FOR A NEGANTHROPOLOGY OF MARKETS

Daniel Ross

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What is usually called globalization can be understood as a simultaneously and inextricably economic and technological process through which the singular character of human localities is ever-increasingly undermined and destroyed. A human locality is defined by all kinds of rules and systems that amount to ways of life, forms of culture and political processes, and it is these that are progressively eradicated as globalization continues to produce what might well be considered as the *universalization of the market*. Furthermore, all of these rules and systems can be understood as ways of intervening in the process of exosomatic evolution that has been ongoing for two or three million years, as ways of *selecting* from among exosomatic possibilities, where the criteria for such selections consist in forms of *knowledge* (understood in a very broad sense): it is all these forms of knowledge, and the education and transmission systems that support them, that, too, are destroyed by the unfolding of globalized exosomatization, including in its most advanced and accelerated stage, known variously as platform capitalism and as disruption.

One significant consequence of this progressive destruction of localities and local characteristics has been to produce all manner of *reactive* symptoms, through which individuals and groups of one kind or another express and act out their feelings of frustration, powerlessness and resentment about this *seemingly* inevitable process. But these attempts to in one way or another *resist* the onslaught of globalization inevitably *remain* reactive precisely in the sense that these individuals and groups have been dispossessed of forms of knowledge that would make it possible to take action, that is, to effectively produce positive alternatives, which is also to say, alternative selections from among exosomatic possibilities and new ways of relating to and exchanging these exosomatic possibilities.

It is important to recognize that these reactive symptoms that try to hold back the destruction of localities are not limited to the politics of nationalism or xenophobia

found in reactionary forms of right-wing politics or religious fundamentalism or terrorism, but are also common in forms of left-wing politics fixated on questions of identity, resistance to power, or spectacles of protest. Whether right-wing reactions are more dangerous than left-wing reactions is beside the point: what makes this situation *most* dangerous is the way all these poisonous reactions *combine and reinforce each other*. In *all* of these symptoms, there is *something* that is right, which is to say that all of them reflect one or another form of real suffering, even if in distorted form, but there is always also something wrong, in the sense that they are not founded on any critique capable of shifting from resistance to invention, that is, to the possibility of inventing an alternative future.

At the same time, globalization and disruption have led to the destruction not just of human localities but of biological ones, that is, ecosystems, including the planetary-scale ecosystem that is the biosphere. In particular, the continued extensive use of fossil fuels as the means of powering these global processes has proven to have disastrous consequences for the climate, and consequently for all those systems whose sustainable functioning depends on climatic conditions. But fundamental to the *continuation* of this biospheric crisis is that destruction of all the rules, systems and knowledge that hitherto had been the very basis for struggling against the dangerous possibilities *always* brought by technological evolution (but previously, always on smaller scales): the destruction of human localities is thus *also* the destruction of the possibility of responding positively and inventively to the destruction of ecosystemic localities and the biospheric locality itself.

If this very dangerous situation demands a new critique of political economy, then two elements of a response have been proposed on the basis of such a critique: the first at the level of economics, and the second at the level, more or less, of politics. The contributory economy amounts to the idea that the disembedded, absolutized and computational market, as the destroyer of localities and knowledge, must be replaced by new kinds of economic models that *facilitate* the creation of localities and knowledge, including *new kinds* of localities and *new kinds* of knowledge, through a reinvention of work conceived as knowledgeable economic action (as opposed to proletarianized labour, itself increasingly replaced by automation and robotization). The internation amounts to a call for the invention of a new geopolitical process, distinct from the 'universalized' internationalism of globalization but also from the

reactive 'particularism' of nationalism. Only such a political reinvention, combined with the widespread introduction of local contributory economies, so the argument goes, would be capable of producing political processes capable of addressing the highly urgent and large-scale problems with which we are currently faced, not just in terms of the toxicity we are unleashing on the biosphere but equally the toxicity we are introducing into our political, cultural and social atmosphere.

One virtue of this two-pronged response consists in the fact that, contrary to most defences of the local against the global or the universal, it conceives human locality on a basis *other than* the *opposition* of 'culture' (or 'society' or 'nation') to 'technology'. Behind the notions of contributory economy and internation is the thought that *every* kind of locality stems from the always ultimately local character of the endosomatic or exosomatic struggle against entropy, that is, against the tendency towards the flattening out of difference and diversity brought by the tendency towards the probable and the average. And it recognizes that, in the case of *human* localities, this struggle against entropy, a struggle conducted *for* and *with* the means of knowledge, is never *opposed* to technology but rather always occurs in technological conditions, that is, exosomatic conditions, and more precisely in mnemotechnological conditions, that is, in hypomnesic conditions. What all of this makes clear is that the question of economics is the question of what to do with, and how to exchange, the products of exosomatization in a particular epoch, within a locality and between localities (whether adjacent localities or between scales of locality).

