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There is an ecology of bad ideas, just as there is an ecology of weeds.

Gregory Bateson

The Earth is undergoing a period of intense techno-scientific transformations. If no remedy is found, the ecological disequilibrium this has generated will ultimately threaten the continuation of life on the planet’s surface. Alongside these upheavals, human modes of life, both individual and collective, are progressively deteriorating. Kinship networks tend to be reduced to a bare minimum; domestic life is being poisoned by the gangrene of mass-media consumption; family and married life are frequently ‘ossified’ by a sort of standardization of behaviour; and neighbourhood relations are generally reduced to their meanest expression... It is the relationship between subjectivity and its exteriority – be it social, animal, vegetable or Cosmic – that is compromised in this way, in a sort of general movement of implosion and regressive infantalization. Otherness [l’altérité] tends to lose all its asperity. Tourism, for example, usually amounts to no more than a journey on the spot, with the same redundancies of images and behaviour.

Political groupings and executive authorities appear to be totally incapable of understanding the full implications of these issues. Despite having recently initiated a partial realization of the most obvious dangers that threaten the natural environ-
ment of our societies, they are generally content to simply tackle industrial pollution and then from a purely technocratic perspective, whereas only an ethico-political articulation—which I call ecosophy—between the three ecological registers (the environment, social relations and human subjectivity) would be likely to clarify these questions.²

Henceforth it is the ways of living on this planet that are in question, in the context of the acceleration of techno-scientific mutations and of considerable demographic growth. Through the continuous development of machinic labour, multiplied by the information revolution, productive forces can make available an increasing amount of time for potential human activity.³ But to what end? Unemployment, oppressive marginalization, loneliness, boredom, anxiety and neurosis? Or culture, creation, development, the reinvention of the environment and the enrichment of modes of life and sensibility? In both the Third World and the developed world, whole sections of the collective subjectivity are floundering or simply huddle around archaisms; as is the case, for example, with the dreadful rise of religious fundamentalism.⁴

The only true response to the ecological crisis is on a global scale, provided that it brings about an authentic political, social and cultural revolution, reshaping the objectives of the production of both material and immaterial assets. Therefore this revolution must not be exclusively concerned with visible relations of force on a grand scale, but will also take into account molecular domains of sensibility, intelligence and desire. A finalization of social labour, regulated in a univocal way by a profit economy and by power relations, would only lead, at present, to dramatic dead-ends. This is obvious from the absurd and burdensome economic supervisions of the Third World, which lead some of its regions into an absolute and irreversible pauperization. It is equally evident in countries like France, where the proliferation of nuclear power stations threatens, over a large part of Europe, the possible consequences of Chernobyl-style accidents.⁵ One need hardly mention the almost delirious stockpiling of thousands of nuclear warheads, which, at the slightest technical or human error, could automatically lead to collective extermination. In all of these examples it is the same dominant modes of valorizing human activities that are implicated. That is to say:

1. those of the imperium [Latin: ‘authority’] of a global market that destroys specific value systems and puts on the same plane of equivalence: material assets, cultural assets, wildlife areas, etc.
2. those that place all social and international relations under the control of police and military machines.

Trapped in this double pincer movement, the nation States see their traditional role of mediation being reduced more and more, and they are frequently put in the combined service of the authorities of the global marketplace and of military-industrial complexes.⁶

The current situation is all the more paradoxical as the time is almost over when the world was placed under the aegis of an East-West antagonism, a largely imaginary projection of working-class/middle-class oppositions within capitalist countries.⁷ Does this mean that the new, multipolar issues of the three ecologies will simply take the place of the old class
struggles and their myths of reference? Of course, such a substitution will not be automatic! But it nevertheless appears probable that these issues, which correspond to an extreme complexification of social, economic and international contexts, will increasingly come to the foreground.

Initially the class antagonisms that were inherited from the nineteenth century contributed to the creation of homogenous, bipolarized fields of subjectivity. Then, during the second half of the twentieth century, the hardline worker subjectivity crumbled with the advent of the consumer society, the welfare system, the media, etc. Despite the fact that today these segregations and hierarchies have never been so intensively experienced, this group of subjective positions has been cloaked by the same fictitious smokescreen. A vague sense of social belonging has deprived the old class consciousness of its tension. (I won't go into the accumulation of violently heterogeneous subjective poles, such as those that are emerging in the Muslim world.) For their part, the so-called socialist countries have steadily introjected the 'unidimensionalizing' value systems of the West. Therefore, in the communist world the old façade of egalitarianism is giving way to mass-media serialism (the same ideal standards of living, the same fashions and types of rock music, etc.).

It is difficult to imagine the situation can be improved in any significant way as far as the North-South axis is concerned. Admittedly, in the end, it is conceivable that the spread of agri-business techniques will allow us to modify the theoretical givens of the tragedy of world hunger. But on the ground, meanwhile, it would be a complete illusion to think that international aid, such as it is designed and distributed today, would be able to permanently resolve every problem. Henceforth, the long-term establishment of immense zones of misery, hunger and death seems to play an integral part in the monstrous system of 'stimulation' that is Integrated World Capitalism. In any case, the hyper-exploitative New Industrial Powers, such as Hong Kong, Taiwan, South Korea, etc., depend on these zones for their development.

We find this same principle of social tension and 'stimulation' born of despair in the developed countries, with the establishment of periods of chronic unemployment and the increasing marginalization of the population: the young, the old, 'part-time' workers, the undervalued, etc.

So, wherever we turn, there is the same nagging paradox: on the one hand, the continuous development of new technological means to potentially resolve the dominant ecological issues and reinstate socially useful activities on the surface of the planet, and, on the other hand, the inability of organized social forces and constituted subjective formations to take hold of these resources in order to make them work.

But perhaps this paroxysmal era of the erosion of subjectivities, assets and environments is destined to enter into a phase of decline. The demands of singularity are rising up almost everywhere; the most obvious signs in this regard are to be found in the multiplication of nationalitary claims which were regarded as marginal only yesterday, and which increasingly occupy the foreground of the political stage. (We note, from Corsica to the Baltic States, the conjunction of ecological and separatist demands.) In the end, this rise in nationalitary questions will probably lead to profound modifications in East-West relations, and in particular, the configuration of Europe,
whose centre of gravity could drift decisively towards a neutralist East.

The traditional dualist oppositions that have guided social thought and geopolitical cartographies are over. The conflicts remain, but they engage with multipolar systems incompatible with recruitments under any ideological, Manicheist flag. For example, the opposition between the Third World and the developed world is being completely blown apart. We have seen with the New Industrial Powers that productivity is becoming on an altogether different scale from the traditional industrial bastions of the West, but this phenomenon is accompanied by a sort of Third-Worldization within developed countries, which is coupled with an exacerbation of questions relative to immigration and racism. Make no mistake about it, the great disorder and confusion surrounding the economic unification of the European Community will in no way impede this Third-Worldization of considerable areas of Europe.

Another antagonism, transversal to that of class struggles, remains that of the relations between men and women. On a global scale, the female condition is far from being ameliorated. The exploitation of female labour, like that of child labour, is as bad now as it was in the worst periods of the nineteenth century! Nevertheless, for the last two decades, a gradual subjective revolution has modified the female condition. Although the sexual independence of women is very unequally developed in correlation with the availability of methods of contraception and abortion, and although the rise of religious fundamentalism continues to minorize them, some indices lead us to think that long-term transformations — in Fernand Braudel’s sense — are well and truly on the way (the appointment of women as heads of State, demands for equality between men and women at important representative levels, etc.).

As for young people, although they are crushed by the dominant economic relations which make their position increasingly precarious, and although they are mentally manipulated through the production of a collective, mass-media subjectivity, they are nevertheless developing their own methods of distancing themselves from normalized subjectivity through singularization. In this respect, the transnational character of rock-music is extremely significant; it plays the role of a sort of initiatory cult, which confers a cultural pseudo-identity on a considerable mass of young people and allows them to obtain for themselves a bare minimum of existential Territories.

It is in this context of break-up and decentralization, the multiplication of antagonisms and processes of singularization, that the new ecological problematics suddenly appear. Don’t misunderstand me, I don’t claim in the least that they can be relied upon to take charge of the other lines of molecular fracture, but it appears to me that they lead to a problematization that is transversal to them.

If it is no longer a question — as it was in previous periods of class struggle or the defence of the ‘fatherland of socialism’ — of creating an unequivocal ideology, it is conceivable, on the other hand, that the new ecosophical example indicates the lines of reconstruction of human praxis in the most varied domains. At every level, individual or collective, in everyday life as well as the reinvention of democracy (concerning town planning, artistic creation, sport, etc.), it is a question in each
instance of looking into what would be the dispositives of the production of subjectivity, which tends towards an individual and/or collective resingularization, rather than that of mass-media manufacture, which is synonymous with distress and despair. The ecosophical perspective does not totally exclude a definition of unifying objectives, such as the struggle against world hunger, an end to deforestation or to the blind proliferation of the nuclear industries; but it will no longer be a question of depending on reductionist, stereotypical orderwords which only expropriate other more singular problematics and lead to the promotion of charismatic leaders.

The same ethico-political aim runs through the questions of racism, of phallocentrism, of the disastrous legacy of a self-congratulatory ‘modern’ town planning, of an artistic creation liberated from the market system, of an education system able to appoint its own social mediators, etc. In the final account, the ecosophic problematic is that of the production of human existence itself in new historical contexts.

Social ecosophy will consist in developing specific practices that will modify and reinvent the ways in which we live as couples or in the family, in an urban context or at work, etc. Obviously it would be inconceivable to try and go back to the old formulas, which relate to periods when the planet was far less densely populated and when social relations were much stronger than they are today. But it will be a question of literally reconstructing the modalities of ‘group-being’ [l’étre-en-groupe], not only through ‘communicational’ interventions but through existential mutations driven by the motor of subjectivity. Instead of clinging to general recommendations we would be implementing effective practices of experimenting, as much on a microsocial level as on a larger institutional scale.

For its part, mental ecosophy will lead us to reinvent the relation of the subject to the body, to phantasm, to the passage of time, to the ‘mysteries’ of life and death. It will lead us to search for antidotes to mass-media and telematic standardization, the conformism of fashion, the manipulation of opinion by advertising, surveys, etc. Its ways of operating will be more like those of an artist, rather than of professional psychiatrists who are always haunted by an outmoded ideal of scientificity.

Nothing in these domains is played out in the name of history, in the name of infrastructural determinisms! Barbaric implosion cannot be entirely ruled out. And, for want of such an ecosophical revival (or whatever we wish to call it), for want of a rearticulation of the three fundamental types of ecology, we can unfortunately predict the rise of all kinds of danger: racism, religious fanaticism, nationalitary schisms that suddenly flip into reactionary closure, the exploitation of child labour, the oppression of women . . .

Let us now try to grasp the implications of such an ecosophical perspective on our conception of subjectivity.

The subject is not a straightforward matter; it is not sufficient to think in order to be, as Descartes declares, since all sorts of other ways of existing have already established themselves outside consciousness, while any mode of thought that desperately tries to gain a hold on itself merely turns round and round like a mad spinning top, without ever attaching itself to the real Territories of existence; which, for
their part, drift in relation to each other like tectonic plates under continents. Rather than speak of the 'subject', we should perhaps speak of components of subjectification, each working more or less on its own. This would lead us, necessarily, to re-examine the relation between concepts of the individual and subjectivity, and, above all, to make a clear distinction between the two. Vectors of subjectification do not necessarily pass through the individual, which in reality appears to be something like a 'terminal' for processes that involve human groups, socio-economic ensembles, data-processing machines, etc. Therefore, interiority establishes itself at the crossroads of multiple components, each relatively autonomous in relation to the other, and, if need be, in open conflict.

I know that it remains difficult to get people to listen to such arguments, especially in those contexts where there is still a suspicion — or even an automatic rejection — of any specific reference to subjectivity. In the name of the primacy of infrastructures, of structures or systems, subjectivity still gets a bad press, and those who deal with it, in practice or theory, will generally only approach it at arm’s length, with infinite precautions, taking care never to move too far away from pseudo-scientific paradigms, preferably borrowed from the hard sciences: thermodynamics, topology, information theory, systems theory, linguistics, etc. It is as though a scientistic superego demands that psychic entities are reified and insists that they are only understood by means of extrinsic coordinates. Under such conditions, it is no surprise that the human and social sciences have condemned themselves to missing the intrinsically progressive, creative and auto-positioning dimensions of processes of subjectification. In this context, it appears crucial to me that we rid ourselves of all scientific references and metaphors in order to forge new paradigms that are instead ethico-aesthetic in inspiration. Besides, are not the best cartographies of the psyche, or, if you like, the best psychoanalyses, those of Goethe, Proust, Joyce, Artaud and Beckett, rather than Freud, Jung and Lacan? In fact, it is the literary component in the works of the latter that best survives (for example, Freud’s The Interpretation of Dreams can perhaps be regarded as an extraordinary modern novel!). My reassessment of psychoanalysis proceeds from a concern with aesthetic creation and with ethical implications, yet it doesn’t at all presuppose a ‘rehabilitation’ of phenomenological analysis, which I consider to be handicapped by a systematic ‘reductionism’ that leads it to reduce the objects under consideration to a pure intentional transparency. I myself have come to regard the apprehension of a psychical fact as inseparable from the assemblage of enunciation that engenders it, both as fact and as expressive process. There is a kind of relationship of uncertainty between the apprehension [la saisie] of the object and the apprehension of the subject; so that, to articulate them both, one is compelled to make a pseudo-narrative detour through the annals of myth and ritual or through supposedly scientific accounts [descriptions] — all of which have as their ultimate goal a dis-positional mise en scène, a bringing-into-existence, that authorizes, ‘secondarily’, a discursive intelligibility. I am not advocating a return to the Pascalian distinction between the mathematical and the intuitive mind, for these two types of understanding, conceptual on the one hand and affective or perceptive on the other, are in fact entirely complementary. However, I am suggesting...
that this pseudo-narrative detour deploys repetitions that function, through an infinite variety of rhythms and refrains, as the very supports of existence. Discourse, or any discursive chain, thus becomes the bearer of a non-discursivity which, like a stroboscopic trace, nullifies the play of distinctive oppositions at the level of both content and form of expression. It is only through these repetitions that incorporeal Universes of reference, whose singular events punctuate the progress of individual and collective historicity, can be generated and regenerated.

Just as Greek theatre and courtly love or chivalric romance were once adopted as models or rather as modules of subjectification, so, today it is Freudianism which continues to underwrite our perception of sexuality, childhood, neurosis, etc. I do not at present envisage 'going beyond' Freudianism [le fait freudien] or breaking definitively with it, however I do want to reorient Freud's concepts and practices so as to use them differently; I want to uproot them from their pre-structuralist ties, from a subjectivity anchored solidly in the individual and collective past. From now on what will be on the agenda is a 'futurist' and 'constructivist' opening up of the fields of virtuality. The unconscious remains bound to archaic fixations only as long as there is no investment [engagement] directing it towards the future. This existential tension will proceed through the bias of human and even non-human temporali\(\text{ties, such as the acceleration of the technological and data-processing revolutions, as prefigured in the phenomenal growth of a computer-aided subjectivity, which will lead to the opening up or, if you prefer, the unfolding [dépliages], of animal-, vegetable-, Cosmic-, and machinic-becomings. At the same time}

we should not forget that the formation and 'remote-controlling' of human individuals and groups will be governed by institutional and social class dimensions.

In short, the mythic and phantasmatic lure of psychoanalysis must be resisted, it must be played with, rather than cultivated and tended like an ornamental garden. Unfortunately, the psychoanalysts of today, more so than their predecessors, take refuge behind what one might call a 'structuralization' of unconscious complexes, which leads to dry theorization and to an insufferable dogmatism; also, their practice ends up impoverishing their treatments and produces a stereotyping which renders them insensible to the singular otherness [autre] of their patients.

I have invoked ethical paradigms principally in order to underline the responsibility and necessary 'engagement' required not only of psychiatrists but also all of those in the fields of education, health, culture, sport, the arts, the media, and fashion, who are in a position to intervene in individual and collective psychical proceedings. It is ethically untenable for these psychiatrists to shelter, as they so often do, behind a transferential neutrality supposedly founded upon a scientific corpus and on a perfect mastery of the unconscious. More so given that the domain of psychiatry has established itself as the extension of, and at the interface with, aesthetic domains.

I have stressed these aesthetic paradigms because I want to emphasize that everything, particularly in the field of practical psychiatry, has to be continually reinvented, started again from scratch, otherwise the processes become trapped in a cycle of deathly repetition [répétition mortifère]. The precondition for any revival of analysis - through schizoanalysis, for example -
consists in accepting that as a general rule, and however little one works on them, individual and collective subjective assemblages are capable, potentially, of developing and proliferating well beyond their ordinary equilibrium. By their very essence analytic cartographies extend beyond the existential Territories to which they are assigned. As in painting or literature, the concrete performance of these cartographies requires that they evolve and innovate, that they open up new futures, without their authors [auteurs] having prior recourse to assured theoretical principles or to the authority of a group, a school or an academy . . . Work in progress! An end to psychoanalytic, behaviourist or systematist catechisms. In order to converge with the perspective of the art world, psychiatrists must demonstrate that they have abandoned their white coats, beginning with those invisible ones that they wear in their heads, in their language and in the ways they conduct themselves. The goal of a painter is not to repeat the same painting indefinitely (unless they are Titorelli, who in Kafka's The Trial always painted identical portraits of the same judge). Similarly, every care organization, or aid agency, every educational institution, and any individual course of treatment ought to have as its primary concern the continuous development of its practices as much as its theoretical scaffolding.

Paradoxically, it is perhaps in the 'hard' sciences that we encounter the most spectacular reconsideration of processes of subjectification; Prigogine and Stengers, for example, refer to the necessity of introducing into physics a 'narrative element', which they regard as indispensable for the theorization of evolution in terms of irreversibility. All the same I am convinced that the question of subjective enunciation will pose itself ever more forcefully as machines producing signs, images, syntax and artificial intelligence continue to develop. Here we are talking about a reconstruction of social and individual practices which I shall classify under three complementary headings, all of which come under the ethico-aesthetic aegis of an ecosophy: social ecology, mental ecology and environmental ecology.

The increasing deterioration of human relations with the socius, the psyche and 'nature', is due not only to environmental and objective pollution but is also the result of a certain incomprehension and fatalistic passivity towards these issues as a whole, among both individuals and governments. Catastrophic or not, negative developments [évolutions] are simply accepted without question. Structuralism and subsequently postmodernism, has accustomed us to a vision of the world drained of the significance of human interventions, embodied as they are in concrete politics and micropolitics. The explanations offered for this decline of social praxes - the death of ideologies and the return to universal values - seem to me unsatisfactory. Rather, it appears to be a result of the failure of social and psychological praxes to adapt, as well as a certain blindness to the erroneousness of dividing the Real into a number of discrete domains. It is quite wrong to make a distinction between action on the psyche, the socius and the environment. Refusal to face up to the erosion of these three areas, as the media would have us do, verges on a strategic infantilization of opinion and a destructive neutralization of democracy. We need to 'kick the habit' of sedative discourse,
particularly the 'fix' of television, in order to be able to apprehend the world through the interchangeable lenses or points of view of the three ecologies. Chernobyl and AIDS have dramatically revealed to us the limits of humanity's techno-scientific power and the 'backlash' that 'nature' has in store for us. If the sciences and technology are to be directed towards more human ends, we evidently require collective forms of administration and control, rather than a blind faith in the technocrats of the State apparatuses; we cannot expect them to control progress and to avert risks in these domains, which are governed primarily by the principles of a profit economy. Of course, it would be absurd to want to return to the past in order to reconstruct former ways of living. After the data-processing and robotics revolutions, the rapid development of genetic engineering and the globalization of markets, neither human labour nor the natural habitat will ever be what they once were, even just a few decades ago. As Paul Virilio has suggested, the increased speed of transportation and communications and the interdependence of urban centres are equally irreversible. While on the one hand we must make do with this situation, on the other we must acknowledge that it requires a reconstruction of the objectives and the methods of the whole of the social movement under today's conditions. To symbolize this problematic I need only refer to an experiment once conducted on television by Alain Bombard. He produced two glass tanks, one filled with polluted water — of the sort that one might draw from the port of Marseille — containing a healthy, thriving, almost dancing octopus. The other tank contained pure, unpolluted seawater. Bombard caught the octopus and immersed it in the 'normal' water; after a few seconds the animal curled up, sank to the bottom and died.

Now more than ever, nature cannot be separated from culture; in order to comprehend the interactions between eco-systems, the mechanosphere and the social and individual Universes of reference, we must learn to think 'transversally'. Just as monstrous and mutant algae invade the lagoon of Venice, so our television screens are populated, saturated, by 'degenerate' images and statements [énoncés]. In the field of social ecology, men like Donald Trump are permitted to proliferate freely, like another species of algae, taking over entire districts of New York and Atlantic City; he 'redevelops' by raising rents, thereby driving out tens of thousands of poor families, most of whom are condemned to homelessness, becoming the equivalent of the dead fish of environmental ecology. Further proliferation is evident in the savage deterritorialization of the Third World, which simultaneously affects the cultural texture of its populations, its habitat, its immune systems, climate, etc. Child labour is another disaster of social ecology; it has actually become more prevalent now than it was in the nineteenth century! How do we regain control of such an auto-destructive and potentially catastrophic situation? International organizations have only the most tenuous control of these phenomena which call for a fundamental change in attitudes. International solidarity, once the primary concern of trade unions and leftist parties, is now the sole responsibility of humanitarian organizations. Although Marx's own writings still have great value, Marxist discourse has lost its value. It is up to the protagonists of social liberation to remodel the theoretical references so as to illuminate a possible
escape route out of contemporary history, which is more nightmarish than ever. It is not only species that are becoming extinct but also the words, phrases, and gestures of human solidarity. A stifling cloak of silence has been thrown over the emancipatory struggles of women, and of the new proletariat: the unemployed, the ‘marginalised’, immigrants.

In mapping out the cartographic reference points of the three ecologies, it is important to dispense with pseudo-scientific paradigms. This is not simply due to the complexity of the entities under consideration but more fundamentally to the fact that the three ecologies are governed by a different logic to that of ordinary communication between speakers and listeners which has nothing to do with the intelligibility of discursive sets, or the indeterminate interlocking of fields of signification. It is a logic of intensities, of auto-referential existential assemblages engaging in irreversible durations. It is the logic not only of human subjects constituted as totalized bodies, but also of psychoanalytic partial objects — what Winnicott calls transitional objects, institutional objects (‘subject-groups’), faces and landscapes, etc. While the logic of discursive sets endeavours to completely delimit its objects, the logic of intensities, or eco-logic, is concerned only with the movement and intensity of evolutive processes. Process, which I oppose here to system or to structure, strives to capture existence in the very act of its constitution, definition and deterritorialization. This process of ‘fixing-into-being’ relates only to expressive subsets that have broken out of their totalising frame and have begun to work on their own account, overcoming their referential sets and manifesting themselves as their own existential indices, processual lines of flight.

Ecological praxes strive to scout out the potential vectors of subjectification and singularization at each partial existential locus. They generally seek something that runs counter to the ‘normal’ order of things, a counter-repetition, an intensive given which invokes other intensities to form new existential configurations. These dissident vectors have become relatively detached from their denotative and significative functions and operate as decorporealized existential materials. However, as experiments in the suspension of meaning they are risky, as there is the possibility of a violent deterritorialization which would destroy the assemblage of subjectification (as was the case in Italy in the early 1980s, for example, with the implosion of the social movement). A more gentle deterritorialization, however, might enable the assemblages to evolve in a constructive, processual fashion. At the heart of all ecological praxes there is an a-signifying rupture, in which the catalysts of existential change are close at hand, but lack expressive support from the assemblage of enunciation; they therefore remain passive and are in danger of losing their consistency — here are to be found the roots of anxiety, guilt and more generally, psychopathological repetitions. In the scenario of processual assemblages, the expressive a-signifying rupture summons forth a creative repetition that forges incorporeal objects, abstract machines and Universes of value that make their presence felt as though they had been always ‘already there’, although they are entirely dependent on the existential event that brings them into play.

Furthermore, these existential catalytic segments can also remain the bearers of denotation and signification. The ambiguity of a poetic text, for example, comes from the fact that
it may both transmit a message or denote a referent while functioning at the same time through redundancies of expression and content. Proust skilfully analysed the function of these existential refrains as catalytic focal points of subjectification: Vinteuil’s ‘little phrase’, for example, the ringing of the Martinville church bells or the flavour of the madeleine. What we must emphasize here is that the work of locating these existential refrains is not the sole province of literature and the arts – we find this eco-logic equally at work in everyday life, in social life at every level, and whenever the constitution of an existential Territory is in question. Let us add that these Territories may already have been deterritorialized to the extreme – they can embody themselves in a Heavenly Jerusalem, the problematic of good and evil, or any ethico-political commitment, etc. The only commonality that exists between these various existential features [traits] is their ability to maintain the production of singular existents or to resingularize serialized ensembles.

Throughout history and across the world existential cartographies founded on a conscious acceptance of certain ‘existentializing’ ruptures of meaning have sought refuge in art and religion. However, today the huge subjective void produced by the proliferating production of material and immaterial goods is becoming ever more absurd and increasingly irreparable and threatens the consistency of both individual and group existential Territories. While there no longer appears to be a cause-and-effect relationship between the growth in technoscientific resources and the development of social and cultural progress, it seems clear that we are witnessing an irreversible erosion of the traditional mechanisms of social regulation. Faced with this situation, the most ‘modernist’ capitalist formations seem, in their own way, to be banking on a return to the past, however artificial, and on a reconstitution of ways of being that were familiar to our ancestors. We can see, for example, how certain hierarchical structures (having lost a significant part of their functional efficiency as a result, principally, of the computerization of information and organizational management), have become the object of an imaginary hypercathexis, at both upper and lower executive levels; in the example of Japan this hypercathexis occasionally verges on religious devotion. Similarly we are witnessing a reinforcement of segregationist attitudes vis-à-vis immigrants, women, the young and the elderly. Such a rise in what we might call a subjective conservatism is not solely attributable to an intensification of social repression; it stems equally from a kind of existential contraction [crispation] involving all of the actors in the socius. Post-industrial capitalism, which I prefer to describe as Integrated World Capitalism (IWC), tends increasingly to decentralise its sites of power, moving away from structures producing goods and services towards structures producing signs, syntax and – in particular, through the control which it exercises over the media, advertising, opinion polls, etc. – subjectivity.

