was the city’s secret navel, a notion still alive in classical times in the umbilicus, the point or origin of the decumanus and the kardo, the two perpendicular lines, one broadly west-east, the other north-south with which all land survey started.

Three times a year, each time during a day, the mundus remained open: mundus patet. When mundus patet, Pandora’s box is open. It is prudent to shut oneself up. No contract, no council, no public debates, no war can happen these days. Festus, a writer of the 2d or 3rd century A.D. tells us:

Cato, in his Commentaries on civil law, explains so this name: the mundus derives its name from the mundus (vault of the sky) which is above us; indeed, so I heard from those who went into it, it has a shape similar to that of the other mundus.

For him, the mundus was already a semeion of the world. Things can be classified by dualities: hot and cold things, masculine and feminine, dry and wet, luminous and dark, high and low, right and left, living and dead. These dualities of things ‘thrown together’ reflect or ‘symbolize’ the world’s fundamental dualities. So, if a place is in the world, the world is contained by every place.

Pupils of Louis Dumont would find here matter for a reflection on their master’s concept of inversion, which allows the part to contain the whole to which it belongs. The place has now a center and a cosmic order: a hierarchy.

This account speaks of one ideal type of founding ritual, whose characteristics are often common

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23 Georges Dumézil, La Religion Romaine Archaïque, op. cit., p. 345.
24 Actually, etymology suggests the opposite derivation.
25 Georges Dumézil, op. cit., p. 345.
to the Indian and to the Mediterranean world, particularly in the Etruscan-Roman realm\textsuperscript{27}. Yet, even within the Mediterranean domain, the sequences of foundation proper to a particular tradition are not necessarily followed identically by another. It might be that here the mundus is caved or discovered first and the town limit traced then (as in Rome) or the reverse. And the templum, which we already mentionned as ‘shorthand’ for the union of earth and heaven established by the two first fires is generally traced after the ‘expectoration’ of the haruspex’s liver. At that point, a lamb - whose liver substitutes for the sacrifier’s - is slaughtered\textsuperscript{28}. In Rome, this sacrifice was preceded by the contemplation and the consideration\textsuperscript{29}.

The town still lacks something before it can be declared fully founded: a limit. Ivan Illich,

\textsuperscript{27}Ivan Illich, \textit{H2O and the Waters of Forgetfullness}, Dallas: The Dallas Institute for Humanities and Culture, 1985, pp. 19, 20 (note 11): “It would be a grave mistake to generalize from Etruscan foundaion rituals as though they were the model according to which dwelling space is ritually created by all cultures. The rituals described here should be seen as only one ideal type through which social space can be brought into existence and maintained. In certain African traditions, beautifully described by Zahan, I have the impression that social space is cultivated as the result of the personal experience of initiation. The initiatory way into the sacred woods and the ritual discovery of one’s one ‘inner experience’ are expressed in the communitary building of house and village. This example might be seen as the inverse of the Roman procedure, through which the templum, made visible in the city, comes to be experienced as an inner reality. Lebeuf reports from the Congo a “creation of space” that is the result of heaven and earth growing together, as the right and left part of the house are carefully built so as to rise, inch by inch in harmony with each other. Roumeguere describes the distinct stages of an initiation ritual, in each of which a new revelation of the body’s significance associates the young man or woman with a different sphere of outside realities. Niagoran stresses even more than Zahan that some African dwelling-spaces are the result of each generation’s initiation and therefore are time-bound. They are constantly in the process of decaying and must be reconstituted. Nicolas reports that the sacrificial victim is “split” to “make” new space. The space-creating spirit is ever at work as a zigzag line, representing the motion of water, word, and dance. See Griaule 12, 18 ff. on the “Nummo pairs of twins, who are water.” Space seems never to be ‘sealed off’.,” Dominique Zahan, \textit{Religion, Spiritualité et Pensée Africaines}, Paris: Payot, 1970. J.P. Lebeuf, \textit{L’habitation des Fali}, Paris: Hachette, 1961. J. Roumeguere-Eberhardt, “La notion de vie: base de la structure sociale Venda,” in \textit{Journal de la Société des Africanistes} 27, fasc. 11, Paris, 1957. G. Bouah Niagoran, “La division du temps et le calendrier ritual des peuples lagunaires de la Côte d’Ivoire,” in \textit{Travaux et Mémoires de l’Institut d’Ethnologie} 68, Paris, 1964. G. Nicolas, “Essai sur les structures fondamentales de l’espace dans la cosmologie Hausa,” in \textit{Journal de la Société des Africanistes} 36, Paris, 1966. Marcel Griaule, \textit{Dieu d’Eau: Entretiens avec Ogotemeli}, Paris: Fayard, 1966. Translated into English as \textit{Conversations with Ogotemeli: an Introduction to Dogon Religious Ideas}, Oxford: Oxford University Press, 1975.

\textsuperscript{28} Clay models of the liver, with inscriptions in Etruscan letters have been discovered. They were presumably used in lieu of the liver of a sacrificed animal. Illustration in Joseph Rykwert, \textit{The Idea of a Town}, op. cit., p. 56.

\textsuperscript{29} Ivan Illich, ibid., p. 13: ‘The augur is specially gifted: he can see heavenly bodies that are invisible to ordinary mortals. He sees the city’s templum in the sky. This term is part of the technical vocabulary of his trade. The \textit{templum} is a polygonal shape that hovers over the site found by the founder and that is visible only to the augur as he celebrates the inauguration. The flight of birds, a trail of clouds, the liver of a sacrificed animal can assist the augur in the \textit{contemplatio}, the act in which he projects the figure seen in the sky onto the landscape chosen by the god. In this \textit{con-templatio} the heavenly \textit{templum} takes its this-worldly outline. But \textit{contemplatio} is not enough. The outline of the \textit{templum} cannot settle upon the earth unless it is properly \textit{con-sidered}, aligned with the stars (\textit{sidus}). \textit{Con-sideratio} follows \textit{con-templatio}. \textit{Con-sideratio} aligns the \textit{cardo} (the axes) of the \textit{templum} with the city’s “star.” The \textit{cardo} was
recalling Rykwert’s commentaries of Titus Livus, describes so the tracing of the furrow that determined Rome’s extention and defined its topographic shape:

For this ceremony two white oxens are hitched to a bronze plow, the cow on the inside, drawing the plow counterclockwise, thus engraving the templum into the soil. The furrow creates a sacred circle. Like the walls that will rise on it, it is under the protection of the gods. Crossing this furrow is a sacrilege. To keep this circle open, the plowman lifts the plow when he reaches the spots where the city gates will be. He carries (portat) the plow to create a porta, a doorway. Unlike the furrows and walls guarded by the immortals, the threshold and gate will be under civil law. At the porta, domi (dwelling space) and foras (whatever lies beyond the threshold) meet; the door can swing open or be closed. Benveniste remarks that there is a profound asymmetry between the two terms in Indoeuropean languages; they belong to unrelated sets of words. They are so distant from one another that they cannot even be called antithetical. Domi refers to in-dwelling, whilke foras refers to whatever else is shut out.

Only when the founder has plowed the sulcus primogenitus (furrow) around the future town perimeter does its interior become space that can be trodden and only then is the arcane celestial templum rooted in the landscape. The drawing of the sulcus is in many ways similar to a wedding. The furrow is symbolic of a hierogamy, of a sacred marriage of heaven and earth. The sulcus primogenitus carries this meaning in a special way. By plowing a furrow around the future town, the founder makes inner space tangible, excludes outer space by

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setting a limit to it, and weds the two spaces where the walls will rise later.

The founding of the greatest of all gentile cities did not go without another fratricide. Yet, contrary to Genesis, the Roman religion culpabilized the murdered brother. Following René Girard, only the biblical tradition takes side with the victim. Rome is on the murderer’s side. Romulus’s act was seen as a peace-bringing murder performed by the first citizen, Romulus as Quirinus, the common man who was also the ‘inner Mars’.

With its limit, the place has now an inside and an outside. The inside is the ager effatus (effatus: same origin as fas). Outside the wall is the pomerium and then the open land (rus). The city is now fully founded. Square is the wall, square the houses: they are oriented, founded. On the contrary, a round building is the presence of the unfounded in the founded space: records of the time before the foundation. So the tholos and the several skias in Athens’ center, and, in Rome, Vesta’s round temple on the forum. A round, not orientable building is a hut (Greek skia), not a house. It has generally no threshold, no windows but a simple hole and an opening (Greek eschara) in the roof for the climbing smoke column and the dead’s souls.

But the story still does not end here. The city - the founded place: stead, asty - is the abode of the living. What is the place of the dead? In the neolithic ‘cities’ of Palestina and Anatolia, seven or eight millennia before the Christian era, this was in the hut and then the house, under a heavy stone. But already in the settlement of Hacilar, from the sixth millennium, the dead were expelled at

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34 Bailly, op. cit., p. 940: tholos, édifice en voûte; coupole, bâtie dans la cour, où l’on conservait les provisions. A Athènes, la Rotonde, édifice à voûte où mangeaient les prytanes. (The tholos was a round building recalling “the time before the foundation.”) It had some of the “natural” characteristics of a cave (wetness, darkness).

35 Bailly, op. cit., p. 1760: Ombre (shadow). Also hut, round building.

36 Mircea Eliade, “Architecture sacrée et symbolisme,” in Damian/Raynaud, ed., Les Symboles du Lieu, L’habitation de L’homme,
the periphery of the livings’ domain. Hacilar had the first cemetery ever documented in a sedentary place.