One possible problem with this approach, however, consists in the possibility that the economic and political elements of this response may not have been drawn deeply enough from the critique of political economy that forms their basis. This critique asserts not *just* that globalization, disruption, and platform capitalism destroy localities, knowledge and the biosphere, but that they do so for *systemic reasons* connected to the character of the *global macroeconomic model*. But *more than that*, it argues that this model *destroys itself*, by asserting:

1. that the basis of this model lies in the entropy-denying fantasy of perpetual growth;

2. that the basis of this perpetual-growth model lies in the fantasy that consumption can perpetually increase;

3. that what fuels the attempt to perpetually increase consumption is the exploitation of desire and the libidinal energy by (today) algorithmic marketing;

4. that this exploitation of libidinal energy has the self-defeating tendency to deplete the energy of those consumers on which it depends, by undermining long-term desire and exploiting the drives;

5. that this consumerist perpetual-growth model also drives a shift towards full automation;

6. that this drive to automate has the self-defeating tendency to undermine the employment base on which this post-Keynesian consumerist model also ultimately depends in order to ensure purchasing power and confidence.

The contributory economy amounts to an attempt to solve point 6 (destruction of employment) by introducing new forms of local economic activity conducive to new forms of work, that is, new forms of individual economic behaviour capable of producing knowledge rather than destroying it. It is also an attempt to address point 4 (depletion of libidinal energy) by introducing mechanisms that will have the effect of stimulating ways of life and fostering long-term desire. The way it does so is by experimenting with and elaborating new economic models based on the possibility of either non-market activity or anti-entropic local markets.

It is less clear, however, how these mechanisms (contributory economy and internation) can respond to *all* the elements of the critique from which they emerge: if the cause of the current urgent biospheric crisis lies in the very foundations of the consumerist perpetual-growth macroeconomic model, then how can the contributory economy in fact *replace* that model with *another* macroeconomic model on the scale of the whole planet? If such a thing *were* imaginable, would it be a matter of (a) *applying* the contributory model to the whole global technosphere, or would it on the contrary be a matter of (b) somehow scrapping the global system altogether

and replacing it with a diverse set of medium-scale contributory economies, each related according to some principles other than those of the market? If (a), then the question is: but how can an entire planet function according to a contributory model? If (b), then the question is: but how can a planetary network of local economies sustainably interact according to principles other than those of the market? If the answer to either (a) or (b) is, 'through the introduction of new global regulatory institutions', then the political question becomes that of the basis of the legitimacy or sovereignty of such institutions, and the economic question becomes that of the mechanisms by which such institutions either control or replace the global market.

One reason for this dilemma is ambiguity about the concept of 'market'. As mentioned, Stiegler's work makes clear that the fundamental question of economics is the generation of selection criteria for exosomatic possibilities and impossibilities, and that these criteria changed in the Anthropocene age: from spiritual, religious and also *scientific* criteria to those of the hegemonic market – calculation and rationalization applied at every level and in every dimension and field. It thus makes clear that the *problem* is not economics but the market, or rather, a *shift in the nature and function of markets*. Nevertheless, the relationship between the contributory economy and the market still seems somewhat unclear, and this lack of clarity lies at the root of the problem of relating the small-scale notion of the contributory economy (producing new kinds of markets on non-consumerist foundations) to the very large-scale problem of the consumerist perpetual-growth macroeconomic model itself (on which all smaller scale markets currently ultimately depend). The function of the remainder of this paper is to examine the work of the economic historian Phillip Mirowski, as a means of approaching the question of how to reimagine the future of the role of markets in a neganthropic economy, but first we will say a few more words about some of the themes of Stiegler's work insofar as they relate to this question.

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Stiegler's article, 'The New Conflict of the Faculties and Functions: Quasi-Causality and Serendipity in the Anthropocene', published in *Qui Parle* in 2017, is a version of the text that will subsequently be published in another version as the afterword of

the French re-publication of the first three volumes of *Technics and Time*, intended as a bridge to the volumes in that series that are still forthcoming. It begins by making a connection between the concept of negentropy and the Derridian notion of différance (given that both of these name deferrals that produce differentiations), and by noting the numerous attempts to take account of the concepts of entropy and negentropy in other scientific fields, including the human and social sciences.

Stiegler then takes specific note of the work of Nicholas Georgescu-Roegen, for whom the economic behaviour of the kind of beings we are amounts to negentropic processes associated no longer with the biological beings that evolve through endosomatization but with the technical beings associated with what Alfred Lotka called 'exosomatic evolution', a key difference of the latter being that behaviour is conditioned no longer by instinct but by desire and knowledge. Such knowledge is acquired and contained not on the scale of the species, but on the territorial scale of the tribe or the society, while always tending to become deterritorialized. Stiegler argues that the processes whereby knowledge is now deterritorialized, industrialized and automated on a planetary scale – processes whose common names are globalization and the Anthropocene – call for a new approach to knowledge in general, and in terms of its faculties and functions in particular. More pointedly, he argues that these processes, which are *also* equivalent to the furthest, *computational* development of what in the *Grundrisse* Marx called 'fixed capital', are ultimately entropically self-destructive and thus require a 'new economy […] based on the constant critique of the limits of exosomatization insofar as it is pharmacological'.[1]