This evolution ought to make us reflect upon the ways in which earlier forms of capitalism operated, given that they too were not exempt from this same tendency towards the capitalization of subjective power, both at the level of the capitalist elites as well as among the proletariat. However, the
true importance of this propensity within capitalism was never fully demonstrated, with the result that it was not properly appreciated by theoreticians of the workers’ movement.

I would propose grouping together four main semiotic regimes, the mechanisms [instruments] on which IWC is founded:

1. Economic semiotics (monetary, financial, accounting and decision-making mechanisms);
2. Juridical semiotics (title deeds, legislation and regulations of all kinds);
3. Techno-scientific semiotics (plans, diagrams, programmes, studies, research, etc.);
4. Semiotics of subjectification, of which some coincide with those already mentioned, but to which we should add many others, such as those relating to architecture, town planning, public facilities, etc.

We must acknowledge that models which claim to found a causal hierarchy between these semiotic regimes are well on their way to completely losing touch with reality. For example, it becomes increasingly difficult to maintain that economic semiotics and semiotics that work together towards the production of material goods occupy an infrastructural position in relation to juridical and ideological semiotics, as was postulated by Marxism. At present, IWC is all of a piece: productive-economic-subjective. And, to return to the old scholastic categories, one might say that it follows at the same time from material, formal, efficient and final causes.44

One of the key analytic problems confronted by social and mental ecology is the introjection of repressive power by the oppressed.45 The major difficulty here is the fact that the unions and the parties, which struggle, in principle, to defend the interests of the workers and the oppressed, reproduce in themselves the same pathogenic models that stifle all freedom of expression and innovation in their own ranks. Perhaps it will still be necessary for a lapse of time to ensue before the workers’ movement recognizes that the economic-ecological vectors of circulation, distribution, communication, supervision, and so on, are strictly situated on the same plane, from the point of view of the creation of surplus value, as labour that is directly incorporated into the production of material goods.46 In this regard, a dogmatic ignorance has been maintained by a number of theoreticians, which only serves to reinforce a workerism and a corporatism that have profoundly distorted and handicapped anticapitalist movements of emancipation over the last few decades.

It is to be hoped that the development of the three types of eco-logical praxis outlined here will lead to a reframing and a recomposition of the goals of the emancipatory struggles. And let us hope that, in the context of the new ‘deal’ of the relation between capital and human activity, ecologists, feminists, antiracists, etc., will make it an immediate major objective to target the modes of production of subjectivity, that is, of knowledge, culture, sensibility and sociability that come under an incorporeal value system at the root of the new productive assemblages.

Social ecology will have to work towards rebuilding human relations at every level of the socius. It should never lose sight of the fact that capitalist power has become delocalized and
deterritorialized, both in extension, by extending its influence over the whole social, economic and cultural life of the planet, and in ‘intension’, by infiltrating the most unconscious subjective strata. In doing this it is no longer possible to claim to be opposed to capitalist power only from the outside, through trade unions and traditional politics. It is equally imperative to confront capitalism’s effects in the domain of mental ecology in everyday life: individual, domestic, material, neighbourly, creative or one’s personal ethics. Rather than looking for a stupefying and infantalizing consensus, it will be a question in the future of cultivating a disensus and the singular production of existence. A capitalistic subjectivity is engendered through operators of all types and sizes, and is manufactured to protect existence from any intrusion of events that might disturb or disrupt public opinion. It demands that all singularity must be either evaded or crushed in specialist apparatuses and frames of reference. Therefore, it endeavours to manage the worlds of childhood, love, art, as well as everything associated with anxiety, madness, pain, death, or a feeling of being lost in the Cosmos . . . IWC forms massive subjective aggregates from the most personal – one could even say infra-personal – existential givens, which it hooks up to ideas of race, nation, the professional workforce, competitive sports, a dominating masculinity [virilité], mass-media celebrity . . . Capitalistic subjectivity seeks to gain power by controlling and neutralizing the maximum number of existential refrains. It is intoxicated with and anaesthetized by a collective feeling of pseudo-eternity.$^{37}$

It seems to me that the new ecological practices will have to articulate themselves on these many tangled and heteroge-
Unlike Hegelian and Marxist dialectics, eco-logic no longer imposes a 'resolution' of opposites. In the domain of social ecology there will be times of struggle in which everyone will feel impelled to decide on common objectives and to act 'like little soldiers', by which I mean like good activists. But there will simultaneously be periods in which individual and collective subjectivities will 'pull out' without a thought for collective aims, and in which creative expression as such will take precedence. This new ecosophical logic — and I want to emphasize this point — resembles the manner in which an artist may be led to alter his work after the intrusion of some accidental detail, an event-incident that suddenly makes his initial project bifurcate, making it drift [dérider] far from its previous path, however certain it had once appeared to be.51

There is a proverb 'the exception proves the rule', but the exception can just as easily deflect the rule, or even recreate it.

Environmental ecology, as it exists today, has barely begun to prefigure the generalized ecology that I advocate here, the aim of which will be to radically decentre social struggles and ways of coming to one's own psyche. Current ecological movements certainly have merit, but in truth I think that the overall ecosophical question is too important to be left to some of its usual archaizers and folklorists, who sometimes deliberately refuse any large-scale political involvement. Ecology must stop being associated with the image of a small nature-loving minority or with qualified specialists. Ecology in my sense questions the whole of subjectivity and capitalistic power formations, whose sweeping progress cannot be guaranteed to continue as it has for the past decade.

The present ongoing crisis, both financial and economic, could not only lead to important upheavals of the social status-quo and the mass-media imaginary that underlies it, but certain themes promoted by neo-liberalists — such as flexible labour, deregulation, etc. — could perfectly well backfire on them.

I stress once again, the choice is no longer simply between blind fixation to old State-bureaucratic supervision and generalized welfare on the one hand, and a despairing and cynical surrender to 'yuppie' ideology on the other. All the indications suggest that the productivity gains engendered by current technological revolutions will inscribe themselves on a curve of logarithmic growth. Henceforth it is a question of knowing whether the new ecological operators and the new ecosophical assemblages of enunciation will succeed in channelling these gains in less absurd, less dead-ended directions than those of Integrated World Capitalism.

The principle common to the three ecologies is this: each of the existential Territories with which they confront us is not given as an in-itself [en-soi], closed in on itself, but instead as a for-itself [pour-soi] that is precarious, finite, finitized, singular, singularized, capable of bifurcating into stratified and deathly repetitions or of opening up processually from a praxis that enables it to be made 'habitable' by a human project. It is this praxic opening-out which constitutes the essence of 'eco'-art.52 It subsumes all existing ways of domesticking existential Territories and is concerned with intimate modes of being, the body, the environment or large contextual ensembles relating to ethnic groups, the nation, or even the general rights of humanity. Having said this, it is not a question of establishing
universal rules as a guide to this praxis, but on the contrary of
setting forth the principle antinomies between the ecosophical
levels, or, if you prefer, between the three ecological visions,
the three discriminating lenses under discussion here.

The principle specific to mental ecology is that its approach
to existential Territories derives from a pre-objectal and pre-
personal logic of the sort that Freud has described as being a
'primary process'. One could call this the logic of the
'included middle', in which black and white are indistinct,
where the beautiful coexists with the ugly, the inside with the
outside, the 'good' object with the 'bad' . In the particular
case of the ecology of the phantasm, each attempt to locate
it cartographically requires the drafting of an expressive frame-
work that is both singular and, more precisely, singularized.
Gregory Bateson has clearly shown that what he calls the
'ecology of ideas' cannot be contained within the domain of
the psychology of the individual, but organizes itself into
systems or 'minds', the boundaries of which no longer coincide
with the participant individuals. But I part company with
Bateson when he treats action and enunciation as mere parts
of an ecological subsystem called 'context'. I myself consider
that existential taking on of context is always brought about
by a praxis which is established in the rupture of the systemic
'pretext'. There is no overall hierarchy for locating and
localizing the components of enunciation at a given level. They
are composed of heterogeneous elements that take on a mutual
consistency and persistence as they cross the thresholds that
constitute one world at the expense of another. The operators
of this crystallization are fragments of a-signifying chains of the
type that Schlegel likens to works of art. ('A fragment like a
miniature work of art must be totally detached from the
surrounding world and closed on itself like a hedgehog'.)

The question of mental ecology may emerge anywhere, at
any moment, beyond fully constituted ensembles on the order
of the individual and the collective. In order to arrest these
fragments that act as catalysts in existential bifurcations, Freud
invented the rituals of the session – free association, interpre-
tation – according to the psychoanalytical myths of reference.
Today, certain post-systemic tendencies in family therapy have
set about creating different scenes and references. That's all
well and good, but these conceptual scaffoldings still do not
take into account the production of 'primary' subjectivity,
because they are deployed on a truly industrial scale, particu-
larly by the media and public institutions. All existing theore-
tical bodies of this type share the shortcoming of being closed
to the possibility of creative proliferation. Whether they be
myths or theories with scientific pretensions, the relevance of
such models to mental ecology must be decided by the
following criteria:

(1) their capacity to recognize discursive chains at the point
when they break with meaning;
(2) the use they make of concepts that allow for a theoretical
and practical auto-constructability.

Freudianism meets the first condition reasonably well, but not
the second. On the other hand, post-systemism is more likely
to meet the second condition while wholly underestimating
the first, since, in the socio-political field, 'alternative' milieus generally misunderstand the whole range of problematics relevant to mental ecology.

For our part, we advocate a rethinking of the various attempts at 'psychiatric' modelling, in much the same way as one would approach the practices of religious sects, the 'family novels' of neurotics or the deliriums of psychotics. It will be less a question of taking stock of these practices in terms of their scientific veracity than according to their aesthetico-existential effectiveness. What do we find? What existential scenes establish themselves there? The crucial objective is to grasp the a-signifying points of rupture — the rupture of denotation, connotation and signification — from which a certain number of semiotic chains are put to work in the service of an existential autoreferential effect. The repetitive symptom, the prayer, the ritual of the 'session', the order-word, the emblem, the refrain, the facialitary crystallization of the celebrity ... initiates the production of a partial subjectivity. We can say that they are the beginnings of a proto-subjectivity. The Freudians had already detected the existence of vectors of subjectification that elude the mastery of the Self; partial subjectivity, complexual, taking shape around objects in the rupture of meaning, such as the maternal breast, faeces, the genitals ... But these objects, the generators of a breakaway or 'dissident' subjectivity, were conceived by Freudians as residing essentially adjacent to the instinctual urges and to a corporealized imaginary. Other institutional objects, be they architectural, economic, or Cosmic, have an equal right to contribute to the functioning of existential production.

I repeat: the essential thing here is the break-bifurcation, which it is impossible to represent as such, but which nevertheless exudes a phantasmatic of origins (the Freudian primal scene, initiation ceremonies, conjuration, the 'armed gaze' of the systematization of family therapy, etc.). Pure creative auto-reference is impossible in the apprehension of ordinary existence. Attempts to represent it can only succeed in masking it, travesty it, disfiguring it, making it pass through mythic and narrative myths of reference — what I call metamodelization. Corollary: These focal points of creative subjection in their nascent state can only be accessed by the detour of a phantasmatic economy that is deployed in a random form. In short, no one is exempt from playing the game of the ecology of the imaginary!

In order to have an impact on individual and collective life, mental ecology does not presuppose the importing of concepts and practices from a specialized 'psychiatric' domain. It demands instead that we face up to the logic of desiring ambivalence wherever it emerges — in culture, everyday life, work, sport, etc. — in order to reevaluate the purpose of work and of human activities according to different criteria than those of profit and yield. The imperatives of mental ecology call for an appropriate mobilization of individuals and social segments as a whole. It raises the question of the place we give to phantasms of aggression, murder, rape and racism in the world of childhood and of a regressive adulthood. Rather than tirelessly implementing procedures of censorship and contention in the name of great moral principles we should learn how to promote a true ecology of the phantasm, one that works through the transference, translation and redeployment of their matters of expression. It is, of course, legit-
imate to repress the 'acting out' of certain fantasies! But initially it is necessary for even negative and destructive phantasmagorias to acquire modes of expression — as in the treatment of psychosis — that allow them to be 'abreacted' in order to reanchor existential Territories that are drifting away. This sort of 'transversalization' of violence does not presuppose the need to deal with the existence of an intrapsychic death drive that constantly lies in wait, ready to ravage everything in its path as soon as the Territories of the Self lose their consistency and vigilance. Violence and negativity are the products of complex subjective assemblages; they are not intrinsically inscribed in the essence of the human species, but are constructed and maintained by multiple assemblages of enunciation. Sade and Céline both endeavoured, with more or less success, to turn their negative fantasies into quasi-baroque ones, and because of this they may be considered as key authors for a mental ecology. Any persistently intolerant and uninvective society that fails to 'imaginarize' the various manifestations of violence risks seeing this violence crystallized in the Real.

We see it today, for example, in the intensive commercial exploitation of scatological comic books aimed at children. But in many ways a lot more disturbing is the fascinating and repulsive species of the one-eyed man, who knows better than anyone how to force his implicitly racist and Nazi discourse onto the French media and into the political arena. We should not ignore the fact that the power of this sort of character resides in his ability to interpret an entire montage of drives, which in fact haunt all of the socius.

I am not so naïve and utopian as to maintain that there exists a reliable, analytic methodology that would be able to fundamentally eradicate all of the fantasies leading to the objectification of women, immigrants, the insane, etc., or that might allow us to have done with prisons and psychiatric institutions, etc. However it does seem to me that a generalization of the experiences of institutional analysis (in hospitals, schools, the urban environment) might profoundly modify the conditions of this problem [les données de ce problème]. There will have to be a massive reconstruction of social mechanisms [rouages] if we are to confront the damage caused by IWC. It will not come about through centralized reform, through laws, decrees and bureaucratic programmes, but rather through the promotion of innovatory practices, the expansion of alternative experiences centred around a respect for singularity, and through the continuous production of an autonomizing subjectivity that can articulate itself appropriately in relation to the rest of society. Creating a space for violent fantasies — brutal deterritorializations of the psyche and of the socius — won't lead to miraculous sublimation, but only to redeployed assemblages that will overflow the body, the Self, and the individual in all directions. Ordinary approaches to education and socialization won't weaken the grip of a punitive superego or deadly guilt complex. The great religions, apart from Islam, have an increasingly insignificant hold over the psyche, while almost everywhere else in the world, we are seeing a kind of return to totemism and animism. Troubled human communities tend to become introspective and abandon the task of governing or managing society to the professional
politicians, while trade unions are left behind by the mutations of a society that is everywhere in latent or manifest crisis.69

The principle specific to social ecology concerns the development of affective and pragmatic cathexis [investissement] in human groups of differing sizes.70 This ‘group Eros’ doesn’t present itself as an abstract quantity but corresponds to a specifically qualitative reorganization [reconversion] of primary subjectivity as it relates to mental ecology.71 Two options present themselves: a personological triangulation – I-YOU-S/HE, Father-Mother-Child – or in terms of auto-referential subject-groups, which open broadly onto the socius and the Cosmos. In the first instance, the Self and the other are constructed through a set of stock identifications and imitations, which result in primary groups that are refolded on the father, the boss, or the mass-media celebrity – this is the psychology of the pliable masses upon which the media practices.72 In the second instance, identificatory systems are replaced by traits of diagrammatic efficiency.73 An at least partial escape here from the semiotics of iconic modelling in favour of processual semiotics (which I will resist calling symbolic to avoid falling into the bad habits of the structuralists). A diagrammatic trait, as opposed to an icon, is characterized by the degree of its deterritorialization, its capacity to escape from itself in order to constitute discursive chains directly in touch with the referent. There is a distinction, for example, between a piano pupil’s identificatory imitation of his teacher and the transference of a style likely to bifurcate in a singular direction. There is also a more general distinction to be made between imaginary crowd aggregates and collective assemblages of enunciation, which conjoin pre-personal traits with social systems or their machinic components (here I am opposing living autopoietic machines to mechanisms of empty repetition).74

Having said all this, the oppositions between these two modalities of group formation are not really so clear cut: a crowd might be inhabited by opinion-leading groups and subject-groups may revert to amorphous and alienating states of being. Capitalist societies – and here I include not only Japan and the Western powers, but also the so-called truly socialist countries and the new industrial powers of the Third World – produce, for their own ends, three types of subjectivity. Firstly, a serial subjectivity corresponding to the salaried classes, secondly, to the huge mass of the ‘uninsured’ [non-garantis] and finally an élitist subjectivity corresponding to the executive sectors. The accelerating mass-mediatization of global societies tends, therefore, to create an increasing divergence between these different population categories.75 For their part, the élites possess material wealth, sufficient cultural capital, a minimal level of reading and writing, and a sense of competence and legitimate decision-making power. In contrast, the subjugated classes, on the whole, are abandoned to the status quo – life for them is hopeless and meaningless. An essential programmatic point for social ecology will be to encourage capitalist societies to make the transition from the mass-media era to a post-media age, in which the media will be reappropriated by a multitude of subject-groups capable of directing its resingularization. Despite the seeming impossibility of such an eventuality, the currently unparalleled level of media-related alienation is in no way an inherent necessity. It
seems to me that media fatalism equates to a misunderstanding of a number of factors:

(1) sudden mass consciousness-raising, which always remains possible;
(2) the progressive collapse of Stalinism in all its incarnations, which leaves room for other transformative assemblages of social struggle;
(3) the technological evolution of the media and its possible use for non-capitalist goals, in particular through a reduction in costs and through miniaturization;
(4) the reconstitution of labour processes on the rubble of early twentieth-century systems of industrial production, based upon the increased production – as much on an individual basis as on a collective one – of a ‘creationist’ subjectivity (achieved through continuous training, skill transfer and the ‘re-tooling’ [ressourcement] of the labour force, etc.).

In early industrial society, it was the subjectivity of the working classes that was eroded [laminer] and serialized. Today, the international division of labour has been exported to the Third World where production-line methods now prevail. In this era of the information revolution, biotechnological expansion, the accelerated invention of new materials and ever more precise ‘machinization’ of time, new modalities of subjectification are continually emerging. On the one hand, a greater demand will be placed on intelligence and initiative, whereas on the other hand, more care will be taken over the coding and control of the domestic life of married couples and nuclear families. In short, by reterritorializing the family on a large scale (through the media, the welfare system, etc.), an attempt will be made to achieve the maximum middle-classification [bourgeoisier] of working-class subjectivity.

The effects of these processes of reindividualization and ‘familialization’ won’t all be the same. They will differ according to whether they affect a collective subjectivity devastated by the industrial era of the nineteenth and early twentieth century or areas where certain archaic features of the pre-capitalist era have been inherited and maintained. In this context, the examples of Japan and Italy seem significant because both countries have succeeded in grafting high-tech industries onto a collective subjectivity, while retaining ties with a sometimes very distant past (Shinto-Buddhism in the case of Japan, patriarchalism in the case of Italy). In both of these countries, post-industrialization has been achieved with comparatively little violence, whereas in France for example, for a long time whole regions withdrew from the active economic life of the country.

In a number of Third World countries we are also witnessing the superimposition of a post-industrial subjectivity onto a medieval subjectivity, as evidenced by submission to the clan, the total alienation of women and children, etc. Although currently confined primarily to the Pacific Rim, these New Industrial Powers may well begin to flourish along the shores of the Mediterranean and Atlantic coasts of Africa. If they do, we may well see entire regions of Europe subject to severe tensions; they will radically challenge not only Europe’s financial base but the membership status of its countries in the Great White Power club.
As the above indicates, ecological problematics can become somewhat confused. Left to itself, the propagation of social and mental neo-arcaims could be for the best, or for the worst—a formidably difficult question to resolve—especially when we recall that the fascism of the Ayatollahs was installed firmly on the basis of a profoundly popular revolution in Iran. The recent uprisings of young people in Algeria have fostered a double symbiosis between Western ways of living and various forms of fundamentalism. Spontaneous social ecology works towards the constitution of existential Territories that replace, more or less, the former religious and ritualized griddings of the socius. It seems evident that, unless a politically coherent stance is taken by collective praxes, social ecology will ultimately always be dominated by reactionary nationalist enterprises hostile to any innovation, oppressing women, children and the marginalized. I am not proposing a ready-made model of society here, but simply the acceptance of a complete range of ecosophical components so as to institute, in particular, new systems of valorization.

I have already stressed that it is less and less legitimate that only a profit-based market should regulate financial and prestige-based rewards for human social activities, for there is a range of other value systems that ought to be considered, including social and aesthetic ‘profitability’ and the values of desire. Until now, these non-capitalist domains of value have only been regulated by the State; hence, for example, the esteem in which national heritage is held. We must stress that new social associations—such as institutions recognized for their social utility—should broaden the financing of a more flexible non-private, non-public Third Sector, which will be forced to expand continuously for as long as human labour gives way to machinization. Beyond recognizing a universal basic income—as a right rather than as some kind of ‘New Deal’—the question becomes one of how to encourage the organization of individual and collective ventures, and how to direct them towards an ecology of resingularization. The search for an existential Territory or homeland doesn’t necessarily involve searching for one’s country of birth or a distant country of origin, although too often, nationalitarian movements (like the Irish or the Basques) have turned in on themselves due to exterior antagonisms, leaving aside other molecular revolutions relating to women’s liberation, environmental ecology, etc. All sorts of deterritorialized ‘nationalities’ are conceivable, such as music and poetry. What condemns the capitalist value system is that it is characterized by general equivalence, which flattens out all other forms of value, alienating them in its hegemony. On this basis we must if not oppose, at least superimpose instruments of valorization founded on existential productions that cannot be determined simply in terms of abstract labour-time or by an expected capitalist profit. The information and telematic revolutions are supporting new ‘stock exchanges’ of value and new collective debate, providing opportunities for the most individual, most singular and most dissensual enterprises. The notion of collective interest ought to be expanded to include companies that, in the short term, don’t profit anyone, but in the long term are the conduits of a processual enrichment for the whole of humanity. It is the whole future of fundamental research and artistic production that is in question here.

It must also be stressed that this promotion of existential
values and the values of desire will not present itself as a fully-
fledged global alternative. It will result from widespread shifts in
current value systems and from the appearance of new poles of
valorization. In this respect it is significant that, over the
last few years, the most spectacular social changes have
resulted from precisely these kinds of long-term shifts; on a
political level in the Philippines or Chile, for example, or on a
nationality level in the USSR. In these countries, thousands
of value-system revolutions are progressively percolating their
way up through society and it is up to the new ecological
components to polarize them and to affirm their importance
within the political and social relations of force.

There is a principle specific to environmental ecology: it
states that anything is possible - the worst disasters or the most
flexible evolutions en souplesse. Natural equilibriums
will be increasingly reliant upon human intervention, and a time
will come when vast programmes will need to be set up in
order to regulate the relationship between oxygen, ozone and
carbon dioxide in the Earth's atmosphere. We might just as
well rename environmental ecology machinic ecology, because
Cosmic and human praxis has only ever been a question of
machines, even, dare I say it, of war machines. From time
immemorial 'nature' has been at war with life! The pursuit of
mastery over the mechanosphere will have to begin immediately
if the acceleration of techno-scientific progress and the pressure
of huge population increases are to be dealt with.

In the future much more than the simple defence of nature
will be required; we will have to launch an initiative if we are
to repair the Amazonian 'lung', for example, or bring vegeta-
tion back to the Sahara. The creation of new living species -

animal and vegetable - looms inevitably on the horizon, and
the adoption of an ecosophical ethics adapted to this terrifying
and fascinating situation is equally as urgent as the invention of
a politics focussed on the destiny of humanity.

As new stories of the permanent recreation of the world
replace the narrative of biblical genesis, we can do no better
than cite Walter Benjamin, condemning the reductionism that
accompanies the primacy of information:

When information supplants the old form, storytelling, and
when it itself gives way to sensation, this double process
reflects an imaginary degradation of experience. Each of
these forms is in its own way an offshoot of storytelling.
Storytelling . . . does not aim to convey the pure essence of
a thing, like information or a report. It sinks the thing into
the life of the storyteller, in order to bring it out of him
again. Thus traces of the storyteller cling to the story the
way the handprints of the potter cling to the clay vessel.

To bring into being other worlds beyond those of purely
abstract information, to engender Universes of reference and
existential Territories where singularity and finitude are taken
into consideration by the multivalent logic of mental ecologies
and by the group Eros principle of social ecology; to dare to
confront the vertiginous Cosmos so as to make it inhabitable;
these are the tangled paths of the tri-ecological vision.

A new ecosophy, at once applied and theoretical, ethico-
political and aesthetic, would have to move away from the old
forms of political, religious and associative commitment . . .
Rather than being a discipline of refolding on interiority, or a
simple renewal of earlier forms of ‘militancy’, it will be a multi-
faceted movement, deploying agencies [instances] and dispositi-
tives that will simultaneously analyse and produce subjectivity.
A collective and individual subjectivity that completely exceeds
the limits of individualization, stagnation, identificatory closure,
and will instead open itself up on all sides to the socius, but also
to the machinic Phylum, to techno-scientific Universes of
reference, to aesthetic worlds, as well as to a new ‘pre-personal’
understanding of time, of the body, of sexuality. A subjectivity
of resingularization that can meet head-on the encounter with
the finitude of desire, pain and death. However, rumour would
have it that none of this is self-evident! All sorts of neuroleptic
cloaks [chapes] enshroud this subjectivity, concealing it from any
intrusive singularity. Do we have to invoke History yet again?
There is at least a risk that there will be no more human history
unless humanity undertakes a radical reconsideration of itself.
We must ward off, by every means possible, the entropic rise
of a dominant subjectivity. Rather than remaining subject, in
perpetuity, to the seductive efficiency of economic competition,
we must reappropriate Universes of value, so that processes of
singularization can rediscover their consistency. We need new
social and aesthetic practices, new practices of the Self in
relation to the other, to the foreign, the strange – a whole
programme that seems far removed from current concerns.
And yet, ultimately, we will only escape from the major crises
of our era through the articulation of:

- a nascent subjectivity
- a constantly mutating socius
- an environment in the process of being reinvented.

In conclusion, it should be understood that the three ecol-
ogies originate from a common ethico-aesthetic discipline, and
are also distinct from the point of view of the practices that
characterize them. Their different styles are produced by what
I call *heterogenesis*, in other words, processes of continuous
resingularization. Individuals must become both more united
and increasingly different. The same is true for the resingulari-
ization of schools, town councils, urban planning, etc.