In Rome, the law of the twelve tables stipulated that no dead must be buried within the city’s limits, and similar dispositions existed in the Greek poleis. With the exception, sometimes of the founding hero, the dead must be buried outside. The tomb marks both the end of human life and the ultimate limit of the city’s domain (of the fields, outside the wall). In the stone(s) or the wooden pole recording a dead’s abode, the temporal and the spatial limit of earthly existence coincide.

Above Ithaca, the Odissea tells us, there was a hermaios lophos, a heap of stones. The Greek god Hermes has been defined as an iconic representation of the hermaios lophos. It is also the personification of one of the most primitive ritual gestures of the Mediterranean world: the act of throwing stones on a grave, or simply on the spot where blood had been shed. Jean Servier reports that Algeria’s Berbers, the Kabyles, still do it, shouting “la,” “well done!” while throwing their stones. Historians call this gesture lithoboly. Sometimes, etymology illuminates deep phenomenological contexts. So is it with the Indoeuropean root from which Hermes comes.

Following Pokorny, this root is uer, It has given most Indoeuropean languages terms meaning ‘mount’, ‘eminence’, ‘protuberance’ or ‘turgidity’, as for instance the not very palatable ‘wart’. The Greek words herma and hermaios, meaning heap, mound are ‘uer’ words. Many linguists have

1983.

37 Jean Servier, “Hermès Africain: les origines communes, les limites du visible et de l’invisible,” in Eranos Jahrbuch 49 (1980), pp. 199-257. Servier reports that in all North Africa, the mound resulting from the lithobolic gesture (the “African Hermes” on local tombs) is called h orm. Though I am not at all competent for research on semitic languages, I checked in a Hebrew dictionary and found that, be it by coincidence or by borrowing, the Indoeuropean and the Semitic root that originally refers to the heap of stones on a tomb strangely seem to coincide phonetically. In the Bible, we find it several times under the forms hor, horeb, hora, meaning each time a mound. The most striking example is from Deuteronomy (5, 1-5), the passage where Moses received the tables of the law on mount Horeb.

38 Pokorny, op. cit. II, Gr herma: 1150, 1151, 1152. Pok. I, p. 1151: uer-, erweitert uer-d-, uer-s-, ‘erhöhte Stelle (im Gelände oder in der Haut), ursu-, ‘hoch’. uer-s, Lat. verruca, Warze (bei Cato auch locus editus et asper). Gr. herma, ‘Stütze, Riff, Hügel’. Unsicher: Greek rhion, ‘Berghöhe, Vorgebirge (*urison?) und aisl. ri s, Riese. (Pok. sees the origin both of the name Hermes and the word horizon in the Indoeuropean root uer-, suggesting a mound, a top, a protuberance or even a wart. From that root derive also, apparently, the English verbs to “raise” and to “rise.” What Pokorny cannot treat is the strange homophony of the Indoeuropean root uer- and the Semitic root hor, hora, (for instance, in North Africa, “h orm” means as much as “hermaios lophos,” a heap of stone), which I am not able to explain).
hypothesized that from the same root comes also Greek horizeo, I divide, for the crest of a mountain divides the landscape in two parts. From that comes ‘horizon’, the line dividing the visible and the (still) invisible part of the landscape.

The horizon was the limit of ‘our world’, including the city and the countryside (polis and agros). As far as local people’s perception is concerned, it was the world’s limit and every trespassing was the motive of rites of passage. Tombs were on that line. Temporal and spatial expression of liminality, they were also on a topographic limit, close to, or on the horizon: the most conspicuous mark of the temporal limitation of life was also the origin of spatial boundaries. All practical delimitation were derived from tombs through a kind of primitive trigonometry: landmarks and milestones were defined by their distance to three tombs. In an age still deprived of formal census practices, lithoboly, which defined the first fix points of a country, was the originary limit tracing gesture.

So, a town had a center, an enclosure and a broad periphery. The passage from the outside to the inside and vice-versa occurred through four doors. Thresholds, like walls were sacred, the nature of sacredness being the passage between two radically heterogenous kinds of space: the inside and the outside. Yet remember: if the latter was protected by the gods, the first was under the protection of civil law. Beyond the horizon begun the others’ world, which was not ‘sacred’ proper, but taboo. The word ‘taboo’ refers to the opposition of a ‘we’ and ‘the others’.

Oscar Koschorke differentiates between four broad moments of the history of the horizon:

1. Horizon and world limit coincide in the dwellers’ perception. To trespass the horizon is

42 Ivan Illich, *H2O and the Waters of Forgetfulness*, op. cit.
equivalent with leaving ‘our’ world and penetrating into the others’ world.

2. Horizon and world limit cease to coincide. The Odissea speaks of the beginning of this moment in archaic Greece.

3. Any horizon is a challenge to trespass, a syndrom characteristic of the times of ‘great discoveries’.

4. The aporia of the horizon: every limit having been transgressed, the perception of the horizon wanes. No wonder if the dead, whose tombs belonged to the horizon have no longer a place: no more mysterious presences among the living, they are radically negated. Following Koschorke, the succession of these four moments summarizes the peculiar dynamism of the West and shapes its history.

What meaning can still have the word ‘place’ - as opposed to abstract, ‘cartesian’ space - in late Western culture, that is in modernity? Has our time become placeless, as it is limitless, centerless, horizonless and deprived of the presence of the dead? And what kind of earth, of body, of heaven are we left with, when the very elements making of a place a topocosm and of the body a soma in a topocosm have abandoned us? How can we recover some sense of placeness beyond the demise of all that, which made a place? We are here to explore Jerry Brown’s idea that friendship can make us recover a sense of placeness.

44 Borst, Arno, Mönche am Bodensee 610-1525, Sigmaringen: Thorbecke, 1978. “Among all the groups that suffer from discrimination, the dead are the worst off, since their very existence is negated.”

45 Albrecht Koschorke, Die Geschichte des Horizonts, op. cit.
History of Place:

*Odysseus’s house, 8th Century B.C.*

Jean Robert

In Homer’s time, in the 9th century before Christ, a *polis* was not a city but the household of a noble man. The word stems from the Indoeuropean root *pūr* and means originally a mound or a hill. The German word *Burg* derives from the same root. To designate the city, there was another word, *asty*, which did not mean the physical city within its limit, but a broad domain of civility, of people who could be called *asteoi*, urban in the sense of civilized, polite, handy. Odysseus was the prototype of such a man. Instead of speaking of politics, for those times, it would be better to speak of “asteism.” The word could stand for the maintenance of relations of civility between houses, equal if they were in the same town or not. The Odyssea is thus a first “geography of asteism” that should inspire the Greeks to expand their sphere, particularly in the still half unknown Western part of the Mediterranean.

One good half of Odysseus’s house was dedicated to the inter-domestic relations of “asteic” hospitality. It consisted mainly in a huge room, with a hearth and small tables for festive meals. It was Hermes’s domain, and the type of hospitality that was practiced there was no longer the “hestian” hospitality, in which the guest was integrated into the domestic hierarchy, but the “equalitarian,” “hermetic” hospitality characterized by the *xenos* relationship. In later time, this place, much reduced in size, was called *andronitis*, and opposed to the *gynaikonitis*, the space of women.
In Homer’s time, the part of the house dedicated to inter-domestic “politics” or better “asteism” was still called the megaron. The asteoi gathered in the megaron, ate and drank, listened to the rhapsod or aiodos, and weaved intrigues. Homer was such an aiodos. In absence of any supra-domestic institution, of well-maintained roads and hotels, hospitality in the web of “asteism” was the only possible means of traveling and the only way to know about the world.

The megaron opened the house to the world. Though it was men’s domain, the Odyssea reports over regions where women had entrance into the megaron. In the 8th song for instance, Odysseus, whose ship had wrecked on the shore of Phaiakia, is told by Athena to ask the queen, and not the king for hospitality. The other part of the house was dedicated to household activities. It is the domain of Hestia, to which men are not allowed.

Euphiletos’ House, 5th Century B.C.

Euphiletos lived in Athens at the end of the 5th century before Christ. One day, while he was in the fields, his wife let her lover into the house. When her husband came back earlier than usual, she convinced him that he should take a nap. She enclosed him in his room and went back to her lover to help him escape. In order to cover the noise, she ordered the servant to pinch the child, so he would cry. Nonetheless, Euphiletos heard the noise of the door and discovered the plot. He murdered his wife’s lover and had to stand for the judge for that reason. Since he was a poor speaker, he asked a logographos and rhetor to take care of his defense. This logographos was Lysias. Here is how Lysias let Euphiletos describe his house to the judge:

I have a small, two story house, whose second floor is installed like the first. It is so divided into a gynaikonitis on the upper floor and an andronitis downstairs. (...) When my wife got the child, we interchanged rooms, so that she would not be exposed to dangers when she
goes to the bath. So it became a habit, that my wife went away from me and slept downstairs near the child (...) so that he would not cry.¹

Lysias’s text shows us at least two things about a small house in Athens in the 5th century.

1. Since the house has two stories, there is no hearth in the middle of the men’s quarter: it is no longer a megaron.

2. Men’s and women’s quarters have become interchangeable: they are alike.

Louis Gernet, the founder of the “French School” of Hellenism, related the disappearance—or at least the reduction—of the hearth with the rise of democracy in Clysthenes’s time:

When the position of the hearth becomes arbitrary, the territory can be ordered mathematically, that is, reorganized around an arbitrary and theoretical center: every hearth can be displaced at will.²

He so associates the rise of the classical polis, be it democratic, oligarchic or ploutocratic, with changes in the relations between gendered spaces, and this is a powerful insight.