From there, Stiegler returns to an argument put forward in *Technics and Time, 2* concerning the difference between knowledge and information, and with the way this distinction arose in the nineteenth century with the development of newspapers, advertising and telecommunication networks. Despite the seeming difficulty that these notions have produced in the history of, for example, information theory (as well as in economics), Stiegler's distinction between them is perhaps surprisingly straightforward: information is what tends to lose value over time, whereas this is not the case for knowledge, which can continue to rise in value and for unpredictable reasons. What causes this loss of value of information? In these terms, value means

[1] Bernard Stiegler, 'The New Conflict of the Faculties and Functions: Quasi-Causality and Serendipity in the Anthropocene', trans. Daniel Ross, *Qui Parle* 26 (2017), p. 83.

the difference a bit of information makes or can make *to me*, in the sense of an advantage I can have that others don't have. If so, then the spread of information that occurs when it is broadcast (for example, in newspapers, on television, over the internet) decreases that difference as this information becomes a difference held in common (which is to say, no longer a difference).

But this is so only because information is then also a commodity and because the space in which it is diffused is also a *market*, 'a *computational milieu* that turns behaviors into *inherently* calculable objects'.[2] On this market that has developed since the nineteenth century, knowledge is more and more turned into information, which is to say turned into calculable value for particular interests. Since this general spread of information depends on eliminating everything incalculable, however, it ultimately leads to the evaporation of its value, which is to say that it succumbs to informational entropy, which is *also* to say that it undermines psychosocial negentropy.

Stiegler's conception of knowledge, then, is grounded in the thought that philosophical questions, about, for instance, the division of faculties, cannot be separated from economic or bioeconomic questions about the *function* of knowledge, where the latter provides the localized criteria for selections among individual and collective behavioural possibilities. Because philosophical concepts of knowledge possess an economic dimension, and vice versa, Stiegler argues that the 'new economy' must be 'founded on a neganthropology', that is, on a form of thought that is also a form of care, in which the critique of the limits of exosomatization implies the need not just for concepts of entropy and negentropy, but 'anthropy' and 'neganthropy' – involving the 'pharmacological' character of exosomatization as a form of life that is dependent upon artificial and technical forms of memory (which Stiegler calls 'tertiary retention' and more particularly *hypomnesic* tertiary retention).

It is the circuits of these retentional forms that open up the possibility of the accumulation of knowledge, but it is these same retentional forms that make it possible to turn knowledge into calculable information, and then computationally calculable information. More generally, this pharmacological character of the tertiary retentional systems of exosomatic evolution means that the processes involved in

[2] Ibid.

exosomatic evolution, which are not just biological but economic, can, if we are not careful, lead to increases of entropy and anthropy at the expense of negentropy and neganthropy. Thus far, we, exosomatic beings, have not been careful enough, especially as the market extends its reach to every corner of the planet and every field of existence. The aim of any 'new economy' capable of responding to the limits of the Anthropocene must therefore be to maximize negentropy and neganthropy while minimizing entropy and anthropy, within that 'locality' whose dimensions are today biospheric and technospheric. It therefore depends on cultivating forms of knowledge and desire capable of engaging in the perpetual struggle to take care of contemporary exosomatic evolution.

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Stiegler thus presents an account of the Anthropocene as essentially involving the rise of a form of economic organization in which the market becomes increasingly 'absolutized' and 'hegemonic', with the consequence that knowledge is increasingly turned into information within the locality of a market that is itself increasingly de-localized, that is, globalized. But is this the character of *all* markets, in which case the problem of the absolutized market arises with the extension of markets beyond their sustainable limits, or is it a question of the *transformation* of the very notion of the market, so that it stops being one kind of thing and instead becomes another kind of thing? What is a market?

Stiegler's 'general organology', or 'exorganology', is describable in modified Simondonian terms as involving three strands of individuation, psychic, collective and technical individuation. None of these three unfinished and ongoing individuation processes can be extricated from the other two without collapsing, which does not mean that the unfolding of this collapse cannot last a long time. The opening of exosomatization (or what Leroi-Gourhan called exteriorization) leads to a technical individuation process that is both cause and consequence of hominization, which is irreducibly psychosocial in the sense that the individuation of the individual is not possible outside of the individuation of the group, while the individuation of the group is possible only insofar as it is composed of *different* individuals, each individuating individually, this separation and connection of

psychic and collective individuation (via technical individuation) being in contrast to the vital individuation characteristic of endosomatic evolution.

From such a perspective, should we conclude that a market is a collective individuation process, such as, for example, the village market in which farmers, artisans and other locals would meet to exchange goods, but also to exchange knowledge about many things related to those goods but also separate from them? Are such market*s*, which are, precisely, *local*, of a completely different type from *the* market (or the *M*arket), or does the latter just amount to the accentuation of the negative pharmacological characteristics of the technical aspect of *any* such market?

Would what we today call 'the market' then amount to a *disindividuation* process resulting from these negative pharmacological characteristics, where this form of the market doesn't truly catch hold until the nineteenth century (even if the extension of global trade through colonialism is an early form of the rise of this market and sets up its necessary economic conditions), and which in the twentieth century becomes computational, premised on the 'general equivalence' of everything (that is, on the calculability of information) and thus on its 'universality' (that is, its absolute delocalizability)? Or could there be another possibility: could it be that what happens in the twentieth and twenty-first centuries is that the market *ceases* to be a collective individuation process and becomes, itself, a *technical* individuation process, and a highly pharmacological one with the power to unravel from, and undermine, all forms of collective individuation? And if so, is it possible for the market to once again become a collective individuation process, even at a planetary scale, and under what conditions?