By means of these transversal tools [clefts], subjectivity is able
to install itself simultaneously in the realms of the environment,
in the major social and institutional assemblages, and symmet-
rically in the landscapes and fantasies of the most intimate
spheres of the individual. The reconquest of a degree of creative
autonomy in one particular domain encourages conquests in
other domains – the catalyst for a gradual reforging and renewal
of humanity’s confidence in itself starting at the most miniscule
level. Hence this essay, which sets out, in its own way, to
counter the pervasive atmosphere of dullness and passivity.
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Vibrant Matter
The Force of Things

In the wake of Michel Foucault’s death in 1984, there was an explosion of scholarship on the body and its social construction, on the operations of biopower. These genealogical (in the Nietzschean sense) studies exposed the various micropolitical and macropolitical techniques through which the human body was disciplined, normalized, sped up and slowed down, gendered, sexed, nationalized, globalized, rendered disposable, or otherwise composed. The initial insight was to reveal how cultural practices produce what is experienced as the “natural,” but many theorists also insisted on the material recalcitrance of such cultural productions. Though gender, for example, was a congealed bodily effect of historical norms and repetitions, its status as artifact does not imply an easy susceptibility to human understanding, reform, or control. The point was that cultural forms are themselves powerful, material assemblages with resistant force.

In what follows, I, too, will feature the negative power or recalcitrance of things. But I will also seek to highlight a positive, productive power of their own. And, instead of focusing on collectives conceived primarily
as conglomerates of human designs and practices ("discourse"), I will highlight the active role of nonhuman materials in public life. In short, I will try to give voice to a thing-power. As W. J. T. Mitchell notes, "objects are the way things appear to a subject—that is, with a name, an identity, a gestalt or stereotypical template. . . . Things, on the other hand, . . . [signal] the moment when the object becomes the Other, when the sardine can looks back, when the mute idol speaks, when the subject experiences the object as uncanny and feels the need for what Foucault calls 'a metaphysics of the object, or, more exactly, a metaphysics of that never objectifiable depth from which objects rise up toward our superficial knowledge.'"2

Thing-Power, or the Out-Side

Spinoza ascribes to bodies a peculiar vitality: "Each thing [res], as far as it can by its own power, strives [conatur] to persevere in its own being."3 Conatus names an "active impulsion" or trending tendency to persist.4 Although Spinoza distinguishes the human body from other bodies by noting that its "virtue" consists in "nothing other than to live by the guidance of reason,"5 every nonhuman body shares with every human body a conative nature (and thus a "virtue" appropriate to its material configuration). Conatus names a power present in every body: "Any thing whatsoever, whether it be more perfect or less perfect, will always be able to persist in existing with that same force whereby it begins to exist, so that in this respect all things are equal."6 Even a falling stone, writes Spinoza, "is endeavoring, as far as in it lies, to continue in its motion."7 As Nancy Levene notes, "Spinoza continually stresses this continuity between human and other beings," for "not only do human beings not form a separate imperium unto themselves; they do not even command the imperium, nature, of which they are a part."8

The idea of thing-power bears a family resemblance to Spinoza's conatus, as well as to what Henry David Thoreau called the Wild or that uncanny presence that met him in the Concord woods and atop Mount Ktaadn and also resided in/as that monster called the railroad and that alien called his Genius. Wildness was a not-quite-human force that addled and altered human and other bodies. It named an irreducibly
strange dimension of matter, an out-side. Thing-power is also kin to what Henk de Vries, in the context of political theology, called “the absolute” or that “intangible and imponderable” recalcitrance. Though the absolute is often equated with God, especially in theologies emphasizing divine omnipotence or radical alterity, de Vries defines it more open-endedly as “that which tends to loosen its ties to existing contexts.”

This definition makes sense when we look at the etymology of absolute: ab (off) + solver (to loosen). The absolute is that which is loosened off and on the loose. When, for example, a Catholic priest performs the act of absolution, he is the vehicle of a divine agency that loosens sins from their attachment to a particular soul: sins now stand apart, displaced foreigners living a strange, impersonal life of their own. When de Vries speaks of the absolute, he thus tries to point to what no speaker could possibly see, that is, a some-thing that is not an object of knowledge, that is detached or radically free from representation, and thus no-thing at all. Nothing but the force or effectivity of the detachment, that is.

De Vries’s notion of the absolute, like the thing-power I will seek to express, seeks to acknowledge that which refuses to dissolve completely into the milieu of human knowledge. But there is also a difference in emphasis. De Vries conceives this exteriority, this out-side, primarily as an epistemological limit: in the presence of the absolute, we cannot know. It is from human thinking that the absolute has detached; the absolute names the limits of intelligibility. De Vries’s formulations thus give priority to humans as knowing bodies, while tending to overlook things and what they can do. The notion of thing-power aims instead to attend to the it as actant; I will try, impossibly, to name the moment of independence (from subjectivity) possessed by things, a moment that must be there, since things do in fact affect other bodies, enhancing or weakening their power. I will shift from the language of epistemology to that of ontology, from a focus on an elusive recalcitrance hovering between immanence and transcendence (the absolute) to an active, earthy, not-quite-human capaciousness (vibrant matter). I will try to give voice to a vitality intrinsic to materiality, in the process absolving matter from its long history of attachment to automatism or mechanism.

The strangely vital things that will rise up to meet us in this chapter—a dead rat, a plastic cap, a spool of thread—are characters in a specula-
tive onto-story. The tale hazards an account of materiality, even though it is both too alien and too close to see clearly and even though linguistic means prove inadequate to the task. The story will highlight the extent to which human being and thinghood overlap, the extent to which the us and the it slip-slide into each other. One moral of the story is that we are also nonhuman and that things, too, are vital players in the world. The hope is that the story will enhance receptivity to the impersonal life that surrounds and infuses us, will generate a more subtle awareness of the complicated web of dissonant connections between bodies, and will enable wiser interventions into that ecology.

Chapter 1

Thing-Power I: Debris

On a sunny Tuesday morning on 4 June in the grate over the storm drain to the Chesapeake Bay in front of Sam’s Bagels on Cold Spring Lane in Baltimore, there was:

- one large men’s black plastic work glove
- one dense mat of oak pollen
- one unblemished dead rat
- one white plastic bottle cap
- one smooth stick of wood

Glove, pollen, rat, cap, stick. As I encountered these items, they shuffled back and forth between debris and thing—between, on the one hand, stuff to ignore, except insofar as it betokened human activity (the workman’s efforts, the litterer’s toss, the rat-poisoner’s success), and, on the other hand, stuff that commanded attention in its own right, as existents in excess of their association with human meanings, habits, or projects. In the second moment, stuff exhibited its thing-power: it issued a call, even if I did not quite understand what it was saying. At the very least, it provoked affects in me: I was repelled by the dead (or was it merely sleeping?) rat and dismayed by the litter, but I also felt something else: a nameless awareness of the impossible singularity of that rat, that configuration of pollen, that otherwise utterly banal, mass-produced plastic water-bottle cap.

I was struck by what Stephen Jay Gould called the “excruciating complexity and intractability” of nonhuman bodies, but, in being struck, I
realized that the capacity of these bodies was not restricted to a passive "intractability" but also included the ability to make things happen, to produce effects. When the materiality of the glove, the rat, the pollen, the bottle cap, and the stick started to shimmer and spark, it was in part because of the contingent tableau that they formed with each other, with the street, with the weather that morning, with me. For had the sun not glinted on the black glove, I might not have seen the rat; had the rat not been there, I might not have noted the bottle cap, and so on. But they were all there just as they were, and so I caught a glimpse of an energetic vitality inside each of these things, things that I generally conceived as inert. In this assemblage, objects appeared as things, that is, as vivid entities not entirely reducible to the contexts in which (human) subjects set them, never entirely exhausted by their semiotics. In my encounter with the gutter on Cold Spring Lane, I glimpsed a culture of things irreducible to the culture of objects. I achieved, for a moment, what Thoreau had made his life's goal: to be able, as Thomas Dumm puts it, "to be surprised by what we see."

This window onto an eccentric out-side was made possible by the fortuity of that particular assemblage, but also by a certain anticipatory readiness on my in-side, by a perceptual style open to the appearance of thing-power. For I came on the glove-pollen-rat-cap-stick with Thoreau in my head, who had encouraged me to practice "the discipline of looking always at what is to be seen"; with Spinoza's claim that all things are "animate, albeit in different degrees"; and with Maurice Merleau-Ponty, whose Phenomenology of Perception had disclosed for me "an immanent incipient significance in the living body [which] extends, . . . to the whole sensible world" and which had shown me how "our gaze, prompted by the experience of our own body, will discover in all other 'objects' the miracle of expression."

As I have already noted, the items on the ground that day were vibratory—at one moment disclosing themselves as dead stuff and at the next as live presence: junk, then claimant; inert matter, then live wire. It hit me then in a visceral way how American materialism, which requires buying ever-increasing numbers of products purchased in ever-shorter cycles, is antimateriality. The sheer volume of commodities, and the hyperconsumptive necessity of junking them to make room for new ones, conceals the vitality of matter. In The Meadowlands, a late twentieth-century, Thoreauian travelogue of the New Jersey garbage
hills outside Manhattan, Robert Sullivan describes the vitality that persists even in trash:

The . . . garbage hills are alive . . . there are billions of microscopic organisms thriving underground in dark, oxygen-free communities. . . . After having ingested the tiniest portion of leftover New Jersey or New York, these cells then exhale huge underground plumes of carbon dioxide and of warm moist methane, giant stillborn tropical winds that seep through the ground to feed the Meadowlands' fires, or creep up into the atmosphere, where they eat away at the . . . ozone . . . . One afternoon I . . . walked along the edge of a garbage hill, a forty-foot drumlin of compacted trash that owed its topography to the waste of the city of Newark . . . . There had been rain the night before, so it wasn't long before I found a little leachate seep, a black ooze trickling down the slope of the hill, an espresso of refuse. In a few hours, this stream would find its way down into the . . . groundwater of the Meadowlands; it would mingle with toxic streams . . . . But in this moment, here at its birth, . . . this little seep was pure pollution, a pristine stew of oil and grease, of cyanide and arsenic, of cadmium, chromium, copper, lead, nickel, silver, mercury, and zinc. I touched this fluid—my fingertip was a bluish caramel color—and it was warm and fresh. A few yards away, where the stream collected into a benzene-scented pool, a mallard swam alone.17

Sullivan reminds us that a vital materiality can never really be thrown "away," for it continues its activities even as a discarded or unwanted commodity. For Sullivan that day, as for me on that June morning, thing-power rose from a pile of trash. Not Flower Power, or Black Power, or Girl Power, but Thing-Power: the curious ability of inanimate things to animate, to act, to produce effects dramatic and subtle.

Thing-Power II: Odradek's Nonorganic Life

A dead rat, some oak pollen, and a stick of wood stopped me in my tracks. But so did the plastic glove and the bottle cap: thing-power arises from bodies inorganic as well as organic. In support of this contention, Manuel De Landa notes how even inorganic matter can "self-organize".
Inorganic matter-energy has a wider range of alternatives for the generation of structure than just simple phase transitions. ... In other words, even the humblest forms of matter and energy have the potential for self-organization beyond the relatively simple type involved in the creation of crystals. There are, for instance, those coherent waves called solitons which form in many different types of materials, ranging from ocean waters (where they are called tsunamis) to lasers. Then there are ... stable states (or attractors), which can sustain coherent cyclic activity. ... Finally, and unlike the previous examples of nonlinear self-organization where true innovation cannot occur, there ... the different combinations into which entities derived from the previous processes (crystals, coherent pulses, cyclic patterns) may enter. When put together, these forms of spontaneous structural generation suggest that inorganic matter is much more variable and creative than we ever imagined. And this insight into matter's inherent creativity needs to be fully incorporated into our new materialist philosophies.18

I will in chapter 4 try to wrestle philosophically with the idea of impersonal or nonorganic life, but here I would like to draw attention to a literary dramatization of this idea: to Odradek, the protagonist of Franz Kafka's short story "Cares of a Family Man." Odradek is a spool of thread who can run and laugh; this animate wood exercises an impersonal form of vitality. De Landa speaks of a "spontaneous structural generation" that happens, for example, when chemical systems at far-from-equilibrium states inexplicably choose one path of development rather than another. Like these systems, the material configuration that is Odradek straddles the line between inert matter and vital life.

For this reason Kafka's narrator has trouble assigning Odradek to an ontological category. Is Odradek a cultural artifact, a tool of some sort? Perhaps, but if so, its purpose is obscure: "It looks like a flat star-shaped spool of thread, and indeed it does seem to have thread wound upon it; to be sure, these are only old, broken-off bits of thread, knotted and tangled together, of the most varied sorts and colors. ... One is tempted to believe that the creature once had some sort of intelligible shape and is now only a broken-down remnant. Yet this does not seem to be the case; ... nowhere is there an unfinished or unbroken surface to suggest anything of the kind: the whole thing looks senseless enough, but in its own way perfectly finished."19

Or perhaps Odradek is more a subject than an object—an organic
creature, a little person? But if so, his/her/its embodiment seems rather unnatural: from the center of Odradek’s star protrudes a small wooden crossbar, and "by means of this latter rod . . . and one of the points of the star . . . , the whole thing can stand upright as if on two legs."20

On the one hand, like an active organism, Odradek appears to move deliberately (he is "extraordinarily nimble") and to speak intelligibly: "He lurks by turns in the garret, the stairway, the lobbies, the entrance hall. Often for months on end he is not to be seen; then he has presumably moved into other houses; but he always comes faithfully back to our house again. Many a time when you go out of the door and he happens just to be leaning directly beneath you against the banisters you feel inclined to speak to him. Of course, you put no difficult questions to him; he is so diminutive that you cannot help it—rather like a child. 'Well, what's your name?' you ask him. 'Odradek,' he says. 'And where do you live?' 'No fixed abode,' he says and laughs." And yet, on the other hand, like an inanimate object, Odradek produced a so-called laughter that "has no lungs behind it" and "sounds rather like the rustling of fallen leaves. And that is usually the end of the conversation. Even these answers are not always forthcoming; often he stays mute for a long time, as wooden as his appearance."21

Wooden yet lively, verbal yet vegetal, alive yet inert, Odradek is ontologically multiple. He/it is a vital materiality and exhibits what Gilles Deleuze has described as the persistent "hint of the animate in plants, and of the vegetable in animals."22 The late-nineteenth-century Russian scientist Vladimir Ivanovich Vernadsky, who also refused any sharp distinction between life and matter, defined organisms as "special, distributed forms of the common mineral, water . . . . Emphasizing the continuity of watery life and rocks, such as that evident in coal or fossil limestone reefs, Vernadsky noted how these apparently inert strata are 'traces of bygone biospheres.'23 Odradek exposes this continuity of watery life and rocks; be/it brings to the fore the becoming of things.

Thing-Power III: Legal Actants

I may have met a relative of Odradek while serving on a jury, again in Baltimore, for a man on trial for attempted homicide. It was a small glass vial with an adhesive-covered metal lid: the Gunpowder Residue
Sampler. This object/witness had been dabbed on the accused's hand hours after the shooting and now offered to the jury its microscopic evidence that the hand had either fired a gun or been within three feet of a gun firing. Expert witnesses showed the sampler to the jury several times, and with each appearance it exercised more force, until it became vital to the verdict. This composite of glass, skin cells, glue, words, laws, metals, and human emotions had become an actant. Actant, recall, is Bruno Latour's term for a source of action; an actant can be human or not, or, most likely, a combination of both. Latour defines it as "something that acts or to which activity is granted by others. It implies no special motivation of human individual actors, nor of humans in general." An actant is neither an object nor a subject but an "intervener," akin to the Deleuzean "quasi-causal operator." An operator is that which, by virtue of its particular location in an assemblage and the fortuity of being in the right place at the right time, makes the difference, makes things happen, becomes the decisive force catalyzing an event.

Actant and operator are substitute words for what in a more subject-centered vocabulary are called agents. Agentic capacity is now seen as differentially distributed across a wider range of ontological types. This idea is also expressed in the notion of "deodand," a figure of English law from about 1200 until it was abolished in 1846. In cases of accidental death or injury to a human, the nonhuman actant, for example, the carving knife that fell into human flesh or the carriage that trampled the leg of a pedestrian—became deodand (literally, "that which must be given to God"). In recognition of its peculiar efficacy (a power that is less masterful than agency but more active than recalcitrance), the deodand, a materiality "suspended between human and thing," was surrendered to the crown to be used (or sold) to compensate for the harm done. According to William Pietz, "any culture must establish some procedure of compensation, expiation, or punishment to settle the debt created by unintended human deaths whose direct cause is not a morally accountable person, but a nonhuman material object. This was the issue thematized in public discourse by . . . the law of deodand."

There are of course differences between the knife that impales and the man impaled, between the technician who dabs the sampler and the sampler, between the array of items in the gutter of Cold Spring Lane and me, the narrator of their vitality. But I agree with John Frow that these differences need "to be flattened, read horizontally as a juxtapo-
sition rather than vertically as a hierarchy of being. It's a feature of our world that we can and do distinguish ... things from persons. But the sort of world we live in makes it constantly possible for these two sets of kinds to exchange properties. And to note this fact explicitly, which is also to begin to experience the relationship between persons and other materialities more horizontally, is to take a step toward a more ecological sensibility.

Thing-Power IV: Walking, Talking Minerals

Odradek, a gunpowder residue sampler, and some junk on the street can be fascinating to people and can thus seem to come alive. But is this evanescence a property of the stuff or of people? Was the thing-power of the debris I encountered but a function of the subjective and intersubjective connotations, memories, and affects that had accumulated around my ideas of these items? Was the real agent of my temporary immobilization on the street that day humanity, that is, the cultural meanings of "rat," "plastic," and "wood" in conjunction with my own idiosyncratic biography? It could be. But what if the swarming activity inside my head was itself an instance of the vital materiality that also constituted the trash?

I have been trying to raise the volume on the vitality of materiality per se, pursuing this task so far by focusing on nonhuman bodies, by, that is, depicting them as actants rather than as objects. But the case for matter as active needs also to readjust the status of human actants: not by denying humanity's awesome, awful powers, but by presenting these powers as evidence of our own constitution as vital materiality. In other words, human power is itself a kind of thing-power. At one level this claim is uncontroversial: it is easy to acknowledge that humans are composed of various material parts (the minerality of our bones, or the metal of our blood, or the electricity of our neurons). But it is more challenging to conceive of these materials as lively and self-organizing, rather than as passive or mechanical means under the direction of something nonmaterial, that is, an active soul or mind.

Perhaps the claim to a vitality intrinsic to matter itself becomes more plausible if one takes a long view of time. If one adopts the perspective
of evolutionary rather than biographical time, for example, a mineral efficacy becomes visible. Here is De Landa's account of the emergence of our bones: "Soft tissue (gels and aerosols, muscle and nerve) reigned supreme until 5000 million years ago. At that point, some of the conglomerations of fleshy matter-energy that made up life underwent a sudden mineralization, and a new material for constructing living creatures emerged: bone. It is almost as if the mineral world that had served as a substratum for the emergence of biological creatures was reasserting itself."³⁰ Mineralization names the creative agency by which bone was produced, and bones then "made new forms of movement control possible among animals, freeing them from many constraints and literally setting them into motion to conquer every available niche in the air, in water, and on land."³¹ In the long and slow time of evolution, then, mineral material appears as the mover and shaker, the active power, and the human beings, with their much-lauded capacity for self-directed action, appear as its product.³² Vernadsky seconds this view in his description of humankind as a particularly potent mix of minerals: "What struck [Vernadsky] most was that the material of Earth's crust has been packaged into myriad moving beings whose reproduction and growth build and break down matter on a global scale. People, for example, redistribute and concentrate oxygen . . . and other elements of Earth's crust into two-legged, upright forms that have an amazing propensity to wander across, dig into and in countless other ways alter Earth's surface. We are walking, talking minerals."³³ Kafka, De Landa, and Vernadsky suggest that human individuals are themselves composed of vital materials, that our powers are thing-power. These vital materialists do not claim that there are no differences between humans and bones, only that there is no necessity to describe these differences in a way that places humans at the ontological center or hierarchical apex. Humanity can be distinguished, instead, as Jean-François Lyotard suggests, as a particularly rich and complex collection of materials: "Humankind is taken for a complex material system; consciousness, for an effect of language; and language for a highly complex material system."³⁴ Richard Rorty similarly defines humans as very complex animals, rather than as animals "with an extra added ingredient called 'intellect' or 'the rational soul.'"³⁵

The fear is that in failing to affirm human uniqueness, such views
authorize the treatment of people as mere things; in other words, that a strong distinction between subjects and objects is needed to prevent the instrumentalization of humans. Yes, such critics continue, objects possess a certain power of action (as when bacteria or pharmaceuticals enact hostile or symbiotic projects inside the human body), and yes, some subject-on-subject objectifications are permissible (as when persons consent to use and be used as a means to sexual pleasure), but the ontological divide between persons and things must remain lest one have no moral grounds for privileging man over germ or for condemning pernicious forms of human-on-human instrumentalization (as when powerful humans exploit illegal, poor, young, or otherwise weaker humans).

How can the vital materialist respond to this important concern? First, by acknowledging that the framework of subject versus object has indeed at times worked to prevent or ameliorate human suffering and to promote human happiness or well-being. Second, by noting that its successes come at the price of an instrumentalization of nonhuman nature that can itself be unethical and can itself undermine long-term human interests. Third, by pointing out that the Kantian imperative to treat humanity always as an end-in-itself and never merely as a means does not have a stellar record of success in preventing human suffering or promoting human well-being: it is important to raise the question of its actual, historical efficacy in order to open up space for forms of ethical practice that do not rely upon the image of an intrinsically hierarchical order of things. Here the materialist speaks of promoting healthy and enabling instrumentalizations, rather than of treating people as ends-in-themselves, because to face up to the compound nature of the human self is to find it difficult even to make sense of the notion of a single end-in-itself. What instead appears is a swarm of competing ends being pursued simultaneously in each individual, some of which are healthy to the whole, some of which are not. Here the vital materialist, taking a cue from Nietzsche’s and Spinoza’s ethics, favors physiological over moral descriptors because she fears that moralism can itself become a source of unnecessary human suffering.36

We are now in a better position to name that other way to promote human health and happiness: to raise the status of the materiality of which we are composed. Each human is a heterogeneous compound of wonder-
fully vibrant, dangerously vibrant, matter. If matter itself is lively, then not only is the difference between subjects and objects minimized, but the status of the shared materiality of all things is elevated. All bodies become more than mere objects, as the thing-powers of resistance and protean agency are brought into sharper relief. Vital materialism would thus set up a kind of safety net for those humans who are now, in a world where Kantian morality is the standard, routinely made to suffer because they do not conform to a particular (Euro-American, bourgeois, theocentric, or other) model of personhood. The ethical aim becomes to distribute value more generously, to bodies as such. Such a newfound attentiveness to matter and its powers will not solve the problem of human exploitation or oppression, but it can inspire a greater sense of the extent to which all bodies are kin in the sense of inextricably enmeshed in a dense network of relations. And in a knotted world of vibrant matter, to harm one section of the web may very well be to harm oneself. Such an enlightened or expanded notion of self-interest is good for humans. As I will argue further in chapter 8, a vital materialism does not reject self-interest as a motivation for ethical behavior, though it does seek to cultivate a broader definition of self and of interest.

Thing-Power V: Thing-Power and Adorno’s Nonidentity

But perhaps the very idea of thing-power or vibrant matter claims too much: to know more than it is possible to know. Or, to put the criticism in Theodor Adorno’s terms, does it exemplify the violent hubris of Western philosophy, a tradition that has consistently failed to mind the gap between concept and reality, object and thing? For Adorno this gap is ineradicable, and the most that can be said with confidence about the thing is that it eludes capture by the concept, that there is always a “nonidentity” between it and any representation. And yet, as I shall argue, even Adorno continues to seek a way to access—however darkly, crudely, or fleetingly—this out-side. One can detect a trace of this longing in the following quotation from Negative Dialectics: “What we may call the thing itself is not positively and immediately at hand. He who wants to know it must think more, not less.” Adorno clearly rejects the possibility of any direct, sensuous apprehension (“the thing itself is not
positively and immediately at hand”), but he does not reject all modes of encounter, for there is one mode, “thinking more, not less,” that holds promise. In this section I will explore some of the affinities between Adorno’s nonidentity and my thing-power and, more generally, between his “specific materialism” (ND, 203) and a vital materialism.

Nonidentity is the name Adorno gives to that which is not subject to knowledge but is instead “heterogeneous” to all concepts. This elusive force is not, however, wholly outside human experience. For Adorno describes nonidentity as a presence that acts upon us: we knowers are haunted, he says, by a painful, nagging feeling that something’s being forgotten or left out. This discomfiting sense of the inadequacy of representation remains no matter how refined or analytically precise one’s concepts become. “Negative dialectics” is the method Adorno designs to teach us how to accentuate this discomfiting experience and how to give it a meaning. When practiced correctly, negative dialectics will render the static buzz of nonidentity into a powerful reminder that “objects do not go into their concepts without leaving a remainder” and thus that life will always exceed our knowledge and control. The ethical project par excellence, as Adorno sees it, is to keep remembering this and to learn how to accept it. Only then can we stop raging against a world that refuses to offer us the “reconcilement” that we, according to Adorno, crave (ND, 5).

For the vital materialist, however, the starting point of ethics is less the acceptance of the impossibility of “reconcilement” and more the recognition of human participation in a shared, vital materiality. We are vital materiality and we are surrounded by it, though we do not always see it that way. The ethical task at hand here is to cultivate the ability to discern nonhuman vitality, to become perceptually open to it. In a parallel manner, Adorno’s “specific materialism” also recommends a set of practical techniques for training oneself to better detect and accept nonidentity. Negative dialectics is, in other words, the pedagogy inside Adorno’s materialism.

This pedagogy includes intellectual as well as aesthetic exercises. The intellectual practice consists in the attempt to make the very process of conceptualization an explicit object of thought. The goal here is to become more cognizant that conceptualization automatically obscures the inadequacy of its concepts. Adorno believes that critical reflection
can expose this cloaking mechanism and that the exposure will intensify the felt presence of nonidentity. The treatment is homeopathic: we must develop a concept of nonidentity to cure the hubris of conceptualization. The treatment can work because, however distorting, concepts still "refer to nonconceptualities." This is "because concepts on their part are moments of the reality that requires their formation" (*ND*, 12). Concepts can never provide a clear view of things in themselves, but the "discriminating man," who "in the matter and its concept can distinguish even the infinitesimal, that which escapes the concept" (*ND*, 45), can do a better job of gesturing toward them. Note that the discriminating man (adept at negative dialectics) both subjects his conceptualizations to second-order reflection and pays close aesthetic attention to the object's "qualitative moments" (*ND*, 43), for these open a window onto nonidentity.