Not only the hearth, but the parts of the house, and the house itself had become mobile, as if Hestia had been uprooted. This can be compared with Xenophon’s admiration for a “mobile house” which is a ship. In Οἰκονομικός, he lets the perfect householder Ischomachos tell Socrates:

But the most beautiful and best calculated order of furniture, o Socrates, I have observed during a visit of the great Phoenician ship.³

And Ischomachos goes on to explain how the organization of this ship should be the model of all well-ordered houses.

Xenophon is the author of one of the first known “doctrines about the house.” Such doctrines do not speak of the vernacular tracing of limits between gendered domains, but of the domination of the house father over wife, children, slaves and dependants. I have, I believe, identified a moment in which domination is instituted over the asymmetrical complementarities of gendered spaces. This moment implies the alphabet.
To the question “where are you in this moment?” a pilot would answer “at longitude x, latitude y, altitude z.” But if I ask you “where do you live?” your answer may instead evoke neighborly relations woven through the years—a climate, old stones, the freshness of water. Depending on who is asked about what, the “where?” question can be answered by space determinations or by the memories of a concrete place. Space and place are two different ways of conceiving the “where” or, using the Latin word for “where” as a terminus technicus, two answers to the ubi question.

Place is an order of being vis-à-vis my body. This order (Gr: kosmos) always mirrors the great cosmos. This vis-à-vis or mirroring is the essence of what Ivan Illich called proportionality (Illich and Rieger, 1991.) According to Einstein, the concept of space disembodied itself from the “simpler concept of place” and “achieve[d] a meaning which is freed from any connection with a particular material object” ([1954], p. xv.) Yet, Einstein insisted that space is a free creation of imagination, a “means devised for easier comprehension of our sense experience.” In pure space however, my body would be out of place and in a state of perceptual deprivation.

This article concentrates on the radical monopoly that space determinations exert today on the ubi question. Wheels and motors seem to belong to space, as feet do to places. And just as the radical monopoly of motorized transportation on human mobility leaves some freedom to walk, space determinations leave remnants of placeness to linger in perception and memory. It will be contended that ethics can only be rebuilt by a recovery of placeness.
A general conception of space is conspicuously absent from ancient mathematics, physics and astronomy. The Greek language, so rich in locational terms, had no word for “space.” (Bochner, 1973) *Topos* meant place, and when Plato in *Timaeus* located the demiurge in an uncreated *ubi* of which we can have no perception because it does not “exist,” he called it *chôra*, fallow land, the temporary void between the fullness of the wild and cultivation. According to Plato, the demiurge’s *chôra* could only be conceived “by a kind of spurious reason,” “as in a dream,” in a state in which “we are unable to cast off sleep and determine the truth about it” (Plato, *Timaeus* 52). In hindsight, it can be conceded that this was a first intuition of the antinomy between place and what is today called “space.” In the XIVth century, Nicolas d’Oresme imagined an incorporeal void beyond the last heavenly sphere, but still insisted that, in contrast, all real places are full and material. Space, still only a pure logical possibility, became a *possibile realis* between d’Oresme and Galileo (Funkenstein, 1986, p. 62).

Following the canons of Antique and medieval cartography, a chart had to summarize bodily scouting and measuring gestures. Pilgrims followed *itineraria*; sailors, charts of ports; and surveyors consigned ritually performed acts of mensuration on marmor or brass plates. These were no maps in the modern sense, because they did not postulate a disembodied eye contemplating a land or a sea from above. The first maps in the modern sense were contemporary of the early experimentations of central perspective and, like these, construed an abstract “eye” contemplating a distant grid in which particulars could be relatively situated. In 1574, Peter Ramus wrote a “lytle booke” in which he exposed a “calculus of reality” in which all topics were divided in mental spaces that immobilized objects in their definitions precluding the understanding of knowledge as an act (Pickstock, 1998). Cartesian coordinates and projective geometry gave the first mathematical justification to the idea of an immaterial vessel, unlimited in extent, in which all material objects
are contained.

Had “space” been invented, as Einstein contended, or discovered? In the XVIIIth century, Kant announced that space was an *a priori* of perception. For him, Euclidean geometry and its axioms were the mathematical expression of an entity—space that cannot be perceived, but, like time, underlies all perceptions. The first attempts to contradict Euclidean geometry were published in Russian in 1829 by Lobachevsky\(^1\), whose ideas were rooted in his opposition to Kant. For him, space was an *a posteriori* concept. He thought that he could prove this by demonstrating that axioms different from Euclid’s can generate different spaces. In the light of Lobachevsky’s—and then Riemann’s—non-Euclidean geometry, Euclidean geometry appears *ex post* as just another axiomatic construct. There is no *a-priori* space experience, no “natural,” “universal” space. Space is not an empirical fact but a construct, an arbitrary frame that “carpenters” the modern imagination (Heelan, 1983).

Einstein occupies an axial and simultaneously ambiguous position in the history of this understanding. In order to express alterations of classical physics that seemed offensive to common sense, he adopted a mathematically constructed *manifold* (coordinate “space”) in which the space coordinates of one coordinate system depend on both the time and space coordinates of another relatively moving system. On the one hand, like Lobachevsy and Riemann\(^2\) ([1854]), Einstein insisted on the constructed character of space: different axioms generate different spaces. On the other hand, he not only came to consider his construct as ruling the unreachable realms of the universe, but that which also reduced earthly human experience to a particular case of it. In

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1. Lobachevsky, Nikolay Ivanovich. The date of the first publication on non-Euclidean geometry is 1829. It was a work in Russian by Nikolay Ivanovich Lobachevsky (1792-1856), followed in 1837 by an essay in French (“Géométrie imaginaire”) and, in 1840, by a book in German (*Geometrische Untersuchungen zur Theorie der Parallellinien*).

Einstein’s space, time can become extension; mass, energy; gravity, a geometric curvature; and reality a distant shore, indifferent to ethics. This space has reigned over the modern imagination since about a century. Yet, the idea that the realm of everyday experience is a particular case of this construct has not raised fundamental ethical questions.

The subsumption of the neighborhood where I live into the same category as distant galaxies transforms my neighbors into disembodied particularities. This loss of the sense of immediate reality invites a moral suicide. Hence, ethics requires today an epistemological distinction that evokes d’Oresme’s: contrary to outer space, the perceptual milieu is a place of fullness. According to its oldest etymology, ethos means a place’s gait. Space recognizes no gait, no body, no concreteness and, accordingly, no ethics. The ubi question must, therefore, be ethically restated.

Body historians and phenomenologists provide tracks towards an ethical recovery of placeness in the space age. Barbara Duden has shown that fundamental ethical questions related to pregnancy can only be raised by relocating the body in its historical places (1991). For their part, phenomenologists, these philosophers who cling to the “primacy of perception” in spite of tantalizing science-borne and technogenic “certainties,” restore some proportionality between body and place. For Bachelard, for instance, there is not the individual body immersed in the apathetic void of space, but an experience of “mutual seizure” of the body and its natural ubi. Merleau-Ponty (1964) further articulates the complementarity of these two sides of reality. These can be steps toward a recovery of the sense of the vis-à-vis without which there is no immediate reality, and hence no ethics.
References


Modernity’s Spatial Imperative
(2000)

Jean Robert

Modernity could be appropriately defined by its urge to master space and to expose all reality to a shadowless light in a controlled space. Long before Armstrong treded the moon and even before Sputnik’s bip was broadcasted all over the world, modernity was the “space age.”

Unlike other epochs, this age does not care to define its concept of the *summum bonum* as a graspable frame of orientation for action. It does not offer clues for decisions about ends, but for choices about means, and these means always imply free motion and shadowless vision in mastered spaces. All what our epoch considers worthwhile can always be reduced to a mastery over spaces, to vision and to motion in a manageable space.

Bridge builders do no longer say that, by uniting the edges of a cleft, they found a human site in the wilderness. They say that they remove an obstacle to a virtual flow of circulation. Traffic planners have adopted their language: in all that which opposes free motion in controlled space, they see a “factor of friction” to be removed.

“Circulation” and “speed”—the measure of its intensity—have become the axiomatic certainties underpinning a vision of the world as a collection of accessible objects and locations in space. Starting in the mid 19th century with the rapid propagation of the railroads, “space” has emerged into public consciousness as the ultimate substratum of reality. In the experience of speed, the landscape is experienced as an immutable space which frames ever changing images. This fixed receptacle of fleeting images makes the abstract coordinate-space of mathematics and physics seem
more real than the realities that “it contains.” This void, and yet more than real universal container has become “the real space of modern experience.” It is what commuters perceive as the “environment” in which they haste by selecting the appropriate signs along the highway, successively discarding sight after sight what E.V. Walter calls “the rubbish of perception.” Traffic landscapes are not landscapes in which one dwells but landscapes through which one runs by abolishing their sight. Symbolically, speed is the arrow that pierces all circles and removes boundaries as disposable obstacles.

Yet, circulation is not the only manifestation of our time’s spatial imperative. It is only one of several symptoms. From astrophysics to topology, from cinematography to poetry, there is hardly a modern discipline or an art which does not start as an initiation to rules of composition in real or imaginary spaces. Since centuries in the West, space is the medium of all visual representations. Yet, in the “real space” of modernity, representation becomes a simulation: an engineered deceit of the senses which abolishes the distinction between the image and its model.