The neganthropological *purpose* of such questions would be to be able to begin to form an idea of: (1) how the Stieglerian presentation of markets and information relates to the way these are conceived in economics; (2) what role the market or markets would play in the 'new economy' called for by Stiegler, which he also calls a contributory economy; and (3) how this new contributory economy can possibly be scaled up to replace the *global* market responsible for the vastly anthropic character of the so-called Anthropocene.

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Now let's turn to the work of Philip Mirowski, an economic historian and philosopher whose perspective may be far from that of most economists but where this may prove to be the very thing that opens the way to a reconsideration of fundamental economic questions along the kinds of lines that Stiegler advocates. Mirowski's first major work, *More Heat Than Light. Economics as Social Physics: Physics as Nature's Economics* is dedicated to 'the most profound economic philosophers of the 20th century: Thorstein Veblen and Nicholas Georgescu-Roegen', that is, respectively, the economic philosopher of consumerism and the economic philosopher of entropy.

After paying his respects to these two economico-philosophical saints, Mirowski proceeds to unfold a work devoted to the way in which economists have suffered from 'physics envy'. By this, he means (as he summarizes it in a reply to critics) that 'neoclassical economics was born of the inept imitation of early nineteenth-century classical mechanics'.[3] Neoclassical economists, in other words, have longingly admired the billiard-ball precision of classical mechanics, but they have never taken account of the economic significance of the statistical mechanics of the second law of thermodynamics. Had they taken entropy into account, then they would not have been able to persist in fantasies of 'natural cycles' and 'perpetual growth', and they may, especially if they had also read Schrödinger, have had a way of reflecting on how behavioural decisions in the biological world of endosomatic evolution are a function of the localized systems formed by organisms and species in their improbable struggle to persist against the entropic tendency. They may then also have had a way to reflect on how, in *exosomatic* evolution, the capacities for making those decisions are furnished by criteria that are no longer just biological but economic, which is also to say, historical.

The criteria for selecting among behavioural possibilities in exosomatic evolution are commonly called *values*: these are first and foremost a matter of taking care of the technical systems of this or that epoch of exosomatization, and of taking care of them via the social systems that arrange these technical systems with the individuals living within any particular locality, and therefore of taking care of the social systems

[3] Philip Mirowski, 'Philosophizing With a Hammer: Reply to Binmore, Davis and Klaes', *Journal of Economic Methodology* 11 (2004), p. 500.

themselves and the individuals of which they are composed. Abandoning the standpoint of 'early nineteenth-century classical mechanics', for example, might have led to a way of reinterpreting John Locke, for whom the source of value was the work done upon a milieu by the instrumented hand of man in order to extract utility. But without such a revised social physics, Mirowski finds that the basis for this or that economic approach always seems to turn out to be based on some or other metaphor, where these metaphors are mostly more or less false ideas about equilibrium and invariance – or in other words on an *acknowledgment* of the necessity of some kind of account of so-called 'feedback loops', but at the same time a *denial* of the fact that such loops exist only in localized dynamic systems still subject to the overall tendency.

When Mirowski himself asks about this need of economists to grab onto this or that founding metaphor, he turns for illumination to the anthropologist Mary Douglas, and to the following quotation from her book, *How Institutions Think*:

> Equilibrium cannot be assumed; it must be demonstrated and with a different demonstration for each type of society…Before it can perform its entropy-reducing work, the incipient institution needs some stabilizing principle to stop its premature demise. That stabilizing principle is the naturalization of social classifications. There needs to be an analogy by which the future structure of a crucial set of social relations is found in the physical world, or in the supernatural world, or in eternity, anywhere, so long as it is not seen as a socially contrived arrangement.[4]

With this consideration of the need for a founding analogy or metaphor, for a stabilizing principle by which to 'naturalize social classifications', Douglas and Mirowski are addressing fundamental issues lying at the base of any economic science, past, present or future: (1) the fact that there is a need for an archi-criterion to function as the value of values; (2) the fact that this archi-criterion can be bestowed only by what Stiegler calls a higher complex exorganism and as a local and historical expression of the struggle against entropy; and (3) that, *as* an archi-criterion, it cannot be something 'real', and thus its relationship to the 'supernatural world' or 'eternity' is *always* a kind of analogy or metaphor, a de-spatialization or de-

[4] Mary Douglas, *How Institutions Think*, quoted in Philip Mirowski, *More Heat Than Light. Economics as Social Physics: Physics as Nature's Economics* (Cambridge: Cambridge University Press, 1989), p. 397.

temporalization concealing that the higher complex exorganism is itself only ever local and temporary.