A second technique of the pedagogy is to exercise one's utopian imagination. The negative dialectician should imaginatively re-create what has been obscured by the distortion of conceptualization: "The means employed in negative dialectics for the penetration of its hardened objects is possibility—the possibility of which their reality has cheated the objects and which is nonetheless visible in each one" (*ND*, 52). Nonidentity resides in those denied possibilities, in the invisible field that surrounds and infuses the world of objects.

A third technique is to admit a "playful element" into one's thinking and to be willing to play the fool. The negative dialectician "knows how far he remains from" knowing nonidentity, "and yet he must always talk as if he had it entirely. This brings him to the point of clowning. He must not deny his clownish traits, least of all since they alone can give him hope for what is denied him" (*ND*, 14).

The self-criticism of conceptualization, a sensory attentiveness to the qualitative singularities of the object, the exercise of an unrealistic imagination, and the courage of a clown: by means of such practices one might replace the "rage" against nonidentity with a respect for it, a respect that chastens our will to mastery. That rage is for Adorno the driving force behind interhuman acts of cruelty and violence. Adorno goes even further to suggest that negative dialectics can transmute the anguish of nonidentity into a will to ameliorative political action: the thing thwarts our desire for conceptual and practical mastery and this
refusal angers us; but it also offers us an ethical injunction, according
to which "suffering ought not to be, ... things should be different. Woe
speaks: 'Go.' Hence the convergence of specific materialism with criti­
cism, with social change in practice" (ND, 202–3).39

Adorno founds his ethics on an intellectual and aesthetic attentiveness
that, though it will always fail to see its object clearly, nevertheless
has salutary effects on the bodies straining to see. Adorno willingly plays
the fool by questing after what I would call thing-power, but which he
calls "the preponderance of the object" (ND, 183). Humans encounter a
world in which nonhuman materialities have power, a power that the
"bourgeois I," with its pretensions to autonomy, denies.40 It is at this
point that Adorno identifies negative dialectics as a materialism: it is
only "by passing to the object's preponderance that dialectics is ren­
dered materialistic" (ND, 192).

Adorno dares to affirm something like thing-power, but he does not
want to play the fool for too long. He is quick—too quick from the point
of view of the vital materialist—to remind the reader that objects are
always "entwined" with human subjectivity and that he has no desire "to
place the object on the orphaned royal throne once occupied by the sub­
ject. On that throne the object would be nothing but an idol" (ND, 181).
Adorno is reluctant to say too much about nonhuman vitality, for the
more said, the more it recedes from view. Nevertheless, Adorno does try
to attend somehow to this reclusive reality, by means of a negative dia­
lectics. Negative dialectics has an affinity with negative theology: nega­tive dialectics honors nonidentity as one would honor an unknowable
god; Adorno's "specific materialism" includes the possibility that there
is divinity beyond or within the reality that withdraws. Adorno rejects
any naive picture of transcendence, such as that of a loving God who
designed the world ("metaphysics cannot rise again" [ND, 404] after
Auschwitz), but the desire for transcendence cannot, he believes, be
eliminated: "Nothing could be experienced as truly alive if something
that transcends life were not promised also. . . . The transcendent is, and
it is not" (ND, 375).41 Adorno honors nonidentity as an absent absolute,
as a messianic promise.42

Adorno struggles to describe a force that is material in its resistance to
human concepts but spiritual insofar as it might be a dark promise of an
absolute-to-come. A vital materialism is more thoroughly nontheistic in
presentation: the out-side has no messianic promise. But a philosophy of nonidentity and a vital materialism nevertheless share an urge to cultivate a more careful attentiveness to the out-side.

The Naive Ambition of Vital Materialism

Adorno reminds us that humans can experience the out-side only indirectly, only through vague, aporetic, or unstable images and impressions. But when he says that even distorting concepts still "refer to nonconceptualities, because concepts on their part are moments of the reality that requires their formation" (ND, 12), Adorno also acknowledges that human experience nevertheless includes encounters with an out-side that is active, forceful, and (quasi)independent. This out-side can operate at a distance from our bodies or it can operate as a foreign power internal to them, as when we feel the discomfort of nonidentity, hear the naysaying voice of Socrates's demon, or are moved by what Lucretius described as that "something in our breast" capable of fighting and resisting. There is a strong tendency among modern, secular, well-educated humans to refer such signs back to a human agency conceived as its ultimate source. This impulse toward cultural, linguistic, or historical constructivism, which interprets any expression of thing-power as an effect of culture and the play of human powers, politicizes moralistic and oppressive appeals to "nature." And that is a good thing. But the constructivist response to the world also tends to obscure from view whatever thing-power there may be. There is thus something to be said for moments of methodological naiveté, for the postponement of a genealogical critique of objects. This delay might render manifest a subsistent world of nonhuman vitality. To "render manifest" is both to receive and to participate in the shape given to that which is received. What is manifest arrives through humans but not entirely because of them.

Vital materialists will thus try to linger in those moments during which they find themselves fascinated by objects, taking them as clues to the material vitality that they share with them. This sense of a strange and incomplete commonality with the out-side may induce vital materialists to treat nonhumans—animals, plants, earth, even artifacts and
commodities—more carefully, more strategically, more ecologically. But how to develop this capacity for naiveté? One tactic might be to revisit and become temporarily infected by discredited philosophies of nature, risking “the taint of superstition, animism, vitalism, anthropomorphism, and other premodern attitudes.”\(^44\) I will venture into vitalism in chapters 5 and 6, but let me here make a brief stop at the ancient atomism of Lucretius, the Roman devotee of Epicurus.

Lucretius tells of bodies falling in a void, bodies that are not lifeless stuff but matter on the go, entering and leaving assemblages, swerving into each other: “At times quite undetermined and at undetermined spots they push a little from their path: yet only just so much as you could call a change of trend. [For if they did not] . . . swerve, all things would fall downwards through the deep void like drops of rain, nor could collision come to be, nor a blow brought to pass for the primordia: so nature would never have brought anything into existence.”\(^47\) Louis Althusser described this as a “materialism of the encounter,” according to which political events are born from chance meetings of atoms:\(^48\) A primordial swerve says that the world is not determined, that an element of chanciness resides at the heart of things, but it also affirms that so-called inanimate things have a life, that deep within is an inexplicable vitality or energy, a moment of independence from and resistance to us and other bodies: a kind of thing-power.

The rhetoric of *De Rerum Natura* is realist, speaking in an authoritative voice, claiming to describe a nature that preexists and outlives us: here are the smallest constituent parts of being (“primordia”) and here are the principles of association governing them.\(^49\) It is easy to criticize this realism: Lucretius quests for the thing itself, but there is no there there—or, at least, no way for us to grasp or know it, for the thing is always already humanized; its object status arises at the very instant something comes into our awareness. Adorno levels this charge explicitly against Martin Heidegger’s phenomenology, which Adorno interprets as a “realism” that “seeks to breach the walls which thought has built around itself, to pierce the interjected layer of subjective positions that have become a second nature.” Heidegger’s aim “to philosophize formlessly, so to speak, purely on the ground of things” \(ND, 78\)\(^50\) is for Adorno futile, and it is productive of a violent “rage” against non-identity.\(^51\)
But Lucretius's poem—like Kafka’s stories, Sullivan’s travelogue, Vernadsky’s speculations, and my account of the gutter of Cold Spring Lane—does offer this potential benefit: it can direct sensory, linguistic, and imaginative attention toward a material vitality. The advantage of such tales, with their ambitious naiveté, is that though they “disavow...the tropological work, the psychological work, and the phenomenological work entailed in the human production of materiality,” they do so “in the name of avowing the force of questions that have been too readily foreclosed by more familiar fetishizations: the fetishization of the subject, the image, the word.”
Karen Barad

Posthumanist Performativity: Toward an Understanding of How Matter Comes to Matter

Where did we ever get the strange idea that nature—as opposed to culture—is ahistorical and timeless? We are far too impressed by our own cleverness and self-consciousness. . . . We need to stop telling ourselves the same old anthropocentric bedtime stories.
—Steve Shaviro 1997

Language has been granted too much power. The linguistic turn, the semiotic turn, the interpretative turn, the cultural turn: it seems that at every turn lately every “thing”—even materiality—is turned into a matter of language or some other form of cultural representation. The ubiquitous puns on “matter” do not, alas, mark a rethinking of the key concepts (materiality and signification) and the relationship between them. Rather, it seems to be symptomatic of the extent to which matters of “fact” (so to speak) have been replaced with matters of signification (no scare quotes here). Language matters. Discourse matters. Culture matters. There is an important sense in which the only thing that does not seem to matter anymore is matter.

What compels the belief that we have a direct access to cultural representations and their content that we lack toward the things represented? How did language come to be more trustworthy than matter? Why are language and culture granted their own agency and historicity while matter is figured as passive and immutable, or at best inherits a potential for change derivatively from language and culture? How does one even go about inquiring after the material conditions that have led us to such a brute reversal of naturalist beliefs when materiality itself is always already figured within a linguistic domain as its condition of possibility?

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It is hard to deny that the power of language has been substantial. One might argue too substantial, or perhaps more to the point, too substantializing. Neither an exaggerated faith in the power of language nor the expressed concern that language is being granted too much power is a novel apprehension specifically attached to the early twenty-first century. For example, during the nineteenth century Nietzsche warned against the mistaken tendency to take grammar too seriously: allowing linguistic structure to shape or determine our understanding of the world, believing that the subject and predicate structure of language reflects a prior ontological reality of substance and attribute. The belief that grammatical categories reflect the underlying structure of the world is a continuing seductive habit of mind worth questioning. Indeed, the representationalist belief in the power of words to mirror preexisting phenomena is the metaphysical substrate that supports social constructivist, as well as traditional realist, beliefs. Significantly, social constructivism has been the object of intense scrutiny within both feminist and science studies circles where considerable and informed dissatisfaction has been voiced.\(^1\)

A *performative* understanding of discursive practices challenges the representationalist belief in the power of words to represent preexisting things. Performativity, properly construed, is not an invitation to turn everything (including material bodies) into words; on the contrary, performativity is precisely a contestation of the excessive power granted to language to determine what is real. Hence, in ironic contrast to the misconception that would equate performativity with a form of linguistic monism that takes language to be the stuff of reality, performativity is actually a contestation of the unexamined habits of mind that grant language and other forms of representation more power in determining our ontologies than they deserve.\(^2\)

The move toward performative alternatives to representationalism shifts the focus from questions of correspondence between descriptions and reality (e.g., do they mirror nature or culture?) to matters of practices/ doings/actions. I would argue that these approaches also bring to the forefront important questions of ontology, materiality, and agency, while social constructivist approaches get caught up in the geometrical optics

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\(^1\) Dissatisfaction surfaces in the literature in the 1980s. See, e.g., Donna Haraway’s “Gender for a Marxist Dictionary: The Sexual Politics of a Word” (originally published 1987) and “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective” (originally published 1988); both reprinted in Haraway 1991. See also Butler 1989.

\(^2\) This is not to dismiss the valid concern that certain specific performative accounts grant too much power to language. Rather, the point is that this is not an inherent feature of performativity but an ironic malady.
of reflection where, much like the infinite play of images between two facing mirrors, the epistemological gets bounced back and forth, but nothing more is seen. Moving away from the representationalist trap of geometrical optics, I shift the focus to physical optics, to questions of diffraction rather than reflection. Diffractively reading the insights of feminist and queer theory and science studies approaches through one another entails thinking the “social” and the “scientific” together in an illuminating way. What often appears as separate entities (and separate sets of concerns) with sharp edges does not actually entail a relation of absolute exteriority at all. Like the diffraction patterns illuminating the indefinite nature of boundaries—displaying shadows in “light” regions and bright spots in “dark” regions—the relation of the social and the scientific is a relation of “exteriority within.” This is not a static relationality but a doing—the enactment of boundaries—that always entails constitutive exclusions and therefore requisite questions of accountability. My aim is to contribute to efforts to sharpen the theoretical tool of performativity for science studies and feminist and queer theory endeavors alike, and to promote their mutual consideration. In this article, I offer an elaboration of performativity—a materialist, naturalist, and posthumanist elaboration—that allows matter its due as an active participant in the world’s becoming, in its ongoing “intra-activity.” It is vitally important that we understand how matter matters.

From representationalism to performativity

People represent. That is part of what it is to be a person. . . . Not homo faber, I say, but homo depictor.
—Ian Hacking 1983, 144, 132

Liberal social theories and theories of scientific knowledge alike owe much to the idea that the world is composed of individuals—presumed to exist

3 Haraway proposes the notion of diffraction as a metaphor for rethinking the geometry and optics of relationality: “[F]eminist theorist Trinh Minh-ha . . . was looking for a way to figure ‘difference’ as a ‘critical difference within,’ and not as special taxonomic marks grounding difference as apartheid. . . . Diffraction does not produce ‘the same’ displaced, as reflection and refraction do. Diffraction is a mapping of interference, not of replication, reflection, or reproduction. A diffraction pattern does not map where differences appear, but rather maps where the effects of differences appear” (1992, 300). Haraway (1997) promotes the notion of diffraction to a fourth semiotic category. Inspired by her suggestions for usefully deploying this rich and fascinating physical phenomenon to think about differences that matter, I further elaborate the notion of diffraction as a mutated critical tool of analysis (though not as a fourth semiotic category) in my forthcoming book (Barad forthcoming).

4 See Rouse 2002 on rethinking naturalism. The neologism intra-activity is defined below.
before the law, or the discovery of the law—awaiting/inviting representation. The idea that beings exist as individuals with inherent attributes, anterior to their representation, is a metaphysical presupposition that underlies the belief in political, linguistic, and epistemological forms of representationalism. Or, to put the point the other way around, representationalism is the belief in the ontological distinction between representations and that which they purport to represent; in particular, that which is represented is held to be independent of all practices of representing. That is, there are assumed to be two distinct and independent kinds of entities—representations and entities to be represented. The system of representation is sometimes explicitly theorized in terms of a tripartite arrangement. For example, in addition to knowledge (i.e., representations), on the one hand, and the known (i.e., that which is purportedly represented), on the other, the existence of a knower (i.e., someone who does the representing) is sometimes made explicit. When this happens it becomes clear that representations serve a mediating function between independently existing entities. This taken-for-granted ontological gap generates questions of the accuracy of representations. For example, does scientific knowledge accurately represent an independently existing reality? Does language accurately represent its referent? Does a given political representative, legal counsel, or piece of legislation accurately represent the interests of the people allegedly represented?

Representationalism has received significant challenge from feminists, poststructuralists, postcolonial critics, and queer theorists. The names of Michel Foucault and Judith Butler are frequently associated with such questioning. Butler sums up the problematics of political representationalism as follows:

Foucault points out that juridical systems of power produce the subjects they subsequently come to represent. Juridical notions of power appear to regulate political life in purely negative terms. . . . But the subjects regulated by such structures are, by virtue of being subjected to them, formed, defined, and reproduced in accordance with the requirements of those structures. If this analysis is right, then the juridical formation of language and politics that represents women as “the subject” of feminism is itself a discursive formation and effect of a given version of representationalist politics. And the feminist subject turns out to be discursively constituted by the very political system that is supposed to facilitate its emancipation. (1990, 2)
In an attempt to remedy this difficulty, critical social theorists struggle to formulate understandings of the possibilities for political intervention that go beyond the framework of representationalism.

The fact that representationalism has come under suspicion in the domain of science studies is less well known but of no less significance. Critical examination of representationalism did not emerge until the study of science shifted its focus from the nature and production of scientific knowledge to the study of the detailed dynamics of the actual practice of science. This significant shift is one way to coarsely characterize the difference in emphasis between separate multiple disciplinary studies of science (e.g., history of science, philosophy of science, sociology of science) and science studies. This is not to say that all science studies approaches are critical of representationalism; many such studies accept representationalism unquestioningly. For example, there are countless studies on the nature of scientific representations (including how scientists produce them, interpret them, and otherwise make use of them) that take for granted the underlying philosophical viewpoint that gives way to this focus—namely, representationalism. On the other hand, there has been a concerted effort by some science studies researchers to move beyond representationalism.

Ian Hacking’s *Representing and Intervening* (1983) brought the question of the limitations of representationalist thinking about the nature of science to the forefront. The most sustained and thoroughgoing critique of representationalism in philosophy of science and science studies is to be found in the work of philosopher of science Joseph Rouse. Rouse has taken the lead in interrogating the constraints that representationalist thinking places on theorizing the nature of scientific practices. For example, while the hackneyed debate between scientific realism and social constructivism moved frictionlessly from philosophy of science to science studies, Rouse (1996) has pointed out that these adversarial positions have more in common than their proponents acknowledge. Indeed, they share representationalist assumptions that foster such endless debates: both scientific realists and social constructivists believe that scientific knowledge (in its multiple representational forms such as theoretical concepts, graphs, graphs, graphs...)

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5 Rouse begins his interrogation of representationalism in *Knowledge and Power* (1987). He examines how a representationalist understanding of knowledge gets in the way of understanding the nature of the relationship between power and knowledge. He continues his critique of representationalism and the development of an alternative understanding of the nature of scientific practices in *Engaging Science* (1996). Rouse proposes that we understand science practice as ongoing patterns of situated activity, an idea that is then further elaborated in *How Scientific Practices Matter* (2002).
particle tracks, photographic images) mediates our access to the material world; where they differ is on the question of referent, whether scientific knowledge represents things in the world as they really are (i.e., “Nature”) or “objects” that are the product of social activities (i.e., “Culture”), but both groups subscribe to representationalism.

Representationalism is so deeply entrenched within Western culture that it has taken on a commonsense appeal. It seems inescapable, if not downright natural. But representationalism (like “nature itself,” not merely our representations of it!) has a history. Hacking traces the philosophical problem of representations to the Democritean dream of atoms and the void. According to Hacking’s anthropological philosophy, representations were unproblematic prior to Democritus: “the word ‘real’ first meant just unqualified likeness” (142). With Democritus’s atomic theory emerges the possibility of a gap between representations and represented—“appearance” makes its first appearance. Is the table a solid mass made of wood or an aggregate of discrete entities moving in the void? Atomism poses the question of which representation is real. The problem of realism in philosophy is a product of the atomistic worldview.

Rouse identifies representationalism as a Cartesian by-product—a particularly inconspicuous consequence of the Cartesian division between “internal” and “external” that breaks along the line of the knowing subject. Rouse brings to light the asymmetrical faith in word over world that underlines the nature of Cartesian doubt:

I want to encourage doubt about [the] presumption that representations (that is, their meaning or content) are more accessible to us than the things they supposedly represent. If there is no magic language through which we can unerringly reach out directly to its referents, why should we think there is nevertheless a language that magically enables us to reach out directly to its sense or representational content? The presumption that we can know what we mean, or what our verbal performances say, more readily than we can know the objects those sayings are about is a Cartesian legacy, a linguistic variation on Descartes’ insistence that we have a direct and privileged access to the contents of our thoughts that we lack towards the “external” world. (1996, 209)

In other words, the asymmetrical faith in our access to representations over things is a contingent fact of history and not a logical necessity; that
is, it is simply a Cartesian habit of mind. It takes a healthy skepticism toward Cartesian doubt to be able to begin to see an alternative.\(^6\)

Indeed, it is possible to develop coherent philosophical positions that deny that there are representations on the one hand and ontologically separate entities awaiting representation on the other. A performative understanding, which shifts the focus from linguistic representations to discursive practices, is one such alternative. In particular, the search for alternatives to social constructivism has prompted performative approaches in feminist and queer studies, as well as in science studies. Judith Butler’s name is most often associated with the term *performativity* in feminist and queer theory circles. And while Andrew Pickering has been one of the very few science studies scholars to take ownership of this term, there is surely a sense in which science studies theorists such as Donna Haraway, Bruno Latour, and Joseph Rouse also propound performative understandings of the nature of scientific practices.\(^7\) Indeed, *performativity* has become a ubiquitous term in literary studies, theater studies, and the nascent interdisciplinary area of performance studies, prompting the question as

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\(^6\) The allure of representationalism may make it difficult to imagine alternatives. I discuss performative alternatives below, but these are not the only ones. A concrete historical example may be helpful at this juncture. Foucault points out that in sixteenth-century Europe, language was not thought of as a medium; rather, it was simply “one of the figurations of the world” (1970, 56), an idea that reverberates in a mutated form in the posthumanist performatively account that I offer.

\(^7\) Andrew Pickering (1995) explicitly eschews the representationalist idiom in favor of a performative idiom. It is important to note, however, that Pickering’s notion of performativity would not be recognizable as such to poststructuralists, despite their shared embrace of *performativity* as a remedy to representationalism, and despite their shared rejection of humanism. Pickering’s appropriation of the term does not include any acknowledgement of its politically important—arguably inherently queer—genealogy (see Sedgwick 1993) or why it has been and continues to be important to contemporary critical theorists, especially feminist and queer studies scholars/activists. Indeed, he evacuates its important political historicity along with many of its crucial insights. In particular, Pickering ignores important discursive dimensions, including questions of meaning, intelligibility, significance, identity formation, and power, which are central to poststructuralist invocations of “performativity.” And he takes for granted the humanist notion of agency as a property of individual entities (such as humans, but also weather systems, scallops, and stereos), which poststructuralists problematize. On the other hand, poststructuralist approaches fail to take account of “nonhuman agency,” which is a central focus of Pickering’s account. See Barad (forthcoming) for a more detailed discussion.
to whether all performances are performative. In this article, I propose a specifically posthumanist notion of performativity—one that incorporates important material and discursive, social and scientific, human and nonhuman, and natural and cultural factors. A posthumanist account calls into question the givenness of the differential categories of “human” and “nonhuman,” examining the practices through which these differential boundaries are stabilized and destabilized. Donna Haraway’s scholarly opus—from primates to cyborgs to companion species—epitomizes this point.

If performativity is linked not only to the formation of the subject but also to the production of the matter of bodies, as Butler’s account of “materialization” and Haraway’s notion of “materialized refiguration” suggest, then it is all the more important that we understand the nature of this production.10 Foucault’s analytic of power links discursive practices to the materiality of the body. However, his account is constrained by several important factors that severely limit the potential of his analysis and Butler’s performative elaboration, thereby forestalling an understanding of precisely how discursive practices produce material bodies.

8 The notion of performativity has a distinguished career in philosophy that most of these multiple and various engagements acknowledge. Performativity’s lineage is generally traced to the British philosopher J. L. Austin’s interest in speech acts, particularly the relationship between saying and doing. Jacques Derrida is usually cited next as offering important poststructuralist amendments. Butler elaborates Derrida’s notion of performativity through Foucault’s understanding of the productive effects of regulatory power in theorizing the notion of identity performatively. Butler introduces her notion of gender performativity in Gender Trouble, where she proposes that we understand gender not as a thing or a set of free-floating attributes, not as an essence—but rather as a “doing”: “gender is itself a kind of becoming or activity . . . gender ought not to be conceived as a noun or a substantial thing or a static cultural marker, but rather as an incessant and repeated action of some sort” (1990, 112). In Bodies That Matter (1993) Butler argues for a linkage between gender performativity and the materialization of sexed bodies. Eve Kosofsky Sedgwick (1993) argues that performativity’s genealogy is inherently queer.

9 This notion of posthumanism differs from Pickering’s idiosyncratic assignment of a “posthumanist space [as] a space in which the human actors are still there but now inextricably entangled with the nonhuman, no longer at the center of the action calling the shots” (26). However, the decentering of the human is but one element of posthumanism. (Note that Pickering’s notion of “entanglement” is explicitly epistemological, not ontological. What is at issue for him in dubbing his account “posthumanist” is the fact that it is attentive to the mutual accommodation, or responsiveness, of human and nonhuman agents.)

10 It could be argued that “materialized refiguration” is an enterprised up (Haraway’s term) version of “materialization,” while the notion of “materialization” hints at a richer account of the former. Indeed, it is possible to read my posthumanist performative account along these lines, as a diffractive elaboration of Butler’s and Haraway’s crucial insights.
If Foucault, in queering Marx, positions the body as the locus of productive forces, the site where the large-scale organization of power links up with local practices, then it would seem that any robust theory of the materialization of bodies would necessarily take account of how the body’s materiality—for example, its anatomy and physiology—and other material forces actively matter to the processes of materialization. Indeed, as Foucault makes crystal clear in the last chapter of *The History of Sexuality* (vol. 1), he is not out to deny the relevance of the physical body but, on the contrary, to show how the deployments of power are directly connected to the body—to bodies, functions, physiological processes, sensations, and pleasures; far from the body having to be effaced, what is needed is to make it visible through an analysis in which the biological and the historical are not consecutive to one another . . . but are bound together in an increasingly complex fashion in accordance with the development of the modern technologies of power that take life as their objective. Hence, I do not envision a “history of mentalities” that would take account of bodies only through the manner in which they have been perceived and given meaning and value; but a “history of bodies” and the manner in which what is most material and most vital in them has been invested. (1980a, 151–52)

On the other hand, Foucault does not tell us in what way the biological and the historical are “bound together” such that one is not consecutive to the other. What is it about the materiality of bodies that makes it susceptible to the enactment of biological and historical forces simultaneously? To what degree does the matter of bodies have its own historicity? Are social forces the only ones susceptible to change? Are not biological forces in some sense always already historical ones? Could it be that there is some important sense in which historical forces are always already biological? What would it mean to even ask such a question given the strong social constructivist undercurrent in certain interdisciplinary circles in the early twenty-first century? For all Foucault’s emphasis on the political anatomy of disciplinary power, he too fails to offer an account of the body’s historicity in which its very materiality plays an *active* role in the workings of power. This implicit reinscription of matter’s passivity is a mark of extant elements of representationalism that haunt his largely post-representationalist account.11 This deficiency is importantly related to his failure to theorize the relationship between “discursive” and “nondiscurs-

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11 See also Butler 1989.
sive” practices. As materialist feminist theorist Rosemary Hennessey insists in offering her critique of Foucault, “a rigorous materialist theory of the body cannot stop with the assertion that the body is always discursively constructed. It also needs to explain how the discursive construction of the body is related to nondiscursive practices in ways that vary widely from one social formation to another” (1993, 46).

