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Organization, Anticipation, and Closure in Markets and Science

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Abstract: The approach of some systems biologists, Robert Rosen in particular, to the understanding of biological systems calls for a focus on the organization of the processes internal to such systems, rather than on equilibrium states characterized in material terms and their state transitions viewed as taking place according to dynamical laws. A similar approach is possible for social systems. It is shown that the basic processes operative in both markets and science can be understood as being organized such that these systems exhibit material openness, process closure in the sense of a complete causal cycle, and anticipation based on the maintenance of an internal model of the system’s environment.

Keywords: markets, science, organization, anticipatory systems, process closure.

I. INTRODUCTION

I present here a new approach to the understanding of market (and other) systems of social interaction. Although, perhaps inevitably, I appear critical of existing methods, specifically by economists, for modeling such systems, it is not my intention to represent this new approach as the royal road toward understanding—social systems are complex arrangements, and as such they admit of many perspectives that can be useful in their investigation. What is ‘new’ about this approach, and why it can be complementary to other approaches, is that it is based on the idea that the organization of the processes active within a social system, their dependencies and how they interact, is at least as deserving of attention as are the states of the system characterized in terms of the actors and the material components. For the initial elaboration of that idea, I set the context as the market economy.

Macroeconomics, the study of the economy as a whole, has developed over many years from the general equilibrium equations of Walras through the marriage with some of Keynes’s ideas in the neoclassical synthesis, to the modern dynamic stochastic general equilibrium models which are thought to model the economy, or at least large parts of it, sufficiently well to provide useful guidance to central bankers and other policymakers. Walras self-consciously took his system of equations from classical mechanics, which, not unexpectedly, raised questions of applicability to systems of human interaction, but, in the long process of assimilation and development of Walras’s system, where mathematical consistency conflicted with realism of assumptions, it was the former that won out. In particular, the problem of interactions between agents has been avoided by the device of the representative agent, and the problem of agent expectations has been sidestepped by the assumption that the single agent’s expectations are never systematically different from the equilibrium of the model. The modern models may be significantly more sophisticated than Walras’s original, but they have in common with it that they represent the market economy as a mathematical machine.

The purpose of these models is to compute snapshots of equilibrium states of the economy (in terms of aggregate quantities such as GDP, unemployment level, and inflation rate) resulting from given initial conditions, and this focus on end states does not, and is not intended to, provide understanding of the ways in which the interactions between the individual participants in the economy might (or might not) move the system as a whole toward an equilibrium state. So, criticism for lack of realism in this regard rather begs the question. But the lack of consideration of the processes of interaction, of the constraints faced by the interacting parties, and of the fact that disequilibrium, rather than equilibrium, would appear to be the more realistic characterization of the normal state of affairs in a market economy, has left a gap. Market process economics, which covers a diverse range of inquiry ranging from evolutionary economics to the theory of the entrepreneur (both Schumpeterian and Austrian) is a recognition of the need to fill this gap, but although much useful work has been done in understanding difficult phenomena such as expectations, entrepreneurship, learning, confidence, and the conse-
quences of regime uncertainty, little or none of this can be readily integrated into the mainstream models.3

By focusing on processes of interpersonal interaction and the constraints, incentives, and possibilities for knowledge transmission that they embody, rather than on equilibrium end states, the various strands of market process theories are able to provide understanding of economic activity involved in internal state transitions and of the constraints which impinge on this activity and which are in turn moulded by it. But they do not add up to a theory of the economy as a whole. While we learn a great deal about the nature and operation of particular economic processes, we learn very little as to how these processes are organized, how they are interlinked, how they depend on each other, and how they work together to produce and maintain the complex system that is the economy. The obvious suggestion that follows is that it would be helpful to have, as a complement to theories of process operation, a theory of process organization. That is the thrust of what follows: I describe, admittedly in very general terms, the interactions and co-dependencies of the most basic processes operative in a market economy. The exclusive concentration on organization means that normal economic data referring to the movements and magnitudes of quantities of goods, services, and money, and the prices of such things, play no part; it is the structure of the interplay of processes that is in focus.

A number of interesting results follow from a myopic concentration on process organization. First, it becomes plausible that the form of organization in a market economy is conducive to the adaptation of the system as a whole to its environment. Second, one of the organizational elements can be characterized as functioning as an internal model of the system's environment—that is to say, the system is not merely adaptive, but capable of a form of anticipation. Third, the system is a complete self-maintaining whole in the sense that, under the assumed constraints, the conditions for the operation of each of its processes are provided by at least one other process in the system. While the system is materially and energetically open, there is process closure in the limited sense that the processes form a causal cycle. Apart from the maintenance of some fundamental constraints, the system requires no outside process for ensuring that its operation can continue. Fourth, it seems likely that other systems of human interaction can be described in similar organizational terms, and I show as an example how the basic processes operative in the community of interacting scientists can be understood as also being organized into an adaptive, anticipatory system with process closure.

II. BACKGROUND

The basic idea that the organization of system processes is at least as important a subject of study as the physical effects of those processes has a long history in biology,4 dating back at least to Kant but with earlier glimmerings as far back as Aristotle.3 Kant (1790) described biological organisms as purposeful systems in which the parts ‘so combine in the unity of a whole that they are reciprocally cause and effect of each other’s form’. He pointed out that such systems are self-organizing and self-maintaining: the system is formed and maintained by the interaction of the parts of the system, and the parts are formed and maintained by the system’s processes.4 He contrasted such systems with a mechanical arrangement such as clockwork, in which ‘one part is for the sake of the others, but it does not exist by their means. In this case the producing cause of the parts and of their form is not contained in the nature (of the material), but is external to it’. Machines require external maintenance processes; organisms do not.

Although Kant’s characterization of biological organization was well appreciated throughout the 19th century, it was not until the 1920s that the idea of ‘systems thinking’ gained major traction in the work of biologists, particularly Bertalanffy (1928).7 In arguing for biology’s status as a science independent of physics, he directed attention to the emergence of phenomena at the system level, phenomena that arose only as a result of the interactions of the system components and were not reducible to the characteristics of the components in isolation. It is notable that when Bertalanffy talked about the organization of a biological system he emphasized the organization of the internal processes rather than the organization of the physical matter—in fact, he held that the former determined the latter. In Bertalanffy’s (1968, p. 27) own words: ‘In the last resort, structure (i.e., order of parts) and function (order of processes) may be the very same thing: in the physical world matter dissolves into a play of energies, and in the biological world structures are the expression of a flow of processes.’ This prescient observation foreshadows recent developments in process metaphysics, which takes the fundamental nature of the world to be organizations of processes.8 Bertalanffy also elaborated on the thermodynamic openness of such systems, describing organisms as systems in ‘flux equilib-
rium’, dynamically maintaining themselves through exchange of matter and energy with the environment.8

In the development of his theory of cognitive development in children as a self-organizing complex of processes, Piaget, working from an analogy with biological systems, introduced the concept of closure as the operation in the system of a set of processes which, together, without the aid of any outside process, reconstitute each other and thus maintain the operation of the system. Coupled with Bertalanffy’s notion of thermodynamic openness, this conceptual combination characterizes biological systems as materially and energetically open systems with closed, self-maintaining organization.10 The persistence in such systems is in the functional processes within the system; the physical components are continuously being reconstituted with the help of inputs from the environment.

Rosen (1985, 1991) made two significant contributions to the theory of biological systems: a general treatment of anticipation based on the many examples of anticipatory behaviour evident in biological systems, and a reformulation of the twin phenomena of thermodynamic openness and process closure in terms of the Aristotelian categories of causation.11 These two contributions are closely linked, as will become evident. Rosen’s treatments in both cases were highly mathematical—he did, after all, style himself as a ‘mathematical biologist’12—but the essential ideas behind his work can be understood with a minimum of mathematical notation.

A process \( f \) which transforms inputs \( A \) to outputs \( B \) can be represented as \( f: A \to B \), i.e., as a mapping from domain \( A \) to range \( B \). To give a specific example used by Rosen, \( f \) could represent a metabolic process in which food items (elements of the domain set \( A \)) were processed to produce items of fuel (elements of the range set \( B \)). It is possible for the domain and range set elements to be themselves mappings—for example, the mapping process \( f \), realized as an enzyme, could itself be the product of a replacement process replenishing the metabolic enzyme from available inputs. Given the process notation \( f: A \to B \), Rosen (1991) identified the material cause of (the elements of) \( B \) as (the relevant elements of) \( A \), and the efficient cause of \( B \) as \( f \). Interacting combinations of such processes, represented in terms of such mappings, describe the organizational structure of the system as a whole. The thermodynamic openness of biological systems was, for Rosen, represented by openness to material causation, while process closure was represented by closure to efficient causation, i.e., a network of mappings which every mapping was an entity in the range set of at least one of its companion mappings within the network.

In addition to material openness and efficient closure, the capacity for adaptation is another characteristic of biological systems. As open systems, they are affected by environmental change, and may react to that change in various ways that maintain their structure and coherence, including the adoption of internal changes. Simple biological systems may adapt wholly as feedback homeostats that smooth out randomness in the environment, but in more complex systems there is the phenomenon of anticipation, where adaptation is informed by a prediction of possible future states of the environment. Rosen (1974) defined ‘anticipatory modes of behaviour of organisms … [as those] in which an organism’s present behaviour is determined by: (a) sensory information about the present state of the environment; and (b) an “internal model” of the world, which makes predictions about future states on the basis of the present data and the organism’s possible reactions to it.’ Note that this phenomenon of anticipation allows for a straightforward understanding of final cause as a possible future state which is anticipated in the present.

Rosen’s work has been very influential among ‘organicist’ biologists, and while there is ongoing debate surrounding some of his more detailed claims, his status as a prominent contributor to the field seems assured.13 The general attributes of thermodynamic openness, process closure, and anticipatory adaptation are all recognized as salient characteristics of biological organisms, although work continues to understand how the processes responsible for these characteristics function at a more specific level. But the biological details, however interesting, are not the concern here—what is of present interest is to what extent those characteristics of biological systems have analogues in social systems, and whether such analogies assist in understanding the function of social systems.

III. APPLICABILITY

The employment of biological analogies to economics and social theory has a long, interesting, and sometimes controversial history.14 Even as careful an economist as Alfred Marshall was very inclined to countenance the future usefulness of biological analogies. In fact, he is widely quoted as saying (1920, p. 14) that ‘the Mecca of the economist lies in economic biology rather than in economic dynamics’.15 Less often quoted, however, is the warning that follows this directly: ‘But biological conceptions are
more complex than those of mechanics ...'. And this complexity, though not incompatible with the subject matter, leaves a lot of room for misapplication. Rosen, on the other hand, was definite about the need to pursue biological analogies, specifically where adaptation was evident. The social systems considered here, markets and science, have been characterized by numerous authors as 'complex adaptive systems', and so the domain of applicability seems reasonable. What is of interest here, however, is the analogy, not simply to biological adaptiveness, but to biological anticipation in the context of thermodynamic openness and process closure.

The possibility for the application of these characteristics of biological systems to social contexts has not gone unnoticed. Rosen himself explicitly entertained the idea, discussing at length how understandings of adaptiveness in complex biological systems might be usefully applied to complex economic systems. Leydesdorff & Dubois (2004) incorporate anticipation into a social system of interacting groups modeled by a version of the logistic equation. Louie & Poli (2011) discuss the application, at a very high level of generality, of Louie’s extension of Rosen’s work on self-referential systems to physiology, ecology, cognitive science, and social science, concluding that many natural systems, including brains and societies, appear to be systems closed to efficient causation. But while suggestive, none of these applications rises to a level much beyond the citing of possibilities and rather vague hints as to how progress might be made.

To summarize Rosen’s picture of anticipatory systems, a system is anticipatory if it contains a predictive model of itself and of its environment which allows it to change state on account of the model’s predictions as to a future situation. This ability to develop plans for possible futures, to form expectations of the future based on an internal model, allows for modification of the system’s current state in the course of implementing these plans or predictions and may result in output to the environment conditioned by that modification. And the system’s input from the environment may be processed within the system to confront, and perhaps modify, the model—for the model to be useful for anticipation, the system must be capable of learning, i.e., adjusting its model to reflect experience of reactions from the environment, especially in situations where prior expectations were not met.

These essential features, in terms of process organization, of a materially open anticipatory system are illustrated in the following diagram, where the box represents the conceptual separation of the system from its environment:
If this sort of arrangement is to have any relevance for understanding social systems, there must be identifiable, in the system of interest, a structure which serves as an actionable model of the system’s environment, as well as processes which effectively update that model and which employ that model to influence the propensities of the system for interacting with the environment. The question of whether these processes constitute a closed set of processes can only be answered by a more specific characterization of the processes involved.

IV. Market Processes

A ‘market system’, as defined here in very general terms, is a complex of people in their roles of producers, consumers, entrepreneurs, buyers, and sellers engaging in activity mediated by the institutions of property, contract, exchange, and money. Observable as an emergent result of the exchange interactions is the formation of a ‘price structure’—most obviously, a set of generally recognized ‘market prices’ attached to specific goods and services, including capital goods, each of which, while usually stable in the short run within small limits, can change as circumstances of supply and demand change. The sensitivity of the price structure to changes in external conditions and to changes in the preferences and plans of market participants makes it the obvious candidate for a structure within the system that serves as a model of the system’s environment—a model that is continuously updated by environmental feedback transmitted by the agency of repeated exchange transactions. Entrepreneurs within the system rely, at least in part, on price structure data in imagining plans for the production of future products and in assessing the feasibility of these projected production plans, and thus act as an anticipatory process affecting the system’s production propensities.

Exchange transactions in both consumer and capital goods are the instrument through which the system’s model is continuously updated to register the state of external conditions relevant to the market system. The nature of the transactions is such that their effects are rarely so unstable as to be useless as information—in the case of prices, for example, attempted deviations from market price tend to encounter negative feedback in that, all other things being equal, a seller asking a price higher than the market price tends to lose business. But if all other things are not equal, if real circumstances of supply and demand change, then market prices do change in adaptation to the new environment. Similarly with the structure of capital goods—entrepreneurial success or failure, ultimately shown up in the course of exchange transactions reflecting consumer preferences, will result in changes not only to the prices of capital goods but also to their appraisals as complements and substitutes within the capital structure.

Given these identifications of market process and structure, the overall process organization of the market system can be illustrated as follows:
It is to be emphasized that this is a high-level picture of the functional organization of a market system, not of the movement of physical things within the system. It can be contrasted with the old standard circular flow diagram, which depicts an economy solely in terms of the movements of materials—goods and money—and in so doing represents the economy as a purely mechanical system. But an economy (as being represented) is not a simple mechanical system—it is an anticipatory system whose states depend on possible future states. In incorporating and maintaining a working model of its environment, a model which can be accessed internally within the system to project the anticipated effects of future actions taken by the system, it implements creativity. Of course, the market system has components, the market participants, which are themselves creative, but it is not simply reducible to them, for it provides an organization within which these components can interact to combine creatively in ways that are not possible for them when acting independently.\textsuperscript{26}

The specification given here of particular processes within the system uses, for convenience, the mapping notation of Rosen (1991) described above. The external ‘material’ elements (both tangible and intangible) impacting the market system are represented as the following sets (the memberships of which will change in the course of the system’s operation):

- The set of resources $R$ which enter the system from the environment.
- The set of subjective preferences $S$ of market participants.

Elements produced within the system are represented in terms of the following sets:

- The price structure $M$ which functions as an updatable model of the environment, as experienced by the system in terms of $R$ and $S$.
- The set of output goods and services $O$ generated by the system’s production processes.
- The set of conjectures or plans $C$ developed by entrepreneurs.