In other words, there is no way in which such a founding metaphor can derive a 'theory of moral sentiments' from any kind of mechanistic physics (and with hindsight, we can see that Newtonian physics is itself nothing other than a kind of de-localization). For this struggle against entropy, for exosomatic beings who are also noetic beings, is not just a question of 'information' about the arrangement of space and time within a universe, through which some fantasy of a permanently stable existence can be maintained, but rather a question of the localized and differentiated knowledge that takes care of a locality that is not just a space but a place, and that does so by always striving to rise above the anthropy that this dynamic situation always also produces. This is what Stiegler argues in 'The New Conflict of the Faculties and Functions':

> These forms of knowledge [*savoirs*] produce tastes [*saveurs*], differences, noodiversified nuances through which the exosomatic being constantly raises itself toward a noesis that is more than human, which is always sur-human (just as the cosmos is always sur-realist: the cosmos, which is not just the universe, is composed of places within which improbable possibilities – sur-real possibilities – well up).[5]
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> Within these new perspectives, the *duty* of the economic beings that we must be is no longer just moral: it is cosmic. Based on the noetic power of dreaming (and of realizing our dreams, which is the condition of exosomatization), we must, using every means at our disposal, make this duty serve a sur-realist and serendipitous cosmology, a quasi-causal cosmology.[6]

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In a later book, *Machine Dreams: Economics Becomes a Cyborg Science*, Mirowski argues that the founding metaphors of economics shifted in the twentieth century: whereas neoclassical economics was based on the notion of the 'rational individual' as the atom of social physics, in neoliberal economics this individual tends to become, instead, an elementary cog within a giant machine, and one that may not need any longer to be presumed to be 'rational', and one that, eventually, may almost be

[5] Stiegler, 'The New Conflict of the Faculties and Functions', p. 94.
[6] Ibid., 96.

dispensed with altogether, at least for the purposes of calculation. But this cannot be understood simply as a *fall* from a humanistic economics to an inhuman one, or from a critical (in the Kantian sense) sense to an a-critical one. Mirowski argues that the deficiencies of the original models – the fact that they *implied* some kind of full psychology or anthropology but never elaborated either, and hence that this economics cannot even *truly* be considered 'Newtonian' because it never defined the character of the billiard balls that would be its social atoms – helped to make this change possible:

> the 'methodological individualism' to which neoclassicals pledge their troth is an empty creed, for there are no full-blooded individual humans in their models. Hence all those methodologists who whine about the 'atomistic' character of orthodox economics mistake the promotional verbiage for substantive content. I would add that the models are not so much atomistic as 'machinic', and that once one meets that conceptual requirement, then all other ontological commitments go flying out the window.[7]

This abandoning of 'ontological commitments' in favour of an already-implied machinic conception reaches its culmination, according to Mirowski, when economics turns computational, that is, informational. Mirowski and Edward Nik-Khah will turn again to this question in their 2017 work, *The Knowledge We Have Lost in Information: The History of Information in Modern Economics*, to a large extent dating this turn from the 1945 essay by Friedrich Hayek, 'The Use of Knowledge in Society', which is also to say, from the inception of what would become neoliberalism.

In other words, this shift to a machinic economic conception begins when the question of the knowledge held by the formerly-conceived 'rational' economic agents of neoclassical economics begins to be re-conceived as a question of information that is increasingly understood as lying *somewhere other* than in the heads of agents. For Hayek, and in one way or another for almost *all* mainstream economists thereafter, the values of things, and hence the basis of their distribution, are not a question of something known to the individuals of a society, but something that exists only in 'the Market' itself, which thus serves as a giant 'information processor'. In this sense, we can say that the fundamental premise of neoliberalism

[7] Mirowski, 'Philosophizing With a Hammer', p. 502.

is that the market *itself* becomes the stabilizing principle, the naturalization of social classifications, the archi-criterion.

For Mirowski and Nik-Khah, it is thus impossible to separate the informational and computational concept of 'the Market' from neoliberalism. They identify six important tenets of the latter:

1. As stated, the neoliberal market is to a large extent '*posited to be an information processor more powerful than any human brain, but essentially patterned upon brain/computation metaphors*'.[8]

2. The meaning of being a 'human person' is fundamentally revised: no longer a producer who through his works produces value but instead a repository of 'human capital' (according to Gary Becker, whose significance was seen clearly and early by Michel Foucault) from whom value can be extracted.

3. 'Freedom' is conceived as value of values, but the conception of freedom to which neoliberals are willing to commit is mostly limited to a matter of choices *within* a society rather than to the use of knowledge as an anti-anthropic means of transforming society: 'Freedom cannot be extended from the use of knowledge *in* society to the use of knowledge *about* society', because 'contemplation of how market signals create some forms of knowledge and squelch others'[9] would pose a threat to the conception of the Market as transcendental information processor.

4. 'Inequality' is considered not as an unfortunate by-product of the operation of the capitalist market but as a functional necessity and a source of the dynamism of the Market as a motor force.

5. If indeed it turns out that 'the Market' causes problems, then such problems will always turn out, for neoliberals, to themselves require market solutions

[8] Philip Mirowski and Edward Nik-Khah, *The Knowledge We Have Lost in Information: The History of Information in Modern Economics* (New York: Oxford University Press, 2017), pp. 54–55.
[9] Ibid., p. 56.

(whether those problems are a decline of education, a rise in greenhouse gases, or the global financial crisis itself).