Crucial to understanding the workings of power is an understanding of the nature of power in the fullness of its materiality. To restrict power's productivity to the limited domain of the “social,” for example, or to figure matter as merely an end product rather than an active factor in further materializations, is to cheat matter out of the fullness of its capacity. How might we understand not only how human bodily contours are constituted through psychic processes but how even the very atoms that make up the biological body come to matter and, more generally, how matter makes itself felt? It is difficult to imagine how psychic and socio-historical forces alone could account for the production of matter. Surely it is the case—even when the focus is restricted to the materiality of “human” bodies—that there are “natural,” not merely “social,” forces that matter. Indeed, there is a host of material-discursive forces—including ones that get labeled “social,” “cultural,” “psychic,” “economic,” “natural,” “physical,” “biological,” “geopolitical,” and “geological”—that may be important to particular (entangled) processes of materialization. If we follow disciplinary habits of tracing disciplinary-defined causes through to the corresponding disciplinary-defined effects, we will miss all the crucial intra-actions among these forces that fly in the face of any specific set of disciplinary concerns.12

What is needed is a robust account of the materialization of all bodies—“human” and “nonhuman”—and the material-discursive practices by which their differential constitutions are marked. This will require an understanding of the nature of the relationship between discursive practices and material phenomena, an accounting of “nonhuman” as well as “human” forms of agency, and an understanding of the precise causal nature of productive practices that takes account of the fullness of matter’s implication in its ongoing historicity. My contribution toward the development of such an understanding is based on a philosophical account that I have been calling “agential realism.” Agential realism is an account of technoscientific and other practices that takes feminist, antiracist, poststructuralist, queer, Marxist, science studies, and scientific insights seri-

12 The conjunctive term material-discursive and other agential realist terms like intra-action are defined below.
ously, building specifically on important insights from Niels Bohr, Judith Butler, Michel Foucault, Donna Haraway, Vicki Kirby, Joseph Rouse, and others.13 It is clearly not possible to fully explicate these ideas here. My more limited goal in this article is to use the notion of performativity as a diffraction grating for reading important insights from feminist and queer studies and science studies through one another while simultaneously proposing a materialist and posthumanist reworking of the notion of performativity. This entails a reworking of the familiar notions of discursive practices, materialization, agency, and causality, among others.

I begin by issuing a direct challenge to the metaphysical underpinnings of representationalism, proposing an agential realist ontology as an alternative. In the following section I offer a posthumanist performative reformulation of the notion of discursive practices and materiality and theorize a specific causal relationship between them. In the final section I discuss the agential realist conceptions of causality and agency that are vital to understanding the productive nature of material-discursive practices, including technoscientific ones.

**Toward a performative metaphysics**

As long as we stick to things and words we can believe that we are speaking of what we see, that we see what we are speaking of, and that the two are linked.
—Giles Deleuze 1988, 65

“Words and things” is the entirely serious title of a problem.
—Michel Foucault 1972, 49

Representationalism separates the world into the ontologically disjoint domains of words and things, leaving itself with the dilemma of their linkage such that knowledge is possible. If words are untethered from the material world, how do representations gain a foothold? If we no longer believe that the world is teeming with inherent resemblances whose signatures are inscribed on the face of the world, things already emblazoned with signs, words lying in wait like so many pebbles of sand on a beach there to be discovered, but rather that the knowing subject is enmeshed in a thick web of representations such that the mind cannot see its way

to objects that are now forever out of reach and all that is visible is the sticky problem of humanity’s own captivity within language, then it begins to become apparent that representationalism is a prisoner of the problematic metaphysics it postulates. Like the frustrated would-be runner in Zeno’s paradox, representationalism never seems to be able to get any closer to solving the problem it poses because it is caught in the impossibility of stepping outward from its metaphysical starting place. Perhaps it would be better to begin with a different starting point, a different metaphysics.14

*Thingification*—the turning of relations into “things,” “entities,” “relata”—infests much of the way we understand the world and our relationship to it.15 Why do we think that the existence of relations requires relata? Does the persistent distrust of nature, materiality, and the body that pervades much of contemporary theorizing and a sizable amount of the history of Western thought feed off of this cultural proclivity? In this section, I present a relational ontology that rejects the metaphysics of relata, of “words” and “things.” On an agential realist account, it is once again possible to acknowledge nature, the body, and materiality in the fullness of their becoming without resorting to the optics of transparency or opacity, the geometries of absolute exteriority or interiority, and the theorization of the human as either pure cause or pure effect while at the same time remaining resolutely accountable for the role “we” play in the intertwined practices of knowing and becoming.

The postulation of individually determinate entities with inherent properties is the hallmark of atomistic metaphysics. Atomism hails from Democritus.16 According to Democritus the properties of all things derive

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14 It is no secret that *metaphysics* has been a term of opprobrium through most of the twentieth century. This positivist legacy lives on even in the heart of its detractors. Poststructuralists are simply the newest signatories of its death warrant. Yet, however strong one’s dislike of metaphysics, it will not abide by any death sentence, and so it is ignored at one’s peril. Indeed, new “experimental metaphysics” research is taking place in physics laboratories in the United States and abroad, calling into question the common belief that there is an inherent boundary between the “physical” and the “metaphysical” (see Barad forthcoming). This fact should not be too surprising to those of us who remember that the term *metaphysics* does not have some highbrow origins in the history of philosophy but, rather, originally referred to the writings of Aristotle that came after his writings on physics, in the arrangement made by Andronicus of Rhodes about three centuries after Aristotle’s death.

15 *Relata* are would-be antecedent components of relations. According to metaphysical atomism, individual relata always preexist any relations that may hold between them.

16 Atomism is said to have originated with Leucippus and was further elaborated by Democritus, devotee of democracy, who also explored its anthropological and ethical implications. Democritus’s atomic theory is often identified as the most mature pre-Socratic
from the properties of the smallest unit—atoms (the “uncuttable” or “inseparable”). Liberal social theories and scientific theories alike owe much to the idea that the world is composed of individuals with separately attributable properties. An entangled web of scientific, social, ethical, and political practices, and our understanding of them, hinges on the various/differential instantiations of this presupposition. Much hangs in the balance in contesting its seeming inevitability.

Physicist Niels Bohr won the Nobel Prize for his quantum model of the atom, which marks the beginning of his seminal contributions to the development of the quantum theory. Bohr’s philosophy-physics (the two were inseparable for him) poses a radical challenge not only to Newtonian physics but also to Cartesian epistemology and its representationalist triadic structure of words, knowers, and things. Crucially, in a stunning reversal of his intellectual forefather’s schema, Bohr rejects the atomistic metaphysics that takes “things” as ontologically basic entities. For Bohr, things do not have inherently determinate boundaries or properties, and words do not have inherently determinate meanings. Bohr also calls into question the related Cartesian belief in the inherent distinction between subject and object, and knower and known.

It might be said that the epistemological framework that Bohr develops rejects both the transparency of language and the transparency of measurement; however, even more fundamentally, it rejects the presupposition that language and measurement perform mediating functions. Language does not represent states of affairs, and measurements do not represent measurement-independent states of being. Bohr develops his epistemological framework without giving in to the despair of nihilism or the sticky web of relativism. With brilliance and finesse, Bohr finds a way to hold on to the possibility of objective knowledge while the grand structures of Newtonian physics and representationalism begin to crumble.

Bohr’s break with Newton, Descartes, and Democritus is not based in “mere idle philosophical reflection” but on new empirical findings in the domain of atomic physics that came to light during the first quarter of the twentieth century. Bohr’s struggle to provide a theoretical under-

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17 Niels Bohr (1885–1962), a contemporary of Einstein, was one of the founders of quantum physics and also the most widely accepted interpretation of the quantum theory, which goes by the name of the Copenhagen interpretation (after the home of Bohr’s internationally acclaimed physics institute that bears his name). On my reading of Bohr’s philosophy-physics, Bohr can be understood as proposing a protoperformance account of scientific practices.
standing of these findings resulted in his radical proposal that an entirely new epistemological framework is required. Unfortunately, Bohr does not explore crucial ontological dimensions of his insights but rather focuses on their epistemological import. I have mined his writings for his implicit ontological views and have elaborated on them in the development of an agential realist ontology. In this section, I present a quick overview of important aspects of Bohr’s account and move on to an explication of an agential realist ontology. This relational ontology is the basis for my post-humanist performative account of the production of material bodies. This account refuses the representationalist fixation on “words” and “things” and the problematic of their relationality, advocating instead a causal relationship between specific exclusionary practices embodied as specific material configurations of the world (i.e., discursive practices/(con)figurations rather than “words”) and specific material phenomena (i.e., relations rather than “things”). This causal relationship between the apparatuses of bodily production and the phenomena produced is one of “agential intra-action.” The details follow.

According to Bohr, theoretical concepts (e.g., “position” and “momentum”) are not ideational in character but rather are specific physical arrangements. For example, the notion of “position” cannot be presumed to be a well-defined abstract concept, nor can it be presumed to be an inherent attribute of independently existing objects. Rather, “position” only has meaning when a rigid apparatus with fixed parts is used (e.g., a ruler is nailed to a fixed table in the laboratory, thereby establishing a fixed frame of reference for specifying “position”). And furthermore, any measurement of “position” using this apparatus cannot be attributed to some abstract independently existing “object” but rather is a property of the phenomenon—the inseparability of “observed object” and “agencies of observation.” Similarly, “momentum” is only meaningful as a material arrangement involving movable parts. Hence, the simultaneous indeterminacy of “position” and “momentum” (what is commonly referred to as the Heisenberg uncertainty principle) is a straightforward matter of the material exclusion of “position” and “momentum” arrangements (one requiring fixed parts and the complementary arrangement requiring movable parts).

Bohr argues on the basis of this single crucial insight, together with the empirical finding of an inherent discontinuity in measurement “intra-actions,” that one must reject the presumed inherent separability of observer and observed, knower and known. See Barad 1996, forthcoming.

The so-called uncertainty principle in quantum physics is not a matter of “uncertainty” at all but rather of indeterminacy. See Barad 1995, 1996, forthcoming.
Therefore, according to Bohr, the primary epistemological unit is not independent objects with inherent boundaries and properties but rather phenomena. On my agential realist elaboration, phenomena do not merely mark the epistemological inseparability of “observer” and “observed”; rather, phenomena are the ontological inseparability of agentially intra-acting “components.” That is, phenomena are ontologically primitive relations—relations without preexisting relata. The notion of intra-action (in contrast to the usual “interaction,” which presumes the prior existence of independent entities/relata) represents a profound conceptual shift. It is through specific agential intra-actions that the boundaries and properties of the “components” of phenomena become determinate and that particular embodied concepts become meaningful. A specific intra-action (involving a specific material configuration of the “apparatus of observation”) enacts an agential cut (in contrast to the Cartesian cut—an inherent distinction—between subject and object) effecting a separation between “subject” and “object.” That is, the agential cut enacts a local resolution within the phenomenon of the inherent ontological indeterminacy. In other words, relata do not preexist relations; rather, relata-within-phenomena emerge through specific intra-actions. Crucially then, intra-actions enact agential separability—the local condition of exteriority-within-phenomena. The notion of agential separability is of fundamental importance, for in the absence of a classical ontological condition of exteriority between observer and observed it provides the condition for the possibility of objectivity. Moreover, the agential cut enacts a local causal structure among “components” of a phenomenon in the marking of the “measuring agencies” (“effect”) by the “measured object” (“cause”). Hence, the notion of intra-actions constitutes a reworking of the traditional notion of causality.

20 That is, relations are not secondarily derived from independently existing “relata,” but rather the mutual ontological dependence of “relata”—the relation—is the ontological primitive. As discussed below, relata only exist within phenomena as a result of specific intra-actions (i.e., there are no independent relata, only relata-within-relations).

21 A concrete example may be helpful. When light passes through a two-slit diffraction grating and forms a diffraction pattern it is said to exhibit wavelike behavior. But there is also evidence that light exhibits particlelike characteristics, called photons. If one wanted to test this hypothesis, the diffraction apparatus could be modified in such a way as to allow a determination of which slit a given photon passes through (since particles only go through a single slit at a time). The result of running this experiment is that the diffraction pattern is destroyed! Classically, these two results together seem contradictory—frustrating efforts to specify the true ontological nature of light. Bohr resolves this wave-particle duality paradox as follows: the objective referent is not some abstract, independently existing entity but rather the phenomenon of light intra-acting with the apparatus. The first apparatus gives determinate
In my further elaboration of this agential realist ontology, I argue that phenomena are not the mere result of laboratory exercises engineered by human subjects. Nor can the apparatuses that produce phenomena be understood as observational devices or mere laboratory instruments. Although space constraints do not allow an in-depth discussion of the agential realist understanding of the nature of apparatuses, since apparatuses play such a crucial, indeed constitutive, role in the production of phenomena, I present an overview of the agential realist theoretization of apparatuses before moving on to the question of the nature of phenomena. The proposed elaboration enables an exploration of the implications of the agential realist ontology beyond those specific to understanding the nature of scientific practices. In fact, agential realism offers an understanding of the nature of material-discursive practices, such as those very practices through which different distinctions get drawn, including those between the “social” and the “scientific.”

Apparatuses are not inscription devices, scientific instruments set in place before the action happens, or machines that mediate the dialectic of resistance and accommodation. They are neither neutral probes of the natural world nor structures that deterministically impose some particular outcome. In my further elaboration of Bohr’s insights, apparatuses are not mere static arrangements in the world, but rather apparatuses are dynamic (re)configurings of the world, specific agential practices/intra-actions/performances through which specific exclusionary boundaries are enacted. Apparatuses have no inherent “outside” boundary. This indeterminacy of the “outside” boundary represents the impossibility of closure—the ongoing intra-activity in the iterative reconfiguring of the apparatus of bodily production. Apparatuses are open-ended practices.

Importantly, apparatuses are themselves phenomena. For example, as scientists are well aware, apparatuses are not preformed interchangeable objects that sit atop a shelf waiting to serve a particular purpose. Apparatuses are not inscription devices, scientific instruments set in place before the action happens, or machines that mediate the dialectic of resistance and accommodation. They are neither neutral probes of the natural world nor structures that deterministically impose some particular outcome. In my further elaboration of Bohr’s insights, apparatuses are not mere static arrangements in the world, but rather apparatuses are dynamic (re)configurings of the world, specific agential practices/intra-actions/performances through which specific exclusionary boundaries are enacted. Apparatuses have no inherent “outside” boundary. This indeterminacy of the “outside” boundary represents the impossibility of closure—the ongoing intra-activity in the iterative reconfiguring of the apparatus of bodily production. Apparatuses are open-ended practices.

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ratures are constituted through particular practices that are perpetually open to rearrangements, rearticulations, and other reworkings. This is part of the creativity and difficulty of doing science: getting the instrumentation to work in a particular way for a particular purpose (which is always open to the possibility of being changed during the experiment as different insights are gained). Furthermore, any particular apparatus is always in the process of intra-acting with other apparatuses, and the enfolding of locally stabilized phenomena (which may be traded across laboratories, cultures, or geopolitical spaces only to find themselves differently materializing) into subsequent iterations of particular practices constitutes important shifts in the particular apparatus in question and therefore in the nature of the intra-actions that result in the production of new phenomena, and so on. Boundaries do not sit still.

With this background we can now return to the question of the nature of phenomena. Phenomena are produced through agential intra-actions of multiple apparatuses of bodily production. Agential intra-actions are specific causal material enactments that may or may not involve “humans.” Indeed, it is through such practices that the differential boundaries between “humans” and “nonhumans,” “culture” and “nature,” the “social” and the “scientific” are constituted. Phenomena are constitutive of reality. Reality is not composed of things-in-themselves or things-behind-phenomena but “things”-in-phenomena.23 The world is intra-activity in its differential mattering. It is through specific intra-actions that a differential sense of being is enacted in the ongoing ebb and flow of agency. That is, it is through specific intra-actions that phenomena come to matter—in both senses of the word. The world is a dynamic process of intra-activity in the ongoing reconfiguring of locally determinate causal structures with determinate boundaries, properties, meanings, and patterns of marks on bodies. This ongoing flow of agency through which “part” of the world makes itself differentially intelligible to another “part” of the world and through which local causal structures, boundaries, and properties are stabilized and destabilized does not take place in space and time but in the making of spacetime itself. The world is an ongoing open process of mattering through which “mattering” itself acquires meaning and form in the realization of different agential possibilities. Temporality and spatiality emerge in this processual his-

23 Because phenomena constitute the ontological primitives, it makes no sense to talk about independently existing things as somehow behind or as the causes of phenomena. In essence, there are no noumena, only phenomena. Agential realist phenomena are neither Kant’s phenomena nor the phenomenologist’s phenomena.
toricity. Relations of exteriority, connectivity, and exclusion are reconfigured. The changing topologies of the world entail an ongoing reworking of the very nature of dynamics.

In summary, the universe is agential intra-activity in its becoming. The primary ontological units are not “things” but phenomena—dynamic topological reconfigurings/entanglements/re relationalities/(re)articulations. And the primary semantic units are not “words” but material-discursive practices through which boundaries are constituted. This dynamism is agency. Agency is not an attribute but the ongoing reconfigurings of the world. On the basis of this performative metaphysics, in the next section I propose a posthumanist refiguration of the nature of materiality and discursivity and the relationship between them, and a posthumanist account of performativity.

A posthumanist account of material-discursive practices

Discursive practices are often confused with linguistic expression, and meaning is often thought to be a property of words. Hence, discursive practices and meanings are said to be peculiarly human phenomena. But if this were true, how would it be possible to take account of the boundary-making practices by which the differential constitution of “humans” and “nonhumans” are enacted? It would be one thing if the notion of constitution were to be understood in purely epistemic terms, but it is entirely unsatisfactory when questions of ontology are on the table. If “humans” refers to phenomena, not independent entities with inherent properties but rather beings in their differential becoming, particular material (re)configurings of the world with shifting boundaries and properties that stabilize and destabilize along with specific material changes in what it means to be human, then the notion of discursivity cannot be founded on an inherent distinction between humans and nonhumans. In this section, I propose a posthumanist account of discursive practices. I also outline a concordant reworking of the notion of materiality and hint at an agential realist approach to understanding the relationship between discursive practices and material phenomena.

Meaning is not a property of individual words or groups of words. Meaning is neither intralinguistically conferred nor extralinguistically referenced. Semantic contentfulness is not achieved through the thoughts or performances of individual agents but rather through particular discursive practices. With the inspiration of Bohr’s insights, it would also be tempting to add the following agential realist points: meaning is not ide-
ational but rather specific material (re)configurings of the world, and semantic indeterminacy, like ontological indeterminacy, is only locally resolvable through specific intra-actions. But before proceeding, it is probably worth taking a moment to dispel some misconceptions about the nature of discursive practices.

Discourse is not a synonym for language. Discourse does not refer to linguistic or signifying systems, grammars, speech acts, or conversations. To think of discourse as mere spoken or written words forming descriptive statements is to enact the mistake of representationalist thinking. Discourse is not what is said; it is that which constrains and enables what can be said. Discursive practices define what counts as meaningful statements. Statements are not the mere utterances of the originating consciousness of a unified subject; rather, statements and subjects emerge from a field of possibilities. This field of possibilities is not static or singular but rather is a dynamic and contingent multiplicity.

According to Foucault, discursive practices are the local sociohistorical material conditions that enable and constrain disciplinary knowledge practices such as speaking, writing, thinking, calculating, measuring, filtering, and concentrating. Discursive practices produce, rather than merely describe, the “subjects” and “objects” of knowledge practices. On Foucault’s account these “conditions” are immanent and historical rather than transcendental or phenomenological. That is, they are not conditions in the sense of transcendental, ahistorical, cross-cultural, abstract laws defining the possibilities of experience (Kant), but rather they are actual historically situated social conditions.

Foucault’s account of discursive practices has some provocative resonances (and some fruitful dissonances) with Bohr’s account of apparatuses and the role they play in the material production of bodies and meanings. For Bohr, apparatuses are particular physical arrangements that give meaning to certain concepts to the exclusion of others; they are the local physical conditions that enable and constrain knowledge practices such as conceptualizing and measuring; they are productive of (and part of) the phenomena produced; they enact a local cut that produces “objects” of particular knowledge practices within the particular phenomena produced. On the basis of his profound insight that “concepts” (which are actual physical arrangements) and “things” do not have determinate boundaries,

24 I am concerned here with the Foucauldian notion of discourse (discursive practices), not formalist and empirical approaches stemming from Anglo-American linguistics, sociolinguistics, and sociology.
properties, or meanings apart from their mutual intra-actions, Bohr offers a new epistemological framework that calls into question the dualisms of object/subject, knower/known, nature/culture, and word/world.

Bohr’s insight that concepts are not ideational but rather are actual physical arrangements is clearly an insistence on the materiality of meaning making that goes beyond what is usually meant by the frequently heard contemporary refrain that writing and talking are material practices. Nor is Bohr merely claiming that discourse is “supported” or “sustained” by material practices, as Foucault seems to suggest (though the nature of this “support” is not specified), or that nondiscursive (background) practices determine discursive practices, as some existential-pragmatic philosophers purport. Rather, Bohr’s point entails a much more intimate relationship between concepts and materiality. In order to better understand the nature of this relationship, it is important to shift the focus from linguistic concepts to discursive practices.

On an agential realist elaboration of Bohr’s theoretical framework, apparatuses are not static arrangements in the world that embody particular concepts to the exclusion of others; rather, apparatuses are specific material practices through which local semantic and ontological determinacy are intra-actively enacted. That is, apparatuses are the exclusionary practices of mattering through which intelligibility and materiality are constituted. Apparatuses are material (re)configurings/discursive practices that produce material phenomena in their discursively differentiated becoming. A phenomenon is a dynamic relationality that is locally determinate in its matter and meaning as mutually determined (within a particular phenomenon) through specific causal intra-actions. Outside of particular agential intra-actions, “words” and “things” are indeterminate. Hence, the notions of materiality and discursivity must be reworked in a way that acknowledges their mutual entailment. In particular, on an agential realist account, both materiality and discursive practices are rethought in terms of intra-activity.

On an agential realist account, discursive practices are specific material

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25 Foucault makes a distinction between “discursive” and “nondiscursive” practices, where the latter category is reduced to social institutional practices: “The term ‘institution’ is generally applied to every kind of more-or-less constrained behaviour, everything that functions in a society as a system of constraint and that isn’t utterance, in short, all the field of the non-discursive social, is an institution” (1980b, 197–98; my italics). This specific social science demarcation is not particularly illuminating in the case of agential realism’s posthumanist account, which is not limited to the realm of the social. In fact, it makes no sense to speak of the “nondiscursive” unless one is willing to jettison the notion of causality in its intra-active conception.
(re)configurings of the world through which local determinations of boundaries, properties, and meanings are differentially enacted. That is, discursive practices are ongoing agential intra-actions of the world through which local determinacy is enacted within the phenomena produced. Discursive practices are causal intra-actions—they enact local causal structures through which one “component” (the “effect”) of the phenomenon is marked by another “component” (the “cause”) in their differential articulation. Meaning is not a property of individual words or groups of words but an ongoing performance of the world in its differential intelligibility. In its causal intra-activity, “part” of the world becomes determinately bounded and propertied in its emergent intelligibility to another “part” of the world. Discursive practices are boundary-making practices that have no finality in the ongoing dynamics of agential intra-activity.

Discursive practices are not speech acts, linguistic representations, or even linguistic performances, bearing some unspecified relationship to material practices. Discursive practices are not anthropomorphic placeholders for the projected agency of individual subjects, culture, or language. Indeed, they are not human-based practices. On the contrary, agential realism’s posthumanist account of discursive practices does not fix the boundary between “human” and “nonhuman” before the analysis ever gets off the ground but rather enables (indeed demands) a genealogical analysis of the discursive emergence of the “human.” “Human bodies” and “human subjects” do not preexist as such; nor are they mere end products. “Humans” are neither pure cause nor pure effect but part of the world in its open-ended becoming.

Matter, like meaning, is not an individually articulated or static entity. Matter is not little bits of nature, or a blank slate, surface, or site passively awaiting signification; nor is it an uncontested ground for scientific, feminist, or Marxist theories. Matter is not a support, location, referent, or source of sustainability for discourse. Matter is not immutable or passive. It does not require the mark of an external force like culture or history to complete it. Matter is always already an ongoing historicity.

26 In her critique of constructivism within feminist theory Judith Butler puts forward an account of materialization that seeks to acknowledge these important points. Reworking the notion of matter as a process of materialization brings to the fore the importance of recognizing matter in its historicity and directly challenges representationalism’s construal of matter as a passive blank site awaiting the active inscription of culture and the representationalist positioning of the relationship between materiality and discourse as one of absolute exteriority. Unfortunately, however, Butler’s theory ultimately reinscribes matter as a passive product of discursive practices rather than as an active agent participating in the very process of materialization. This deficiency is symptomatic of an incomplete assessment of important
On an agential realist account, matter does not refer to a fixed substance; rather, *matter is substance in its intra-active becoming—not a thing, but a doing, a congealing of agency*. Matter is a stabilizing and destabilizing process of iterative intra-activity. Phenomena—the smallest material units (relational “atoms”)—come to matter through this process of ongoing intra-activity. That is, *matter refers to the materiality/materialization of phenomena*, not to an inherent fixed property of abstract independently existing objects of Newtonian physics (the modernist realization of the Democritean dream of atoms and the void).

Matter is not simply “a kind of citationality” (Butler 1993, 15), the surface effect of human bodies, or the end product of linguistic or discursive acts. Material constraints and exclusions and the material dimensions of regulatory practices are important factors in the process of materialization. The dynamics of intra-activity entails matter as an *active “agent”* in its ongoing materialization.

Boundary-making practices, that is, discursive practices, are fully implicated in the dynamics of intra-activity through which phenomena come to matter. In other words, materiality is discursive (i.e., material phenomena are inseparable from the apparatuses of bodily production: matter emerges out of and includes as part of its being the ongoing reconfiguring of boundaries), just as discursive practices are always already material (i.e., they are ongoing material (re)configurings of the world). Discursive practices and material phenomena do not stand in a relationship of externality to one another; rather, the material and the discursive are mutually implicated in the dynamics of intra-activity. But nor are they reducible to one another. The relationship between the material and the discursive is one of mutual entailment. Neither is articulated/articulable in the absence of the other; matter and meaning are mutually articulated. Neither discursive practices nor material phenomena are ontologically or epistemologically prior. Neither can be explained in terms of the other. Neither has privileged status in determining the other.