The processes\textsuperscript{27} which constitute the dynamic elements of the system are as follows:

- **Exchange $(x)$**: Out of repeated monetary exchanges of goods and services between market participants (acting according to their individual subjective preferences), each exchange transaction resulting in a price observable to other market participants, there emerges the price structure $M$, i.e., $x: O, S \rightarrow M$.

- **Entrepreneurship $(e)$**: This is a function of some market participants which, by projection based in part on the current price structure, generates plans or conjectures which act as dispositions to change elements of the system’s productive activity, i.e., $e: M \rightarrow C$.

- **Production $(p)$**: The implementation of entrepreneurial plans is a process that maps plans, resources, and (higher level) goods to (lower level) goods, i.e., $p: C, R, O \rightarrow O$.

In summary, $x$ uses $O$ to produce $M$, $e$ uses $M$ to produce $C$, and $p$ uses $C$ to produce $O$, all with the aid of, and conditioned by, the external influences $S$ and $R$.

It is the purposeful agency of the market participants, in the course of acting according to their subjective preferences and motivations (‘pursuing happiness’), which provides the motive force animating the processes in the system. This is a major difference between biological systems and social systems—in social systems, the efficient causes all have as their basis the purposeful action of the participants in the system. There is not ‘closure to efficient causation’ in the same sense of the biological requirement for closure that the elements that act as efficient causes be generated within the system. The efficient closure in the market system, seen in the closed causal cycle of processes detailed above, is effected by the constraint that market participants pursue happiness in specific ways: they participate in exchange, entrepreneurship, and production under the institutions of property and contract—a set of processes which, given the system’s material openness, are each necessary for the function of the others, and which together are sufficient to enable the system’s existence as a self-maintaining entity.

The high-level picture of a market economy developed here is one of an epistemic system, a system capable of building within it some relevant knowledge of its environment, and capable of employing that knowledge to anticipate environmental effects and thereby to successfully adapt to them. Echoing Harper (1996, p. 282), it could usefully be described as a self-organizing and self-maintaining Popperian system\textsuperscript{28} in that its adaptive apparatus consists of a process for developing conjectures based on existing knowledge, a process for implementing these conjectures so that they may be confronted by the environment, and a ‘refutation’ or ‘error elimination’ process through which failures and successes of this confrontation are learned from and the systemic knowledge updated.

It is of interest to note that a ‘consumption’ process is no direct part of the picture developed here. It is obviously of utmost importance that individual market participants can
use the output of the market processes for both essential maintenance and pleasure. And the attitudes of market participants toward these goods and services are expressed in their preferences, which are one of the two aspects of the environment to which the system adapts. So, while from the perspective of an individual consumption is a vital process, from the perspective of the system it is a side-effect, although one without the indirect effects of which the system could not function.

V. ASSESSMENT

The market system process organization presented here is obviously an idealization. No detail is given as to how the fundamental constraints of property and contract are to be implemented and maintained, and how tight these constraints would have to be in order for the essential epistemic processes to proceed effectively. No detail is given about the structure of the production process\textsuperscript{32} and of the various firms, differing in size and organization, through which entrepreneurial plans are implemented.\textsuperscript{30} And no detail is given as to how much the exchange, entrepreneurship, and production processes can tolerate external interference with their functioning and still fulfil their epistemic function.\textsuperscript{31}

The system is presented as fully formed; no indication is given as to how it could have evolved from simpler and less potent arrangements. All of these shortcomings are grist for many mills of future work.

But, for the time being, highlighting the process organization has some virtues—it relates and puts into context some important observations and hypotheses about the functioning of the market system, showing them to be consequences of the fundamental process organization. These involve aspects of economies which appear to be of obvious significance for understanding how markets actually work, but yet have no obvious place in mechanical macroeconomic models featuring quantities in equilibrium.\textsuperscript{32} In fact, the history of economic thought is replete with observations, studies, and hypothesis centering on such phenomena as entrepreneurship and the epistemic characteristics of markets, all of which clearly say something important about functioning of markets, and yet none of this finds its way into macroeconomic theory. They, as Klein (2008, p. 175) puts it, ‘are viewed as interesting, but idiosyncratic, insights that do not easily generalize to other contexts and problems’ and certainly present difficulties in rendering in mathematical terms. For example, consider the following classics:

- Schumpeter's vision of the entrepreneur as 'the pivot on which everything turns'.\textsuperscript{33} It is the entrepreneur, according to Schumpeter, whose innovations drive economic development. Entrepreneurship is a process that is both creative, resulting in the emergence of new production possibilities, and destructive, rendering obsolete existing methods and products and the firms which depend on them for profitability.\textsuperscript{34} Significantly, it is portrayed as a process internal to the economic system. Although Schumpeter (1954, p. 529) was correct in noting that economists had never 'accomplished the impossible feat of overlooking the most colorful figure in the capitalist process', modern macroeconomics comes very close to that accomplishment, rendering entrepreneurial effects as unexplained technological shocks impinging on the economic system from without.
- McCloskey's explanation of the 'great enrichment'. McCloskey (2010) focuses on what she correctly thinks should be the major phenomenon requiring economic explanation: the increase of real income per head since 1800 by a factor of something between 16 and 100 (but probably closer to the latter), an increase which (together with its timing) is not explainable in terms of either supporting institutions or efficiency increases. After analyzing, and rejecting, a long list of possibilities, her explanation (p. 394) is that 'a pair of positive externalities', specifically, 'a new dignity for the bourgeoisie in its dealings and a new liberty for the bourgeoisie to innovate in economic affairs' which emerged in Holland and England in the 1700s are the crucial factors at play. The ability for entrepreneurs to be tolerated and accorded sufficient respect and forbearance meant that practically creative people could respectively, and with expectation of profitably, attempt to implement their innovative plans and conjectures. That the economic growth unleashed by this freeing of the entrepreneurial process was unprecedented underlines the essential role of that process in the functioning of the market system.
- Mises' 'problem of economic calculation'. Mises (1920) explained in detail the dispensability of market prices for entrepreneurial assessment of possible production plans, a process he called 'economic calculation'. He pointed out that the ability to 'calculate' based on market prices (p. 14) ‘affords us a guide through the oppressive plenitude of economic possibilities … Without it, all production involving processes stretching well back in time and all the longer roundabout processes of capitalistic production would be gropings in the dark’.\textsuperscript{35} In short,
without a price structure which is the result of market activity, a rational system of production processes is not possible.

- Hayek’s ‘knowledge problem’. Hayek (1945, pp. 519-520) identifies ‘the economic problem of society’ as ‘a problem of how to secure the best use of resources known to any members of society, for ends whose relative importance only these individuals know’, i.e., ‘a problem of the utilization of knowledge not given to anyone in its totality’. He (pp. 526-527) points to the price system, the process of monetary exchange under the norms of property and contract, as ameliorating the problem by providing the function of ‘communicating information … which enables individual producers … to adjust their activities to changes of which they may never know more than is reflected in the price movement’. The process is one of learning about environmental inputs, generating knowledge about environmental changes, not through analysis by individuals but as the emergent result of continuous exchange transactions.

The picture of market process organization developed here integrates all of these prescient contributions into a single schema. The central importance of the entrepreneurial process described by Schumpeter, the potency of which for productive economic growth and prosperity is pointed to by McCloskey, is linked to, and made possible by, the existence of the price system as explained by Mises, which in turn is characterized by Hayek as the result of a process in which the local, idiosyncratic, and dispersed knowledge of individuals of the state of their environment as they assess it is rendered into a useful form that is widely accessible. The closed circle of the processes of entrepreneurship, production, and exchange, anchored by an internally generated model of the environment, constitutes the basic organization of the market as an anticipatory system.

Hayek (1945, p. 528) expresses his conviction that his ‘knowledge problem’ considerations apply in social contexts other than markets: ‘The problem which we meet here is by no means peculiar to economics but arises in connection with nearly all truly social phenomena … and constitutes really the central theoretical problem in all social science.’ If he is right, and if the concentration on process organization deployed here, a generalization of Hayek’s approach, is of use in extending the understanding of market systems, then it is a reasonable conjecture that it could be of use in conceptualizing and understanding other prominent and long-lasting social arrangements. The arrangements of modern science, which are characterized not by property, contract, and exchange norms in the market sense, but by norms of publication, citation, and correspondence with observation, is an obvious candidate. While what follows is no more than a suggestive sketch, it makes the important point that the potential applicability of process-centric models is not limited to markets but might usefully be applied to the understanding of other major social arrangements.

VI. SCIENCE PROCESSES

It is no surprise that learning and anticipation should play a large part in any description of the activity of science, but in the usual descriptions of science the processes of learning and anticipation refer to the activity of individual scientists. But here, the focus is on learning and anticipation as systemic processes—processes which, although obviously involving individual activity, operate at the system level and whose emergent effects are not under the control of any individual.

A ‘science system’, as defined here in very general terms, is a complex of people in their roles of researchers, experimenters, theorists, and reviewers engaging in activity mediated by the institutions of publication and citation. Observable as a result of continuous publication and citation interactions is the emergence of a structure of scientific knowledge—a set of generally accepted theories and methods which, while usually stable in the short run within small limits, can change in reaction to new findings and reassessments. The body of scientific knowledge is the structure within the system that serves as a model of the system’s environment—a model that is continuously updated by environmental feedback transmitted by the agency of repeated publication and citation transactions in papers through which scientists engage with each other. Scientific entrepreneurs within the system rely, at least in part, on this existing knowledge base in imagining conjectures and hypotheses and in assessing the feasibility of these hypotheses as scientific contributions, and thus act as an anticipatory process affecting the system’s research propensities.

Given these identifications of science process and structure, the overall process organization of the science system can be illustrated as follows:
Just as was done for the market system, this picture of science is focused on functional organization, and represents the system of science as an anticipatory system incorporating and maintaining a working model of its environment, a model which can be accessed internally within the system to project the anticipated effects of future actions taken by the system, providing an organization within which its component scientists can combine creatively within the system’s constraints in ways that are not possible for them when acting independently.

The external ‘material’ elements (both tangible and intangible) impacting the science system are represented here as the following sets (the memberships of which will change in the course of the system’s operation):

- The set of phenomena $A$ in the environment which are observed in the course of research.
- The set of resources $R$ which enter the system from the environment.
- The set of subjective preferences $S$ of scientists. These preferences are not arbitrary, although they will differ across scientific domains and between schools within those domains. In the physical sciences, particularly, there is a strong norm supporting a preference for correspondence with observation.

Elements produced within the system are represented in terms of the following sets:

- The body of scientific knowledge $M$ which functions as an updatable model of the environment, as experienced by the system in terms of $A$, $R$, and $S$.
- The set of output papers $O$ produced by scientists explicating their work.
- The set of conjectures or hypotheses $C$ developed by scientific entrepreneurs.

The processes which constitute the dynamic elements of the system are as follows:

- **Engagement ($x$)**. Out of repeated publication and citation between scientists (acting according to their individual subjective preferences), there emerges the structure of scientific knowledge $M$, i.e., $x : O, S \to O, M$.
- **Scientific Entrepreneurship ($e$)**. This is a function of some scientists which, by projection based in part on current scientific knowledge, generates conjectures which act as dispositions to change elements of the system’s research activity, i.e., $e : M \to C$.
- **Research ($p$)**: The development of entrepreneurial hypotheses and the experimental confrontation of their deduced consequences with environmental phenomena, a mapping from hypotheses, phenomena, resources, and papers to papers, i.e., $p : C, R, A, O \to O$. 


In summary, x uses O to produce M, e uses M to produce C, and p uses C to produce O, all with the aid of, and conditioned by, the external influences A, S, and R.

As with the market system, it is the purposeful agency of the scientists, in the course of acting according to their subjective preferences and motivations,40 which provides the motive force animating the processes in the system. Scientists interact by participating in engagement, entrepreneurship, and research under the institutions of publication and citation—a set of processes which, given the system’s material openness, are each necessary for the function of the others, and which together are sufficient to enable the system’s existence as a self-maintaining entity.

It would take a serious excursion into the philosophy and sociology of science to flesh out and assess the potential of this process-organizational picture of science for the understanding of the social activity of science.41 But preliminary work indicates that some individual and unconnected claims of postpositivist philosophy of science—including constrained relativism, strong antifoundationalism, Duhemian underdetermination, inescapable theory-ladenness, and limited incommensurability—can be related and put into the context of a nonnormative and naturalistic philosophy of science with the help of such a process-oriented picture.

VII. SUMMING UP

Applying, by analogy, the insights of organicist biologists to the study of social systems provides a way of understanding such systems in terms of the organization of their constituent processes—a very different approach from the usual one of attempting understanding (or prediction) in terms of equilibrium states described in material terms. And what becomes very clear from this focus on process organization is the realization that certain processes (in particular, those that implement learning and anticipation) which appear as essential in the sustained operation of these systems either do not feature at all, or feature only in a stylized form, in current theoretical models of the systems as a whole.

The analysis of systemic organization described here is pitched at a very abstract level, and certainly needs to be extensively fleshed out in order to understand the many variations within the basic process types and to model the operation of the supporting processes on which the functioning of the higher-level processes depends. In the case of markets, a great deal of work along those lines has been done already under the rubric of market process economics; what the contribution in this paper offers is an encompassing theoretical structure into which the scattered results can be integrated. In the case of science, there is relatively little in the literature on the economics of science that would be useful in augmenting a process-oriented picture,42 but the work of sociologists of science from Merton on, as well as some theorizing in the ‘sociological’ strands of the philosophy of science,43 when put in the context of the picture developed here, should provide considerable material for a fuller process-centric theory of science.

Rosen’s (1991, pp. 119-120) epigram for encapsulating his approach to understanding biological systems was ‘throw away the matter and keep the underlying organization’. While this is obviously a radical departure from the usual way in which systems are conceptualized, it is not an unscientific move for, as he put it: ‘The organization of a natural system … is at least as much a part of its material reality as the specific particles that constitute it at a given time, perhaps indeed more so. As such, it can be modeled or described in full accord with Natural Law [i.e., scientifically]; the resulting formalisms have at least as much right to be called images of material reality as any reductionistic model based on states and dynamical laws.’ If he is right, and understanding process organization is a path to understanding biological systems—in fact, the key to understanding how they work—then there is a reasonable chance that this insight can be useful in the quest to understand social systems. I hope that the work here can bring that possibility to notice.44
NOTES

1 For a short summary of the influences on Walras in the development of his system, see Jaffe (1983). For an assessment of the influence of Walras on the development of macroeconomics, see Kirman (2011a). For a detailed and highly critical assessment of the mathematics of economics, see Mirowski (1989). For histories of the development of modern mainstream macroeconomics from Keynes to the present day, see Garrison (2001, pp. 18-23) and DeVroey (2016). DeVroey (p. 380) observes that ‘the rise of DSGE macroeconomics amounted to giving prominence to internal consistency over realism. I find this line defensible yet it bears a heavy price, namely that macroeconomists must refrain from claiming that the policy conclusions of their models have a direct policymaking bearing’. For recent critical assessments of modern macroeconomics, see Romer (2016) and Glasner (2018). The seriousness of the critiques can be gauged from a quote from Romer’s abstract: ‘Their models attribute fluctuations in aggregate variables to imaginary causal forces that are not influenced by the action that any person takes. A parallel with string theory from physics hints at a general failure mode of science that is triggered when respect for highly regarded leaders evolves into a deference to authority that displaces objective fact from its position as the ultimate determinant of scientific truth.’