The adoption of the heliocentric worldview led to a “spatialization” of the Earth. The container of all places was transformed into a rock or, as Romanysyn says, “a corpse.” Barbara Duden sees the image of the fetus which—since a famous photograph in Life Magazine—haunts the modern imagination as the outcome of the ultimate spatialization of the body. Building on Panofski, Duden shows that it started with Leonardo’s pictures of the dissected corpses of pregnant women. From Leonardo to Hunter and to the sonogram, Duden documents the constitution of what she calls “the public fetus” as the result of a progressive “peeling away” of the maternal, caring body. In her book *Geschichte unter der Haut*, Duden contrasts modern anatomy—the art of piercing the skin and exploring the “obscurity beneath” to a reckless light—with the complaints of early 18th century patients to their physician, Dr Storch.
Speed similarly transpires all limiting horizon and makes “the beyond” part of daily experience. In No Sense of Place, Meyrowitz has shown that the electronic media breaks down any possible distinction between familiar objects and remote, ungraspable realities. In the words of Michael Mooney, a participant of the “Commonplace Conference” in State College, we live in a world “in which the common is becoming uncommon and the uncommon common.”

An age which disposes of the tangible “flesh” of all things—of all that offers resistance to the hand and is therefore “haptic”—first makes the unexpected seem obvious and then, as Ivan Illich says, redefines it as “that which is demonstrable but remains unimaginable.” Modern man lives in a world of unimaginable demonstrabilia that techniques of spatial simulation have transformed into visibilia.
"Speed" As a State of Altered Perceptions
(1989)

Jean Robert

Most of the experiences which are a trivial part of the condition of modern man have a recent history. I myself belong to the generation who still remembers a time when there was no television and I also recall the day when, for the first time, I climbed into a jet: this was in Luxembourg, and the first landing was in Reykjavik. As Iceland appeared between the clouds, like a green and white jewel on a blue mantle, the plane turned into a graceful curve that soon put the island out of sight. When it appeared again, in the windows of the opposite side, I jumped from my seat to follow the beautiful sight. The plane turned again, and the island changed sides once more. It was only after having run to and fro a couple of times that I became aware of the disapproving glances of the other passengers. What I read in their eyes is that one does not behave that way in a plane. I was a quick learner. I spent my next flight glued to my seat.

One does not have to reach very deeply into family records to find an aunt, a grandfather or a great-grandmother who recalled a somehow comparable experience of first-time contact with tools whose use has become routine: Aunt Mary, who spoke into the ear piece during her first phone call, grandfather’s tales about his first automobile travel to the South on unpaved roads where he met signs of disapproval by villagers, the stories he used to tell about his mother’s memories of the first time she took a train. These are records of first-time experiences which must be carefully distinguished from the ensuing routines. Though they are experienced with the same
tools, the initial excitement and the subsequent routine belong to different constellations of perception. First-timers are overwhelmed by a plethora of sensations which overflow the frame of their customary perceptions. Ordinary users, in contrast, have acquired a new perceptual frame which selects some sensations and filters away others.

This essay tries to catch what happens to first-time perceptions when routine takes command.

Records of people who, around 1915 or 1920, traveled for the first time in an automobile, convey something of the special quality of my own first experience as a driver. “Speed,” when experienced as frontal sight from a vehicle’s windshield is a sudden surge, as if all the usual transitions of motion where abolished.

Proust has described that experience of the “sudden surge” in a text published under the title “Impressions de Route en Automobile” in *Le Figaro of November 12, 1907*:

I had asked the driver to stop for a while in front of the steeples of Saint-Etienne; but remembering how long it took us to get near to them, while from the beginning they looked so close, I pulled my watch from my pocket to see how many minutes it would still take us, when the automobile stopped me at their foot.

After having been for a long time unreachable by our straining machine, which seemed to skid on the road, always at the same distance from the steeples, it was only during the last seconds that speed, which had been totalized during all that time, became appreciable. And the giant steeples threw themselves so rudely upon us that we just had time to stop before dashing ourselves against the porch.

When it becomes a routine, “speed” ceases to be the experience of the sudden surge of things abruptly flung in our path. The driver becomes a driver by acquiring a new sense of the sequence of events. Learning how to drive is learning how to focus on the freeway, and not on the threatening masses of houses, trees or walls along the road. These become a flow of fleeting images at the side of one’s visual field. Only a first-time passenger, or a novice driver can still perceive
speed as a “sudden surge” or as the fear of being dashed against an obstacle, and this perception reveals how much he is still a pedestrian; for him, motion is not yet a flow of fleeting images, but still an encounter with solid things. In *Swann’s Way*, Proust writes:

> The ‘dépaysement’ (uprootedness from one’s place), the effect of strangeness due to speed allows a modification of the conditions of perception, of the categories of time and space; it helps to break these ‘aggregates of reasonings’ out of which our perception is made, to de-intellectualize this, in one word, to reencounter the freshness of sensation.

Actually, this text summarizes an expectation of sensory estrangement which was repeatedly expressed on the occasion of the arrival of the first trains, the automobile, and then the airplane. In the first decades of our century, at the time of the first automobiles, “speed” was the experience from which many poets expected to gain that “disarrangement of all the senses” which, for Rimbaud, was the condition of poetic creation.

In the “Manifesto of Futuristic Painters” that they wrote in 1910, Boccioni and five of his friends urged modern painters to paint what their eye saw, and not what their mind “knew.” The surprise of things that, because of their unusual speed seemed to be irrupting from nowhere should lead painters “to put the spectator in the center of the picture” and “to force him to accept these new appearances.” A bus, for instance, should be painted, not as a box into which people can climb, but as one of those “forces of a street” which Boccioni himself attempted to represent in a famous painting. Here is a sentence from the “manifesto”:

> The bus runs into the houses which it passes and the houses throw themselves against the bus to join themselves with it.

In 1912, only nine years after the Wright brothers had built the first motorized airplane and flew it over a distance of one mile, Marinetti, another Futurist, thought that the old world was
crumbling and that a new world had to be built out of the vision gained by speed and altitude. He imagined himself riding an airplane through the sweeping plains of the sky:

It was in an airplane, seated on the gas tank, my belly heated by the pilot’s head, that I suddenly felt the ridiculous inanity of the old syntax inherited from Homer. (Marinetti, *Le Manifeste du Futurisme*)

The words which come to the mind reading the Futurists is “exacerbation of sensations.” The perception of speed in means newly experienced is a distortion of previous perceptions. A man who sits in a train, in a car or in a plane for the first time experiences an upsetting of his habitual sensations, not a functional perception eventually allowing him to drive the machine or at least to behave in front of the other passengers. The poetic touch in the first testimonies of vehicular speed is based upon this exacerbation of sensations. Christoph Asendorf speaks of the “new coordination of the senses” which, starting in the mid-19th century, allowed men to build a new vision of nature out of the visual sensations generated by speed. He writes, “The 19th century is permeated with strategies for the reorganization of new sensory perceptions.”

**From the Excitement of the “First Time” to the Tediumness of Routine**

Yet, as accustomedness sets in, this reorganization of perceptions under the mediation of mechanical aids is a departure from the perceptual riches of the first-time experience. In order to become functional, the new coordination of the senses must tend toward a state of acquired selective insensibility. For instance, the kind of focusing vision which is required for driving a car is acquired by filtering away most of the profuse “first-time” sensations: houses generally do no “throw themselves” against trained drivers.

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1 See Asendorf, op. cit. infra, p. 160.
2 *Ströme und Strahlen: Das langsame Verschwinden der Mate*
The artists who celebrated speed in the decades of the first cars and airplanes attempted to prolong or fix the surprise of the “first-time.” They cultivated just those sensations which the training to vehicular locomotion tends to erode. Whatever new visions speed inspired to the artists, these were “disarrangements” of their pedestrian sensory memories, not functional, adaptive ways of seeing.

In contrast, the man who hurries to work coordinates the speed of traffic, the distance to be covered, the reading of the gas gauge, the probability of finding a gas station in this area into a single web of meaning. For him, geography is reshaped by the “miles per gallon of gas ratio” that tells him which territory he controls with what he has in the tank. The idea that distances are covered at a given energy cost calculable in gallons of fuel introduces the logic of equivalence into the perception of the landscape. It is as if the distances between places were in a category with the liquid that fills the tank. The motor is the agent of a transaction in which, in exchange for gas, the landscape is swallowed up by the miles and left behind, sight after sight. In a subtle way, it is as if the common quality of being consumed and left behind gave a sort of co-substantiality to the fuel in the tank and the miles of landscape behind the windshield. Fuel is burnt liberating energy. The sight of the landscape disappears by absorbing that energy which, as any scientist will tell you, is now “bound” as residual energy—“high entropy”—in the very substance of nature.

**Discarded Perceptions**

I study what the habit of selecting sensory experiences and discarding most of them as irrelevant to orientation does to vision and perception. I nose around in the waste baskets of perception. I wonder about what becomes of smells and whispers, the touch of leaves, the salty taste of sweat when they are disposed of as the “rubbish of experience.”
The walker draws a map of potential feelings and sensations which tells him what he can reach with the power of his feet. The driver’s map is limited by what “he has in the tank.” I see nature one way with my feet, very differently through the window of a machine whose radius of action is defined by gallons of gas.

What the driver “sees” in sites that his body will never meet are references structuring an itinerary. The sights framed by the windshield are not made of the same substance as the smelly mud that stuck to one’s shoes. Though yellow as they ought to be, the strawstacks along the way are not made of the straw in which we played. The heath is not the one where we picked blueberries. The glimpse of warren, bush, and marsh are fleeting images, easily discarded by a push on the gas pedal.

Vehicular locomotion leaves the body in command of only the instruments of driving: decisions about directions—right, left or straight ahead—are left to the hands, while the foot controls speed and stopping. Only the eye still knows the landscape, but it knows it through the commands of feet and hands on the instruments. Driving first deconstructs the unity of action of the senses and limbs; then, along with the acquisition of the necessary reflexes, it reconstructs their unity in a new guise. One can refuse to let this new “coordination of the senses” determine his vision of the world, but he must accept that he cannot behave in traffic if he does not let his perceptions be re-shaped by the driving instruments, the design of the highways and the rules of circulation.