Apparatuses of bodily production and the phenomena they produce are material-discursive in nature. *Material-discursive practices are specific iterative enactments—agential intra-actions—through which matter is dif-
ferentially engaged and articulated (in the emergence of boundaries and meanings), reconfiguring the material-discursive field of possibilities in the iterative dynamics of intra-activity that is agency. Intra-actions are causally constraining nondeterministic enactments through which matter-in-the-process-of-becoming is sedimented out and enfolded in further materializations.27

Material conditions matter, not because they “support” particular discourses that are the actual generative factors in the formation of bodies but rather because matter comes to matter through the iterative intra-activity of the world in its becoming. The point is not merely that there are important material factors in addition to discursive ones; rather, the issue is the conjoined material-discursive nature of constraints, conditions, and practices. The fact that material and discursive constraints and exclusions are intertwined points to the limited validity of analyses that attempt to determine individual effects of material or discursive factors.28

Furthermore, the conceptualization of materiality offered by agential realism makes it possible to take account of material constraints and conditions once again without reinscribing traditional empiricist assumptions concerning the transparent or immediate given-ness of the world and without falling into the analytical stalemate that simply calls for a recognition of our mediated access to the world and then rests its case. The ubiquitous pronouncements proclaiming that experience or the material world is “mediated” have offered precious little guidance about how to proceed. The notion of mediation has for too long stood in the way of a more thoroughgoing accounting of the empirical world. The reconceptualization of materiality offered here makes it possible to take the empirical world seriously once again, but this time with the understanding that the objective referent is phenomena, not the seeming “immediately given-ness” of the world.

All bodies, not merely “human” bodies, come to matter through the world’s iterative intra-activity—its performativity. This is true not only of the surface or contours of the body but also of the body in the fullness of its physicality, including the very “atoms” of its being. Bodies are not objects with inherent boundaries and properties; they are material-discursive phenomena. “Human” bodies are not inherently different from “nonhuman” ones. What constitutes the “human” (and the “nonhuman”) is not a fixed or pregiven notion, but nor is it a free-floating ideality. What is at issue is not some ill-defined process

27 The nature of causal intra-actions is discussed further in the next section.

by which human-based linguistic practices (materially supported in some unspecified way) manage to produce substantive bodies/bodily substances but rather a material dynamics of intra-activity: material apparatuses produce material phenomena through specific causal intra-actions, where “material” is always already material-discursive—*that is what it means to matter*. Theories that focus exclusively on the materialization of “human” bodies miss the crucial point that the very practices by which the differential boundaries of the “human” and the “nonhuman” are drawn are always already implicated in particular materializations. The differential constitution of the “human” (“nonhuman”) is always accompanied by particular exclusions and always open to contestation. This is a result of the nondeterministic causal nature of agential intra-actions, a crucial point that I take up in the next section.

**The nature of production and the production of nature: Agency and causality**

What is the nature of causality on this account? What possibilities exist for agency, for intervening in the world’s becoming? Where do the issues of responsibility and accountability enter in?

Agential intra-actions are causal enactments. Recall that an agential cut effects a local separability of different “component parts” of the phenomenon, one of which (“the cause”) expresses itself in effecting and marking the other (“the effect”). In a scientific context this process is known as a “measurement.” (Indeed, the notion of “measurement” is nothing more or less than a causal intra-action.) Whether it is thought of as a “measurement,” or as part of the universe making itself intelligible to another part in its ongoing differentiating intelligibility and materialization, is a matter of preference. Either way, what is important about causal intra-actions is the fact that marks are left on bodies. Objectivity means being accountable to marks on bodies.

This causal structure differs in important respects from the common choices of absolute exteriority and absolute interiority and of determinism.

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29 I am grateful to Joe Rouse for putting this point so elegantly (private conversation). Rouse (2002) suggests that *measurement* need not be a term about laboratory operations, that before answering whether or not something is a measurement a prior question must be considered, namely, What constitutes a measurement of what?

30 Intelligibility is not a human-based affair. It is a matter of differential articulations and differential responsiveness/engagement. Vicki Kirby (1997) makes a similar point.
and free will. In the case of the geometry of absolute exteriority, the claim that cultural practices produce material bodies starts with the metaphysical presumption of the ontological distinction of the former set from the latter. The inscription model of constructivism is of this kind: culture is figured as an external force acting on passive nature. There is an ambiguity in this model as to whether nature exists in any prediscursive form prior to its marking by culture. If there is such an antecedent entity then its very existence marks the inherent limit of constructivism. In this case, the rhetoric should be softened to more accurately reflect the fact that the force of culture “shapes” or “inscribes” nature but does not materially produce it. On the other hand, if there is no preexistent nature, then it behooves those who advocate such a theory to explain how it is that culture can materially produce that from which it is allegedly ontologically distinct, namely nature. What is the mechanism of this production? The other usual alternative is also not attractive: the geometry of absolute interiority amounts to a reduction of the effect to its cause, or in this case nature to culture, or matter to language, which amounts to one form or another of idealism.

Agential separability presents an alternative to these unsatisfactory options.31 It postulates a sense of “exteriority within,” one that rejects the previous geometries and opens up a much larger space that is more appropriately thought of as a changing topology.32 More specifically, agential separability is a matter of exteriority within (material-discursive) phenomena. Hence, no priority is given to either materiality or discursivity.33 There

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31 Butler also rejects both of these options, proposing an alternative that she calls the “constitutive outside.” The “constitutive outside” is an exteriority within language—it is the “that which” to which language is impelled to respond in the repeated attempt to capture the persistent loss or absence of that which cannot be captured. It is this persistent demand for, and inevitable failure of, language to resolve that demand that opens up a space for resignification—a form of agency—within the terms of that reiteration. But the fact that language itself is an enclosure that contains the constitutive outside amounts to an unfortunate reinscription of matter as subservient to the play of language and displays a commitment to an unacceptable anthropocentrism, reducing the possibilities for agency to resignification.

32 Geometry is concerned with shapes and sizes (this is true even of the non-Euclidean varieties, such as geometries built on curved surfaces like spheres rather than on flat planes), whereas topology investigates questions of connectivity and boundaries. Although spatiality is often thought of geometrically, particularly in terms of the characteristics of enclosures (like size and shape), this is only one way of thinking about space. Topological features of manifolds can be extremely important. For example, two points that seem far apart geometrically may, given a particular connectivity of the spatial manifold, actually be proximate to one another (as, e.g., in the case of cosmological objects called “wormholes”).

33 In contrast to Butler’s “constitutive outside,” for example.
is no geometrical relation of absolute exteriority between a “causal apparatus” and a “body effected,” nor an idealistic collapse of the two, but rather an ongoing topological dynamics that enfolds the spacetime manifold upon itself, a result of the fact that the apparatuses of bodily production (which are themselves phenomena) are (also) part of the phenomena they produce. Matter plays an active, indeed agential, role in its iterative materialization, but this is not the only reason that the space of agency is much larger than that postulated in many other critical social theories.\textsuperscript{34} Intra-actions always entail particular exclusions, and exclusions foreclose any possibility of determinism, providing the condition of an open future.\textsuperscript{35} Therefore, intra-actions are constraining but not determining. That is, intra-activity is neither a matter of strict determinism nor unconstrained freedom. The future is radically open at every turn. This open sense of futurity does not depend on the clash or collision of cultural demands; rather, it is inherent in the nature of intra-activity—even when apparatuses are primarily reinforcing, agency is not foreclosed. Hence, the notion of intra-actions reformulates the traditional notion of causality and opens up a space, indeed a relatively large space, for material-discursive forms of agency.

A posthumanist formulation of performativity makes evident the importance of taking account of “human,” “nonhuman,” and “cyborgian” forms of agency (indeed all such material-discursive forms). This is both possible and necessary because agency is a matter of changes in the apparatuses of bodily production, and such changes take place through various intra-actions, some of which remake the boundaries that delineate the differential constitution of the “human.” Holding the category “human” fixed excludes an entire range of possibilities in advance, eliding important dimensions of the workings of power.

On an agential realist account, agency is cut loose from its traditional humanist orbit. Agency is not aligned with human intentionality or subjectivity. Nor does it merely entail resignification or other specific kinds of moves within a social geometry of antihumanism. Agency is a matter of intra-acting; it is an enactment, not something that someone or some-

\textsuperscript{34} For example, the space of agency is much larger than that postulated by Butler’s or Louis Althusser’s theories. There is more to agency than the possibilities of linguistic resignification, and the circumvention of deterministic outcome does not require a clash of apparatuses/discursive demands (i.e., overdetermination).

\textsuperscript{35} This is true at the atomic level as well. Indeed, as Bohr emphasizes, the mutual exclusivity of “position” and “momentum” is what makes the notion of causality in quantum physics profoundly different from the determinist sense of causality of classical Newtonian physics.
thing has. Agency cannot be designated as an attribute of “subjects” or “objects” (as they do not preexist as such). Agency is not an attribute whatsoever—it is “doing”/“being” in its intra-activity. Agency is the enactment of iterative changes to particular practices through the dynamics of intra-activity. Agency is about the possibilities and accountability entailed in reconfiguring material-discursive apparatuses of bodily production, including the boundary articulations and exclusions that are marked by those practices in the enactment of a causal structure. Particular possibilities for acting exist at every moment, and these changing possibilities entail a responsibility to intervene in the world’s becoming, to contest and rework what matters and what is excluded from mattering.

Conclusions
Feminist studies, queer studies, science studies, cultural studies, and critical social theory scholars are among those who struggle with the difficulty of coming to terms with the weightiness of the world. On the one hand, there is an expressed desire to recognize and reclaim matter and its kindred reviled Others exiled from the familiar and comforting domains of culture, mind, and history, not simply to altruistically advocate on behalf of the subaltern but in the hopes of finding a way to account for our own finitude. Can we identify the limits and constraints, if not the grounds, of discourse-knowledge in its productivity? But despite its substance, in the end, according to many contemporary attempts at its salvation, it is not matter that reels in the unruliness of infinite possibilities; rather, it is the very existence of finitude that gets defined as matter. Caught once again looking at mirrors, it is either the face of transcendence or our own image. It is as if there are no alternative ways to conceptualize matter: the only options seem to be the naïveté of empiricism or the same old narcissistic bedtime stories.

I have proposed a posthumanist materialist account of performativity that challenges the positioning of materiality as either a given or a mere effect of human agency. On an agential realist account, materiality is an active factor in processes of materialization. Nature is neither a passive surface awaiting the mark of culture nor the end product of cultural performances. The belief that nature is mute and immutable and that all prospects for significance and change reside in culture is a reinscription of the nature/culture dualism that feminists have actively contested. Nor, similarly, can a human/nonhuman distinction be hardwired into any theory that claims to take account of matter in the fullness of its historicity. Feminist science studies scholars in particular have emphasized that foundational inscriptions
of the nature/culture dualism foreclose the understanding of how “nature” and “culture” are formed, an understanding that is crucial to both feminist and scientific analyses. They have also emphasized that the notion of “formation” in no way denies the material reality of either “nature” or “culture.” Hence, any performative account worth its salt would be ill advised to incorporate such anthropocentric values in its foundations.

A crucial part of the performative account that I have proposed is a rethinking of the notions of discursive practices and material phenomena and the relationship between them. On an agential realist account, discursive practices are not human-based activities but rather specific material (re)configurings of the world through which local determinations of boundaries, properties, and meanings are differentially enacted. And matter is not a fixed essence; rather, matter is substance in its intra-active becoming—not a thing but a doing, a congealing of agency. And performativity is not understood as iterative citationality (Butler) but rather iterative intra-activity.

On an agential realist account of technoscientific practices, the “knower” does not stand in a relation of absolute externality to the natural world being investigated—there is no such exterior observational point. It is therefore not absolute exteriority that is the condition of possibility for objectivity but rather agential separability—exteriority within phenomena. “We” are not outside observers of the world. Nor are we simply located at particular places in the world; rather, we are part of the world in its ongoing intra-activity. This is a point Niels Bohr tried to get at in his insistence that our epistemology must take account of the fact that we are a part of that nature we seek to understand. Unfortunately, however, he cuts short important posthumanist implications of this insight in his ultimately humanist understanding of the “we.” Vicki Kirby eloquently articulates this important posthumanist point: “I’m trying to complicate the locatability of human identity as a here and now, an enclosed and finished product, a causal force upon Nature. Or even . . . as something within Nature. I don’t want the human to be in Nature, as if Nature is a container. Identity is inherently unstable, differentiated, dispersed, and yet strangely coherent. If I say ‘this is Nature itself,’ an expression that

36 Others have made this point as well, e.g., Haraway 1991; Kirby 1997; Rouse 2002; and Bohr.

37 The notion of agential separability, which is predicated on the agential realist notion of intra-actions, has far-reaching consequences. Indeed, it can be shown to play a critical role in the resolution of the “measurement problem” and other long-standing problems in quantum theory. See Barad forthcoming.
usually denotes a prescriptive essentialism and that’s why we avoid it, I’ve actually animated this ‘itself’ and even suggested that ‘thinking’ isn’t the other of nature. Nature performs itself differently.\textsuperscript{38}

The particular configuration that an apparatus takes is not an arbitrary construction of “our” choosing; nor is it the result of causally deterministic power structures. “Humans” do not simply assemble different apparatuses for satisfying particular knowledge projects but are themselves specific local parts of the world’s ongoing reconfiguring. To the degree that laboratory manipulations, observational interventions, concepts, or other human practices have a role to play it is as part of the material configuration of the world in its intra-active becoming. “Humans” are part of the world-body space in its dynamic structuration.

There is an important sense in which practices of knowing cannot be fully claimed as human practices, not simply because we use nonhuman elements in our practices but because knowing is a matter of part of the world making itself intelligible to another part. Practices of knowing and being are not isolatable, but rather they are mutually implicated. We do not obtain knowledge by standing outside of the world; we know because “we” are \textit{of} the world. We are part of the world in its differential becoming. The separation of epistemology from ontology is a reverberation of a metaphysics that assumes an inherent difference between human and nonhuman, subject and object, mind and body, matter and discourse. \textit{Onto-epistem-ology}—the study of practices of knowing in being—is probably a better way to think about the kind of understandings that are needed to come to terms with how specific intra-actions matter.

\textit{Women’s Studies Program, Philosophy Department, and Program in Critical Social Thought}
\textit{Mount Holyoke College}

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View from above into the exhibition Making Things Public at the ZKM | Center for Art and Media Karlsruhe 2005, photo: Franz Wamhof
From Realpolitik to Dingpolitik

or How to Make Things Public

Bruno Latour

T he aide said that guys like me were “in what we call the reality-based community,” which he defined as people who “believe that solutions emerge from your judicious study of dis- cernible reality.” I nodded and murmured something about enlightenment principles and empiricism. He cut me off. “That’s not the way the world really works anymore,” he continued. “We’re an empire now, and when we act, we create our own reality. And while you’re studying that reality — judiciously, as you will — we’ll act again, creating other new realities, which you can study too, and that’s how things will sort out. We’re history’s actors […] and you, all of you, will be left to just study what we do.”

Ron Suskind

Some conjunctions of planets are so ominous, astrologers used to say, that it seems safer to stay at home in bed and wait until Heaven sends a more auspicious message. It’s probably the same with political conjunctions. They are presently so hopeless that it seems prudent to stay as far away as possible from anything political and to wait for the passing away of all the present leaders, terrorists, commentators and buffoons who strut about the public stage.

Astrology, however, is as precarious an art as political science; behind the nefarious conjunctions of hapless stars, other much dimmer alignments might be worth pondering. With the political period triggering such desperation, the time seems right to shift our attention to other ways of considering public matters. And “matters” are precisely what might be put center stage. Yes, public matters, but how?

While the German Reich has given us two world wars, the German language has provided us with the word Realpolitik to describe a positive, materialist, no-nonsense, interest only, matter-of-fact way of dealing with naked power relations. Although this “reality,” at the time of Bismarck, might have appeared as a welcome change after the cruel idealisms it aimed to replace, it strikes us now as deeply unrealistic. In general, to invoke “realism” when talking about politics is something one should not do without trembling and shaking. The beautiful word “reality” has been damned by the too many crimes committed in its name.

What Is the Res of Res publica?

By the German neologism Dingpolitik, we wish to designate a risky and tentative set of experiments in probing just what it could mean for political thought to turn “things” around and to become slightly more realistic than has been attempted up to now. A few years ago, computer scientists invented the marvelous expression of “object-oriented” software to describe a new way to program their computers. We wish to use this metaphor to ask the question: “What would an object-oriented democracy look like?”

The general hypothesis is so simple that it might sound trivial — but being trivial might be part of what it is to become a “realist” in politics. We might be more connected to each other by our worries, our matters of concern, the issues we care for, than by any other set of values, opinions, attitudes or principles. The experiment is certainly easy to make. Just go in your head over any set of contemporary issues: the entry of Turkey into the European Union, the Islamic veil in France, the spread of genetically modified organisms in Brazil, the pollution of the river near your home, the breaking down of Greenland’s glaciers, the diminishing return of your pension funds, the closing of your daughter’s factory, the repairs to be made in your apartment, the rise and fall of stock options, the latest beheading by fanatics in Falluja, the last American election. For every one of these objects, you see seeping out of them a different set of passions, indignations, opinions, as well as a different set of interested parties and different ways of carrying out their partial resolution.

It’s clear that each object — each issue — generates a different pattern of emotions and disruptions, of disagreements and agreements. There might be no continuity, no coherence in our opinions, but there is a hidden continuity and a hidden coherence in what we are attached to. Each object gathers around itself a different assembly of relevant parties. Each object triggers new occasions to passionately differ and dispute. Each object may also offer new ways of achieving closure without having to agree on much else. In other words, objects — taken as so many issues — bind all of us in ways that map out a public space profoundly different from what is usually recognized under the label of “the political”. It is this space, this hidden geography that we wish to explore through this catalog and exhibition.

It’s not unfair to say that political philosophy has often been the victim of a strong object-avoidance tendency. From Hobbes to Rawls, from Rousseau to Habermas, many procedures have

• Although I cannot thank all the people whose thoughts have contributed to this paper without listing this entire catalog, I owe a very special thanks to N Ortej Mareas, whose work on Lipigman and Dewey has been central during the three years of preparation for this show.


          Clinton’s cat “Socks” or the degree zero of politics, Little Rock-Arkansas, November 17, 1992, © AP Photo / Greg Gibson

       3 Chelsea Clinton’s cat “Socks” gets the attention of photographers on the sidewalk outside the fenced Arkansas Governor’s Mansion in Little Rock. “Socks” strolled about a two block area with photographers in tow. President elect Bill Clinton was working on his transition and preparing for a trip to Washington and a meeting with President George H. W. Bush.

        Presidential hopefuls US Vice President Al Gore and former US Senator Bill Bradley listen to a question December 17, 1999 during an ABC TV Nightline town hall meeting moderated by Ted Koppel at Daniel Webster College in Nashua, New Hampshire. Photo © AFP/Lance Media, photo: Luke Frazza

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been devised to assemble the relevant parties, to authorize them to contract, to check their degree of representativity, to discover the ideal speech, to detect the legitimate closure, to authorize them to assemble the relevant parties, to authorize them to assemble the relevant parties, to authorize them to assemble the relevant parties.

The assembly, then, needs to be both real and metaphorical. It is important, but it’s only half of what is needed to write the good constitution. But when it comes to representativity, to bring together two different meanings of the word representation that have been kept separate in theory although they have remained always mixed in practice. The first one, so well known in schools of law and political science, designates the ways to gather the legitimate people around some issue. In this case, a representation is said to be faithful if the right procedures have been followed. The second one, well known in science and technology, presents or rather represents the things that have been assembled around it. In this case, a representation is said to be made good if the matters at hand have been accurately portrayed. Realism implies that the same degree of attention be given to the two aspects of what it is to represent an issue. The first question draws a sort of place, sometimes a circle, which might be called an assembly, a gathering, a meeting, a council; the second question brings into this newly created focus a topic, a concern, an issue, a topic. But the two have to be taken together: Who is to be concerned; What is to be considered?

When Thomas Hobbes instructed his engraver on how to sketch the famous frontispiece for Leviathan, he had his mind full of optical metaphors and illusion machines he had seen in his travels through Europe. A third meaning of this ambiguous and ubiquitous word “representation,” the one with which artists are most familiar, had to be called for to solve, this time visually, the problem of the composition of the “Body Politik.” Up to now it has remained a puzzle: How to represent, and through which medium, the sites where people meet to discuss their matters of concern? It’s precisely what we are tackling here. 

Shapin and Schaffer might have renewed Hobbes’s problem even more tellingly when they redescribe his monster for its frontispiece and equipped his left arm not with the bishop’s crozier but with Boyle’s air-pump. From now on, the powers of science are just as important to consider: How do they assemble, and around which matters of concern? But in addition to the visual puzzle of assembling composite bodies, another puzzle should strike us in those engravings. A simple look at them clearly proves that the “Body Politik” is not only made of people! They are thick with things: clothes, a huge sword, immense castles, large cultivated fields, crowns, ships, cities and an immensely complex technology of gathering, meeting, cohabiting, enlarging, reducing and focusing. In addition to the throng of little people summed up in the crowned head of the Leviathan, there are objects everywhere.

To be crowded with objects that nonetheless are not really integrated into our definition of politics is even more tellingly visible in the famous fresco painted by Lorenzetti in Siena’s city hall. Many scholars have deciphered for us the complex meaning of the emblems representing the Good and the Bad Government, and have traced their complex genealogy. But what is most striking for a contemporary eye is the massive presence of cities, landscapes, animals, merchants, dancers, and the ubiquitous rendering of light and space. The Good Government is not simply illustrated by the devilish figure of Discordia but also through the dark light, the destroyed city, the ravaged landscape and the suffocating people. The Good Government is not simply personified by the various emblems of Virtute and Concordia but also through the transparency of light, its well-kept architecture, its well-tended landscape, its diversity of animals, the ease of its commercial relations, its thriving arts. Far from being simply a décor for the emblems, the fresco requests us to become attentive to a subtle ecology of Good and Bad Government. And modern visitors, attuned to the new issues of bad air, hazy lights, destroyed ecosystems, ruined architecture, abandoned industry and delocalized trades are certainly ready to include in their definition of politics a whole new ecology loaded with things. Where has political philosophy turned its distracted gaze while so many objects were drawn under its very nose?

A New Eloquence
In this show, we simply want to pack loads of stuff into the empty arenas where naked people were supposed to assemble simply to talk. Two vignettes will help us focus on those newly crowded sites. The first one is a fable proposed by Peter Sloterdijk. He imagined that the US Air Force should have added to its military paraphernalia a “pneumatic parliament” that could be parachuted at the rear of the front, just after the liberating forces of the Good had defeated the forces of Evil. On hitting the ground, this parliament would unfold and be inflated just like your rescue dingy is supposed to do when you fall in the water. Ready to enter...
and take your seat, your finger still red from the indelible ink that proves you have exercised your voting duty, instant democracy would thus be delivered! The lesson of this simile is easy to draw. To imagine a parliament without its material set of complex instruments, “air-conditioning” pumps, local ecological requirements, material infrastructure, and long-held habits is as ludicrous as to try to parachute such an inflatable parliament into the middle of Iraq. By contrast, probing an object-oriented democracy is to research what are the material conditions that may render the air breathable again.

The second vignette is the terrifying one offered by the now infamous talk former Secretary of State Colin Powell gave to the United Nations on February 5, 2003 about the unambiguous and undisputable fact of the presence of weapons of mass destructions in Iraq. No doubt, the first half of the representation – namely the assembly of legitimate speakers and listeners – was well taken care of. All of those sitting around the UN Security Council horseshoe table had a right to be there. But the same can’t be said of the second half, namely the representation of the facts of the matter presented by the Secretary of State. Every one of the slides was a blatant lie – and the more that time has passed, the more blatant it has become. And yet their showing was prefaced by these words: “My colleagues, every statement I make today is backed up by sources, solid sources. These are not assertions. What we are giving you are facts and conclusions based on solid intelligence” (my emphasis). Never has the difference between facts and assertions been more abused than on this day.

To assemble is one thing; to represent to the eyes and ears of those assembled what is at stake is another. An object-oriented democracy should be concerned as much by the procedure to detect the relevant parties as to the methods to bring into the center of the debate the proof of what is to be debated. This second set of procedures to bring in the object of worry has several old names: eloquence, or more pejorative, sophistry; or, even more derogatory, rhetoric. And yet these are just the labels that we might need to rescue from the dustbin of history. Mr. Powell tried to distinguish the rhetoric of assertions from the undisputable power of facts. He failed miserably. Having no truth, he had no eloquence either. Can we do better? Can we trace again the frail conduits through which truths and proofs are allowed to enter the sphere of politics?

Unwittingly, the secretary of state put us on a track where the abyss between assertions and facts might be a nice “rhetorical” play, but it has lost its relevance. It would imply, on the one hand, that there would be matters-of-fact which some enlightened people would have unmediated access to. On the other hand, disputable assertions would be practically worthless, useful only insofar as they could feed the subjective passions of interested crowds. On one side would be the truth and no mediation, no room for discussion; on the other side would be opinions, many obscure intermediaries, perhaps some hecklings. Through the use of this indefatigable cliché, the Pneumatic Parliament is now equipped with a huge screen on which thoroughly transparent facts are displayed. Those who remain unconvinced prove by their resistance how irrational they are; they have unfortunately fallen prey to subjective passions. And sure enough, having aligned so many “indisputable” facts behind his position, since the “dispute” was still going on, Powell had to close it arbitrarily by a show of unilateral force. Facts and forces, in spite of so many vibrant declarations, always walk in tandem.

The problem is that transparent, unmediated, undisputable facts have recently become rarer and rarer. To provide complete undisputable proof has become a rather messy, pesky, risky business. And to offer a public proof, big enough and certain enough to convince the whole world of the presence of a phenomenon or of a looming danger, seems now almost beyond reach – and always was. The same American administration that was content with a few blurry slides “proving” the presence of non-existing weapons in Iraq is happy to put scare quotes around the proof of much vaster, better validated, more imminent threats, such as global climate change, diminishing oil reserves, increasing inequality. Is it not time to say: “Mr. Powell, given what you have done with facts, we would much prefer you to leave them aside and let us instead compare mere assertions with one another. Don’t worry, even with such an inferior type of proof we might nonetheless come to a conclusion, and this one will not be arbitrarily cut short?” Either we should despair of politics and abandon the hope of providing public proofs altogether, or we should abandon the worn-out cliché of incontrovertible matters of fact. Could we do better and manage to really conclude a dispute with “disputable” assertions? After all, when Aristotle – surely not a cultural relativist! – introduced the word “rhetoric” it was precisely to mean proofs, incomplete to be sure but proofs nonetheless.

This is what we wish to attempt: Where matters-of-fact have failed, let’s try what I have called matters-of-concern. What we are trying to register here in this catalog is a huge sea change in our conceptions of science, our grasp of facts, our understanding of objectivity. For too long, objects have been wrongly portrayed as matters-of-fact. This is unfair to them, unfair to science, unfair to objectivity, unfair to experience. They are much more.