2 The manifestly ad hoc nature of these concessions to mathematical tractability has been one inspiration for the development of agent-based models which, through simulation, allow for repeated individual interactions between heterogenous agents. For an introduction to the large literature which has developed in this vein, see Tesfatsion (2002, 2006); for an early example of the modelling technique, see Epstein & Axtell (1996). Of relevance to the current work is that such models demonstrate the possibility for self-organization in markets and other social and biological systems, a line of thought which has been developed extensively by Kauffman (1993). Related to, and generally compatible with, these new approaches is complex systems theory. See Foster (2005) for a useful taxonomy of types of complex system and for a discussion of some of the implications of replacing standard macroeconomics with network theory.

3 For an historical treatment of market process theories, see Boettke & Prychitko (1998). For a treatise on evolutionary economics, see Dopfer & Potts (2007) and, for a history of the subject, see Hodgson (1995). For an overview of process theory in the Austrian tradition, particularly the seminal contributions of Mises and especially Hayek, see Kirzner (1997). For a discussion of both Schumpeterian and Kirznerian approaches to entrepreneurship and an application and extension of Kirzner’s theory of entrepreneurship, see Harper (2003), and for a summary of recent developments in the economics of entrepreneurship, see Parker (2004) and Klein (2008). For a treatment of expectations based on Hayek’s work, see Butos & Koppl (1993). For a game-theoretic treatment of learning from feedback see Teck, Lim, & Camerer (2006, pp. 323-325), and for a discussion of the applicability of cognitive science to consumer choice, see Bartels & Johnson (2015). For an explanation of regime uncertainty and its role in the Great Depression, see Higgs (1997).

4 For a more extended historical overview of the development of the role of process organization in biology, with references to the historical literature, see Mossio et al (2016).

5 Aristotle (350BCa) emphasized the necessity for studying the parts of an organism with an eye to explaining the organizational interdependence of their parts in achieving their purpose: ‘Now that with which the ancient writers, who first philosophized about Nature, busied themselves, was the material principle and the material cause. … But if men and animals and their several parts are natural phenomena, then the natural philosopher must take into consideration not merely the ultimate substances of which they are made, but … must examine how each of these comes to be what it is, and in virtue of what force. … For the formal nature is of greater importance than the material nature. … It is plain, then, … that the true method is to state what the definitive characters are that distinguish the animal as a whole; to explain what it is both in substance and in form’.

6 In Kant’s (1790) words: ‘For a body then which is to be judged in itself and its internal possibility as a natural purpose, it is requisite that its parts mutually depend upon each other both as to their form and their combination, and so produce a whole by their own causality;
while conversely the concept of the whole may be regarded as its cause according to a principle (in a being possessing a causality according to concepts adequate to such a product). In this case then the connexion of effective causes may be judged as an effect through final causes.

7 For a history of the development of 'systems thinking' in early 20th century biology, embryology, and psychology see Drack et al (2007).

8 Bickhard (2000, p. 12), in a discussion of the difficulties of accounting for the causal properties of emergent phenomena within a substance metaphysics, proposes that 'organization is not something superimposed on a more basic level of reality; it is a necessary aspect of all reality. So, delecting process organization as a potential locus of emergence renders all reality epiphenomenal, because there is no reality that is not constituted as process organization.' In particular, according to Campbell & Bickhard (2011, p. 31): 'Biological systems—including humans—are not substantial entities ("things" in the thick sense) whose constituents are cells (smaller things), which in turn (after a few more reductions) are constituted out of elementary particles. They are open, organized action systems, in essential interactions with their environments, such that we cannot say what they are without taking those interactive processes into account.' 'Process philosophy', however, is not a new trend—its roots go back at least to Heraclitus. But it has gained interest in modern times, firstly due to the impact of the theory of evolution, secondly due to the efforts of biologists (including Bertalanffy and Rosen) to study and explain the dynamic phenomena of self-organization, emergence, and adaptation, and thirdly due to recent developments in quantum field theory which point to a process ontology being more fundamental than a substance one. A recent influential treatment of process metaphysics is that of Rescher (2000). For a useful overview of and commentary on process philosophy, see Seibt (2018).

9 See Bertalanffy (1968, pp. 156-160). Georgescu-Roegen (1976, p. 53) has also invoked thermodynamics to emphasize the open nature of economic systems: 'The economic process is a partial process that, like all partial processes, is circumscribed by a boundary across which matter and energy are exchanged with the rest of the material universe... From the viewpoint of thermodynamics, matter-energy enters the economic process in a state of low entropy and comes out of it in a state of high entropy'. For a fine discussion of 'openness' and 'closedness' particularly with respect to economic systems, see Chick & Dow (2005).

10 According to Piaget (1967): 'The central ambiguity is that of the "open system", for, if system exist, then something like a closure intervenes, which has to be reconciled with the "opening"... The opening then is the system of exchanges with the environment, but this in no way excludes a closure, in the sense of a cyclic rather than a linear order... [and so] we are confronted by a closed cycle, which expresses the permanent reconstructions of the [material and dynamic] elements [of the structure], and which is characteristic of the organism; but each interaction... at the same time represents an opening into the environment as a source of aliment.'

11 See Aristotle (350BCb). The following simple example, dealing with the construction of a house, may be helpful in understanding the Aristotelian categories. The material cause of the house is the physical matter out of which the house is built, the formal cause is the architect's plan for the house, and the efficient cause is the builder's construction activity. The final cause is the use of the house as a home, which can be characterized as the purpose of the house. Note that the notion of 'purpose', while sounding natural enough when applied to biological entities, does not fit well into the normal Newtonian framework of physical science, where present states are determined by past states only and not future states such as, in the present example, the homey services of the completed house.

12 See Rosen (1973). Rosen expressed his later work in the notations of category theory, a very general branch of mathematics which deals with collections of specific mathematical objects (sets, maps, groups, vector spaces, etc.) and the transformations between them. The focus in category theory is on the relationships between the objects rather than the objects themselves. For a formal exposition of category theory in a biological context, heavily dependent on Rosen's work, see Louie (1983).

13 For assessments of Rosen's contributions, see Louie (2006, 2008, 2010), Cornish-Bowden et al (2007), Pattée (2007), and Cárdenas et al (2010). Debates continue about some of Rosen's more controversial claims, such as that closure to efficient causation is a sufficient criterion for life, and that living systems are not machines and are not simulable in finite time—see Wells (2006),

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Gatherer & Galpin (2013), Zhang et al. (2016), and Siekmann (2018). However, Rosen’s work is a foundation for ongoing research into biological systems—see Montévil & Mossio (2015) and Mossio et al. (2016). For a survey of applications of Rosen’s work, see Cárdenas et al. (2017).

For brief history of economists employing biological analogies, citing instances going back to Mandeville, Quesnay, and Adam Smith, see Callejas (2007). See Hodgson (1998) for a comprehensive series of articles on the history of evolutionary economics. Probably the most disturbing critique of biological metaphors in social theory was that of the historian Hofstadter (1944), who successfully attached the epithet ‘social Darwinism’ to free-market economics, and who opined that ‘such biological ideas as the “survival of the fittest”, whatever their doubtful value in natural science, are utterly useless in attempting to understand society; that the life of man in society, while it is incidentally a biological fact, has characteristics that are not reducible to biology and must be explained in the distinctive terms of a cultural analysis’. But see Leonard (2009) for a perceptive study of Hofstadter’s inconsistencies and misunderstandings—and his honesty in calling out the eugenicist and racist aspects of progressive era social science. In economics, Penrose (1952), citing Hofstadter favorably, famously addressed the biological analogies employed by the ‘biological economists’ Boulding and Alchian, who, she said, ‘view firms as organisms and conclude that they grow like organisms’, and critiqued them on the grounds that their ‘variant of the growth approach leaves no room for human motivation and conscious human decision’. But apparently, according to Levallois (2011), her objection to biological analogies later mellowed, and she cited favorably the work of the evolutionary economists Nelson, Winter, and Hodgson.

That this was a consistent feature of Marshall’s thought is evident from other statements of his, for example (1898, p. 314), ‘in the later stages of economics [i.e., as the subject develops] better analogies are to be got from biology than from physics; and, consequently, that economic reasoning should … gradually become more biological in tone’.

According to Rosen (1975, pp. 68-69), ‘we have much to learn about the nature of our own social technology from a study of comparable processes occurring in biological systems. Particularly in the study of adaptive mechanisms, it is important to avail ourselves of the experiences preserved for us in the biological record, when translated into an appropriate social context.’

For treatments of various social arrangements as adaptive systems see, for example, Kauffman (1993, pp. 395-402), Buckley (1998), Elder-Vass (2010), McQuade & Butos (2009), and Ruhl (2008). In economics, there have been many papers in recent years dealing with complex adaptive systems—see, for example, Krugman (1995), Tesfatsion (2006), Kirman (2011b), and Arthur (2015). The idea is also clearly in Hayek—see, for example, Hayek (1967, pp. 66-81), where he asserts that ‘there is no reason why a polycentric order in which each element is guided only by rules and receives no orders from a center should not be capable of bringing about as complex and apparently as “purposive” an adaptation to circumstances as could be produced [in a centralized system]’.

See Rosen (1975). Also, in his introduction to his major treatise on anticipatory systems, Rosen (1985, pp. 4-5) noted the possibility for biological metaphors to be applied in social theory: ‘It is plain, on the face of it, that many tantalizing parallels exist between the processes characteristic of biological organisms and those manifested by social structures or societies.’ One upside he cited for the employment of such parallels was that since ‘it is hard for us to conceive what an external observer of our society as a whole would be like … [but] by exploiting biological experience, obtained from a standpoint of an external observer, we could … develop entirely new insights into the properties of our social systems’.

It is worth pointing out that the human brain is a biological anticipatory system, and its high-level functional organization can be represented by such a system diagram, with ‘output’ understood to include actions manipulating aspects of the environment and ‘anticipation’ referring to what economists usually call ‘expectations’. See McQuade (2019). Interestingly, the economist Hayek (1952) was one of the first to describe the functional aspects of the brain in these terms, showing how a mutable model of the environment could be maintained and updated within a complex neuronal structure and used to create dispositions for action in particular circumstances based in part on past experience. Hayek’s model of the mind as a ‘sensory order’ is fundamentally a process (rather than a substance) model. For a comprehensive description and assess-
ment of Hayek’s work in this area, see Vanberg (2017), and for shorter explanations see Butos & Koppl (1993) and McQuade & Butos (2005). For work applying the ‘sensory order’ analogy to social arrangements in ways complementary to the analysis in this paper, see McQuade & Butos (2005), McQuade (2006), and Horwitz (2008).

20 In line with the high level of abstraction that characterizes this discussion, the legal, security, and financial institutions which underpin the processes of production and exchange and are vital for their proper functioning are not included here—they are assumed to be operative in the background and to function adequately enough for it to be unproblematic to focus only on the higher-level processes they support.

21 The term ‘emergent’ is used here informally to refer to a systemic property which arises from the interactions of system components. But it is not a simple concept. For an examination of the subtly different ways in which the concept is applied in economics and social theory, see Harper & Lewis (2012) and the articles in the volume for which that is the introduction.

22 Of course, other widely understood appraisals, like brand reputation, also emerge in this way, and calling the emergent mapping ‘the price structure’ is not intended to imply an oversimplification of its complex structure. Less obvious, but no less important as a component of that mapping is what Lachmann (1956, p. 53) has called ‘the capital structure’, the sensitive and shifting arrangement of capital goods as entrepreneurially appraised complements and substitutes for each other. The identification of the capital structure as a component of a mutable model of the environment is consistent with Horwitz’s (2008) analysis.

23 The price structure has been characterized as a ‘classification’ of environmental inputs—see McQuade (2006, p. 62): “The … transactions (characterized by transfers of goods and observable exchange prices) between the market participants … are induced by stimuli from environmental conditions conditioned by the preferences and creativity of the market participants themselves. They … result, indirectly, in a classification of the various stimuli currently impinging on the market system, a classification embodied in the array of market goods and their market prices.’ A classification of a set of phenomena is no more nor less than a type of model of the phenomena.

24 See McQuade & Butos (2005, pp. 343-344): ‘The market has, in effect, functioned as an anticipatory mechanism triggered by a current stimulus … that has conditioned it to respond in ways that take account of the future. … While it is clear that part of the process involves regular human insight into the future, it is at the market level … that we observe a manifestation of the anticipatory aspects of the system as it responds to environmental change. … For the market economy, these adjustment responses are instantiated by market mechanisms in which entrepreneurial activity and time markets play decisive roles.’

25 As Harper (1996, p. 286) puts it, highlighting the bottom-up nature of the process in Popperian terms: ‘the refutation of entrepreneurial conjectures is a highly decentralized activity which does not involve an organized group or collective body representing consumers. Rather it results from a sufficiently large number of targeted consumers individually deciding not to purchase an entrepreneur’s product offering’.

26 In other words, the market is a ‘fourth order complex system’ in Foster’s (2005, pp. 876-877) taxonomy.

27 More specifically, these are sets of processes. In an actual market economy, there are a great many processes of each type, differing in detail, but each having in common the basic function of its type.

28 See Popper (1963, p. vii): ‘The way in which knowledge progresses … is by unjustified (and unjustifiable) anticipations, by guesses, by tentative solutions to our problems, by conjectures. These conjectures are controlled by criticism; that is, by attempted refutations, which include severely critical tests.’ See also Popper (1972). In Harper’s words (1996, pp. 290-291): ‘The competitive market process is a spontaneously evolved set of institutions which facilitates the testing of entrepreneurial conjectures and the generation of new structural knowledge. The fact that the market process is a learning process which is spontaneous in origin means that it has been created from forces within the system (i.e., its structure is endogenous). It has formed itself through a process of selective evolution—it is a self-organizing system.’

29 The structure of the production process, particularly with regard to the nature of markets for capital goods and their facilitation of intertemporal exchange, is the focus of a distinctively Austrian macroeconomics. See Garrison (2001).
There is a huge literature on the economics of the firm. See Hart (1989) for a survey of the more prominent approaches, and Teece (2017) for a more recent appraisal. Hart complains that ‘the portrayal of the firm in neo-classical economics is a caricature of the modern firm’, and ‘Teece observes that there is little effort to look at particular firms, their histories, and organizational and technological issues in a systematic, time-aware manner’. It is possible that the theory of the firm could benefit from the theory of anticipatory systems in which the firm is the system of interest, since business success depends both on learning customer needs and innovating ways in which these needs might be met.

Government operates on the market system by imposing restrictions, beyond those constraints of property and contract on which the system’s operation relies, on the processes of exchange, entrepreneurship, and production. In general, these are done piecemeal and with local objectives; they are not done (and cannot be, in the absence of a realistic theory of the economy) for the purpose of increasing the epistemic performance of the economy. In fact, observations of the unintended consequences that, sooner or later, follow such restrictions would indicate that they tend to have the opposite effect. Adam Smith was undoubtedly correct in his observation, recorded in Sinclair (1831, p. 391), that ‘there is a great deal of ruin in a nation’, but getting a handle on just how much, and why there might be limits, should be a question of great concern to economists.

As Schumpeter (1942, p. 86) eloquently put it, in the context of describing how the standard economic theory treats ‘competition within a rigid pattern of invariant conditions, methods of production and forms of industrial organization’ in an equilibrium setting, and thereby misses the dynamic creative and destructive aspects of real-world competition: ‘Now a theoretical construction which neglects this essential element of the case neglects all that is most typically capitalist about it; even if correct in logic as well as in fact, it is like Hamlet without the Danish prince.’