Imagine an extreme situation, an “ideal type” with which real experience can be compared. Imagine a driver who had never been a walker, a man whose only vision is through a windshield. Like the figure of Kafka’s Metamorphosis, he would be re-born as a gigantic cockroach, except that his shell would be of steel and glass and his feet of rubber. His new body would be empty of the
memories walked landscapes imprint in the hiker’s flesh. For him, what others still call the landscape, would consist of weightless images. The windshield would sever the comfortable interior in which his body rests from an abstract outside that he would not call nature, not even landscape, but perhaps “the environment”—that undefined and half-threatening extension surrounding his vehicular uterus. All his representations of the world would differ from the walker’s, who knows that the places he meets with the power of his feet have an independent existence. This theoretical driver would construct his reality on an epistemological ground fitting his confinement in a wheeled box. The images through the windshield—or better, on it—would come and go depending upon his ability to make them appear and disappear through manipulating his instruments and following the map. The visible world, he would state, is contingent on my technical skills. No wonder that such a man would not stop to assist a stranded traveler abandoned by the side of the road: a push on the gas pedal abolishes the disturbing image.

The “Lay Vehicularization” of Perception

When he steps into a vehicle, the walker ceases to be a walker in order to become a driver or passenger. However, no one is a “chemically pure” car driver or commuter. Memories of walked landscapes still mitigate the ultimate vehicularization of perception. Real men differ from the ideal driver in that they sometimes jump from one state to the other. At first, it appears that they have two interchangeable conditions: the pedestrian, in which many traits of traditional man are retained, and the vehicular condition, which is an unprecedented historical novelty. Closer observation, however, reveals that the experience of being a driver, a passenger or a commuter is more than a parenthesis between two pedestrian experiences. Once he has framed nature with a windshield, the car driver never quite becomes a walker again. He now tends to see all landscapes through an imaginary
shield, somewhat as compulsive photographers cannot help seeing you through an imaginary objective. His memories of driven landscapes silently shape his sensations when he walks. He focuses on time ahead as, on the highway, he focuses on the road signals: in one hour, he should be elsewhere. Driven away by an appointment he can’t miss, he computes walking distances as if he would cover them with an imaginary vehicle, he tries to speed up, worries about the sweat that now covers his body.

Another symptom of the transposition of vehicular perceptions on pedestrian realities is the specialization of walkers into sub-species: some are called tourists and are recognizable by the cameras hanging from their neck; others, duly equipped with earphones, are called joggers; men and women too poor to afford transportation fares or rich enough to live close to where they work are officially described as practicing “transportation by foot”; the police keep an eye on loiterers, whom they check for their driving license—or, in its absence, their I.D.—and then dictate a destination: “go home” or “come with us.” He who still loiters and chats downtown generally speaks Spanish or has a dark skin. He who risks walking along the highways joining the City with its residential suburbs has often an apologizing sentence ready for the police: “I’m going for stamps; I live two blocks from the post office” or “my car is in the shop, so I walked to the supermarket.” He who is seen walking in the street needs to be rehabilitated as a pedestrian commuter: he must prove that he uses his feet as others use wheels.

However, there can still be moments where the driver or the commuter can recover for a moment the surprise of a first-time vision. There are days when the freeway which joins the town where I live to the metropolis where I work is free from traffic jams and the bus seems to dance joyfully on the smoothly meandering road that climbs to the pass. Pines, cornfields, ranches along the road, people cleaning fields, the smoke of a charcoal furnace climbing in the dawn sky, the
smell of fresh hay, the pollen of the pines, flowers. Car stopped, along the road, men and women
picking flowers. Sometimes, for brief moments, the tedious experience recovers its pristine
freshness of impression.

At other times, just the opposite occurs and the commuter, for a moment does no longer
know if he dreams or if he awakens to a nightmare made true. The wheels get clogged, flows
congeal and the assumptions of traffic routines are briefly shaken as if by force of an
epistemological subversion. For instance, the driver caught in a traffic jam may, for a while, forget
about the power of gas to devour miles and see himself as Adam perhaps did: a fragile fleshy being,
now caught in a horde of threatening insects. By empathy, he might suddenly see a human crowd,
where only steel shells are visible. In a moment of hallucination, he could even imagine the never
before seen: they all step out of their boxes and, as in a painting by Sydney Goodman, they walk
nude on the asphalt. Macadam Adam: intimations of obscure or forgotten meanings sometimes
overwhelm us in a flash. The flesh of tamed bodies pulsates again.

As the jam dissolves into a lazy flow, hands and feet reassume their function on the steering
wheel and pedals. The acquired reflexes of daily routine take command again. Habit and the
familiar daydream tame the strangeness of a moment.
Pedestrian locomotion is not the abolishing of distances. It is the bodily experience of the intimate distance between unique places and moments. The hiker’s tales enhance and sometimes exaggerate the estranging particularities of the far regions into which he ventured. Pilgrims had their most noticeable adventures in the most remote places they had visited, as if the intensity of their experiences increased with the traveled distance. Walking is not a disembodied motion relating an abstract distance to an abstract time. It is not an arrow between an origin and a destination, but an action that can shape its goals realizing them. It is not a scheduled forecast about my body’s location within one hour or one day, but an unpredictable event. The world’s center is always under the walker’s feet. To him who walks about, nature does not reveal herself as a mere sequence of images, but as an oikos of heavy and smelly substances limited by a horizon.

Far under the perceptual rubles of mechanized transportation, we find a form of locomotion which does not fit the schedules, the maps nor the internal arrow of whom who considers that time is the cost of an operation whose benefit is the attainment of valuable locations.

Any activity that puts means at the service of predetermined goals, Aristotle calls a motion. He opposed motion to action, an activity which, like playing, sets its own goals and reveals the world in always new and unexpected ways. We have to contrast the perceptual habits gained in mechanical locomotion with a form of movement which was both an action and an always
surprising revelation of this world’s stuffs. I found inspiration in the works of two great phenomenologists.

Substantial Motion Versus The Vain Destiny of Fleeting Images

In his essay on the imagination of matter, Bachelard establishes a distinction between movements that entail “an essential destiny that endlessly changes the substance of the being,” and “the vain destiny of fleeting images and a never-ending dream” (Water and Dreams, p. 6). Motion either brings forth the substantial essence of moving stuffs, or it is a vain succession of immaterial images. True movement always reveals something of the substantial depths of the visible world. The experience of motion is essentially the bringing of things into the presence of one’s body in the revelation of their materiality. Substance-less, motion is nothing—it can be construed as a vain succession of weightless images. Bodiless, motion is a dream. It is not enough to say that motion is always motion of something: its true nature lies in the acts which, from the depths of substance, bring the materiality of the world into our incarnated presence. The walker’s movements bring existents which were at best only potentially there—in thought or in memory—into the realm of his vision. It is by my movements that immobile objects facing me reveal their hidden face and become seizable. It is my motion which will reveal the things presently behind the horizon.

Conversely, nature seizes us in her motions. The world is an experience of seizure. In the sense of that double grasping, a doctrine of motion that would start from these powers of reciprocal revelation would be a “haptology”: a science of the mutually palpable presence of the world and the body. Yet, the actuality of this seizure is, in itself, inexpressible through words, for we can only speak of motions that have happened and make guesses about their continuation.

In spite of all their merits, the physico-mathematical theories of motion that fix its trajectory
in space-time miss this “haptologic” dimension. To regain a pristine conception of motion as the mutual seizure of the body and things, we must attempt to conceive it without our usual a priori’s of space and time, as an experience that precedes, and not follows any reference to rods and clocks. Before it could possibly be scheduled and mapped, perhaps before the conceptual invention of space and time, motion was the modality of our vision. Schedules, trajectories and space-time coordinates are means to catch, not the unseizable “haptologic” moment of motion, but its dead trace once it has passed away and to make that trace available to the eye as “trajectory.” Trajectories are the past-ness of future motion, not its unspeakable present.

The “space” and “time” of actual motion, experienced in the flesh, is not the metric space-time of mathematics and physics. Embodied movement engenders its own “spime,” which is why it is so radically different from the motion of a mechanical contraption in the lab. Walking is a moving experience which, only by an abuse of language, can be dealt with in the terms applied to mechanical locomotion. The act of walking is the complement to the act of seeing. As Gibson has shown, seeing is an ecological act: it opens up an oikos to be seized, smelled, tasted, heard and seen while walking.

The walker sees nature with his feet as well as by walking her with the feet of his eye: even in the darkest night, a special fatigue in the ankle allows him to “see” the steepness of a path. At dawn, he who wants to climb a mountain prepares himself by evaluating and feeling “in the calf of the eye” the distance to be covered.

The walker’s space is a manifold of actual and potential body sensations: not only the hill actually climbed is mirrored as fatigue in the walker’s calves or the rider’s loins, but distances to be covered are evaluated as potential sensations of effort. This sensation of movement is the reflection, in the walker’s flesh, of nature’s motive injunctions. As long as man was a pedestrian or horse
rider, the perceived movement of things could be echoed in his entire body which was then, with all his senses—not just the eye—the sensorium of motion. Nature’s movements were challenges to man’s actions and claims for new gestures to be performed. When man could experience nature’s motions by being immersed in them and responding with his own movements, every particular motion bore the coloration of a particular element: violent water, through which the swimmer escapes using all his muscles was radically different from the volutes of fire, from the wind’s action on the dauntless walker or from the crumbling weight of earth. In a pedestrian world, nature’s challenges are always embodied in material elements.