8 Full text is available at: http://www.state.gov/secretary/rm/2003/17000.htm
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10 Simon Schaffer, this volume, chapter 5.
12 “Entwihmen” is the name given to this type of incomplete proof. Aristotle, Treatises on Rhetorics, Prometheus Books, New York, 1995.
For those like Mr. Powell, who have long been accustomed to getting rid of all opposition by claiming the superior power of facts, such a sea change might be met with cries of derision: “relativism,” “subjectivism,” “irrationalism,” “mere rhetoric,” “sophistry”! They might see the new life of facts as so much subtraction. Quite right! It subtracts a lot of their power because it renders their lives more difficult. Think of that: They might have to enter into the new arenas for good and finally make their point to the bitter end. They might actually have to publicly prove their assertions against other assertions and come to a closure without thumping and kicking, without alternating wildly between indisputable facts and indisputable shows of terror. We wish to explore in this catalog many realist gestures other than just thumping and kicking. We want to imagine a new eloquence. Is it asking too much of our public conversation? It’s great to be convinced, but it would be even better to be convinced by some evidence.

Our notions of politics have been thwarted for too long by an absurdly unrealistic epistemology. Accurate facts are hard to come by, and the harder they are, the more they entail some costly equipment, a longer set of mediations, more delicate proofs. Transparency and immediacy are bad for science as well as for politics; they would make both suffocate.

What we need is to be able to bring inside the assemblies divisive issues with their long retinue of complicated proof-giving...
equipment. No unmediated access to agreement; no unmediated access to the facts of the matter. After all, we are used to rather arcane procedures for voting and electing. Why should we suddenly consider, no stranger to the Icelandic Althing, since the ancient "thingmen" – what we would call "congressmen" or MPs – had the amazing idea of meeting in a desolate and sublime site that happens to sit smack in the middle of the fault line that marks the meeting place of the Atlantic and European tectonic plates. Not only do Icelanders manage to remind us of the old sense of Ding, but they also dramatize to the utmost how much these political questions have also become questions of nature. Are not all parliaments now divided by the nature of things as well as by the din of the assembly of our show on as many fault lines from the political to the provisional and fragile assembly of our show on as many fault lines from as many tectonic plates as possible.

The point of reviving this old etymology is that we don’t assemble because we agree, look alike, feel good, are socially compatible or wish to fuse together but because we are brought by divisive matters of concern into some neutral, isolated place in order to come to some sort of provisional makeshift (dis)agreement. If the Ding designates both those who assemble because they are concerned as well as what causes their concerns and divisions, it should become the center of our attention: Back to Things! Is this not a more engaging political slogan?

But how strange is the shape of the things we should go back to. They no longer have the clarity, transparency, obviousness of matters-of-fact; they are not made of clearly delineated, discrete objects that would be bathing in some translucent space like the beautiful anatomical drawings of Leonardo, or the marvelous wash drawings of Gaspard Monge, or the clear-cut "isotypes" devised by Otto Neurath. Matters-of-fact now appear to our eyes as depending on a delicate aesthetic of painting, drawing, lighting, gazing, convening, something that has been elaborated over four centuries and that might be changing now before our very eyes. There has been an aesthetic of matters-of-fact, of objects, of Gegendstände. Can we devise an aesthetic of matters-of-concern, of Things? This is one of the (too many!) topics we wish to explore.

Gatherings is the translation that Heidegger used, to talk about those Things, those sites able to assemble mortals and gods, humans and nonhumans. There is more than a little irony in extending this meaning to what Heidegger and his followers loved to hate, namely science, technology, commerce, industry and popular culture.

And yet this is just what we intend to do in this book: the objects of science and technology, the aisles of supermarkets, financial institutions, medical establishments, computer networks – even the catwalks of fashion shows – offer paramount examples of hybrid forums and agoras, of the gatherings that have been eating away at the older realm of pure objects bathing in the clear light of...
the modernist gaze. Who could dream of a better example of hybrid forums than the scale models used by architects all over the world to assemble those able to build them at scale? Or the thin felt pen used by draughtsmen to imagine new landscapes?

When we say “Public matters!” or “Back to Things!” we are not trying to go back to the old materialism of Realpolitik, because matter itself is up for grabs as well. To be materialist now implies that one enters a labyrinth more intricate than that built by Daedalus.

In the same fatal month of February 2003, another stunning example of this shift from object to things was demonstrated by the explosion of the shuttle Columbia. “Assembly drawing” is how engineers call the invention of the blueprint. But the word assembly sounds odd once the shuttle has exploded and its debris has been gathered in a huge hall where inquirers from a specially designed commission are trying to discover what happened to the shuttle. They are now provided with an “exploded view” of a highly complex technical object. But what has exploded is our capacity to understand what objects are when they have become Ding. How sad that we need catastrophes to remind us that when Columbia was shown on its launching pad in its complete, autonomous, objective form that such a view was even more of a lie than Mr. Powell’s presentation of the “facts” of WMD. It’s only after the explosion that everyone realized the shuttle’s complex technology should have been drawn with the NASA bureaucracy inside of it in which they, too, would have to fly.

The object, the Gegenstand, may remain outside of all assemblies but not the Ding. Hence the question we wish to raise: What are the various shapes of the assemblies that can make sense of all those assemblages? Questions we address are to the three types of representation brought together in this show: political, scientific and artistic.

Through some amazing quirk of etymology, it just happens that the same root has given birth to those twin brothers: the Demon and the Demos—and those two are more at war with each other than Eteocles and Polynices ever were. The word “demos” that makes half of the much vaunted word “demo-cracy” is haunted by the demon, yes, the devil, because they share the same Indo-European root da- to divide.

If the demon is such a terrible threat, it’s because it divides in two. If the demos is such a welcome solution, it’s because it also divides in two. A paradox? No, it’s because we ourselves are so divided by so many contradictory attachments that we have to assemble.

We might be familiar with Jesus’ admonition against Satan’s power, but the same power of division is also what provides the division/divide, namely the sharing of the same territory. Hence

27 Albena Yaneva, this volume, chapter 9.
28 Emilie Gomart, this volume, chapter 12.
30 Wiebe E. Bijker, this volume, chapter 9.
33 “Every kingdom divided against itself is laid waste, and no city or house divided against itself will stand; and if Satan casts out Satan, he is divided against himself; how then will his kingdom stand?” (Matthew 12: 25-30).
the people, the demos, are made up of those who share the same space and are divided by the same contradictory worries. How could an object-oriented democracy ignore such a vertiginous uncertainty? When the knife hovers around the cake of common wealth to be divided in shares, it may divide and let loose the demon of civil strife, or it may cut equal shares and let the demos be happily apportioned. Strangely enough, we are divided and yet might have to divide, that is to share, even more. The “demos” is haunted by the demon of division! No wonder that this show offers, I am afraid, such a pandemonium. Politics is a branch of teratology: from Leviathan to devils, from Discordia to Behemoth, and soon a whole array of ghosts and phantoms. Tricks and treats all the way down.

No Representation without Re-presentation

Michael Frayn’s play Democracy begins with the grating noise of a worm, a little annelid that at the onset is supposed to make the whole decadent West crumble like a wooden house eaten up by termites while the sturdy and united DDR emerges from chaos. The same noisy worm is heard again at the end of the play, but this time it’s the whole Soviet Bloc that, unexpectedly, lies in dust while democracy – “the worst form of government, except for all the others,” as Churchill famously said – keeps on munching and worming along.

A demon haunts politics but it might not be so much the demon of division – this is what is so devilish about it – but the demon of unity, totality, transparency and immediacy. “Down with intermediaries! Enough spin! We are lied to! We have been betrayed.” Those cries resonate everywhere, and everyone seems to sigh: “Why are we being so badly represented?” Columnists, educators, military and clerks have been multiplying imageries, intermediaries, mediations, representations while tearing them down and resurrecting them with even more forceful, beautiful, inspired, objective forms. We reckoned that it was not absurd to explore the roots of a specific form of Western fanaticism. If only there was no image – that is, no mediation – the better our grasp of Beauty, Truth and Piety would be. We visited the famous iconoclastic periods from the Byzantine to the Reforma-

tion, from Lenin’s Red Square to Malevich’s Black Square to which we added the less well-known struggles among iconoclasts in mathematics, physics and the other sciences. We wanted to compare with one another the various interference patterns created by all those forms of contradictory attitudes toward images. Scientists, artists and clerks have been multiplying imageries, intermediaries, mediations, representations while tearing them down and resurrecting them with even more forceful, beautiful, inspired, objective forms. We reckoned that it was not absurd to explore the whole Western tradition by following up such a ubiquitous double bind. Hence the neologism Iconoclash to point at this ambivalence, this otheremonic division: “As, we cannot do anything without image!” “Fortunately, we cannot do anything without image!”

Iconoclash was not an iconoclastic show but a show about iconoclasms; not a critical show but a show about critique. The urge to debunk was no longer a resource to feed from, we hoped, but a topic to be carefully examined. Like the slave who was asked to remind emperors during their triumphs that they were mere mortals, we had asked...
an angel to come down and suspend in mid-air the arm that held the hammer, an angel that could mutter in the ear of the triumphant idol-breakers: “Beware! Consider what you strike at with so much glee. Look first at what you might risk destroying instead!” Once the destructive gesture was suspended, we discovered that no iconoclast had ever struck at the right target. Their blows always drifted sideways. For this reason, even St. George, we thought, looked more interesting without his spear. 34

Our aim was to move the collective attention, as the subtitle of the show, “beyond the image wars in science, religion, and art,” clearly indicated. This “beyond” was drawn, very simply, by taking into consideration the other half of what they were all doing: Those we were following were never simply tearing down idols, burning fetishes, debunking ideologies, exposing scandals, breaking down old forms but also were putting ideas onto pedestals, invoking deities, proving facts, establishing theories, building institutions, creating new forms and also destroying unexpectedly and unwittingly other things they had not known that they cherished so much. By bringing destruction, blunder, plunder and construction together we hoped to foster a new respect for mediators.

Obviously, there is something in the way flows of images create access to Beauty, Truth and Piety that has been missed by idol-breakers over the ages. To summarize our attempt in one simile, I proposed to say that Moses, in addition to being tongue-twisted, might have also been a little hard of hearing and that’s why he had understood “Thou shall not make unto thee any graven image” when he had been told: “Thou shall not freeze frame.” If you stick to them, images are dangerous, blasphemous, idolatrous, but they are safe, innocent, indispensable if you learn how to jump from one image to the next. “Truth is image, but destroying unexpect-
tedly, unreflecting, might have also been a little hard of hearing and that’s why he had understood “Thou shall not make unto thee any graven image” when he had been told: “Thou shall not freeze frame.” If you stick to them, images are dangerous, blasphemous, idolatrous, but they are safe, innocent, indispensable if you learn how to jump from one image to the next. “Truth is image, but destroying unexpectedly, unwittingly other things they had not known that they cherished so much. By bringing destruction, blunder, plunder and construction together we hoped to foster a new respect for mediators.

What frightens us so much in collective action, the reason why we delight so much in despising it, is that we might see reflected in its distorted mirror our own grimacing faces. Are we not asking from the assembly something it cannot possibly deliver, so that talking positively of politics horrifies us because it’s our limitations that we are not prepared to accept? If it’s true that representations are so indispensable and yet so opaque, how well prepared are we to handle them? When politicians; no sphere more inviting for irony, satire, debunking, derision than the political sphere; no idols more inviting for destruction than the Idols of the Forum; no discourse easier to deconstruct. On political rhetoric, critique has a field day. By kindergarten, toddlers have already grown cynical on all political matters. In a show that was about critique, adding politics would have skewed the whole project, and visitors would have left even more iconoclasts than when they had entered.

But once we have moved beyond the image wars, once we have regained a good grasp of the masses of intermediaries necessary to represent anything, once we have moved back to things, could we extend the same attention for mediators to the most despised activity, namely political spin? Is it possible now to tackle the question of political representation with care and respect? Even more extravagant: Is it possible to tackle it uncritically? Just try to imagine a show about politics that would not be about debunking, exposing, revealing or smashing the idols down. Do you really want to take politics positively? Indeed.

“Disabled Persons of All Countries, Unite!” What makes it so difficult to stare straight at the Gorgonian face of politics is that we seem to delight in adding to it some even more distorting traits. Not happy with Frankenstein, we want to hybridize it with Quasimodo. M onstrous it is, yet this is not a reason to transform it into a painting by Hieronymus Bosch. Or rather, Bosch is paint-
ing our own internal Hell, which might not bear that much of a relation with the specific monsters of politics. 45 What frightens us so much in collective action, the reason why we delight so much in despising it, is that we might see reflected in its distorted mirror our own grimacing faces. Are we not asking from the assembly something it cannot possibly deliver, so that talking positively of politics horrifies us because it’s our limitations that we are not prepared to accept? If it’s true that representations are so indispensable and yet so opaque, how well prepared are we to handle them? When
hearing the call for assembling at the Thing, are we able to accept that we are radically and basically unfit to take a seat in it? Do we have the cognitive equipment required for this? Are we not, on the whole, totally disabled?

Instead of the radiant crystal of the common good, through the action of some mystic being, our seat under the transparent crystal of the Body Politik was supposed to assemble. We were told that all of us, every individual might be corrupted, feeble or deficient, but above their weak heads there was a heaven, a sphere, a globe under which they all sat. Just before the French Revolution, Emmanuel-Joseph Sieyès imagined a parliament so big – and so virtual – that it extended to the whole of France, tiers after tiers, all the way to the farthest provinces. 

Unfortunately, much like the Tower of Babel, those “palaces of reason” – to use the name of many city halls in northern Italy – are no longer able to house the issues they were supposed to gather. Commentators on the “events” of May 1968 in France were amused to see that the turbulent demonstrations carried past by the National Assembly without even looking at it, as if its irrelevance was so great that it could not even invite attention. Relevant now might seem to be that the global has become the new name of the Body Politik. Where would you assemble the global? Certainly not under golden domes and kitsch frescoes where heroic senators and half-naked republics are crowned by laurels descending from the clouds. Why are politics always about imitation? Here is Robespierre imitating Cicero, Lenin mimicking Robespierre. In the name of the common good, forests of Greek columns have been erected across the Western world – while the “mother of parliaments” in Westminster remained faithful to the dark, cramped, uncomfortable cafe of stalls, spires and gargoyles. Neo-gothic, neo-classic, neo-modern or neo-postmodern, those spaces were all “nee,” that is, trying to imitate some venerated past.48 But you might need more than imitation to build the new political assemblies. Covering the Reichstag with a transparent dome – in effect, fully opaque – as Foster did, doesn’t seem nearly enough to absorb the new masses that are entering political arenas. If it’s true that a parliament is a complex machinery of speech, of hearing, of voting, of dealing, what should be the shapes adjusted to a Dingpolitik? What would a political space be that would not be “nee”? What would a truly contemporary style of assembly look like?

It’s impossible to answer this question without gathering techniques of representation in different types of assemblies. The effect we wish to obtain is to show that parliaments are only a few of the machineries of representations among many others and not necessarily the most relevant or the best equipped.

It’s likely that fundamentalists will not like our show: They think they are safer without representation. They really believe that outside of any assembly, freed from all those cumbersome, tortuous and opaque techniques, they will see better, farther, faster and act more decisively. Inspired directly by the Good, often by their God, they despise the indirectness of representations. But realists might appreciate it because if we are all politically-challenged, if there is no direct access to the general will, if no transparent dome gives any global visibility, if, at best, the blind lead the blind, then any small, even infinitesimal innovation in the practical ways of representing an issue will make a small – that is, significant – difference. Not for the fundamentalist but for the realists.

Ask the blind what difference it makes to have a white cane or not. Ask the deaf what difference it makes to be instrumented with a hearing-aid or not. Ask the crippled, the advantage they see in having a slightly better-adjusted wheelchair. If we are all handicapped, or rather politically-challenged, is this difference – the difference in representation – the only relevant prostheses. Each object exhibited in the show and commented on in the catalog is such a crutch. We promise nothing more grandioso than a store of aids for the invalids who have been repatriated from the political frontlines – and haven’t we all been badly mauled in recent years? Politics might be better taken as a branch of disability studies.

From an Assembly of Assemblies ...

An exhibition cannot do much, but it can explore new possibilities with a much greater degree of freedom because it is so good at thought-experiments, or rather Gedankenästhetik. One of those attempts is to design not one assembly but rather an assembly of assemblies, so that, much like at a fair, visitors or readers can compare the different types of representation. This is what we have attempted here.

Scientific laboratories, technical institutions, marketplaces, churches and temples, financial trading rooms, Internet forums, ecological disputes – without forgetting the very shape of the museum inside which we gather all those mirema disjecta – are just some of the forums and agoras in which we speak, vote, decide, are decided upon, prove, are being convinced. Each has its own architecture, its own technology of speech, its complex set of procedures, its definition of freedom and domination, its ways of bringing together those who are concerned – and even more important, those who are not concerned – and what concerns them, its expedient way to obtain closure and come to a decision. Why not abuse them comparably to one another?

After all, they have never stopped exchanging their properties: churches became temples before becoming city halls;49 heads of state learned from artists how to create through publicity a public space;50 it is deep inside monarchies that the complex voting procedures have been prepared and constitutions been written;51 while labo-

tories are migrating to forums, the tasting of products borrows heavily from the laboratory;52 supermarkets are taking more and more features that make them look like contested voting booths;53 but even the most abstruse models of physics have to borrow heavily from social theories.54 On the other hand, financial institutions seem to gather more information technologies

41 Michel Callon, this volume, chapter 5
42 “How then should Pharaoh heed me, a man of impeded speech?” (Exodus 4:10).
43 Michel De Certeau, this volume, chapter 13.
44 Jean-Philippe Heurtin, this volume, chapter 13.
45 Anne Miljanić, this volume, chapter 3.
47 See excerpt, this volume, chapter 13.
48 Christine Riding, Jacqueline Riding, The Houses of Parlia-
49 James A. Leth, Space and Revolution: Projects for Monu-
50 Joseph Leo Koerner, this volume, chapter 12.
51 Lisa Pon, this volume, chapter 12.
52 Christophe Bourcier, this volume, chapter 12.
53 A. Hemmink, G. Tel, F. Vergnaud, this volume, chapter 13.
54 Franck Cachoy, Catherine Grandclément Chaffy, this vol-
ume, chapter 11.
55 Pablo Jensen, this volume, chapter 5.
than parliaments. The quietest sites of nature have become some of the most contested and disassembling of battlegrounds. As for the World Wide Web, it begins by being a mess and slowly imports all sorts of virtual architectures, but only very few reproduce the even more virtual space of the original parliaments; artistic installations borrow more and more from scientific demonstrations; technical know-how absorbs more and more elements from law. There is no river that flows anywhere from mountain to sea without being as equipped in speech-making instruments as humans are through opinion polls. Such is the constant commerce, the ceaseless swapping, the endless crisscrossing of apparatuses, procedures, instruments and customs that we have attempted to weave through this show and this catalog. To collect such an assembly of assemblies, we have not tried to build around them an even bigger, a more all-encompassing dome. We have not tried to imagine that they would all be reducible to the European tradition of parliaments. On the contrary, we have offered to show how much they differ from one another by linking them through the humble and mundane back door of their representation machineries. We would like visitors and readers to move from one to the other by asking every time the three following questions: How do they manage to bring in the relevant parties? How do they manage to bring in the relevant issues? What changes does it make in the way people make up their mind to be attached to things? We hope that once this assembly of assemblies is staging machineries, on the contrary, in the object-oriented conception, “parliament” is a technical term for “making things public” among many other forms of producing voices and connections among people. By this comparative visit, we seek to learn how parliaments – with a small “p” – could be enlarged or connected or modified or redrawn. Instead of saying that “everything is political” by detecting dark forces hidden beneath all the other assemblages, we wish on the contrary to locate the tiny procedures of parliamentary assent and dissent, in order to see on what practical terms and through which added labor they could, one day, become pertinent. In this show, we hope visitors will shop for the materials that might be needed later for them to build this new Noah’s Ark. The Parliament of Things? Don’t you hear the rain pouring relentlessly already? And Noah for sure was a realist.

...to an Assembly of Dissembling

There might just be another reason than the weak imagination of architects for not having a well-designed dome under which to assemble: Getting together might not be such a universal desire after all! No matter how wide you stretch it, the political horizon might be too small to encompass the whole Earth. Not only because parliaments are too tiny, not only because a parliament of parliaments would require the use of many different machineries now dispersed among different gatherings, but because the very idea of a political assembly might not be shareable in the end. The urge for political representation might be so much of a Western obsession that other people might object to being thus mobilized or called for. And this objection too has to be registered in our show. If you read the UNESCO literature, it seems that the whole world aspires to become one under the aegis of democracy, transparent representation and the rule of law. But what if every time this infallible image is dropped in, many other voices were raised: “No politics, please!” “No representation!” “Not with you,” “No democracy, thanks.” “Would you please stay as far away as possible?” “Leave us alone,” “I’d rather not,” “I prefer my king.” What if the disagree-ments were not of the sort of issues that divide people in the normal state of things but were bearing instead on the very way to assemble at all? What if we had to imagine not an assembly of assemblies, not even an assembly of ways of assembling but an assembly of ways of disassembling? Would not that be a call for disassembling instead? And yet this is just what happens when you begin to listen to other voices. Not because they are exotic, far fetched, archaic, irrational, but because they too claim that making things public might be a much more protracted affair than entering into the realm of politics – even widely enlarged. Under the thin veneer of “democracy for all” will soon appear another crisis of representation, one much wider and deeper, because it will strike at the heart of what it is to represent at all.

Listen to the Japanese tradition: The very word “representation” strikes their ears as quaint and superfluous. Listen to the Jivaros: Their highly complex rhetoric of agonistic encounters aims at not meeting in the same assembly. Listen to the jihadists calling for the extension of the Umma. The word “demokrata” remains an imported vocabulary that resonates more like a term of abuse than any deeply cherished value. There are many other ways to assemble than under the aegis of a political intent. And when highlanders of Papua New Guinea assemble to vote using a complex procedure imported by helicopter from Australian-trained scrutinizers, can we measure how much they have transformed it? Even in our own lands obsessed by the transparent republic, their ideas of democracy are far from the parliamentary aegis that is, into making things secret. What if one of the causes of fundamentalism were that all those other ways of gathering find themselves, in the end, badly represented? As if the usual garment of politics were too narrow for them? As if they never had room to assemble with the other things they are attached to, such as their gods, their divinities, their scruples of conscience. It’s as if the whole definition of politics inherited from the conflicts between church and state had to be discussed again.

To see politics as a problem of collecting, where if you don’t manage it properly you disappear into chaos, seems to be the problem of only a fraction of humanity, for instance, those obsessed by the link between their cosmic and social orders. And even among those, the idea of politics as speaking one’s mind in the middle of an assembly seems to be rather provincial notion. According to François Jullien, the Chinese tradition seems to ignore it entirely. The Chinese, at least in their ancient learned tradition, don’t want simply to add their differences to other differences: They are less than happy to take their seats in the global amphitheater of multiculturalism – similarly seated but with a tiny difference of angle to witness the same spectacle – but wish to remain indifferent to our own, meaning Western, ways of being all-encompassing. Differences we could absorb – we thought we could absorb under the decaying but still solid dome of the Holy Roman Empire – but indifference?

To the possible dismay of political scientists, the very idea of a political assembly does not gather much interest. This is where things become really complicated and thus interesting: How to devise an assembly of ways of disassembling instead of sending a convocation to gather under the common dome of “O Ne Politics Size Fits All”? Can we enlarge our definition of politics to the point where it accepts its own suspension? But who can really be that open-minded?

And yet, do we have another course of action? It would be too easy simply to recognize the many contradictions as if we could be content with the absence or the demise of all political assemblies, as if we could abandon for good the task of composition. There must be some alternative to cheap uninflationary but surely every human is a political animal) and to cheap relativism (“let everyone gather under their own flag, and if they have no flag then let them hang themselves!”).
That we have to find a way out is forced upon us by what is called “globalization”: even though the Jivaros, the Chinese, the Japanese, the faithful members of the Oumma, the born-again Christians don’t want to enter under the same dome, they are still, willingly or unwillingly, connected by the very expansion of those makeshift assemblies we call markets, technologies, science, ecological crises, wars and terrorist networks. In other words, the many differing assemblies we have gathered under the roof of ZKM are already connecting people no matter how much they don’t feel assembled by any common politics. The shape of the dome might be contested, because it does not allow enough room for differences and differences, but that there is something at work that is called “global” is not in question. It’s simply that our usual definitions of politics have not caught up yet with the masses of linkages already established.

In this catalog we want to probe further into this historical paradox. In earlier times, say during the Enlightenment, there existed a metaphysical globe, to use Sloterdijk’s expression, even though globalization was barely beginning. But now that we are indeed globalized, there is no globe anymore! To take an example, when the cartographer Mercator transformed Atlas from a distorted giant supporting the Earth on his shoulder into a quiet and seated scientist holding the planet in his hand, this was probably the time when globalization was at its zenith. And yet the world in 1608 was barely known, and people remained far apart. Still, every new land, every new civilization, every new difference could be located, situated, housed without much surprise in the transparent house of Nature. All the organs of the body have been tried out to probe the making up of the monstrous Body Politik. All the animals have been invoked in turn — ants, bees, sheep, wolves, bugs, worms, pigs, chimps, baboons — to establish a firmer ground for the whimsical assemblages of humans. And yet to no avail, since there are many ways to be a body, since sheep don’t flock, wolves are not as cruel as humans, baboons have an intense social life, brains have no central direction. It seems that everything from the metaphor of the organism to that of the brain has been tried. It has been a continuous undertaking: How to replace the dangerous trade of politics by the serious and safe knowledge of some better established science? And it has continuously failed.