See Schumpeter (1954, p. 530): ‘[Although he] did not see all its analytic possibilities [...] B. Say] did realize, to some extent, that a greatly improved theory of the economic process might be derived by making the entrepreneur in the analytic schema what he is in capitalist reality, the pivot on which everything turns.’

See Schumpeter (1942, p. 83): ‘[Capitalism is a process] that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one. This process of Creative Destruction is the essential fact about capitalism. It is what capitalism consists in and what every capitalist concern has got to live in.’

Mises (1920, pp. 34-35) exposed the utopian nature of socialist theorizing: ‘All socialist systems ... proceed from the assumption that in a socialist society a conflict between the interests of the particular and general could not possibly arise. Everybody will act in his own interest in giving of his best because he participates in the product of all economic activity. ... But even if we for the moment grant that ... each individual in a socialist society will exert himself with the same zeal as he does today in a society where he is subjected to the pressure of free competition, there still remains the problem of measuring the result of economic activity in a socialist commonwealth which does not permit of any economic calculation. We cannot act economically if we are not in a position to understand economizing.’

By ‘modern science’ is meant science carried out under the arrangements that have evolved from those explicitly developed at the Royal Society in England during the second half of the 17th century. Merton (1973, pp. 191-203 & 460-496) has noted the coincidence of the rise of scientific and technological activity in England and the formalized communication between scientists which took shape upon the founding of the Royal Society and the inauguration of its journal, the Philosophical Transactions. Prior to that, scientists such as Bacon had advocated that science be an endeavor pursued for the common good of society and not for personal credit. The specific mechanism introduced by Henry Oldenburg, the secretary of the Royal Society, was access to publication for scientific papers, enabling the author to receive personal credit and identification of priority and thus eliminating a major reason why authors might withhold access to their work. To this function was soon added the feature of referee-based certification, as Oldenburg turned to other society members for advice on acceptance of papers when the material was outside his competence to evaluate. See also Hull (1988, pp. 323-324) and McQuade & Butos (2003, p. 141).

In line with the high level of abstraction that characterizes this discussion, the legal, security, and financial institutions which underpin the processes of research and publication and are vital for their proper functioning are not included here—they are assumed to be op-
erative in the background and to function adequately enough for it to be unproblematic to focus only on the higher-level processes they support.

By ‘papers’ is meant not only reviewed papers published in journals, but any vehicle through which scientists can engage each other’s work, including conference presentations, circulated working papers, speeches, podcasts, and internet blogs.

See Butos & McQuade (2012, p. 2): ‘Scientists publish speculations and observations; other scientists who find these useful to their own work (or who wish to criticize them) cite them; the citation feeds back to affect the reputation of the publishing scientist; and a scientist’s reputation not only affects the notice given to his future publications and citations but also his ability to attract funding or to advance in academic position. This recursive set of procedures and feedback loops, hereafter referred to as "PCR" (for Publication-Citation-Reputation), implements the knowledge generating characteristic of the scientific order. In this picture, “scientific knowledge” is not the knowledge of individual scientists; it is the end result of the PCR processes repeatedly acting on individual scientific contributions, ignoring, altering, merging, selectively abstracting, and reinterpreting them in the process.’

Including, among other motivations, the motive to enhance one’s scientific reputation, a prized benefit for which participation in the system’s processes is a prerequisite, since reputations emerge as a side-effect of the system’s transactions.

Preliminary work to that end is attempted in McQuade (2010).

Work in the economics of science tends to view science through a market lens, portraying the activity of science as transactions in ideas, and typically identifying inefficiencies due to the nonrivalrous and nonappropriable nature of ideas. For a survey of work in the economics of science, see Stephan (1996); for a brief critique of the market approach to science see Butos & McQuade (2006, pp. 185-193).

For Merton’s classic contributions to the sociology of science, see Merton (1973; 1996). Interesting work with some process orientation in the philosophy of science includes Kuhn (1962), Barnes & Bloor (1982), Popper (1984), and Goldman (1999).

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A Critique of Capitalism, from an Austrian Perspective

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Abstract: Capitalism is a term widely used by critics and advocates alike, but with little coherence to its meaning. Austrian economists Ludwig von Mises and F. A. Hayek, along with Chicago School economist Milton Friedman sought to turn it into a term of approval rather than criticism. Their different efforts to do so did not harmonize theoretically. When their respective insights and confusions are addressed a coherent theory of capitalism emerges, one that is critical, as was initially the case.

Keywords: Austrian School, capitalism, civil society, corporations, freedom, Hayek, markets, Mises, power, private property, property, Proudhon

Political debate and discussions of public policy in the United States have been more pointless and contentious than they otherwise might be due to the conflicting and mutually incoherent roles the words “capitalism” and “socialism” play in them.

Within the lifetimes of many readers “socialism” usually referred to economies where government direction sought to replace the workings of the price system. The Soviet Union and China were examples of such socialism. At the same time, countries with either significant elements of government ownership of enterprises operating within a market order, such as public utilities, or providing public services separate from such an order, such as Social Security, were also called socialist. As a general term, “socialism” had no coherent meaning, and still does not. But it was always contrasted to the term “capitalism.”

Little light was shed by this contrast. “Capitalism” is equally vague in its meaning. Today, nearly everyone agrees the United States has a “capitalist economy,” but without agreement as to what “capitalism” really means. Once we look beyond the word to its meaning for the people who use it, agreement vanishes before our eyes. Most Americans and nearly all classical liberals and libertarians now equate capitalism with a “free market” and “competitive enterprise.” Critics of the American economy usually use “capitalism” to mean something quite different from this. However, as to what that difference is, among critics there is no agreement.

I agree the term “capitalism” best describes the American economic system. No other word works quite as well, and a careful examination of the term pinpoints what is unique about capitalist economic systems. I will argue capitalism describes a particular institutional form that can exist within a largely market economy but is not in any sense reducible to it. Other institutional forms can and do exist in market contexts, and in advanced forms, capitalism can subjugate market processes to organizational criteria.

PROUDHON AND CAPITALISM

‘Capitalism’ began as a term of criticism. Its first significant use was by the French anarchist Pierre Joseph Proudhon, who argued:

The economic idea of capitalism, the politics of government or of authority, and the theological idea of the Church are three identical ideas, linked in various ways. To attack one of them is equivalent to attacking all of them... What capital does to labour, and the State to liberty, the Church does to the spirit. This trinity of absolutism is as baneful in practice as it is in philosophy. The most effective means for oppressing the people would be simultaneously to enslave its body, its will and its reason (1851, p. 271; Nettlau 1997, pp. 43-44).

Absent from Proudhon’s indictment is any reference to the market. In fact he thought his mutualist alternative was compatible with a market economy. Proudhon was concerned with hierarchical relations of power in all the forms it took, and the exploitation of the weak that usually accom-
panied it. As Proudhon used the term, capitalism’s primary focus is not the market, but unequal power within large enterprises. In addition, far from being a ‘free market,’ the capitalism he described included a thick layer of political privileges for the powerful, some rooted in the past and some serving the business elite of the time.

So far as I can tell, for decades afterwards the term “capitalism” was associated with big business, but beyond that, analyses varied. Karl Marx had not used the term and was critical of Proudhon, but the Marxists that followed readily adapted it to a Marxist framework. From this perspective capitalism was based on private property in the means of production within a market. As Marxism’s influence grew, Proudhon’s original focus on hierarchies of domination was increasingly lost from sight. For many of capitalism’s critics, issues of workers’ freedom and justice were subordinated to theories of class conflict, capitalist accumulation, the inexorable operation of impersonal scientific laws, and visions of deliberate economic planning.

Defenders of the economic status quo, critics of government involvement with business, or advocates of a market economy, preferred using terms such as the ‘free market’, ‘competitive enterprise’, ‘free enterprise’, ‘private enterprise’, and more philosophical terms like ‘liberalism’, and ‘classical liberalism.’ ‘Capitalism’ was conspicuous in its absence.

In time, “scientific socialism” came to dominate critics’ alternatives to capitalism. Instead of the domination of working people by hierarchies of organizational power, exploitation was described as the extraction of “surplus value” by the logic of the market process itself. This exploitation was separate from any ‘subjective’ sense of exploitation by working people, thereby making the term ‘scientific.’

When ‘scientific socialism’ came to power in Russia and elsewhere, new forms of hierarchy and new forms of violent oppression were created, all in the name of ending ‘capitalism.’ This became ‘socialism’ for many.

Consequently, emphasis on the importance of ‘freedom’ shifted from capitalism’s critics to the market’s defenders, and in the process redefined from freedom from organizational hierarchy, as Proudhon might have put it, to freedom within what Hayek in time termed a spontaneous order. Putting the same point in different terms, the focus on freedom shifted from emphasizing the concrete context which stifled it to emphasizing voluntary exchange while minimizing the importance of context. By definition freedom existed in a ‘free market,’ and increasingly became equated with choice. The freedom that mattered most was consumer choice since everyone was a consumer. The circumstances of working people became irrelevant, at least so long as they chose their employment, because they could always choose to work somewhere else. They voluntarily worked where they did. The market subordinated everyone, workers and businessmen alike to serving consumers and rewarded them according to their service.

Three influential books published by Ludwig von Mises, F. A. Hayek, and Milton Friedman played a powerful role in transforming ‘capitalism’ from a negative term about big business and hierarchies of power to a positive description of a free society. However, these men employed subtly different definitions, and later advocates of ‘capitalism’ failed to grasp these differences. Today, capitalism’s defenders freely use the word as analogous to free enterprise or free markets, but at the cost of at least as much conceptual confusion as plagued capitalism’s critics.

LUDWIG VON MISES’ OPENING MOVE

In 1922, Ludwig von Mises published Socialism, a powerful critique of socialist arguments for replacing the market with central planning. In it, Mises also argued market advocates should appropriate the word “capitalism” for their own purposes. The term was vague, Mises wrote, for “users [of the term] agree only in that they indicate the characteristics of the modern economic system. But wherein these characteristics consist is always a matter of dispute” (1951, II.5. 34). Consequently, Mises argued, since “capitalism” was increasingly used in the social sciences and political debate, it was worth liberating from the theoretical incoherence accompanying its use by the left.

In Socialism Mises suggested “If the term capitalism is used to designate an economic system in which production is governed by capital calculations, it acquires a special significance for defining economic activity…” (1981[1922], II.5. 36.) Both Proudhon’s emphasis on power relations between employees and employers and Marx’s focus on the market in general were sidetracked. Proudhon was not interested in the calculation problem and Marxists largely denied it existed, at least until later Marxists sought to confront his and Hayek’s critique of central planning. (At which time the Polish Marxist Oskar Lange wrote a statue to Mises needed to be put in the ministry of planning for drawing their attention to a serious challenge.) (Lange, 1937).

Mises used the term “capitalism” to focus on one variable dimension of the market process, flowing naturally from his insight that market prices provided a common denomi-
nator reflecting the relative availability of different resources with respect to one another. This common denominator made it possible for otherwise unconnected people to freely employ resources based on their own limited knowledge, while still leaving as much as possible to meet other people's demands. The word 'capitalism,' Mises emphasized, identified the purest example of this process at work.

Mises' definition of capitalism identified one important characteristic, but then obscured its full significance. While market prices are essential signals enabling businesses to be managed sustainably, not all businesses seek to reduce all the values their owners seek to a single monetary denominator. This distinction was hidden by Mises' use of the broad term "governed." We can bring the issue to the surface if we look carefully at the details of Mises' description of capitalism. (I have shortened the following quote because it is a long one, but in no way have I distorted it.) (Mises 1981[1922], II.5.35-7)

[capital calculation is] used only for purposes of economic calculation. It serves to bring the original properties of a concern under one [my italics] denomination, whether they consisted of money or were only expressed in money. The object of its computations is to enable us to ascertain how much the [monetary] value of this property has altered in the course of business operations. The concept of capital is derived from economic calculation... Calculation in terms of money is [essential to] the concept of capital...

II. 5. If the term capitalism is used to designate an economic system in which production is governed by capital calculations... it is by no means misleading to speak of Capitalism and capitalist methods of production... [when] Capitalism is used correctly, the association it is intended to convey [is] the development and spread of large scale undertakings... only capital calculation made the growth of giant enterprise and undertakings possible.

Like its critics on the left, Mises identified capitalism with giant enterprises operating on large, even global, scales. It was not a synonym for the market process. A craft faire is an example of the market process, but it is not an example of capitalism. Neither is an individual proprietorship.

For years I ran a small business I had founded to support my Ph.D. research. While it was consistently profitable, I never sought to make as much money as I could. There were many times when I subordinated maximizing financial income to other values. Writing my dissertation took priority. Within my business I used recycled paper at a time when I could have used cheaper alternatives that I believed would make little difference in sales. I donated products to charitable causes without concern as to whether doing so was good for business. I gave special prices to some buyers when I did not have to. In other words, my business was an expression of many of my values, one of which was as a way to make a living.

Mises was not describing my kind of enterprise. He was describing businesses where decisions were made after all important questions had been evaluated "governed by capital calculations", in order (to meld the quotations above) to "bring the original properties of a concern under one denomination." The purest form of such a business is the publicly held joint stock corporation.

This distinction between all market enterprises and those most characteristic of capitalism is important.

Years earlier I had read Mises' argument that prices are signals, rather than genuine measures of value, because value is never constant in the market. It is subjective and contextual. Prices indicate how many other resources I must give up to acquire something at the moment. On balance, these signals serve to enable everyone to acquire what they desire while expending the minimum resources that could then be used to acquire other less desired things. As a small businessman, I treated prices this way. They were one (essential) factor among many that determined how I ran my enterprise. This is often true even for those running very large businesses, so long as they are truly its owners. For example, Deborah Cadbury's history of the chocolate industry emphasized the ethical complexity motivating many of its key entrepreneurs, until businesses were acquired by traditional corporations (Cadbury 2010). See also David Harris' study of how the once family-owned Pacific Lumber company operated before and after corporate acquisition (Harris 1995).

F. A. HAYEK’S DIFFERENT DEFENSE OF CAPITALISM

A little over two decades after Mises published Socialism, F. A. Hayek wrote The Road to Serfdom. There he observed "If 'capitalism' means here a competitive system based on free disposal of private property, it is far more important to realize only within this system is democracy possible" (1944,
PRIVATE OWNERSHIP, OR NOT?

Private ownership fuses control with responsibility: I control what I own, and am responsible for it. The power ownership makes possible for me is accompanied by responsibility for its use. Together power and responsibility, through owning property, provide the material basis for freedom within society. How I use my property reflects my individual values.

In large corporations such as Mises described, private property in this sense has dissolved. ‘Owners’ of corporate shares are not personally responsible for its actions. A share ‘owner’s’ liability is limited to the value of the share. In terms of private property, it is as if the maximum liability I have for anything I own is its replacement value. Beyond this limit, the degree of injury I might cause another is irrelevant.

The privilege of limited liability undermines responsibility. However, it is not the only way in which the traditional idea of private property is eventually dissolved. And it is probably not the most important.

Unless they own a majority or a large minority of a corporation’s shares, ‘owners’ have no appreciable power over the company’s actions. In addition, they usually do not know what those actions are. If they do know, and disagree, as a practical matter they cannot contact other ‘owners’ to try and bring these actions to a halt through collective action.

Often corporate shares are owned by mutual funds, and in these cases many individual ‘owners’ often have no idea of what shares they ‘own.’ They essentially hire fund managers to steward their wealth, hopefully better than they could. Fund managers have a fiduciary obligation to maximize share value, not shareholders’ individual values, which for the most part they have no way of discovering. Mutual fund ‘ownership’ distances ‘owners’ even farther from having any impact on corporate decisions, and therefore reduces the impact of any values they have other than maximizing money wealth.