6. While their dedication to 'freedom' means that neoliberals oppose 'regulation' as a fetter on economic behaviour (and which Stiegler would say is their opposition to the regulation of the technical system in general by the social systems in general), they make an exception for criminal law. As Richard Posner put it, 'The function of criminal sanction in a capitalist market economy, then, is to prevent individuals from bypassing the efficient market'.[10]

Neoliberal market fundamentalism would thus consist in the twofold claim that the 'freedom' of the market is what guarantees its capacity to function as an efficient information processor, and its capacity for functioning as an information processor is what demands that it remain 'unfettered'. From this standpoint, it is impossible to separate the rise of neoliberalism from the rise of the computer as information processor. Nevertheless, according to Mirowski and Nik-Khah, the notion of the market 'as such', as 'something that has always existed in a quasi-natural state, much like gravity'[11], faces a challenge when two things begin to occur: (1) the computer itself changes, from a device for making calculations to a network of 'distributed all-purpose communication devices […] culminating with the spread of the Internet'[12]; (2) regulators begin to intervene, in efforts 'to improve or otherwise reconfigure specific markets'.[13] In other words, the neoliberal notion of the market-qua-information processor *as* archi-criterion of the most efficient truth (the 'truth' of *Gestell*) *both* establishes itself through *and* is challenged by the transformations in computational technics and economic institutions.

We can have no trouble understanding how 'the Computer' is in fact a process of technical individuation that has been vastly defunctionalized and refunctionalized over the past several decades. But it is necessary to offer some examples to elucidate how the same can be said of 'the Market'. What does it mean to say that there were

[10] Ibid., p. 58.
[11] Ibid., p. 144.
[12] Ibid., pp. 145–46.
[13] Ibid., p. 146.

efforts to improve or reconfigure markets, and what impact does that have on the notion of 'the Market' qua information processor qua archi-criterion of truth?

The first example of such intervention given by Mirowski and Nik-Khah was the efforts of the United States government across the second half of the twentieth century to promote the growth of the national mortgage market. After the privatization of Fannie Mae in 1968, the foundations were laid for the securitization of mortgages, along with numerous other forms of 'financial innovation'. This trajectory, which forms a key part of the shift towards what Colin Crouch calls 'privatized Keynesianism'[14], through which the role of Keynesian mechanisms for maintaining stable levels of consumption were replaced by the invention and growth of consumer credit, leads to the proliferation of new instruments that produce new markets (the market is the *product* of the inventing and sanctioning of such instruments). What Mirowski and Nik-Khah describe in this way is the evolution of all of those financial instruments, *which are also new and strange markets*, that would eventually culminate in the global financial crisis that would reveal the self-poisoning toxicity lurking within these instruments and markets.[15]

A second example offered by Mirowski and Nik-Khah is the set of electromagnetic spectrum auctions run by the Federal Communications Commission (FCC) starting in 1993.[16] This centrally-conceived example of the creation of a new market was premised on the ideas: (1) that 'the Market' can most efficiently reconcile political, scientific and economic considerations; (2) that this implies that 'market design' engineered by economic experts can thus serve public policy; (3) that the best measure of the quality of this service is the revenue brought by the auctions themselves. But what became clear in the lead-up to these auctions is that it is not 'the Market' that will determine these outcomes, but the set of rules determined for the *particular* form of auction or market algorithm chosen by the regulatory body, and in a situation where the *participants* in these FCC auctions themselves hired their own game-theory experts in order to *influence* the initial choice of form and algorithm (not only in order to 'win', but in order to create *lower* revenues generally). The 'success' of these spectrum auctions would lead to a market in market-design itself,

[14] See Colin Crouch, *The Strange Non-Death of Neoliberalism* (Cambridge: Polity Press, 2011), ch. 5.
[15] Mirowski and Nik-Khah, *The Knowledge We Have Lost in Information*, p. 146.
[16] Ibid., ch. 15.

with numerous economists taking out patents on various 'made-to-order' market forms, along with the software and other elements necessary to create a full market 'package', in order to engage in a lucrative competition for government and other contracts.

A final example they offer is the attempt to find market solutions to the global financial crisis itself, whose causes can to a significant extent be traced precisely to the earlier attempts at market creation and design. This was thus an attempt to turn the Troubled Asset Relief Program (TARP) into a market solution for a market problem. The crucial moment in the unfolding of that crisis, in which it became absolutely necessary for action to be taken, was the moment when the extent and spread of the toxicity of securitization became undeniable, because it was at this moment that banks and investors suddenly understood that there was nowhere that could be considered immune from catastrophic risk. And it was this understanding that threatened to freeze the entire financial system, as banks and investors refused to expose themselves to any further risk.

Treasure Secretary Hank Paulson and Federal Reserve Chairman Ben Bernanke had the idea, or were at least open to the idea, that market designers could resolve this crisis through the design and implementation of a TARP market whose auction system would successfully *differentiate* between toxic assets and genuine assets. The (dubious) assumption behind this idea was that, in all these bundles and packages of loans and securities, there must be some that were still worth something, and the problem was thus not value but information about its location. Through the information-processing characteristics of such a market, the idea went, the government would come to discern where true value lay, and would be able to offer fair prices for these assets, lubricating and unfreezing the financial system.