The perception of things in motion is, following Bachelard, strengthened by the knowledge of the depth of a particular element. This element, for him, was water. Water gave his imagination of matter its “fundamental color.” For he was born “in a section of Champagne noted for its streams, its rivers, and its valleys—in Vallage, so called because it has so many valleys.” Thus, his preferred image for substantial motion was flowing water. He never saw water as the ocean’s surface, which evokes an infinite extension, but as the stream of rivers or the flow spurting from a deep underground spring, “for, in my own reverie, it is not infinity that I find in waters, but depth.” Movements of water surging from the depths are, for Bachelard, the carriers of remembrance. They first remind him of Vallage, where “matter” is never abstract—tasteless, colorless, devoid of tactile qualities—but always embodied in sensible stuffs.

But the region we call home is less expanse than matter; it is granite or soil, wind or dryness, water or light. It is in it that we materialize our reveries, through it that our dream seizes upon its true substance. From it we solicit our fundamental color. Dreaming by the river, I dedicated my imagination to water, to clear, green water, the water that makes the meadows green. I cannot sit aside a stream without falling into a profound reverie, without picturing my youthful happiness.... It does not have to be the stream at home, water from home. The nameless waters know all of my secrets. The same memory flows from all fountains. (Water and Dreams, p. 8)
“Dreaming by the river,” letting water give him its “fundamental color,” Bachelard made of flowing water a metaphor for motion. Readers of his other works might find my statement too exclusive and object that he recognized that each one of the elements—earth, water, air and fire—called for its specific imagination of substantial movement. He dedicated another book to the imagination of air and even gave it the subtitle “Essay on the Imagination of Motion.” Bachelard, however, remained exterior to the invisible air volutes which shape and sustain the spectacle of the vault of the heavens. He was not a wind hero, a dauntless walker who, like Nietzsche “bends forward in the face of the wind, against the wind,” whose walking stick “pierces the hurricane, makes holes in the earth, thrusts through the wind.”

The movement which brings water from the depths to the visible surface allowed Bachelard to understand motion as an epiphany of the materiality of the world. What, for the sake of references to come I will call “substantial motion” (motion that brings forth the substantiality of things), Bachelard understood in accordance with the movements of the flesh it induces or demands (Ibid p.159). Again and again, he insisted that reality cannot be founded as a succession of images in a human’s eye. I bring nature into my sensible presence by the movements of my flesh, and, in her motions, she responds by her active presence. “I see” means that my movements actualize as visible the potential existents which nature brings forth from her depths. Between nature—which Aristotle defined as a “principle of motion and change” (Physics 200b)—and my body there takes place an interplay of mutual challenges and responses through which both establish their carnal presence. It would be as silly to claim that nature is “an image in my eye” or “a representation in my mind” as to say that I am a dream of nature.

To address that carnal presence in a mutual activity, Bachelard—who wrote fifty years ago—spoke of “man’s labor,” the objects’ “coefficient of adversity,” our “offenses” and the
elements’ “anger.” He wrote:

... as soon as we begin to distinguish—as I have tried to do by considering the composition of water and earth—every matter in accordance with the human labor it induces or demands, we shall not be long in understanding that reality can never be well founded in men’s eyes until human activity is sufficiently and intelligently aggressive. Then all the objects of the world receive their true coefficient of aggressivity.

And:

We will bring Schopenhauer’s insight to its conclusion; we shall compute the sum of intellectual representation and clear will from The World As Will and Representation in a formula: The world is my provocation. I understand the world because I surprise it with my incisive forces, with my directed forces, in the rightful hierarchy of my offenses, which are like embodiments of my joyous anger, my ever-victorious, ever-conquering anger. Insofar as he is a source of energy, a being is an a priori anger. (op. cit. p. 159, 160)

We should not misread these lines as allusions to the offenses of homo industrialis or to the threats of climatic catastrophe. Bachelard searched for strong words to express the mutual claims of carnal presence of body and nature. His “labor” is my effort in walking, his “provocations” are my dauntless steps into the wind. An object’s “coefficient of adversity” is the resistance felt in my flesh when it opposes my “incisive force”: for example, the experience of lifting rocks to build a stone wall. My joyous anger corresponds to the anger of the elements, embodied in motions of earth, violent water, wind and fire. Bachelard was in search of the conditions of a pristine vision, which for him were no other than the conditions of the world’s material reality and of my carnal presence in and to it. If, hearing his words, we cannot help thinking of our industrial offenses and our frozen anguish, it is because we have understood that we live in an epoch capable of limitless provocations but insensible to nature’s elementary angers. Our aggressions are disembodied, our angers mindless. Nature’s flesh has been peeled away. Like heavily loaded clouds before the storm, the elements keep a threatening silence. Bachelard died before pollution and ecological disasters
manifested nature’s obvious response to our industrial offenses; and therefore, he is at risk of being misunderstood.

Merleau-Ponty’s understanding that the body “is an intertwining of vision and movement” echoes and completes Bachelard’s intuitions. Substantial motion, which Bachelard called nature’s elementary “anger,” responds to my “provocations”—my claims of carnal presence—and elicits my “labors.” Nature’s angers, which reveal her deep, elementary materiality and my labors are the two complementary sides of the same being. In *The Primacy of Perception*, Merleau-Ponty articulates the complementarity of these two sides:

In principle, all my changes of place figure in a corner of my landscape; they are recorded on the map of the visible. Everything I see is in principle within my reach, at least within reach of my sight, and is marked upon the map of the ‘I can.’ Each of the two maps is complete. The visible world and the world of my motor projects are each total parts of the same Being. (*The Primacy of Perception*, p.162)

The “map of the visible” intimately coincides with the realm of my motor projects. What I see cannot be disembodied from what I can reach, seize, taste, smell, hear. No ideal “image” can be abstracted from these powers and their challenge by nature’s moves. It is only by a kind of ellipsis that one can say that the senses “overlap” in a joint action, for they were never severed in the first place. In this joint perception, or *synaesthesia*, things are present before any analytical reduction of their perception to “sensorial data”: eyes eavesdrop, words enlighten, feet see and the nose touches the body’s aura.

We do not “think sufficiently” of the complementarity of “the map of the visible” with the realm of the “I can”:

This extraordinary overlapping, which we never think about sufficiently, forbids us to conceive of vision as an operation of thought that would set up before the mind a picture or a representation of the world, a world of immanence and of ideality. (op. cit. p. 162)
The breach of that overlapping opens the door to a picture of nature, sets up before the mind “a representation of the world, a world of immanence and ideality.” Nature’s destiny becomes the vain fate of “fleeting images and a never-ending dream” (Bachelard) and Merleau-Ponty reminds us that the word “image” generally refers to “a copy, a second thing” (op. cit. p. 164). The world becomes a self-referent copy.

We can now understand what radically distinguishes the vision of nature through a windshield—the “kinetic experience”—from the experience of walking. Our projects of vehicular displacements—let’s call them our “automotive dreams”—do not match nature’s substantial movements nor do they elicit her elementary angers. The old map of the “I can” is replaced by the map of “what I have in the tank.” The act of seeing ceases to be the complement of the act of walking. Frozen by the windshield glance, nature becomes a neutral environment. It thus becomes clear that the essence of the kinetic experience is not the quantitative intensity of speed but the qualitative dislocation of the two sides of being which the walker knows as one. Speed produces a bipartite division of the flesh of perceived nature into, on one side, a quasi immaterial environment manifest as sequences of fleeting images and, on the other, a body enclosed behind shields and screens.
Let us delve into the perceptual sediments of a century of car-related routines. Under that accumulated alluvium, we find the strata of pedestrian locomotion, with which we will contrast railroad journeys. Up to the epoch of the first iron ways, around 1830, everybody was a hiker or traveled in coaches at walking or riding speed. Pedestrian was almost a synonym for “common man” and in many languages, “horse rider”—cavalier, Ritter, caballero, chevalier—was the first distinction from the common condition. Except for brief moments of gallop, the rider’s pace is twice or thrice faster than the walker’s. Let’s imagine that the speed of human locomotion, today, be within the range of the velocities of walking and of driving a bicycle. Such a narrow spectrum of possible speeds would not allow for essential differences of perceptual modalities to occur. The bicycle and the horse enhance or exacerbate perceptions, but they do not break the circle of the pedestrian condition. The rider, or the cyclist are immersed in nature’s materiality, even if they pierce the wind rash a way than pedestrians.

The pedestrian’s is a condition of immersion and embodiment. The walker meets the sites of nature with his legs, his nose, his ears and all the pores of his skin. For him, there are smelly places, others are recalled for their unique rumor. Besides, places vary with the seasons and the hour of the day, constituting local “spimes” remembered by the walker’s body. The feeling of sweat in my armpits will always recall me that fountain under a Jura pine where, on a summer afternoon, we washed our skirts and let the sun dry our sweating chests. I can still name the friends who remember
that place, that day.

Through all of history, up to the modern epoch, the feet had defined the scale of inhabited places. The pedestrian condition common to all shaped common perceptions of natural sites and landscapes. The king, then, hardly traveled faster than his subjects and he perceived nature the way they did: by walking her or riding in her. For the best and the worst, neighbors truly dwelled in the same place, and every place engendered its peculiar perceptions and representations of the close and the far, this and the other world. Every inhabited site was, as E.V. Walter writes, “a unity of experiences organizing the mutual (...) influence of all beings within it.”¹ It was a stage on which reigned a particular unity of place, time and action. An intimate distance, which was felt in the legs, but was also evaluated in kinship or in intensity of friendship or enmity made every site distinct from the next and gave it, in Walter Benjamin’s words, its unique aura. Things, like places had, Benjamin writes, an aura of uniqueness: they were not reproducible. Except printed books, no object was an exact copy of another one, an even a book, in a given region, was generally unique, because the next copy was out of reach. In his essay on the village of Montaillou in the 13th century, Leroy Ladurie speaks of the man who possessed an exemplar of Ovide’s *Art of Loving* and was known round about for that.