Any ‘owner’ who discovered unethical corporate behavior could sell his or her shares in protest, but they would be purchased by others either ignorant of what was happening or who did not care. Selling a share need not increase the pressure to change corporate behavior. In fact, if the unethical behavior is profitable, selling shares imposes a financial loss on ethical shareholders while enabling less ethical or knowledgeable shareholders to make even greater financial gains. If a group of ethical shareholders sold considerable stock, these less ethical buyers would make additional income by taking advantage of lower share prices caused by a temporary glut of stock that does not reflect anticipated lower profits. As Mises defined capitalism, when there is an ethical conflict, financial resources will tend to move from the more ethical to the less.

Not only is the average shareholder powerless to change bad policies unless he or she wants to organize a boycott (which is no easier for share owners than for non-share owners), they are also powerless to reduce ‘their’ resources devoted to wrong doing. So-called ‘owners’ either must profit from behavior they oppose or, by selling their shares, transfer them to someone else who will then profit from that behavior. So long as they are profitable, the bad actions will continue.

The two most basic principles behind owning private property, control and responsibility, are virtually non-existent in most ownership of publicly traded shares.

WHAT REPLACES OWNERSHIP?

I am describing a systemic feature of a certain kind of market economy, not a characteristic of people acting within them. Mises emphasized people acted based on a wide range of individual motivations, not all of which had to be compatible with seeking the maximum profit. I agree with him completely, and my experience running a profitable business for many years illustrates this truth. But actions always take place within contexts, and contexts are never neutral. Any context makes some actions easier to pursue and others more difficult. The actions I can take as owner of my business, or of other private property, are different than the actions I can take as a owner of shares. Some are the same: I can buy and sell. But others are different, some very much so. Under Misesian capitalism, shareholders have traded traditional ownership for stewarding shares in the interests of maximizing money profit as determined
by the market. Their position and skills are akin to that of a fund manager (to whom many subcontract) not to an owner of what we think of as private property. The equivalent of a manager’s fiduciary responsibility to their client is that they will lose stewardship opportunities to the degree they fail to serve the market. In both cases they buy and sell and gain if they successfully anticipate changes in price.

Property owners embedded in a rich context of values, where prices are one important factor among many in influencing how resources are used, have been replaced by stewards responsible for maximizing money profit alone. Beyond that, how something is used is not important. The more sellers’ and buyers’ actions correctly anticipate market performance, the better they do, and potentially the more shares they can steward. Those poor at it are weeded out of any stewardship responsibility at all. The value of a person’s shares reflects their success as stewards, not as owners. Shareholders have become the market’s agents, and are rewarded to the degree they encourage companies to act in keeping with purely monetary values.

If we must persist in using the language of ownership, corporations are ‘owned’ by the market and shareholders are its trustees. Publicly held corporations are designed to be as completely responsive to market dictates and in harmony with its incentives as a human institution can be. People come and go, and shares may pass through many ‘owners’ who have neither power nor responsibility over them in the senses we usually think of regarding private property. But the market process dominates what companies do on pain of their being taken over by other people or companies acting in greater harmony with market incentives and dictates.

Had I turned my business into a publicly held corporation and continued to make choices similar to those I made as an owner, I would have become vulnerable to a take-over bid. Corporate raiders, who believed subordinating everything to maximizing share value would make them more money, would soon make other shareholders inviting offers. These hypothetical raiders would be attracted to my company not because they wanted to run a business but rather by the possibilities of making a profit by selling more valuable shares once the business’s resources are more completely subordinated to the demands of the market. As an owner, I was free to make the value trade-offs I wanted to make. Prices were signals. As a manager those same prices became commands I disregarded at the risk of losing control of the enterprise I had created and now managed.

People own and operate a privately held business for many reasons. A publicly held corporation exists ultimately for one reason.

ELIMINATING THE HUMAN ELEMENT

When an organization exists only to maximize making money, being fully human becomes a problem. Today even important managerial functions at major hedge funds such as Bridgewater Associates are being turned over to computer programs in order to eliminate the ‘fallible’ human dimension in financial management (Copeland 2016). Today it is easy to anticipate a time not that far off where important investment decisions will be made without any input by messy human values at all, because human beings will have been largely eliminated from the process. From computerized buying and selling stock, to managing the organizations in whose names the buying and selling happens, in principle, virtually no human element need remain. People will prosper to the degree they can serve this process.

Nor need value added by improving this process do anything to improve human well-being. Peter Barnes helped manage Working Assets as a socially screened money market fund, which meant values other than money income were to be a part of its investment strategy. Working Assets was privately held. At one point Working Assets considered going public with an initial public stock offering. Barnes writes “Our investment banker informed us that, simply by going public, we’d increase the value of our stock by 30 percent. He called this magic liquidity premium. What he meant was that stock that can be sold in a market of millions is worth more than stock with almost no market at all. The extra value would not come from anything we did, but from the socially created bonus of liquidity.” Working Assets ended up not going public because “we didn’t want to be subjected to Wall Street’s calculus” (Barnes 2006, pp. 67-68).

“Wall Street’s calculus” would override the decisions and values of the then owners of the company. They would still own stock, and presumably be the richer for it financially, but the values associated with private property are not simply financial, and those values would be subordinated to an impersonal market calculating whether the company’s assets were being utilized with maximum efficiency in seeking wealth. I suggest this 30% “liquidity premium” approximately measures the profit opportunities that open up once private owners motivated by complex values are replaced by the market and its values. In market terms this is more ef-
Milton Friedman Blurs a Distinction

In 1962 Milton Friedman wrote Capitalism and Freedom, another very influential book helping to rehabilitate capitalism in the eyes of many (1962). In it he combined Mises’ concept of capitalism with Hayek’s, even though they are ultimately incompatible. Since much of Friedman’s less technical writings were concerned with people’s freedom to choose among alternatives, I believe he was not aware of his argument’s theoretical and political incoherence. But the road to Hell, as they say, is paved with good intentions.

Using the logic of private ownership, Friedman argued a corporate CEO’s sole legitimate job is service to shareholders. Pursuing other values to the cost of shareholder returns was a kind of theft from the owners (1970; 1962, chapter 8). Hayek agreed (1979, p. 82; 1967, p. 312). Friedman emphasized managers have no “social responsibility” to anyone but shareholders. If a corporation performs a “public service” that costs the company money, it must be able to justify it in terms of its bottom line. Friedman contended more complex value choices balancing making money with other priorities were properly the responsibility of individual shareholders, not CEOs.

This observation is reasonable when applied to people employed by private owners as trustees to manage their property. It is misleading when applied to publicly held corporations where traditional private property does not exist for many, (unless there is a majority shareholder). The corporation will not be serving shareholders as owners, but shareholders as stewards of market resources.

From Friedman’s perspective, corporate capitalism is an example of freedom in action even though private property as it has traditionally played a role in preserving freedom has been dissolved. For Friedman, freedom is choice and yet choice in a capitalist economy is increasingly subordinated to putting financial profit over all other values. Because most human beings are not comfortable with such an ethic, increasingly, dominant financial enterprises seek to eliminate the human element from financial decision making. Meanwhile, all remaining humans must serve capital growth, or be expelled from influence over allocating capital.

Systemic Biases

These implications were hidden from the sight of capitalism’s defenders because so many market advocates equated whatever the market manifested with expressing the freely made choices of people engaging in voluntary transactions. Freedom is choice, devoid of context. The impact of the system of market coordination within which exchanges are made was ignored, yet this system provides a context for success or failure every bit as powerful as an ecosystem does for the organisms seeking to live within it. In fact, any system of rules carries a value bias that shapes who and what can succeed within it (diZerega 1997).

In a free society, the market is but one spontaneous order among many, albeit a critically important one (diZerega 2013). For example, Hayek and Michael Polanyi also described science as a spontaneous order (Hayek 1978, pp. 180-83; Polanyi 1998, pp. 195-96; 1969, pp. 49-72). Scientists practicing science create very different results from business people practicing business partly due to different interests and partly because the rules they follow are different.

For example, the market values information that is scarce relative to demand, so people are willing to pay for it. The most valuable information yields enormous profit in part because access to it is controlled by the owner. Science values information that is abundant relative to demand, so it
can be applied as widely as other scientist wish, and often in unexpected ways. A scientist writes a paper to be read by as many as possible, and is professionally unconcerned with making money from it. A market-oriented author also wants to be read by as many people as possible, but only if they pay for it. Writing a widely used scientific text book can make a scientist considerable money, and to ensure continued sales, chapters are often rearranged from edition to edition so previous editions with the same information cannot be easily used in classes. However, writing such books yields little professional recognition. On the other hand, writing a paper available for free to all might lead to a Nobel Prize.

Neither the market nor science can be described as simply the expression of free men and women cooperating together. Both are emergent outcomes arising from formally voluntary cooperation within a given context of rules. Reducing a free society to either scientific or market values is reductionism of the crudest sort. The larger encompassing context within which people engage in voluntary cooperation is often, I think appropriately, called civil society: a field for voluntary cooperation among status equals in which markets, science, and other social institutions provide contexts for different kinds of projects. Civil society, and not any subset within it, is the ultimate context for freedom (diZerega 2014a).

MURRAY ROTHBARD OBJECTS

Some Austrian oriented libertarians were unhappy with the too easy equation of capitalism with a free society, but for reasons quite different from mine. For example, another student of Mises, Murray Rothbard, wrote:

If we are to keep the term ‘capitalism’ at all, then, we must distinguish between ‘free-market capitalism’ on the one hand, and ‘state capitalism’ on the other. The two are as different as day and night in their nature and consequences. Free-market capitalism is a network of free and voluntary exchanges in which producers work, produce, and exchange their products for the products of others through prices voluntarily arrived at. State capitalism consists of one or more groups making use of the coercive apparatus of the government—the State—to accumulate capital for themselves by expropriating the production of others by force and violence (Rothbard 1972, pp. 60-74).

There has never been a “free market capitalism” in the sense Rothbard described, and there never will be. The market in any complex sense is made possible by a set of rules about property rights and contract which can reasonably vary from place to place and from time to time. Government in some sense is sometimes required to modify and clarify rules such as what do and do not qualify as property rights (diZerega 2013a, pp. 55-98). Regardless of the decision, some will benefit from it and others will lose. In Rothbard’s sense of the term, there has only been and can only be “state capitalism.”

Adding the term “state” to “capitalism” clarifies nothing and one could even say that it confuses our understanding since many Marxist critics of the Soviet Union have long termed it “state capitalism” (Howard 2001). Yet no one would describe the former Soviet Union as a market economy, even if elements of markets survived to make it more viable than it otherwise would have been.

Coming from another perspective, equating the ‘state’ with authoritative decision-making conflates traditional states, which are hierarchical systems of rule from above, with democracies, where rules are discovered through a political process of equals, a process ideally seen as neutral as to which rules are decided upon (diZerega 2011). This distinction is easily captured when we reflect that in wartime, when a clear and overwhelming majority exists for major issues, democracies act most undemocratically because democratic rules ensure freedom of speech, organization, and press for all.

On the other hand, Rothbard’s reason for wanting to distinguish between “market” and “state” capitalism is very illuminating. We can see why by considering two observations by Hayek.

PEOPLE AND SYSTEMS

Hayek wrote “The interests of the organized producers is . . . always contrary to the one permanent interest of all the individual members of society—namely the interest in the continuous adaptation to unpredictable changes, an adaptation necessary even if only the existing level of production is to be maintained” (Hayek 1979, pp. 93-4). This kind of observation is at least as old as Adam Smith’s famous remark that “People of the same trade seldom meet together, even for merriment and diversion, but the conversation ends in a conspiracy against the public, or in some contrivance to raise prices” (Smith, 2003, Book I, Chapter X).
Hayek’s second observation adds needed depth to these observations, and shifts our attention from the failings of individuals to the systemic context within which they act. Hayek wrote capitalism, in his sense of the term, “is a system which imposes upon enterprise a discipline under which the managers chafe and which each endeavours to escape” (Hayek 1973, p. 62). One way of dealing with these pressures is to adapt, and this is a significant reason why old products are improved upon and new products are introduced. This process of adaptation on pain of extinction is why so many economists and biologists alike have seen similarities between economics and the similar patterns we find in ecology and evolution (diZerega 2018).

However, unlike fungi, plants, and animals, businessmen and managers have a third option to adaptation or extinction. They can seek to change the rules in their favor. At least some business people will realize it is in their interests to seek political protection from market forces that threaten their profits. We have seen that both the logic of corporate governance and the ethic Friedman and Hayek said should apply to them, push CEOs to put safeguarding and maximizing profit above all other concerns, although Hayek emphasized more than Friedman that it should be within moral as well as legal limits (Hayek 1967).

This pattern is most clear with long established businesses seeking to safeguard their existing status. Today most government regulations of industry and banking benefit the bottom line of the dominant organizations. New businesses most often oppose government oversight. Older established concerns take a different view, seeking to encourage ‘oversight’ that benefits them as well as capturing agencies established during periods where reform efforts arose from the general population, such as regulations over pollution or unsafe labor practices.

For example, national standards for organic food emerged from a demand by dominant corporate producers of food. There was no demand for national standards by either local producers who pioneered the growth of organic food, or by the consumers themselves (Ruiz-Marrero 2004; Thomas 2015). The current move in many states to legalize marijuana is opposed by the largest producers in the beer industry. Confirming Hayek’s second observation, beer sales, especially of the largest breweries, have declined most in states that have gone farthest in decriminalizing marijuana (Peterson 2016; Fang 2012). These corporations would rather have people go to prison than engage in open competition with alternatives to alcohol. To name a third, fossil fuel producers have become major political opponents of solar energy, arguing against subsidies to encourage solar while happily benefitting from much larger subsidies for themselves (Warrick 2015a; 2015b). The list could be expanded to fill a book, and the bias to favor existing companies and industries is clear.

Sometimes regulations originate in the political arena and are then “captured” by the industries they are established to control. Other times the regulations are demanded by leading industries themselves. The people making decisions for established corporations have both the motive and the means to seek to modify market rules to reduce the threat of competition and increase the security of their profits. Further, corporate logic leads them to act in this way. They serve shareholder interests better, the more secure and large their profits become.

These considerations illuminate a problem that has long frustrated advocates of ‘free markets.’ They argue government will ultimately control businesses, and so businesses should never seek political favors. But businesses continue seeking favors, and the bigger the business the more involved they tend to be. Far from being shortsighted or making some kind of miscalculation, given the context within which they exist, these businesses are acting rationally. The supposed line separating the ‘state’ from the ‘market,’ so clear in abstract theories, ceases to be clear in practice, since people engaged in the one, are often also engaged in the other.

CRONY CAPITALISM?

Nowhere is this failure to integrate context into economics greater than with the term “crony capitalism.” Efforts by businessmen to influence policies and laws are nothing new. They are probably as old as business, or at least as old as businesses successful enough to seek to influence policies in their favor. It is as common on Main Street as on Wall Street. As Adam Smith observed, businessmen have an interest in safeguarding and increasing their profits, though in many cases other values modify or override this interest. Because in capitalism these other values are systematically eliminated, corporations are extreme instances of a tendency existing in any group of businesses. In other words, adding “crony” to capitalism is like writing about a “light white” or a “dark black.”

But the problem with the term is worse than this. It misidentifies the problem.