The *most* perverse aspect of this scheme lay in the fact that it had to aim at a *particular* threshold of value: too low, and it would confirm the essentially worthless character of the assets, leading to a crash; too high, and it would seem like a wasteful and politically indefensible throwing of government money in the direction of those responsible for the crisis in the first place. In short, the 'real value' of the assets such a market was supposedly there to divine was really a question of engineering the *right* value for the (political) circumstances. In practice, it turned out that the difference

between, on the one hand, the ideological notion that *the* Market functions as the most *neutral* and efficient information processor and, on the other hand, the *competition* between economists about which *particular* market design would deliver the right outcome, rendered the solution unworkable (especially given the crisis timeframe faced by governments and regulators), and was abandoned by Paulson and Bernanke.

The overall lesson of these examples for Mirowski and Nik-Khah is threefold:

1. There is a progressive elimination of the noetic role of the psychic individual from the conception of the market qua information processor, an elimination that occurs as economists strive to reduce markets to calculable and programmable elements, as 'the profession came to hold that its task was to build markets in such a way that agent cognition should be irrelevant to their successful operation'[17], a situation they describe as the production of 'artificial ignorance';

2. There is a contradiction between, on the one hand, the neoliberal ideology of the Market as most efficient information processor, and, on the other hand, the diversity of actual markets, a contradiction that is brought to an extreme when economists become designers and engineers of markets, even if this diversity is a *diversity of the calculable*, so to speak, and where the *possibility* and the *necessity* of *maintaining* this contradiction arises *because* knowledge has been systematically eliminated from the agents of the market as well as from governments and institutions, and hence the 'god's-eye knowledge'[18] required to sculpt market outcomes must be ascribed *solely* to those experts who will then become the economist-sophists selling markets designed as 'boutique' rather than 'universal' information processors;

3. All of this unfolds not just as an inevitable tendency of knowledge to regress to information, or as if an inevitable effect of the rise of computation is to eliminate psychic and collective individuation, but rather as an ideological political and economic program in which neoliberalism 'influenced the way

[17] Ibid., p. 238.
[18] Ibid., p. 240.

computational themes would enter economics'[19], a neoliberalism whose battle cry might be freedom but whose fundamental goal is power, to be obtained by the *means* of power.

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Some questions, problems and conclusions suggest themselves on the basis of Mirowski's work:

- In addition to the fact that it exposes the notion of the universal market qua information processor as an ideological fantasy, it *also* shows that all of those diverse, engineered, idiomatically-calculable (so to speak) markets are themselves based on informational models that are largely *performative fictions*, informational prostheses whose function is to serve particular aims (make possible particular selections) while still *partaking* in the fantasy of the universal, neutral and efficient information-processing market.

- While Mirowski exposes the failure of economics to incorporate the question of thermodynamics, and is thus concerned with the way in which economic phenomena are subject to entropy, he *also* has a notion that markets 'reproduce' in an essentially negentropic way, 'by extruding copies of themselves', which are 'then "selected" for persistence by the human beings who make use of them and constitute the environment in which they grow and reproduce'. It is the irreducibly non-mathematizable character of the goals of these human beings that means that markets can never converge to a single form, but where there is, nevertheless, a negentropic 'arrow of time' in 'market evolution', a tendency towards increased complexity according to principles of 'von Neumann (*not* Darwinian) evolution'.[20] But is this so-called market evolution process really capable of being characterized as negentropic or neganthropic, whether according to biological or informational metaphors? To what extent does the answer to this question depend on whether we characterize markets as collective individuation processes or technical individuation processes, and to what extent does it depend on

[19] Ibid., p. 239.
[20] Mirowski, 'Philosophizing With a Hammer', p. 506.

whether the effect of these markets *on* psychosocial individuation is to promote it or undermine it?

- According to Mirowski, the source of the dynamic but pharmacological *mutation* of these evolving markets lies in attempts to "'bend" or "break" the rules; this source of randomness [being] beneficial for the evolutionary process, if kept within certain bounds'.[21] But is the notion that the dynamism of this evolutionary process comes from the hubris of the rule-breakers (who want to take advantage of the constraints and limits of existing markets) not the very ideology of the libertarian disruptors, who are no longer merely neoliberal precisely to the extent that they conceive criminal sanction as itself a brake on the efficiency of the market, and who for that reason prefer to engineer legal vacuums by always being *in advance* of the law, whether criminal or otherwise?

- If Mirowski's goal is to describe the 'history of information in modern economics', and to that end focuses on the shift whereby economists become not just scientists but purveyors of market design, then in the twenty-first century isn't it necessary to suggest some other kinds of examples too? Did not platforms such as Amazon and eBay create new markets with specific sets of rules designed to serve particular goals and objectives? More importantly still, did not Google and then Facebook design new algorithmic markets that have enabled them to dominate global advertising, by taking advantage of the vast bi-directional flow of information occurring on these platforms? In short, are not the platforms of platform capitalism nothing other than new forms of market design resulting from new kinds of collaboration between computational and economic engineers, but forms whose goal is to eliminate the economists themselves in favour of a *purely* automatic information processor?