Pedestrian locomotion is not a disembodied motion relating an abstract distance to an abstract time. It is not a scheduled forecast about my body’s location within one hour or one day, but an unpredictable event. The world’s center is always under the walker’s feet.

Far under the perceptual rubles of mechanized locomotion, we find a form of motion which does not fit our schedules, our maps, nor the internal arrow of whom who considers that time is the cost of an operation whose benefit is the attainment of valuable locations. Any activity that puts ends at the service of predetermined goals, Aristotle calls a motion. He opposed motion to action, an

activity which, like playing, sets its own goals and reveals the world in always new and unexpected ways. We have to contrast the perceptual habits gained in mechanical motion a form of motion which was both an action and an always surprising revelation of this world’s matters.

The old philosophers who thought that motion is an actualization of substantial forms understood its nature differently—and perhaps more genuinely—than the modern scientists who draw its trajectories in coordinate space-time. For them, motion was an “actualization,” by which they meant the bringing into being of a potential existence. In order to see how right they were, and in what, we don’t need to share their belief in predetermined and eternal potentialities or “forms.” It is sufficient to understand that motion—my body’s and nature’s—has the power to actualize existents into sensible beings by bringing them into my carnal presence. The walker’s movements bring existents which were at best only potentially there—in thought or in memory—into the realm of his vision and in this the ancient philosophers were right: motion actualizes hitherto hidden possibilities of being.

Unlike modern scientists, who freeze motion in graphs, the medieval philosophers attempted to catch its actuality with words. They defined it as a perfectio, by which they meant the bringing forth of a substantial form and its completion. They recognized that the via ad perfectionem (the path to that perfection) could be studied as something different from the “perfectio” itself, but they resisted the temptation to take the path for the motion. They insisted that the essence of motion was actualization. Further, if I see “actualization” as the bringing into my presence of things hitherto only potentially existent for me, I come to understand that the medieval philosophers—the great Scholastics or “Schoolmen”—were also great walkers, for their philosophy fits the experience of him who knows nature by walking her.

Galileo studied abstract trajectories in space-time, not motion as that which brings potential
existence into sensible being. A theory of motion centered on trajectories and framed in an
aprioristic space-time necessarily concentrates on repeatability and predictability. On the contrary,
motion, experienced in the act of its completion, is never quite predictable because one does not
know which hidden aspect of being, which “substantial form” it is going to bring into his presence.
The “space” and “time” of actual motion, experienced in the flesh, is not the metric space-time of
mathematics and physics. Embodied movement engenders its own “spime,” which is why it is so
radically different from the motion of a mechanical contraption in the lab.

A philosophy of walking is a philosophy of vision and, conversely, the philosophers who
start their inquiry by asking “what is there, there?” used to be walkers: were not Aristotle and his
students called “the ones who walk about,” the “Peripatetics”? Through the middle ages, up to the
beginning of modern times, philosophers who followed Aristotle’s example and commented on his
works claimed that same name for themselves, signifying that walking is the complement of the
philosopher’s vision. Did not Socrates himself initiate the dialogue with Phaedrus with the
injunction: “Move forward”? They went out of the city, took a stroll, and while walking reflected on
the spell cast by letters on sensible being.

The walker sees nature with his feet as well as by walking her with the feet of his eye: even
in the darkest night, a special fatigue in the ankle allows him to “see” the steepness of a path. At
dawn, he who wants to climb a mountain prepares himself by evaluating and feeling “in the calf of
the eye” the distance to be covered.

The alphabet first engendered a realm which is open to the eye only. The man of letters sits
behind a desk. While his eyes pour over the pages, he sometimes dreams that he’s left his body
behind. What the mastery of the alphabet’s technique once allowed a well-trained minority—letting
the eyes abandon the body—the technology of speed internalized into everybody’s perception.
Kinaesthesia

The walker’s space is a manifold of actual and potential body sensations: not only the hill actually climbed is mirrored as fatigue in the walker’s calves or the rider’s loins, but distances to be covered are evaluated as potential sensations of effort. This sensation of movement or “kinaesthesia” (from Greek kinein, to move and aesthesia, sensation) is the reflection, in the walker’s flesh, of nature’s motive injunctions. As long as man was a pedestrian or horse rider, the perceived movement of things could be echoed in his entire body which was then, with all his senses—not just the eye—the sensorium of motion. Nature’s movements were challenges to man’s actions and claims for new gestures to be performed. This is how I understand the phenomenologists’s intuition of an intentionality of nature.

Seeing Becomes “An Operation of Thought”

The ambiguity of speed—which can be experienced as a thrill or as unspeakable boredom, as the excitement of a departure from routines or as the most enslaving grind—lies in that dislocation of vision and bodily motion. In its “first-timeness,” the kinetic experience could be a kind of premonition of that “systematic disarrangement of all the senses” which, after Rimbaud, was seen as a possible door to poetry for it shook the ground of common sense judgment. Yet it is a disarrangement or “dérèglement” only as long as it is experienced in a frame of pedestrian references. In that frame—as long as it holds and the body is not tamed—speed creates an illusory extension of the map of the “I can” and extends my motive projects. Then—as soon as I feel comfortable sitting quiet on my seat—a chasm is introduced between motion and vision, but speed still maintains me in an interesting state of giddiness. As long as the traveler is a transported pedestrian, motion is still substantial. Then, while nature’s elementary angers seem more intense
and colorful, the body surreptitiously recedes from their reach. When the chasm becomes the rule, the interesting “dérèglement” ceases and the windshield becomes the frontier of a new covenant: inside, the internal swarming of bodily stuffs under the skin; outside, the unbearable lightness of things in motion. Speed breaks the overlapping of the visible world with my motor projects.

When speed imbues the space situated beyond vehicular enclosures—the environment—with never-ending motion, motion becomes a disembodied flux of forms. Bodily exposure to mechanical speed—the “kinetic experience”—dramatizes formal aspects of nature, like tectonic lines, orological textures and materializes geometries: straight lines, horizontal planes, intimations of sphericity beyond pedestrian horizons. The routinized experience of speed severs the imagination of matter from powers of judgment grounded in the overlapping of “what I see” with “what I can.” Like a dust, stuffs whose substantiality is not attested by intuitive judgments can stealthily cover the ground of synaesthetic perceptions and muddle judgments to come. It is then time to step out, extend your legs, shake off that unsubstantial powder and cleanse the eye of your feet from this cloud of dust.

If speed can extend its realm beyond all the limits of a pedestrian common sense, it becomes a reality-shaping experience. The ground of judgment is crushed, reality is molded in the new stuffs. Taking Greek etymology seriously, I call it a neo-plasm, a newly-cast matter. Unless we watch out, it will proliferate and pollute all the interstices between whatever synaesthetic harbors we have managed to keep. The neo-plasm is but a bad dream: it is matter in its absence, as only a numb, legless and handless no-body could possibly imagine it.
In 1844, during the years of enthusiasm recalled as the decade of the railroad mania, an already well-traveled lady described the strange dance of an individual who visibly did not yet know how to behave in a train compartment. In the coach seated opposite her, she commented, was an elderly gentleman, short and stout, with a red face and a curious prominent nose. The weather was very wild, and by and by a violent storm swept over the country blotting out the sunshine and the blue sky, and hanging like a pall over the landscape. The old gentleman seemed strangely excited at this, jumping up to open the window, craning his neck out, and finally calling to her to come and observe a curious effect of light.

The story, or rather the gossip was circulated by a Mrs. Simon during the Royal Academy Exhibition of 1844, of which the masterpiece was William Turner’s *Rain, Steam and Speed*, which showed the Western Express crossing the Maidenhead Bridge over the Thames. The old gentleman was allegedly Turner himself whom Mrs. Simon, as she reported, had witnessed jumping and exulting in the train like a first-timer.

If the story wasn’t true it was, as the French say, well invented. *Rain, Steam and Speed* has the freshness of a first vision. What it shows is the power the railroad exerted on the landscape, its “perception-shaping” force.
A Landscape Shaped by a Machine’s Rhythms

Though the sky occupies more than half of the picture’s surface, it is not a skyscape in which the clouds and the light piercing through them would play the dramatic part, as in *Snow Storm*, painted two years earlier. Nor is the sky of *Rain, Steam and Speed* the uniform grey lid that takes hold after days of bad weather, when it seems that the sun has lost the force to pierce the lead of fog condensed into low clouds. It is a threatening sky, but the threat is diffuse and suspended, as in the composure which succeeds a thunderbolt, when a cumulus, like a pierced barrel, is on the verge of pouring a local deluge, but it hasn’t happened yet. It might not happen, for the thunderbolt with which the sky resonates is not a heavenly, but an earthly explosion: it is the tumult which accompanies the train’s sudden appearance.

Patches of the left part of the picture are still illuminated by sun rays, as if some parts of the landscape remained indifferent to the mechanical storm. More than an elementary uproar, the sky of *Rain, Steam and Speed* suggests a broad open space—in part diaphanous, in part veiled by stripes of rain—laden with the tension of a man-made conflagration. The line of the horizon is blurred, but it would not be adequate to say that it is hidden behind a veil of fog. It rather dissolves into a white substance that suggests infinity.