“Crony” misdirects our attention from systems to individuals, from context to treating actions divorced from
context. Capitalism is unique not because it has “cronies” but because as a system of impersonal processes it selects out and rewards those who put profit above every other value. The value-depth and complexity of a system rooted in private property guided in its uses by human values and choices is replaced by the value-thin context of people being rewarded to the degree they serve purely financial values as determined by the market alone.

The key to understanding capitalism is the market’s systemic impersonality and how certain kinds of organizations respond to it. A system is a network of relationships that mutually influence one another rather than a linear chain of causes leading to effects which are causes to still more effects. Individual actions can have powerful impacts within systems (think of Steve Jobs) but they are also shaped and made possible by the systems within which they act, and in acting, modify. As a system, the market operates the same way regardless of the personal values of the people acting within it. Depending on the context, this is its virtue and its vice.

Among his generation of Austrian economists, only Hayek was able to break free from the methodological individualistic assumptions that masked systems’ independent role in social explanation (diZerega 2014b).

THE HIGH PRICE PAID IN MISUNDERSTANDING THE CASE FOR MARKETS AND FREEDOM

Hayek’s observation that a system of exchangeable private property rights is the foundation for a free society, is strongly supported by history and logic alike. So is the observation that when people are deprived of personal control over resources needed to live, they become vulnerable to despotic control. When capitalism is taken as the normal expression of a ‘free market’ both points are obscured. The possibilities for how large-scale enterprise can be harmonized with liberty is hidden. Private property in production is dissolved even as the name remains and a new form of systemic despotism is arising and is called ‘freedom.’ What exists is a system of “Power, in the objectionable sense of the word. . .the capacity to direct the energy and resources of others to the service of values which those others do not share” (Hayek 1967, p. 301).

Hayek and Mises exhibit this blindness, one relatively humbly, one far from humanely. In his essay “The Corporation in a Democratic Society,” Hayek discusses problems with corporate abuses of power. With respect to working people the only safeguard he sees to abuses of this power by corporations is “the facility the individual has for changing his employment.” (1967, p. 302). He takes the hierarchical relation of ‘management’ to ‘labor’ for granted, connecting abstract theoretical roles with concrete individuals and failing to see the distinction. But Hayek at least acknowledged a significant problem existed, he just could not see a solution beyond being able to take another job.

Mises had no such sensitivity. In a letter to Ayn Rand celebrating her book Atlas Shrugged, Mises wrote “You have the courage to tell the masses what no politician told them: you are inferior and all the improvements in your conditions which you simply take for granted owe to the effort of men who are better than you” (Quoted in Burns 2009, p. 177).

Freedom was redefined from control over one’s life and not being subordinate to others (hence the desirability of private ownership and -- at first -- a republic of small farmers) to choice as a consumer. Since everyone consumes, free choice is freedom and economic success depends on serving consumers, hence on serving everybody. Authority relations in industry are unimportant since workers are essentially serving themselves in another guise, as consumers.

This focus on ‘consumer sovereignty’ not only fragments what it is to be a human being, it blinds analysts to people’s circumstances when they are not consuming. Capitalism’s systemic logic encourages companies to limit employees’ freedom, such as seeking to make what their employees learn on the job the property of their employer. If they leave, they may not use what they have learned. This practice has gone so far as for a janitor in Seattle to be barred from taking a better paying position with another company because of a “non-compete” clause he signed when taking the first position (Westneat 2014a; 2014b). Increasingly people do not control their time even when they are not on the job. They are forced to be “on call” in case their manager wants them to show up, but not paid unless actually called to work. Nor do employers often need to give any notice for changes in workers’ schedules. It impossible for employees to organize their daily life or plan a monthly budget because they have no idea what they will make or when they must be on the job (Greenhouse 2014).

Its impact on employees’ off-the-job lives underlines the truth that capitalism is a political economic phenomenon and, in Hayek’s terms, a threat to freedom. With respect to understanding capitalism, relying on economics alone, separated from politics, is like studying animals while ignoring their environment. That would be bad biology. The social
science equivalent is bad social science. Political economy is the context in which both actual economies and capitalism in particular can be understood.

Even when Mises and Hayek wrote, solutions existed that preserved both the market mechanism and a strong system of private property rights and contract in the context of big industry and mass production. By far the most impressive example among many are the Mondragon worker managed cooperatives in Spain, which today are major centers of large scale manufacturing, education, and research. In these enterprises, rather than controllers of capital hiring and subjugating labor, labor hires and manages capital (diZerega 2014c; Ellerman 1982). Alternatively, as Alaska pioneered with its Permanent Fund, capital resources that are not the creation of human action, such as natural resources, and even the enhanced value of corporate shares due to the special privileges they are given, can be distributed among the members of society as a whole (Barnes 2006; 2014; Murphey 2009). Again, no violation of principles of private ownership or freedom of contract is involved. But these examples, which have existed successfully for decades, are ignored by advocates of ‘free markets’ who confuse them with capitalism. Equating capitalism with markets blinds people to their significance.

CONCLUSION

Capitalism is a variant of a market economy, one where to an increasing degree the market process has freed itself from immersion in the thick value context of civil society and reversed that relation, increasingly subordinating civil society to the organizations which have evolved to respond only to maximizing profit. These organizations then use their resources to manipulate the rules in order to subdivide the market itself more completely to their service. People are rewarded to the degree they serve this system, but the system has become independent of most all human values. This is why it can now be integrated into computer programs that eliminate the need for ‘irrational’ human beings. We are its servants rather than it being ours.

If a market economy is a contractual system for exchanging private property, capitalism has absorbed and subordinated the market economy to something for which we do not have a clear term, other than “capitalism.” As a system of economic and political organization capitalism defends itself against richer human values by penalizing and expelling people who put these values ahead of profit when making economic decisions. It is a new kind of oligarchy, a systemic oligarchy where oligarchs benefit financially but are themselves subordinate to the capitalist system. Capital, not oligarchs, rule.

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25 years since the death of Karl Popper
Karl Popper was a philosopher who advocated and defended rationalism at a time when irrationalism was popular, not only in philosophy, but in political and social life. The rationalist (in Popper’s sense) seeks to solve problems by means of argument, unlike the irrationalist, who generally disdains arguments and is swayed by affections.

Born in 1902, Popper was a young Austrian during the turmoil of the inter-war years. In his first published book, Logik der Forschung (1935), which was translated into English as The Logic of Scientific Discovery (1959), he developed his critical rationalist epistemology in opposition to the uncritical rationalist epistemology of the logical positivists of the Vienna Circle. During the Second World War, while in exile in New Zealand, he wrote The Open Society and its Enemies (1945), in which he defended liberal democracy against the various kinds of tribalist authoritarianism, whether socialist or fascist, that were wreaking such devastation in the world. He argued that liberal democracy is the socio-political counterpart of critical rationalism, an environment in which critical rationalism can thrive and which critical rationalism endorses.

In the years and decades following the Second World War liberal democracy seemed to be triumphant in the Western countries and extending its reach elsewhere, especially with the collapse of the Soviet Union. But more recent times have seen a resurgence of the irrationalism of tribalist authoritarianism. On the Right there has been a growth in nationalist and traditionalist movements. On the Left we have seen an epidemic of ‘identity politics.’ On both Right and Left there is increasing opposition to free trade, freedom of expression, science and the use of argument generally, as well as a recurrence of anti-semitism, us-and-them antagonism and readiness to settle disputes by resort to violence. It is therefore timely, in this year which marks the twenty-fifth anniversary of Popper’s death, to revisit Popper’s critical rationalist philosophy and his critique of irrationalism.

The following three papers are intended as a contribution to that endeavour.

The first paper explains Popper’s contrast between open and closed societies and the superiority of critical rationalism to other forms of rationalism and to irrationalism. It then goes on to exhibit the irrationalism of each of a collection of positions and theories that make up different strands of the current identity politics. The critical treatment of these themes is quite brief: each could be given an article or, in some cases, even a book, to itself. My somewhat summary dispatch may be regarded as an pointed invitation to further debate.

The second paper criticises a critique of Popper’s Open Society by Anthony O’Hear. The latter takes a position that, in my first paper, I label ‘fideist rationalism.’ O’Hear impugns Popper’s assimilation of an open society to a scientific community and he claims that a liberal society can survive only if it outlaws critical debate of its defining principles. I concede the first point but not the second. O’Hear makes his second point in connection with the presence in contemporary liberal societies of cohorts of highly illiberal Islamic fundamentalists. This is a serious problem that demands a solution. I argue that limiting, but not prohibiting, immigration from societies permeated with an intolerant culture provides a better solution than a lurch into the authoritarianism of censorship.

The first two papers, each about the open society, are complementary. The third paper may seem disconnected from them, as it is a brief and systematic exposition of Popper’s epistemology. As indicated above, however, it was Popper’s epistemological insights that guided his social-political philosophy.

Traditional epistemology is preoccupied with justification, verification, proof or certainty. It tries to start from scratch, wiping the slate clean and beginning with no assumptions (thereby, self-defeatingly, making the huge assumption that one can proceed with no assumptions and...
still make progress). In contrast, Popper’s epistemology is concerned with improvement through criticism. It starts with what we have and tries, through criticism, to improve upon it, bit by bit. Anything may be criticised and replaced; but not everything at the same time. Even the revolutionary overthrow of a highly successful scientific theory about the whole universe (such as Newton’s) is a replacement of just a part of the fabric of scientific knowledge. While traditional rationalists have been disposed to utopian social-revolutionary projects, the critical rationalist favours piecemeal reforms that can be evaluated with regard to their impact and, if necessary, revised. Similarly, traditional rationalists, keen to establish final answers, have asked the question ‘Who should rule?’ But the critical rationalist, focusing on criticism and improvement, asks the question ‘How can we arrange things so that bad rulers can be replaced?’ Further, unlike utopians seeking arrangements or policies to maximise happiness, the critical rationalist favours arrangements or policies that minimise suffering, leaving individuals free to exercise their critical rationality to discover for themselves, by the process of conjecture and criticism, their own paths to happiness. The flip-side of this recognition of the “rational unity of mankind” is that the critical rationalist evaluates theories, proposals, policies and arrangements according to the acceptability of their implications, not according to the characteristics (race, class, nation, sex, religion, etc.) of the people who propose or oppose them.

Popper’s epistemological insights therefore tend to favour social and political arrangements that are open to piecemeal improvement, that permit all individuals the freedom to make their own mistakes (and learn from them), that guarantee freedom of expression, particularly freedom to criticise, that enable rulers to be replaced by peaceful means (typically, democratic vote with a universal franchise), and that give government a role in relieving suffering.
The Relevance of Karl Popper’s *Open Society*

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Abstract. In *The Open Society and its Enemies*, Karl Popper contrasts closed and open societies. He evaluates irrationalism and the different kinds of rationalism and he argues that critical rationalism is superior. Living in an open society bestows great benefits but involves a strain that may in some people engender a longing to return to a closed society of tribal submission and an attraction for irrationalism. Attempts to recreate a closed society lead to totalitarianism. In the light of Popper’s arguments I criticise contemporary identity politics and I argue that identity politics is irrationalist and tends to totalitarianism.

Keywords. Critical rationalism; identity politics; irrationalism; open society; Karl Popper; totalitarianism; tribalism.

I. INTRODUCTION

Karl Popper’s *The Open Society and its Enemies* was written during World War Two. The book is an extended argument against totalitarianism, whether in fascist or socialist form. In recent years a new form of revolt against civilisation, against rationality, freedom and personal responsibility, has arisen. That is the irrationalist movement of identity politics. The aim of this paper is to show the relevance of Popper’s *Open Society* to the criticism of this latest fashion for totalitarianism.

In section 2 I summarise what Popper says about closed and open societies, the transition from the former to the latter and the mistaken if understandable quest to return from the strain of civilisation to tribal submission. In section 3 I expound Popper’s discussion of irrationalism and different varieties of rationalism. In section 4 I discuss Popper’s critical comparison of critical rationalism and irrationalism. In section 5 I show how the salient defects of irrationalism are exemplified in identity politics. In section 6 I conclude with some brief reflections about the totalitarian tendency of identity politics and how rationalists should respond to it.

II. CLOSED AND OPEN SOCIETIES

A tribal or closed society resembles a herd or a tribe in being a semi-organic unit whose members are held together by semi-biological ties of kinship, living together, sharing common efforts, common dangers, common joys and common distress. The members of a closed society have a magical or irrational attitude towards social customs, which they do not distinguish from the regularities found in nature, regarding both type of regularity as enforced by a supernatural will. The customs are consequently rigid. They are also very restrictive: all aspects of life are regulated by taboos that leave few loopholes, so the right way of acting is almost always specified; though, in difficult situations, doing what is deemed right may demand courage or other virtues. There is little in the way of competition for status among the society’s members. Its institutions, including its castes, are sacrosanct. Changes in the tribal ways of life are relatively infrequent and when they happen they have the character of religious conversions rather than rational attempts to improve social conditions (Popper 1945, I, pp. 171-74). In a closed society, the tribe is everything and the individual nothing (Popper 1945, I, p. 190).

In an open society many people strive to rise socially, to take the places of other members, or to define a social place for themselves which is different to the one in which they find themselves. People are allowed to separate themselves from social groups and to have relationships with many others that involve no close personal ties. Open societies function largely by way of abstract relations, such as exchange or co-operation. There are still social groups in an open society but, with the exception of some lucky family groups, most are poor substitutes for the tribe because they do not provide for a common life and many of them do not have any function in the life of the society at large. However, personal relationships of a new kind arise which can be
entered into freely, instead of being determined by the accidents of birth; and with this, a new individualism arises. Similarly, spiritual bonds can play a major role where the biological or physical bonds are weakened (Popper 1945, I, pp. 173-75). An open society is characterised by individual initiative and self-assertion, interest in the human individual as individual, and not only as tribal hero and saviour, and the belief that there is nothing more important in our life than individual persons (Popper 1945, I, p. 190).

The gradual transformation of closed societies into more open ones was prompted by population growth, colonisation and trade. Commercial initiative was one of the few forms in which individual initiative and independence could assert itself in tribal societies. Close contact with other tribes that had different customs impugned the assumption that tribal institutions are unchangeable. The development of the open society and the breakdown of the old ways generated feelings of insecurity. The endeavour to be rational, to forgo at least some of our emotional social needs, to look after ourselves and to accept responsibilities, was the cause of stress. This 'strain of civilisation' is still felt by people today, especially in times of social change. It is the price to be paid for every increase in knowledge, reasonableness, co-operation and mutual help, and consequently for the increase in our chances of survival and in the size of the population (Popper 1945, I, pp. 176-77).

There were two rival responses to the breakdown of the closed society and its magical beliefs. The rise of rationalistic philosophy supplanted the tradition of passing on a myth by the tradition of challenging and critically discussing theories and myths. Ironically, the early philosophers argued for a return to tribalism and they organised sects with a common life modelled largely after those of an idealised tribe. In contrast to the attempt to replace the lost magical faith by rationality was the rise of irrationalism which, rejecting the claims of reason, attempted to replace the lost feeling of unity by a new mystical religion. Nearly all these early thinkers were labouring under a tragic and desperate strain (Popper 1945, I, pp. 188-89).

Plato found that his contemporaries were suffering under a severe strain due to the social change and social dissen- sion consequent upon the rise of democracy and individualism. His recommendation was the arrest of change and the return to tribalism (Popper 1945, I, pp. 169-71). However, the recommendation was impracticable. Once people have learned to use argument and criticism and to exercise personal responsibility, including the responsibility of helping to advance knowledge, the attempt to return to a harmonious state of submission to tribal magic leads instead to the inquisition, the secret police, and a romanticised gangsterism. Beginning with the suppression of reason, we end with the most brutal and violent destruction of all that is human. If we wish to remain human, we must go forward into the open society, into the unknown, the uncertain and insecure, using what reason we may have to plan as well as we can for both security and freedom (Popper 1945, I, pp. 200-201).