A fundamental lesson from Mirowski's work is, as mentioned, that governments and institutions have been proletarianized *by* economists *with respect to* economic knowledge itself. It is this economic proletarianization that *forces* these governments

[21] Ibid.

to turn *back* to economists in order to find market-informational solutions (purportedly useful performative fictions) to problems caused by markets themselves, including the problem of climate change, but where this 'turning back' simply introduces new chances for new problems. On the other hand, the engineered algorithmic markets of platform capitalism operate *automatically* to disrupt other markets, in the name of freedom but according to imperatives that would seem to exceed Mirowski's notion that neoliberalism is concerned only with freedom *within* society rather than *about* it. It is hard not to conclude that this dual process of market evolution does indeed evince an 'arrow of time', but one that seems thoroughly entropic, a complexification of markets, perhaps, but one that is also the creation of a new, standardized hegemony, in a shift that seems to define the Anthropocene as a period across which markets of every kind cease to be collective individuation processes and are ever-increasingly-automatic technical individuation processes.

Let's return to the question of the contributory economy. It has the explicit aim of reversing the neoliberal tendency identified by Mirowski through which the psychic individual is reduced to 'human capital' and ceases to be the producer of value by his or her works. By re-establishing the possibility of work, by remunerating it, and by measuring its value according to the ultimately incalculable archi-criterion of neganthropy, the individual (worker) again becomes a generator of knowledge in a way that can then be shared and in this way a contributor to genuine local wealth.

Beyond the level of individual work and its social effects within a city or even a country, however, the necessity of a new economic model is established by a critique of the global economic system that shows this system is reaching its limits – in terms of the destruction of its own basis in the conditions of the biosphere, the destruction of its own basis in terms of the exploitation of libidinal energy (and the belief in knowledge it makes possible), and the destruction of its own basis in terms of the elimination by automation of the post-Keynesian distribution mechanism necessary for a consumption-based model. The potential problem we identified was that the contributory economy seems like a model applicable to the scale of the local community, and perhaps even to the national scale, but that it is hard to see how it can be scaled up to the planetary scale, *even though* that is the scale that ultimately necessitates a new model. The problem is that, *unless* this upscaling occurs, the

contributory economy seems bound to remain an epiphenomenal half-solution, akin, despite all its virtues, to a kind of grand, and in itself very worthwhile, tending of one's own garden.

What we can see by reading Mirowski is that this is not just a question of the hegemony of '*the* Market', but of the combined unfolding of: (1) the history of computation; (2) the economic problem of the role of information and markets in society; and (3) a neoliberal economics that *drives* the reduction of (economic) knowledge to information, but where this unfolding history leads to a proliferation of different and diverse markets rather than a truly *universal* market. It is markets that become universal, rather than *the* Market, but this *diversity* of markets is also an *industrialization of the market itself*, as markets become products bought and sold by economists, and, precisely, *marketed* by them.

What we can see by going *beyond* Mirowski is that platform capitalism is the attempt to exceed *all these scales* and dispense with economists themselves, except as in-house engineers dedicated to ceaselessly-improving algorithms that function automatically and without need for the 'selections of the human beings who make use of them'. It is not individuals who 'bend' or 'break' these rules in order to drive market evolution but the platforms themselves that defy *all* rules, and where these platforms *are* markets. And they do so in order to produce addictive processes for the human beings who are still necessary for the system as producers of clicks and ultimately of consumer behaviour. At the same time, energy markets and carbon market mechanisms continue to be formed or proposed, as market solutions utilizing different indicators but still devised by economists as a way of solving problems caused by global markets themselves. If, as seems to be the case, such solutions prove to be fantastical, then does the internation name a non-market mechanism that would amount to a global institution operating according to qualitative neganthropic criteria rather than calculable economic indicators, does it name a *more-than*-market solution that *incorporates* global markets into a broader transformation of the conditions of globalization, or does it amount to a placeholder name in lieu of a remedy?

Today, seven of the ten largest corporations in the world *by revenue* remain fossil fuel energy companies (and the largest of all is the emblem of consumerism that is

Walmart), and seven of the ten the largest corporations in the world *by market capitalization* are the leading companies of platform capitalism. In both cases, these giants are not just *expressions* of a universal market: they *define* the markets in which they operate. At the same time, they are the leading drivers of climate change, addictive consumerism and automation – that is, they are fundamental agents of the headlong rush towards limits. It is thus strictly impossible to deal with the question of what it means to reinvent economic processes while ignoring the vast scale of this entropic and anthropic reality. To not ignore this entropic reality implies asking what macroeconomic model can replace the consumerist perpetual-growth model, and this in turn implies asking what function markets fulfil in such a model and at every scale, *including the largest*. It means knowing whether those markets need to be engineered by knowledgeable economists, and whether and how the role of markets would no longer be to computationally process 'true' information about calculable economic 'exchange values' and instead be to generate real but incalculable knowledge defined according to neganthropic values in order to generate real but incalculable neganthropic wealth. What would it mean for a *global* market to be a generator of such knowledge, and how is such a thing even conceivable, let alone achievable?