It is from that white that the train emerges like a fist blow. The train? No, the whole system of the railroad: the locomotive, the steam ribbons it adds to the strips of rainy fog hauled by the wind, the iron tracks and the black mass of the bridge that sustains the whole. The iron way is perfectly rectilinear and its tracks, like the strokes of light which suggest glitters on the convoy’s wheels, converge toward a point that loses itself in the milky infinity of the horizon. Whatever this is—a black monster, a technological structure, the Machine or the New Age—
comes from very far. It does not properly belong to the landscape but a closer examination reveals that it structures it. Though the touch is of a quasi impressionistic facture, several convergences of lines suggest that the infinite point from which the Thing stems coincides with the vanishing lines of the picture’s perspective.

The technological infrastructure of the bridge is in strong contrast with the impressionistic conception of the rest. The two lines marking the edges of the bridge are so straight that the painter must have traced them with a rod and though the tracks themselves, because they catch twinkles, partly dissolve into the space of light, the dark streaks that indicate their presence also organize themselves along perfectly straight lines.

Once Turner obtained the ideal point of convergence of these four beams of light and shadow, he must have marked on the canvas some other straight lines irradiating from that point, for the crest of some hills and of a remote forest also converge toward it. Some of the underlying lines of construction even seem to lurk, in a pentimento-like fashion, from under the brushes. I suggest that it was only once these constructive indications had organized the canvas that Turner surrendered to that kind of “acting painting” which so impressed a young onlooker who was to become the art critique G.D. Leslie, and, years later, recalled it in these terms:

He used rather short brushes, a very messy palette, and, standing very close up to the canvas, appeared to paint with his eyes and nose as well as his hand. Of course, he repeatedly walked back to study the effect.

Leslie goes on to tell how the painter commented with him “the little hare running for its life in front of the locomotive on the viaduct” and even suggests that Turner did it to show him how painters of old would have represented a fast motion. Another allegoric intimation of the same style is the figure of a man ploughing on the plain below the viaduct which, Leslie recalls,
evokes the name of a popular country dance, “Speed the Plough.”

These are, however, hat bows to means of allegoric representation of the past or, as modern art critiques would say, “quotations.” In Turner’s picture, speed is not only emblematized—as it was for instance in Rembrandt’s Landscape with a Coach, where a young boy running after the coach stood as an emblem of movement. Speed impregnates the whole space of the picture, and structures its meteoric and tectonic forces anew. What the whole space is filled with is the noise of the train. Looking at Rain, Steam and Speed, the modern onlooker cannot help evoking The Cry, that picture by Edvard Munch in which a whole landscape seems to be molded in the vibrations of a shout. In Turner’s painting, the noise seems to stem from the same point from which the black mass of the railroad jumps into reality, and it is echoed by “perspectival reminiscences” among the lines of the hills and of the sky, as if the landscape’s tectonics would vibrate with the artificial noise.

The train comes and its noise seems to suspend everything. What the noise does to rural rumors, the railroad and its infrastructure do to the landscape. The tracks have no locus, they know no “topos,” respect no sense of “a concrete place.” They do not meander, like old roads and they ignore valleys and hills. Their straight line floats, or better, the train with its infrastructure does not inhabit a place: it occupies a space. The structural integration of the iron way into the composition of the picture suggests that the railroad creates the space that it fills with its noise. Once the train will have crossed the landscape, this will never again be the same.

A Chasm between Two “Landscapes”
The black shape of the railroad cuts the picture into two unequal parts, as if it were dismembering the body of the landscape. The right part is already re-structured by the new force and seems animated by a syncopic rhythm punctuated by vertical strips which resonates with the monster’s noise. And look at the oblique alternating bands of rainy air which makes the bridge vibrate with the noise, taa ta ta ta, taa ta ta ta, scanning perhaps the music of the new age? Intimations of verticality suggest the edge of a city beyond the field where a single individual passes the plow, probably chanting—as Leslie suggests—“Speed the Plough” at the new rhythm of production.

On the contrary, on the left side of the picture, we are recalled of the landscape of old: a “riverscape” under the arches of another, older bridge in which a man in a boat is fishing. On the river side, a group of bathers plays games and beckon some invisible travelers with the hand. Remembrances of previous modes of perceiving and painting the landscape, “quotations” of the baroque palette, of the Romantic sky.

The lesson of *Rain, Steam and Speed* is that speed—mechanical motion and its action on the flesh—unlike the tectonic and meteorological forces of the Romantic landscape, cannot be “represented.” By an irony of History and the unique genius of an old man, it was given to one of the creators of the “Romantic landscape” to understand this. In the “Romantic landscape,” the elements—wind, fire, water, earth—were the actors. Speed is not an “actor” on the scenery of nature, but a force organizing its perception. What we, today, call “the environment” is perhaps the landscape seen through the looking glass of speed by the successive generations which came and passed since Turner painted a train. Or better: “speed”—the vision of nature through a vehicle’s window—changed people’s gaze.
The Kinetic Experience

The black mass of the tracks and the viaduct materialize the lines of construction of linear perspective. Yet, the space which is constructed by these lines does not reveal itself from the vantage point of a window in reality. *Rain, Steam and Speed* is a perspective without a window in a real place, it offers a viewpoint without a standpoint. In Turner’s time, no real body had ever occupied the position from which the Maidenhead Bridge is represented and, today, only the helicopter, which stays immobile at any distance above the landscape could make it “real.” This disembodiment of the onlooker’s position is Turner’s means to express the specificity of the new experience of speed. In its literary expressions, the core of the kinetic experience—that is of the experience of speed apprehended from vehicles—always implies the establishment of a fictitiously fixed vantage point from which the apparently immobile body sees the landscape as a space of images in motion. The habituation to speed, which renders veteran travelers numb to the profusion of impressions which overwhelms first-timers, amounts to a progressive reification of the imaginary place from which the landscape is seen into a stable space. Upholstered seats, framed pictures on the walls, curtains at the windows, a whole register of symbols of stability borrowed from the architecture of all times make the mobile point look immobile. By contrast, the vividness of the first kinetic experience relied on the ambiguity of the newly gained vantage point, on its radical difference from all previous experience of being in a place. Turner wants to represent the space generated by the railroad while remembering the freshness of his first-time experience: his standing point is not solidified.

In its genuine profusion of stimuli, the kinetic experience is first an estranged glance at real places. Then, as the mobile vantage point solidifies into the simulacrum of a room, the
landscape in imaginary motion dissolves into fleeting images in space. Or, to say the same in
other words: speed and windshields first separate the body from sites which were still imprinted
in the flesh. This ambiguous situation corresponds to the short period of exultation of the first
experiences. Then, accustomance makes the eye oblivious of “how it felt in the legs” and numb
to the tastes and smells of seen things. The gaze becomes a dream-like sense of fleeting shadows.

In the kinetic experience, the onlooker is excluded from nature by the effects of speed and
of the windshield. His perception of motion is dissociated from the feeling in the walker’s calf of
the leg or of the rider’s buttocks. He sits quietly on a bench while, around him, everything turns,
all is motion. Astonished, he experiences a motion that his body does not acknowledge.

Here is how an overwhelmed Victor Hugo described his first kinetic experience, in the
train between Brussels and Antwerp, on August 26, 1837:

It is a magnificent motion, that one must have felt to appreciate it. Speed is something
unheard of. The flowers on the road are no longer flowers, but spots, or rather red or
white stripes; no longer points, everything becomes a line; the wheat is a big yellow blur.
The alfalfa fields are large green braids; towns, steeples and trees dance and mingle
madly on the horizon; from time to time, a shadow, a form, a standing specter appears
and disappears like a lightening: it’s a railroad guard that, following military custom,
presents arms to the convoy.

Jean-Bertrand Barrère, from whose book on “Victor Hugo’s Fantasy” I borrowed this
passage, comments:

Joy opens his eyes. His gaze, always so sensitive to fresh impressions, first seizes the
prodigious transformation of the landscape. Instead of dismantling it, speed recreates it,
differently. He attentively acknowledges this new geometry of perception: ‘no longer
points, everything becomes a stripe.’ It is an original modality of vision which, as any
other, one must learn.

It was in 1837, too, that Théophile Gautier took the train for the first time and reported
the following impressions:

... the trees fled, right and left, like a defeated army; the steeples disappeared and flew to the horizon; the gray earth, striped with white spots, looked like an immense guinea-hen tail; the stars of the daisy, the golden flowers of the rape lost their shape and hatched the dark background of the landscape with diffuse stripes; clouds and winds panted to keep up with us.

Turner’s genius consisted in integrating his first-time impressions into a new spatial logic. He gave the constructive character of the space generated by speed its first pictorial expression. *Rain, Steam and Speed* is a picture without a foreground because speed dissolves close objects—“the flowers along the road”—into colored stripes. Since the kinetic experience melts all solids into thin air, Turner located the onlooker in the atmosphere, at an ideal point some fifty yards above the bridge. It was how he could paint the train seen from the outside, and yet convey the essence of the kinetic experience which lies in the dematerialization of the immediate surrounding. Alternating bands of rainy air constitute the only foreground the onlooker is left with; by means of that dematerialization of his standing point, the painter translated his original exultation—“ex-sultation”: leaping up—into a literal ex-altation, a physical elevation of his body.

From that imaginary vantage point, he discovered what Hugo and Gautier could not see from their wagons: speed does not only exalt the perceptions of first-timers; the repetition of the kinetic experience also substitutes a cold, homogenous extension—the mentally constructed space of the picture’s right side—for the concrete diversity of places and sites.