III. RATIONALISM AND IRRATIONALISM

The differences between irrationalism and different kinds of rationalism concern the extent to which we should seek to solve problems by the use of argument (Popper 1945, II, pp. 224-25). Popper often says ‘argument or experience,’ instead of simply ‘argument,’ but by ‘experience’ he means argument from experience (empirical refutation). Popper distinguishes five different types of philosophy:

- irrationalism;
- pseudo-rationalism;
- uncritical rationalism;
- fideist rationalism;
- critical rationalism.

An irrationalist seeks solutions to problems by appealing to emotions, passions, instincts, impulses or traditions. The irrationalist maintains that most people are more amenable to appeals to emotion than to argument and that even the few scientists who take argument seriously are bound to their rationalist attitude merely because they love it; and, besides, their creativeness, like that of artists or statesmen, is entirely irrational and mystical (Popper 1945, II, pp. 227-28). The irrationalist therefore propounds aphorisms and dogmatic statements which must be ‘understood’ or else left alone (Popper 1945, II, p. 299, note 52). He may, though, make use of argument when it serves his purpose; for instance, he may use arguments to criticise a position of a rationalist, because he knows that the rationalist is generally prepared to listen to argument (Popper 1945, II, pp. 227-28, 231, 240). Irrationalists have included members of Orphic sects in ancient Greece (Popper 1945, I, p. 188), mediaeval mystics (Popper 1945, I, p. 229) and, in modern times, Edmund Burke, Henri Bergson, Adolf Keller, Alfred North Whitehead, and Arnold Toynbee (Popper 1945, I, pp. 229, 241, 247-58).
The pseudo-rationalist claims an intellectual intuition that enables him, and others relevantly like him, to know with certainty or authority. Popper’s paradigm of a pseudo-rationalist is Plato (Popper 1945, II, p. 227). In contemporary analytic philosophy claims to certainty are rare, but claims to intellectual intuition and to epistemic authority are common (Brown 1977; Stich and Nisbett 1980, pp. 198-99). For example, Robert Audi (2013, pp. 65-82) claims that those who have appropriate epistemic virtues, such as moral sensitivity, can apprehend, intuitively, moral truths that others fail to see. "Insofar as we are self-critical and have justified self-trust, as some of us do, our retention of a belief after such scrutiny tends to be confirmatory" (Audi 2013, p. 80; for criticism see Frederick 2015). The pseudo-rationalist’s claim is false: all our knowledge is fallible and there are no authorities with superior faculties that give them privileged access to the truth (Popper 1945, II, p. 227).

The uncritical rationalist claims to reject anything that cannot be supported by argument (Popper 1945, II, p. 230). Popper’s paradigm of the uncritical rationalist is Edmund Husserl (Popper 1945, II, p. 654, note 8; p. 362, note 5), though he also seems to suggest the earlier Ludwig Wittgenstein and the positivists (Popper 1945, II, p. 353, note 6). Uncritical rationalism is commonplace in contemporary analytic philosophy, partly as a legacy of positivism. One form of it is evidentialism, which has been formulated as follows:

(E) “It is wrong always, everywhere, and for anyone to believe anything on insufficient evidence” (Clifford 1877, p. 295).

Uncritical rationalism Popper argues, can be defeated by its own chosen weapon, argument. The demand to reject any assumption that cannot be supported by argument cannot itself be supported by argument. An attempt to support it by argument would involve a vicious regress, because the premises of the supporting argument would need their own supporting arguments, and so on ad infinitum. Since the demand of the uncritical rationalist cannot be supported by argument, it implies that it should itself be discarded. Indeed, the demand that we should start with no assumptions rests upon the truly colossal assumption that it is possible to start with no assumptions and still obtain results that are worthwhile (Popper 1945, II, pp. 230-31). So, if the evidentialist tries to justify (E) by appealing to evidence, he will need further evidence to justify his evidence; so, to avoid an infinite regress, he will eventually need to stop at evidence accepted without evidence and thus do something wrong on his own view. Popper says that many uncritical rationalists, such as Alfred North Whitehead, once they became cognisant of the contradictions inherent in their own position, capitulated to irrationalism (Popper 1945, II, p. 231; p. 356, note 9).

What we may call ‘fideist rationalism’ is a half-way house between irrationalism and uncritical rationalism. In order to avoid the self-contradictions of the latter, it requires an irrational faith in some positions that are accepted uncritically and are not held open to dispute. All other positions are open to argument. A minimalist version would be:

(F) believe nothing which is unsupported by argument, except (F).

Generally, however, fideist rationalists are more eclectic, believing a variety of propositions unsupported by argument, such as some vaguely specified principle of induction (Ayer 1956, pp. 71-75; Putnam 1974, p. 239; Strawson 1952, pp. 256-63), ordinary observation statements (Moore 1939, pp. 165-67), the existence of the external world or of other minds (Ayer 1956, pp. 80-81), liberal values (O’Hear 2009, pp. 209-13) and so on. Fideist rationalism is common in contemporary philosophy in one form or another, one exponent being the later Wittgenstein (1969, sections 341-44). However, it is saved from self-refutation only by the ad hoc adoption of limited irrational commitments.

Critical rationalism, Popper says, is the attitude of admitting that “I may be wrong and you may be right, and by an effort, we may get nearer to the truth” (Popper 1945, II, p. 225). It is the acknowledgement of one’s limitations and that, although argument is the only means of learning, it rarely settles a question (Popper 1945, II, p. 227). Critical rationalism recognises that we begin, and must begin, with assumptions that are accepted without argument or support; but it requires that we be ready to learn from argument (1945, II, p. 225). Its principle is:

(C) one should hold all one’s views open to criticism and, if criticism shows them to be faulty, be prepared to replace them with better ones.

If one adopts (C) without justification or support by argument, that is not inconsistent with (C), so long one holds (C) open to criticism. Thus, the critical rationalist avoids the infinite regress of uncritical rationalism. Pseudo-rationalist appeals to intellectual intuition or epistemic authorities are
also avoided. So, too, does the critical rationalist avoid all of the rag-bag of irrational commitments that pockmark fideist rationalism. Initially, Popper failed to distinguish critical rationalism from fideist rationalism: he held that the adoption of (C) shows an irrational faith in reason (Popper 1945, II, pp. 228-31). However, as William Bartley pointed out (1984, pp. 96-107, 112-23), and as Popper conceded (1945, II, p. 369 note 1, pp. 377-83; 1983, pp. 18-22), the critical rationalist does not need to make any such concession to irrationalism because (C) is held open to criticism rather than accepted uncritically and deemed beyond dispute. So, unlike fideist rationalism, critical rationalism avoids self-refutation without resorting to *ad hoc* manoeuvres. Popper’s paradigm critical rationalist is Socrates (Popper 1945, II, p. 227). Given the difficulties of pseudo-rationalism, uncritical rationalism, and fideist rationalism, Popper often uses the term ‘rationalism’ to mean critical rationalism.

One who adopts (C) is prepared to give up (C) if (C) can be shown to be false or self-contradictory or paradoxical, or if some other position can be shown to be superior to (C). As we have just seen, critical rationalism is better than pseudo-rationalism and uncritical rationalism, because it survives the arguments that tell against those philosophies, and it is better than fideist rationalism because it avoids the latter’s *ad hoc* manoeuvres. However, irrationalism is self-consistent, since the refusal to accept arguments involves no self-contradiction; and the irrationalists claim that irrationalism is superior to all forms of rationalism. The critical rationalist is therefore under obligation to defend critical rationalism against that claim. At a minimum that means showing that irrationalism is not superior to critical rationalism. The critical rationalist is therefore under obligation to defend critical rationalism against that claim. At a minimum that means showing that irrationalism is not superior to critical rationalism. Popper defends the stronger position that critical rationalism is superior to irrationalism. It is worth noting that Popper’s arguments against irrationalism are also arguments against the irrationalist components of fideist rationalism.

IV. CRITICAL COMPARISON OF CRITICAL RATIONALISM WITH IRRATIONALISM

Popper’s arguments against irrationalism are not intended to convince the irrationalist, who can be expected to dismiss them and to attribute Popper’s failure to share his mystical insight to class, racial, religious or other group bias (Popper 1945, II, . 242-43). The arguments are intended, rather, to show that critical rationalism is rationally tenable, that critical rationalism does not require rejecting critical rationalism, as it would if irrationalism were a better philosophy. Popper’s arguments are largely moral ones (Popper 1945, II, pp. 232, 240-41). In what follows I reorganise and summarise them.

1 When *making choices*, arguments can be used to draw out the consequences of the options so that we can make an informed decision, otherwise we choose blindly (Popper 1945, II, pp. 232-33). The irrationalist might claim that our emotions, passions, instincts or impulses give us as good a guide to the consequences of options (Popper 1945, II, p. 241). But that appears to be false. The contrast between the progress of modern times and the enduring squalor of the Middle Ages attests that, on the whole, people who make decisions in the light of a rational comparison of the consequences of options are more successful in achieving their aims than those who defer uncritically to tradition or to other emotional attachments (Popper 1945, II, pp. 241-44). This is not to deny that we owe a great deal to tradition. But the critical rationalist, instead of viewing a tradition as sacrosanct or as valuable in itself, will analyse it into concrete personal relations and view it as valuable or pernicious according to its influence upon individuals. We may thus realise that each of us, by way of example and criticism, may contribute to the growth or the suppression of a tradition (Popper 1945, II, p. 226).

2 The critical rationalist will seek to *resolve disputes* by using arguments to help to identify the advantages and disadvantages, costs and benefits, of alternative options. That can generate agreement about which options should be excluded even where agreement cannot be reached on which remaining option is best. Such steps toward conflict resolution are precluded by the irrationalist emphasis upon emotion and passion. Indeed, disputes arise when the more constructive emotions and passions, such as reverence, love or devotion to a common cause, have shown themselves incapable of solving a problem. That leaves the irrationalist with an appeal to other and less constructive emotions and passions, such as fear, hatred, envy, and ultimately, violence (Popper 1945, II, pp. 233-34). For example, Tom likes the theatre and Dick likes dancing. Tom lovingly insists on going to a dance while Dick wants for Tom’s sake to go to the theatre. This conflict cannot be settled by love; rather, the greater the love, the stronger will be the conflict. There are only two solutions; one is the use of emotion, and ultimately of violence, and the other is the use of reason, of impartiality, of reasonable compromise (Popper 1945, II, p. 236).

Things might not seem so bleak as Popper suggests in that the irrationalist has two other recourses. First, as Popper acknowledges, the irrationalist may make use of ar-
argument when it serves his purpose without thereby being inconsistent in any case (Popper 1945, II, pp. 227-28, 231, 232, 235, 240). So, if appeals to emotion fail to resolve the dispute, the irrationalist could try producing some arguments to knock out options to which he is emotionally opposed. However, he can succeed in that only if he is dealing with a rationalist who is prepared to listen to arguments: between two irrationalists such a recourse is not viable. Second, if he cannot secure agreement on the basis of emotions, the irrationalist may resort to trade: ‘do what I want here and I will give you this.’ But trade occurs only if the parties to it are able to agree terms, which may be difficult if the parties to the trade are both irrationalists. Between irrationalists, the recourse to trade may just replace one irresolvable dispute with another.

(3) Critical rationalism implies that people have equal rights because, by recognising everyone with whom we communicate as a potential source of argument, it acknowledges the “rational unity of mankind” (Popper 1945, II, pp. 225, 232, 234-35). The implication may seem doubtful and Popper does not make out a cogent case for it. Nevertheless, such a case can be made using materials that Popper has supplied. In brief, our capacity for criticism enables us to consider, and experiment with, different kinds of life to discover who we are; our fulfilment depends upon such discovery; so morality demands equal negative freedom for all humans (Frederick 2016, pp. 39-48). It might be objected that irrationalism implies the irrational unity of mankind, recognising everybody with whom we communicate as a potential source of emotions, passions, instincts and impulses; so it also has a connection with the idea of equal rights. But, Popper says, irrationalism is not bound by any rules of consistency, so it may be combined with any kind of belief, such as a belief in unequal rights. Further, it lends itself easily to the support of a romantic belief in the division of people into leaders and led, masters and natural slaves (Popper 1945, II, p. 232), for we cannot feel the same emotions towards everybody, those who are near to us and those who are far from us, friend and foe, compatriots and aliens, leaders and led, believers and unbelievers, and so on (Popper 1945, II, p. 235).

(4) Openness to criticism demands, when put into practice, a real effort of our imagination; and reason supported by imagination fosters humanitarianism because it enables us to understand that people who are far away, whom we shall never see, are like ourselves, and that their relations to one another are like our relations to those whom we love. Irrationalism tends in the opposite direction. First, without argument, nothing is left but acceptance or rejection, which leads to dogmatism, which suppresses imagination. Second, the emotions of love and compassion keep our focus more parochial, since it is humanly impossible for us to love, or to suffer with, a great number of people (Popper 1945, II, pp. 239-40).

(5) Critical rationalism is linked to the recognition of the necessity of social institutions to protect freedom of criticism and freedom of thought because it acknowledges that everybody is liable to make mistakes, which may be found out by himself, or by others, or by himself with the assistance of the criticism of others. It is inconsistent with claims to authority. It suggests the idea of impartiality, that nobody should be his own judge, that the other fellow has a right to be heard, and that we have not only to listen to arguments but also to respond, to answer, where our actions affect others (Popper 1945, II, pp. 237-39). In contrast, the abandonment of the respect for argument in favour of the ‘deeper’ layers of human nature views thought as a superficial manifestation of what lies within the irrational depths. It therefore leads to the attitude which evaluates the person of the thinker instead of his thought on its own merits; it splits mankind into different categories; it tends toward censorship and the silencing of out-groups; and ultimately it will be used, as in Plato, to justify murder (Popper 1945, II, pp. 235-36).

(6) Critical rationalism fosters humility rather than arrogance. The irrationalist, who prides himself on his respect for the more profound mysteries of the world and his understanding of them, says that the scientist merely scratches the surface of things. But in fact the irrationalist neither respects nor understands the world’s mysteries. He just satisfies himself with cheap rationalisations. He is free to maintain anything because he need not fear any test; though, despite this dubious freedom, he repeats endlessly the same myth of the lost tribal paradise, the hysterical refusal to bear the strain of civilisation. In contrast, the critical rationalist, in the person of the scientist, shows greater reverence for mystery by devoting himself to discovering it step by step, always ready to submit to facts, and always aware that even his boldest achievement will never be more than a stepping-stone for those who come after him (Popper 1945, II, pp. 244-45).
V. DEFECTS OF IRRATIONALISM AND IDENTITY POLITICS

Popper’s comparative evaluation of critical rationalism against irrationalism enables us to enumerate a number of the characteristic defects of the irrationalist. In summary:

a. dogmatic;

b. appeals to emotions and passions;

c. makes uncritical appeals to tradition;

d. dismisses arguments, except when they can be used in his favour;

e. ready to settle disagreements by violence;

f. opposes freedom of expression;

g. authoritarian;

h. affirms in-group privilege rather than impartiality or equal human rights;

i. makes ad hominem evaluations of the person, perhaps on the basis of the person’s group affiliation, rather than of the proposition the person expounds;

j. favours tribal collectivism;

k. refuses, sometimes hysterically, to bear the strain of novelty, dissenting opinions, insecurity, personal responsibility and rationality.