A crisscrossing of metaphors from Menenius’s “Fable of the Members and the Stomach” to contemporary socio-biology and cybernetics has tried to fasten the poor assemblies of humans to the solid reality of nature. All the organs of the body have been tried out to probe the making up of the monstrous Body Politik. All the animals have been invoked in turn — ants, bees, sheep, wolves, bugs, worms, pigs, chimps, baboons — to establish a firmer ground for the whimsical assemblages of humans. And yet to no avail, since there are many ways to be a body, since sheep don’t flock, wolves are not as cruel as humans, baboons have an intense social life, brains have no central direction. It seems that nature is no

74 John Tresch, this volume, chapter 6.
75 William Shakespeare, excerpt this volume, chapter 3.
76 Eden Medina, this volume, chapter 12.
78 Vinciane Despret, this volume, chapter 6.
longer unified enough to provide a stabilizing pattern for the dramatic experience of humans living in society. No doubt, the Body Politik is a monster – so much so that it's not even a body. But which type of monster is it? This is what we wish to find out. We might have transformed politics into a monstrous activity because we have tried to make it exist in a form, borrowed from nature, that it could not possibly take. “The answer was not acceptable in the nineteenth century, when men, in spite of all their iconoclasm, were still haunted by the phantom of identity,” wrote Walter Lippmann in a stunning book called the Phantom Public. 80 In many ways our exhibition is an effort in teratology, an experiment in trying to pry apart two ghostly figures: the Leviathan and the Phantom of the Public. (Sorry, there is no way to talk about politics and to speak of beautiful shapes, elegant silhouettes, heroic statues, glorious ideals, radiant futures, transparent information – except if you want to go through, once again, the long list of grandiose ceremonies held by various totalitarianisms which, as we are all painfully aware, lead to the worst abominations. The choice is either to speak of monsters early on with care and caution, or too late and end up as a criminal. O Machiavelli, how right you were; let us pray that we heed your cautious lessons in realism.)

According to Lippmann and to the philosopher John Dewey in response to his book, 81 most of European political philosophy has been obsessed by the body and the state. The Europeans have tried to assemble an impossible parliament that represented really the contradictory wills of the multitude into one General Will. But this enterprise suffered from a cruel lack of realism. Representation, conceived in that total, complete and transparent fashion, cannot possibly be faithful. By asking from politics something it could not deliver, Europeans kept generating aborted monsters and ended up discouraging people from thinking politically. For politics to be able to absorb more diversity (“the Great Society” in Ohio University Press, Athens, OH, 1991). 82 “The Ghost of the Future,” it has to devise a very specific and new type of presentation, conceptually conceived in that total, complete and transparent fashion, cannot possibly be faithful. By asking from politics something it could not deliver, Europeans kept generating aborted monsters and ended up discouraging people from thinking politically. For politics to be able to absorb more diversity (“the Great Society” in Ohio University Press, Athens, OH, 1991).

In this exhibition, we try the impossible feat of giving the visitors feel the presence of the Phantom of the Public. We want to make the visitors feel the difference there is between expecting from the Body Politik something it cannot give – and that surely creates a monster – and being moved by the Phantom Pub- lic. The idea is to take the word Phantom and to grant this fragile and provisional concept more reality – at least more realism – than the phantas- morical spheres, globes, common good and general will that the Leviathan was supposed to incarnate. In other words, we want to tackle again the problem of composing one body from the multitude of bodies – a problem that is reviewed below, but this time with con- temporary means and media.

The Phantom designed by Michel Jaffrenou and Thierry Coduys is an invisible work of art. It’s activated by the movements of the visitors throughout the show so that each spectator is simultaneously an actor in the show and the only screen on which the whole spectacle is projected. The input/output relation will vary according to the time of day, the number of people in the show, the answers given to the various queries, the cumulative effect of past visitors, the somewhat invisible presence of the web visitors. At times the relation will be traceable in a sort of one-to-one connection ("I did this, and here is what happened") but at other instances the whole effect will be entirely lost ("I did nothing, and here is what happened"), while at some other times the effect will be direct but on some other visitors. Through this complex, invisible (and expensive!) work of art rendered possible by the complex technology infrastructure of 2 KM, we hope to substitute in the mind of the visitor the light spirit of the Phantom for the crushing weight of the total Body Politik. Unfortunately, the catalog has to render through the layout the experience of what it is to be caught by the passage of this Phantom. It’s to the flow of words and images that we have to confide the task of imitating the ghostly but spirited figure of politics.

Why do we attach so much importance to the difference between Body Politik and Phantom? It is due to the fact that for the new eloquence to become a habit of thought, we must be able to dis- tinguish two ways of speaking. To raise a political question often means to reveal a state of affairs whose presence was hitherto hidden. But then you risk falling into the same trap of providing social explanations and do exactly the opposite of what is meant here by political flow. You use the same old repertoire of already-gathered social ties to "explain" the new associations. Although you seem to speak about politics you don’t speak polit- ically. What you are doing is simply the extension one step further of the same small repertoire of already standardized forces. You might feel the pleasure of providing a “powerful explanation,” but that’s just the problem: You yourself partake in the expansion of power not the re-composition of its effects. To solve this problem, we have to make the visitors feel the difference there is between expecting from the Body Politik something it cannot give – and that surely creates a monster – and being moved by the Phantom Public. It’s to the flow of words and images that we have to confide the task of imitating the ghostly but spirited figure of politics.

Politics of Time, Politics of Space

Politics of Time, Politics of Space

Going back to things and speaking positively of the “phantom of the public,” this is not, in the end, terribly reactionary? It depends on what we mean by progressive. Imagine that you have the respon- sibility of assembling together a set of disorderly voices, contradictory interests and virulent claims. Then imagine you are miraculously offered a chance, just at the time when you despair of accommodating so many dissenting parties, to get rid of most of them. Would you not embrace such a solution as a gift from heaven?

This is exactly what happened when the con- tradictory interests of people could be differenti- ated by using the following shibboleths: “Are they progressive or reactionary? Enlightened or archaic? In the vanguard or in the rear guard?” Dissenting voices were still there, but most of them represented backward, obscurantist or regressive trends. The cleansing march of progress was going to render them passé. You could safely forget two-thirds of them, and so your task of assembling them was simplified by the same amount.

In the remaining third, not everything had to be taken into account either, since most of the posi- tions were soon made obsolete by the passage of time. Among the contemporary parties to the dis- pute, progressive minds had to take into consider- ation only those few seen as the harbingers of the future. So, through the magical ordering power of progress, politics was a cinch, since 90 percent of the contradictory passions had been spirited away, leaving in the limbo of provincial politics talk, it has not even begun to address the political endeavor since it has not tried to assemble the can- didates into a new assembly adjusted to their spe- cific requirements. “Drunk with power” is an expression not only fit for generals, presidents, CEO’s, mad scientists and bosses – it can also be used for those commentators who are confusing the expansion of powerful explanations with the composition of the collective. This is why we might need still another slogan: “Be sober with power.” In other words, abstain as much as possi- ble from using the notion of power in case it back- fires and your explanations instead of the tar- get you are aiming to destroy. No powerful explanations without checks and balances.

80 Nannie L. Marion, this volume, chapter 3.
Strange enough, we have changed time so completely that we have shifted from the time of Time to the time of Simultaneity. Nothing, it seems, accepts to simply reside in the past, and no one feels intimidated any more by the adjectives “irrational,” “backward” or “archaic.” Time, the bygone time of cataclysmic substitution, has suddenly become something that neither the Left nor the Right seems to have been fully prepared to encounter: a monstrous time, the time of cohabitation. Everything has become contemporary.

The questions are no longer: “Are you going to disappear soon?” “Are you the tintle sign of something new coming to replace everything else?” “Is this the seventh seal of the Book of Apocalypse that you are now breaking?” “Is this the seventh seal of the Book of Apocalypse that you are now breaking?” An entirely new set of questions has now emerged: “Can we cohabit with you?” “Is there a way for all of us to survive together while none of our contradictory claims, interests and passions can be eliminated?” Revolutionary time, the great Simplification, the time of cohabitation: a monstrous time, the time of cohabitation: How many contemporary elements can you build side by side, generating the inherent limits imposed by speech impairments and cognitive weaknesses and all sorts of handicaps are no longer denied but prostheses are accepted instead;

e) It’s no longer limited to properly speaking parliaments but extended to the many other assemblages in search of a rightful assembly;
f) The assemblage is done under the provisional and fragile Phantom Public, which no longer claims to be equivalent to a Body, a Leviathan or a State;
g) And, finally, Dingpolitik may become possible when politics is freed from its obsession with the time of Succession.

So what is Dingpolitik in the end? It is the degree of realism that is injected when:

a) Politics is no longer limited to humans and incorporates the many issues to which they are attached;
b) Objects become things, that is, when matters of fact give way to their complicated entanglements and become matters of concern;
c) Assembling is no longer done under the already existing globe or dome of some earlier tradition of building virtual parliaments;
d) The inherent limits imposed by speech impairment, cognitive weaknesses and all sorts of
Athens (Greece). Opening Ceremony of the 2004 Olympic Games, photo © AP Photo, photo: David J. Phillip ■ Athletes from countries all over the world assemble inside the stadium during the Opening Ceremony of the 2004 Olympic Games in Athens, Friday, August 13, 2004.
At a symposium devoted to the structure of enzymes and proteins held in 1955, Paul C. Zamecnik talked about his laboratory’s attempts to integrate amino acids into proteins in test tubes. When, in the discussion to follow, Sol Spiegelman referred to his own experiments on the induction of enzymes in yeast cultures, Zamecnik responded as follows: “We would like to study induced enzyme formation, too; but that reminds me of a story Dr. Hotchkiss told me of a man who wanted to use a new boomerang but found himself unable to throw his old one away successfully.” This remark is insightful concerning the auto-feedback character which is typical of experimentation in the research process. It expresses a fundamental experience of scientific work. The more familiar a scientist is with his experimental set-up, the more effectively its inherent possibilities open up. Formulated paradoxically, the more an experimental system is tied to the skill and experience of the researcher, the more independently it develops. The subject enters into a kind of inner connection to its object. The boomerang is an image of this relationship, which can also be called virtuosity.

Alan Caren once asked Alfred Hershey what a scientist’s dream of happiness was, and the latter replied: “To have one experiment that works, and keep doing it all the time.” As Seymour Benzer reports, the first generation of molecular biologists referred to this situation as being in “Hershey heaven”. François Jacob’s autobiography, which contains a reflected record of a research process matched by only few scientists’ own testimonials, contains the following sentences: “In analyzing a problem, the biologist is constrained to focus on a fragment of reality, on a piece of the universe which he arbitrarily isolates to define certain of its parameters. In biology, any study thus begins with the choice of a ‘system.’ On this choice...
depend the experimenter’s freedom to manoeuvre, the nature of the questions he is free to ask, and even, often, the type of answer he can obtain.”

The contexts in which these three quotations stand could hardly be more different. They speak of experimentation in light of familiarity, satisfaction, and analytic constraints. But they all converge in one respect: they suppose an experimental system to be the smallest functional unit, to be a scientist’s working unit. This has consequences for the theory and history of science. When asked what drives the research process, it is advisable to begin by characterising the experimental systems, their structure, and their dynamics, and not with an original, unavoidable primacy of theory (however it is formulated).

Should one rather speak of experimental reasoning then? If everything depends on the choice of a “system” – the experimenter’s room for manoeuvre, the scope of the questions that he can ask, and the kind of answers he can receive – then even the expression “experimental reasoning” might still be misleading. The system’s grammatical structure presupposes “reasoning” as the genus proximum whose specific difference consists in that it is being guided by an experiment. But what is at issue is the exact opposite: a movement oriented through instrumental peripheral conditions in which reasoning is torn into the game of material entities. Gaston Bachelard called the instruments of science “theories materialised.” He formulated it more sharply later: “Contemporary science thinks with/in its apparatuses.” Thus, it is the “scientific real” itself in its “noumenal contexture” which is “able to define the axes of experimentation.” At issue is the writing game, the tracing game of science. The expression alludes to Wittgenstein’s discussion of the “language-game”. “I shall,” says Wittgenstein, “call also the whole, consisting of language and the actions into which it is woven, a language-game”. We cannot retreat behind this interweaving. “Our mistake is to look for an explanation where we ought to look at what happens as a proto-phenomenon’. That is, where we ought to have said: this language-game is played.” Thus, I am not looking for a “logic” of the relationship between experiment and theory. Nor am I speaking of theories, experiments, and instruments as relatively autonomous, intercalating layers of a scientific whole that manifests itself in postponements, side-shifts, extensions and

5 Jacob 1988, p. 234.
6 Bachelard 1984, p. 13. As a mirror image of this, one could refer to theories as ‘machines idealised.’
7 Bachelard 1951, p. 84. 
9 Wittgenstein 1953, paragraph 7. 
10 Wittgenstein 1953, paragraph 654. 
11 In the classic formulation of Karl Popper: “The theoretician puts certain definite questions to the experimenter, and the latter, by his experiments, tries to elicit a decisive answer to these questions, and to no others. All other questions he tries hard to exclude.” (Popper 2002, p. 89.)
abortions. My remarks concern, rather, that which can be irreducibly regarded as the experimental situation: a situation that offers technological conditions for the existence of scientific objects, differential reproduction of experimental systems, conjunctures of such systems and graphematic representation as the decisive aspects of practical production of what one might call “epistemic things.” What is meant by this?

To illustrate these considerations, I will cite an episode from the experimental history of protein biosynthesis: laboratory production of transfer ribonucleic acid in the 1950s. This molecule would go on to occupy a central place in the scaffolding of molecular biology. It formed the bridge between DNA, which stores genetic information, and proteins, which realise the biological function of the DNA. It was among the levers with which the genetic code could be deciphered. The history of the early test-tube production of these nucleic acids as soluble RNA has to be viewed, however, against a biomedical, bioenergetic and biochemical background, which initially had nothing to do with these later events. It is not a matter of the usual history of a “discovery,” but of what Foucault would have called the “archaeology” of what today is called transfer RNA.

Experimental systems
First, though, I would like to provide a few methodological and conceptual clarifications. How should an experimental system be understood? In traditional philosophy of science, experiments are normally viewed as singular instances, as staged tribunals that are organised and conducted in order to corroborate or refute theories. Some time ago, though largely without success, Ludwik Fleck argued convincingly, based on a historical analysis of biomedical research practice, that experimenters, contrary to the conventional views of philosophers of science, deal with everything except individual experiments. “Every

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12 Cf. e.g. Galison 1988.
13 “…what I am attempting to bring to light is the epistemological field, the episteme in which knowledge, envisaged apart from all criteria having reference to its rational value or to its objective forms, grounds its positivity and thereby manifests a history which is not that of its growing perfection, but rather that of its conditions of possibility; in this account, what should appear are those configurations within the space of knowledge which have given rise to the diverse forms of empirical science. Such an enterprise is not so much a history, in the traditional meaning of that word, as an ‘archaeology.’” (Foucault 1994, pp. xxi) The concept of the “archaeology” of knowledge is discussed in detail in Foucault 1969.
14 Cf. Popper 1984, footnote 10. The idea of the experiment as the test of an hypothesis is, however, still virulent in more recent social constructivist approaches which explicitly deny the naked experiment the ability to decide on controversies in science (see e.g. Collins 1985).
An experimental scientist knows just how little a single experiment can prove or convince. To establish proof, an entire system of experiments and controls is needed, set up according to an assumption [...] and performed by an expert.” According to Fleck, in research we do not deal with individual experiments, nor, as a rule, with a clear-cut relationship between theory and experiment, but rather with a complex experimental arrangement set up in such a way that it produces knowledge that we do not yet have. And even more important: we deal with experimental systems which normally do not provide clear answers. “If a research experiment were well defined, it would be altogether unnecessary to perform it. For the experimental arrangements to be well defined, the outcome must be known in advance; otherwise the procedure cannot be limited and purposeful.”

Thus, experimental systems can be regarded as the smallest functional units of research; they are set up in order to give answers to questions that we are not yet able to formulate clearly. In a typical case, an experimental system is, in Jacobs’ words, a “machine for making the future.” It enables one in the first place to formulate questions that can be answered. It is a vehicle which serves to materialise questions. It cogenerates, if you will, the phenomena or material delineations and the concepts they embody. An individual experiment, on the other hand, as a sharp procedure for testing a sharp idea, is in no way the simple, elementary unit of experimental science, but rather the degeneration of an elementarily complex situation.

Reproduction and difference
So asking questions and giving answers within such an experimental system is an inherently open and inconclusive game. It is quite possible and common that a scientific object – and

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15 Discussion in theory and history of science about the experiment and the experimental practice of sciences has actually only been taken up intensively in the last ten years, although less so here in Germany than in the Anglo-Saxon countries and in France.
16 Fleck 1979, p. 96, emphasis added.
17 Fleck 1979, p. 86. The chapter “Observation, Experiment, Experience,” from which these quotations were taken, is today still an unsurpassed masterpiece of describing a research activity in the biosciences.
19 Here I take up an idea that Gaston Bachelard formulated for the objects of contemporary physics as follows: “In very general terms simple always means simplified; we cannot use simple concepts correctly until we understand the process of simplification from which they are derived.” Bachelard 1984, p. 138, translation slightly altered.
this applies even more to its ultimate transformation into a technological one— is not even conceivable at the time an experimental setup is established. But once a surprising outcome has emerged and is sufficiently stabilised, it is difficult to avoid the illusion of a logical path of thinking, let alone a teleology of the experimental process. I would like to quote François Jacob again: “How does one trace a path chosen for research work? [...] How does one recreate a thought centred on a tiny fragment of the universe, on a “system” one turns over and over to view from every angle? How, above all, does one recapture the sense of a maze with no way out, the incessant quest for a solution, without referring to what later proved to be the solution in all its dazzling obviousness”? The construction principle of a labyrinth consists precisely in the fact that the already existing walls determine the space and the direction in which new walls can be added. A labyrinth cannot be planned. It builds itself. It forces one to proceed by “groping” and “grasping.”

An experimental system owes its temporal coherence to its reproduction, and its development depends on whether one manages to produce differences without destroying its reproductive coherence. Together, these two factors make up its differential reproduction. The construction process is dominated by a kind of probing movement which with regard to the scientific object can be described as a “jeu des possibles” or a “game” of difference. I would like to suggest that it is precisely the way in which it is “falling prey to its own work” that makes the scientific enterprise similar in a certain sense to what Derrida called “the enterprise of deconstruction.” To play this game productively requires “Erfahrenheit” on

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20 On the relationship of scientific objects or epistemic things and technological objects or technical conditions cf. Part IV “’Das ’Epistemische Ding’ und seine technischen Bedingungen” (The ‘Epistemic Thing’ and its Technical Conditions) in Rheinberger 1992.

21 Jacob 1988: 274.

22 Jacob 1988: 255, among other places.

23 The concept of reproduction is complex. Here it does not mean so much the restoration of something used, nor the repeatability of a process as often as one likes (i.e. the ‘reproducibility’ of results), but rather keeping a movement going that enables an experimental system to be ‘productive’.

24 Jacob 1982. The title of this ‘Essai sur la diversité du vivant’, ‘Le jeu des possibles’, refers to the “bricolage” of the evolutionary process as well as to the process of the sciences. Insofar as the scientific dynamic is at issue, the “possible” has to be taken in both senses: on the one hand it is that which never will have existed because things always turn out differently than expected; on the other hand, “one always has to have decided what is possible” (p. 22, translation altered).


27 Fleck 1979, p. 96. “Erfahrenheit” is not simply “experience.” Experience connotes an ability to judge. Erfahrenheit - experiencedness - is a form of practice in which this ability is shown.
the part of the experimenter, something that can perhaps best be paraphrased using the paradoxical expression ‘acquired intuition’.\textsuperscript{28}

We can conclude from what has just been said that one never knows exactly where an experimental system will lead. As soon as one knows exactly what it produces it is no longer a research system. An experimental system in which a scientific object gradually takes on contours in the sense that certain signals can be handled in a reproducible way, has to simultaneously open windows in which new signals are visible. Once it is stabilised in one respect, it can and must be destabilised in another in order to arrive at new ‘results’.\textsuperscript{29} Stabilisation and destabilisation are interdependent. In order to remain productive, an experimental set-up has to be sufficiently open to produce unforeseeable signals and to let new technologies, instruments, and model substances seep in. If, on the other hand, it becomes too rigid, it stops being a “machine for making the future”; it degenerates into a testing facility geared to production of standards or replicas. Thus, it loses its immediate function as a research tool. As a stable sub-system it can, however, be integrated into other, still productive experimental systems and thus contribute towards producing new results in an indirect way. The transformation of former research systems into stable, technical sub-systems of other research arrangements lends the experimental process its specific material kind of growth and information storage. On account of the same mechanism, however, it also produces a historical burden. Usually, due to this mechanism, ‘new objects’ have to be brought to light by ‘old tools’. In the long term, however, a degenerated research system is completely replaced by technological systems which embody the current, stabilised knowledge in a more efficient form. Thus, the historian of science normally deals with a ‘museum of abandoned systems’ and must in the very first place reconstruct the context in which they made sense at all. So an experimental system is initially a research activity, is subsequently transformed into a technological system, and finally is replaced.

To remain a research system, such an arrangement must therefore be set up ‘differentially’. If it is organised such that the production of differences itself becomes the organising principle of its reproduction, then one can say that it obeys the kind of subversive,

\textsuperscript{28} It numbers among the attempts to do justice to the ‘surplus’ of scientific action, to what lies beyond all methodological axiomatisation. Cf. e.g. Michael Polanyi’s “tacit knowledge” (Polanyi 1967) or San MacColl’s “intimate observation” (MacColl 1989).

\textsuperscript{29} In the everyday language of the laboratory scientist the ‘result’ is the unit with which the productivity of an experimental system is expressed. The ‘result’ is usually not the scientific statement concluding a programme, but rather a stone whose place in the mosaic still has to be found.
displacing movement Jacques Derrida referred to as “différance”. In this sense, differential reproduction lends science, or better, individual research systems, their own internal time and turns the process into a “historial” one.

**Representation**

How does that which I provisionally termed the “writing game” take place within a research system, with its formal dynamic as a machine for producing the future? This leads us to the problem of representation. But what does representation mean?

Here ‘representation’ is generally to be understood in the sense in which German technical chemistry language uses the term in conjunction with the process of production, characterisation, isolation and purification of a substance. We will see that such a usage of the term leads to a fundamental undermining of its classical connotation, namely being something that stands for something else. Within the framework of a given experimental system, a scientific object is unfolded within a space of material representation and brought to articulation. One certainly misses the specific nature of the procedure if one considers it simply as the ‘theoretical’ representation of a ‘reality’ of any kind. What practically occurs in a research process is the realisation, i.e. production of scientific objects with the help of things that can already be viewed and handled as sufficiently stable material forms of knowledge. In turn, a realised scientific object itself becomes a tool, a technical construct, which makes it possible to new research arrangements. It is incorporated in the process of the realisation of that which one does not yet know. The only proof of its scientific form, or character, is the fact that, and only the fact that, it promises to change an already modelled piece of nature which the technological arrangement embodies at the present [30] Derrida 1976, p. 23. In ‘The différance’ the term is paraphrased as follows: “We will designate as différance the movement according to which language, or any code, any system of referral in general, is constituted ‘historically’ as a weave of differences.” (Derrida 1982, p. 12).


[33] An experimental system embodies a knowledge horizon which can only be handled by manipulating the system itself. Subsequently the arrangement of its significant units can be transformed to an arrangement of a second order – to a graphic, algebraic, or other arrangement on paper (or in a calculator). And this is not simply an abstractive doubling process. It is itself again a representation in the sense of a purification, a selection, which can retroactively have an effect on the arrangement of the first order. Since moreover the arrangement of the first order has more signification possibilities than the arrangement of the second order expresses, other arrangements of the second order also have the possibility in principle to have an effect on a given experimental system.
moment. This process is in no way target-oriented from the very outset. It has to be “felt out” by those processes that Jacob described as “the abortive trials, the failed experiments, the false starts, the misguided attempts”. Ultimately, the only guide through this landscape, as Goethe would have said, is “the kind of procedure itself”. The latter alone produces the reference to which direction one can turn and where one has to change direction.

Representation: so what happens when the experimenter produces a chromatogram using a DNA sequence gel and a series of test tubes to which round filters are assigned, with which, in turn, its measuring units of radioactive decay can be correlated? All of these ‘epistemic things’ are objects of experimental interpretation. They embody certain aspects of the scientific object in a palpable form that can be handled in the laboratory. It is the arrangement of these graphematic traces or graphemes and the possibility of pushing them around in the space of representation that comprise the experimental writing game. It is out of these units that the experimenter composes his ‘model’. How are the graphemes constituted? A polyacrylamide gel in a biochemical laboratory, for example, is at the same time an analytical tool for dividing macromolecules and a graphematic pattern of components that are made visible as coloured, fluorescent, UV-absorbing or radioactive spots. It is the scientific object, the realised model, which in turn is compared with other such models, to find out whether it ‘fits’. So the comparison here is not between ‘nature’ and its ‘model’, but rather between different graphematic traces that can be produced. That which conveys to us a sense of certainty of one ‘reality’, which we ascribe to the scientific object studied, is nothing other than this kind of fit. The scientific real is a world of traces.

The production of “inscriptions” is neither a purely arbitrary process nor completely dictated by the material, technical conditions and instruments of the respective

34 Jacob 1988, p. 281.
35 Goethe 1962, p. 315.
36 Cf. the more detailed Part IV "Das 'Epistemische Ding' und seine technischen Bedingungen" (The Epistemic Thing and Its Technical Conditions) in Rheinberger 1992.
37 Astonishingly, to date there has been little acknowledgement in scientific theory of the role played by dealings with model components, say, in the development of the alpha helix structure of proteins by Linus Pauling and the DNA double helix by Watson and Crick. Such models occupy the position of experiments where the comparison between different experimental representations is not or not yet possible. An experimental system always implies a model which in turn has to be made explicit by a further experimental system.
38 Bruno Latour and Steve Woolgar distinguish between machines that “transform matter between one state and another” and apparatus or “inscription devices” that “transform pieces of matter into written documents” (Latour and Woolgar 1986, p. 51; cf. also Latour 1987, p. 64f.). It is often not possible to clearly distinguish between the two. What is a polyacrylamide gel? It transforms matter – it divides molecules – and it produces an inscription – for example a series of blue spots. Perhaps one has to go a step further and view the totality of the experimental arrangement – including both kinds of machines – as a graphematic activity. A written table or a printed curve is
system. In the process of production and differential reproduction in experimental systems, there is a constant interplay between presentation and absentation. And this is the case because every grapheme is the suppression of another. In any attempt to show or strengthen ‘something’, at the same time an effort is inevitably made to make ‘something else’ disappear. It is like playing with pegs. When you drive in one, you drive out another. In an ongoing research process, one normally does not know which of the possible signals should be suppressed and which strengthened. This means that for a shorter or longer period the presentation/absentation game has to be kept reversible. One must ensure that the research object can oscillate between different interpretations, i.e. realisations.

English translation: Burke Barrett

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then only the recorded form of a preceding graphematic disposition of pieces of matter produced in the experiment.

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