In identity politics, people tend to form exclusive political alliances based on their shared religion, race, class, sex, culture, sexual orientation, disability or other characteristic. There need be nothing amiss with identity politics in principle. For instance, where there is officially condoned discrimination against people of a particular race or religion, an alliance amongst those in the affected group to secure equal rights may be sensible; though it would generally be more likely to succeed if it were not an exclusive alliance but, rather, one that sought support from people outside of the affected group on the basis of shared humanity. However, the currently popular form of identity politics embraces irrationalism. Some parts of the trend may be outright irrationalist but, mostly, the practitioners of identity politics appear to be fideist rationalists who are prepared to consider argument in connection with some issues but who have a wide range of contentions which are accepted unconditionally and deemed to be beyond dispute. Like the irrationalists of old, the advocates of identity politics favour a return to the closed society. As a consequence, the current identity politics exhibits all of the defects of irrationalism listed above. To show that, I will list and then discuss briefly, a number of the concepts employed and positions taken by current spokespersons of one or other form of identity politics.

Multiculturalism. In one of its forms (Song, 2017) this is the affirmation that cultural differences should be celebrated and respected so that society preserves a diversity of cultures; in particular, the cultures of minority groups need special protection from the dominant culture including, in some cases, rights of self-government (defect (h) in-group privilege). Multiculturalism’s prohibition or inhibition of criticism of the cultural practices and beliefs of minority groups (defect (f) opposition to freedom of expression) encourages the members of such groups to take offence at criticism of their characteristic beliefs or practices (defects (a) dogmatic, and (k) refusal to bear the strain of civilisation) and it tends to imprison the members of those groups within their traditional culture (defects (c) uncritical appeals to tradition, and (j) tribal collectivism). Even if a particular culture is ideal for some people, there will be other people for whom it is unsuitable; and some of the latter may be members of the culture in question. Criticism of their cultural practices can help them to find a way of life that is more suitable for them; and the most effective criticism can come from people outside of the culture who are not blinkered by the culture’s unquestioned presuppositions. Further, no culture is perfect: all have practices or beliefs that can be replaced with something better, to the benefit of the members of those cultures. Indeed, some cultural practices, such as enforced female genital mutilation, are wrong and should be prohibited. So, preventing cultures from changing in response to the growth of knowledge and changing circumstances denies people opportunities for growth and learning (defect (g) authoritarian).

Cultural Appropriation. It is held to be wrong for someone from a ‘privileged’ group to borrow or copy something from the culture of a ‘marginalised’ or ‘oppressed’ group without getting permission (Arewa 2016; Johnson 2015). So, when people in third-world countries wear denim jeans, it is not cultural appropriation; but when a white person wears a Native-American headress, it is. For instance, Adrienne Keene (2010) says that, in the Plains Indian tribes the right to wear a feathered warbonnet had to be earned by acts of bravery, the warbonnets were worn only by men and they were regarded as having deep spiritual significance; so when they are worn by white men, or especially women, for fashion or fancy dress, people of the Plains Indian cultures are being subjected to an indignity. However, that ignores the fact that symbolic meaning is conventional, not natu-
some white women wearing feathered warbonnets in a comedy sketch to satirise the sexual inequality enforced in traditional Plains Indian tribes. Such ridicule, in part because of the discomfort it causes, can be an effective form of criticism that helps the ridiculed people to see their defects, thus enabling them to change and improve. Objections to cultural appropriation are an extension of the multiculturalism that seeks to imprison people within their inherited cultures, so it has all the defects of the latter (a) dogmatism, (c) uncritical appeals to tradition, (f) opposes freedom of expression, (g) authoritarian, (h) in-group privilege, (j) tribal collectivism, and (k) refusal to bear the strain of civilisation).

Microaggressions. Derald Wing Sue (2010) says: “Microaggressions are the everyday verbal, nonverbal, and environmental slights, snubs, or insults, whether intentional or unintentional, which communicate hostile, derogatory, or negative messages to target persons based solely upon their marginalized group membership.” A person identifies a microaggression by imputing a “hidden message” to some speech or behaviour of another person. For example, “An assertive female manager is labeled as a ‘bitch,’ while her male counterpart is described as ‘a forceful leader.’ (Hidden message: Women should be passive and allow men to be the decision makers.)” (Sue 2010). However, the supposed hidden messages are conjectures and they ought to be tested, for example by stating openly the supposed hidden message and then discussing it critically with the person who is supposed to have intimated it. The campaign against microaggressions instead encourages people to respond emotionally to a guessed intention and to denounce and demand punishment of the people they imagine to have slighted them (defects (b) appeals to emotions, (g) authoritarian, and (k) refusal to bear the strain of civilisation). That is a more overt act of aggression than the so-called microaggression (defect (e) fosters violence) and it inhibits people from speaking freely (defect (f) opposes freedom of expression). Only the members of ‘marginalized groups’ can be victims of microaggressions (defect (h) in-group privilege) and the perpetrators are identified not by the overt content of what they say or do but by their group membership (defects (i) ad hominem attacks, and (j) tribal collectivism).

Some Speech is Violence. Related to the idea of the microaggression is the contention that some speech constitutes violence. For instance: “Oppressive language does more than represent violence; it is violence” (Morrison 1993). That is different from the generally accepted point that some words that are said in particularly sensitive or inflammatory contexts constitute incitement to violence. The contention is rather that some speech contents, some thoughts, are such that to express them at all is to commit an act of violence. The contention thereby attempts to legitimise defensive or retributive violence against anyone who expresses those thoughts. The contention can be used to defend laws against ‘hate speech’ but it is often used even more restrictively to prevent or punish types of speech that would be permitted in jurisdictions that have ‘hate speech’ laws. To give just two examples: students used violence to prevent the social scientist Charles Murray from speaking at Middlebury College (New York Times 2017); and the KPFA radio station in Berkeley cancelled a talk by the atheist and scientist Richard Dawkins because of his supposedly “hurtful speech” about Islam (Graham 2017). However, while it seems plausible that for every thought there is some context in which expressing it would constitute violence, so that expressing the thought in such a context should be prohibited, it seems false that there is any thought the expression of which constitutes violence no matter when or how it is expressed. The latter also seems false if we substitute ‘causes psychological harm’ for ‘constitutes violence’ (Haidt and Lukianoff 2017). The contention that some speech is violence is used to prevent, by force if necessary, the questioning of favoured views (defects (a) dogmatic, (b) appeals to emotions, (d) dismisses arguments, (e) encourages violence, (f) opposes freedom of expression, (g) authoritarian, and (k) refusal to bear the strain of civilisation).

Ironically, the champion of the open society, Karl Popper, has been invoked to bolster the claims of these closed-society advocates. Popper (1945, p. 265, note 4) says that unlimited tolerance must lead to the disappearance of tolerance, so we must claim, in the name of tolerance, the right not to tolerate the intolerant. The question is: what sort of intolerance should not be tolerated? Forcibly preventing people from pursuing peacefully their chosen lifestyles should certainly count as intolerance that should not be tolerated. But advocates of identity politics claim that expressing theories of some kinds should not be tolerated. That seems not to have been Popper’s intention: “I do not...
Tolerance of Contradictions. Some of the characteristic positions of identity politics have implications that contradict the implications of other such positions. For instance, LGBT advocates defend the rights of men to identify as women; yet, since men are deemed a ‘privileged’ group and women an ‘oppressed’ group, such ‘privileging’ counts as cultural appropriation and should therefore be prohibited, at least until the transgender men get permission from the ‘oppressed’ group to transition (though from whom, in particular, they should get permission is obscure). Advocates of identity politics seem simply to ignore this reduc-

trigger warnings. These are intended to warn people that particular contents may trigger a post-traumatic stress reaction. Originally used to alert people to graphic descriptions of rape that might lead past victims to suffer panic attacks or other adverse reactions, they are now used on websites and on material used in college classes or student reading lists in connection with a wide range of potentially offensive material that might conceivably cause someone to feel upset; and some colleges recommend that ‘triggering’ material be removed from syllabi (Filipovic 2014). However, that discourages students and others from encountering challenging ideas and it encourages an emotional response to issues instead of a rational discussion (defects (a) dogmatic, (b) appeals to emotions, (f) opposes freedom of expression, (k) hysterical refusal to bear the strain of civilisation).

Mansplaining. This happens when a man explains something to a woman in a condescending way that suggests that the woman knows less than she actually does, perhaps because she is a woman. Of course, it occurs; though such condescending explanations are also often given by a woman to a man, or by a woman to a woman, or by a man to a man. What is troublesome is that the term is sometimes used by feminists to dismiss arguments instead of debating them (defects (a) dogmatic, (d) dismisses arguments, (h) in-group privilege, (i) ad hominem attacks, (k) refusal to bear the strain of civilisation).

Check Your Privilege. This phrase is used to tell a person that there are aspects of his identity (such as class, race or gender) that, due to our current social arrangements, give him unfair advantages over others. It invites him to reflect on his advantages and the disadvantages suffered by his interlocutor or by others (Finch 2015). The problem with this device is that it turns attention away from the issues, which can be discussed in general terms, without reference to individual persons, directing attention instead onto the personal circumstances of the parties to the discussion. It can consequently be used as an ad hominem attack (defects (a) dogmatic, (d) dismisses arguments, (h) in-group privilege, (i) ad hominem attacks, (k) refusal to bear the strain of civilisation).

One of the things to be critically watched is the government’s toleration of various opinions, ideologies, and religions (in so far as these are themselves tolerant, for ideologies that preach intolerance lose their claim to be tolerated).

That seems pretty clearly to say theories that advocate the use of force instead of argument should be outlawed. That is inconsistent with Popper’s critical rationalism because it means that force instead of argument is used to resolve a theoretical question, and that some theories are not debated and criticised, so we lose the opportunity to learn from the mistakes they make.

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Popper’s *The Open Society and its Enemies* contrasts open societies with the closed, tribal societies from which they emerged. Despite the benefits of living in open societies, some people find individual responsibility, freedom and rationality burdensome and stressful, and they long for a return to submission to a closed tribal order. As a consequence they are attracted to irrationalist ideologies. However, the attempt to return to a lost tribal past requires that rationality and freedom be forcibly suppressed; it leads to totalitarianism.

The exponents of identity politics want to establish a closed society in which their ideological views are unchallenged, cultural traditions are ossified, a new caste system of approved identities is imposed, and respect for it is successfully indoctrinated. However, even if such a society were desirable it could not be achieved. People can think, they can question and criticise, they can imagine new possibilities and strive to realise them or try them out. A closed society can be maintained only by ruthless suppression of dissent, curtailment of freedom, thought-policing and punitive ‘re-education,’ all of which can already be seen emerging in the current identity politics. The natural terminus of identity politics is the totalitarian state.

Identity politics is a form of irrationalism, though more likely the limited irrationalism of fideist rationalism rather than pure irrationalism. Irrationalism can be shown to be inferior to rationalism only if rationalism takes a critical form. The pseudo-rationalism of authoritarians who claim special insight, and the uncritical rationalisms of empiricists and *a priorists* who demand that every view be supported by argument, are untenable. The fideist rationalism that is popular with followers of the later Wittgenstein, amongst others, is on a par with identity politics in that it adheres to some propositions that are accepted on faith and held impervious to argument. Only critical rationalism, which holds all views open to criticism and is prepared to give up any view that does not survive criticism, can be shown by argument to be superior to the irrationalism of identity politics. However, argument cannot persuade an irrationalist out of his irrational commitment; so, while arguments may influence people who are undecided about identity politics, those who are committed to the irrationalism of identity politics will simply dismiss the arguments.

An open society can and should tolerate the expression of, and adherence to, irrationalist philosophies, and the criticism of such philosophies; but it cannot tolerate irrationalist acts of violence or incitement to violence or threats of violence. One of the problems with identity politics is that some its advocates do commit or incite or threaten the use of force to prevent people from expressing views that conflict with the irrational commitments of identity politics. That is not surprising because dismissal of argument, and appeals to emotions and passions, which are characteristic of irrationalism, tend naturally to inhumanity and violence, as Popper argued.

**VI. CONCLUSION**

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O’Hear on Popper, Criticism and the Open Society

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Abstract. Karl Popper champions an open society in which all institutions, principles and values are open to criticism. Anthony O’Hear contends that Popper’s vision is utopian because an open society can survive only if some non-liberal values are assumed, including the prohibition of criticism of fundamental liberal principles and values. I correct O’Hear’s interpretation of Popper and I rebut most of his criticisms, arguing that an open society is stronger if it permits criticism of all views. However, I accept and strengthen O’Hear’s rejection of Popper’s assimilation of an open society to a scientific community. I also suggest that the survival of open societies may require limits on immigration from societies permeated by Islamic fundamentalism or similar cultures of intolerance.

Keywords. Criticism; liberalism; Anthony O’Hear; open society; Karl Popper; tradition.

1. INTRODUCTION

Anthony O’Hear (2009) criticises Karl Popper’s vision of the open society as utopian. He says that discussion alone cannot resolve fundamental political differences and that the survival of an open society depends upon acceptance of some non-liberal values, including the prohibition of criticism of the society’s fundamental principles and values. These points are brought to the fore, he thinks, by the growth in recent decades of significant groups within Western societies who do not share its assumptions. I criticise O’Hear’s exposition and criticism of Popper and I offer some reflections on the issues he raises.

In section 2 I summarise O’Hear’s exposition of Popper and I correct a significant misrepresentation. In section 3 I expound five criticisms that O’Hear makes of Popper and I show how three of them are mistaken. I accept and strengthen one criticism while leaving another one open; and I raise a question, prompted by O’Hear’s discussion, concerning mass Islamist immigration. In section 4 I conclude.

2. O’HEAR’S EXPOSITION

O’Hear’s account of Popper’s views is for the most part reasonable, although it contains some errors, one of which is substantial.

In The Open Society and its Enemies, says O’Hear, Popper distinguishes between societies which are run by closed groups which prevent scrutiny of customs, traditions, or the official ideology, and societies in which all involved have both the right and the ability to criticise and improve what is going on. Closed societies fail because the rulers pretend to possess knowledge that they cannot have and, by dictating to the rest and repressing their voices, they silence the main source of genuine knowledge of the operation of a society, namely, the effects of policies and institutions on those on whom they are imposed. In practice most open societies are democracies, not because all democracies are actually open, but because in democracies the ruled are able peacefully to get rid of the rulers (O’Hear 2009, pp. 205-6).

Underlying Popper’s conception of the open society are five basic ideas (O’Hear 2009, pp. 206-8):

i. anyone may criticise and contribute, regardless of race, religion, class or gender;
ii. each individual is endowed with reason and the consequent freedom and duty to decide for himself what is morally and politically demanded at any time;
iii. any view may be worth hearing, whatever its provenance;
iv. the lives of others should never be treated simply as means to an end;
v. the possibility of error or failure, even in the best regulated and conducted of enquiries or institutions, can never be ruled out.
All policies will have unknown and unintended consequences, so large-scale blueprints for societies should be avoided. Instead of trying to produce happiness for all, we should pursue piecemeal social engineering, that is, the careful identification of manifest ills in society, the formulation of policies to remove those ills, and the monitoring of the effects of the policies, so as to counter their unintended and unwelcome consequences. There will also be a constant attempt on the part of all in an open society to maintain a spirit of openness (O’Hear 2009, pp. 206, 208).

O’Hear says that, in his (1949), Popper moved away from this rationalistic stance when he castigated rationalists for thinking that they have the means to correct and disparage traditions on the basis of pure reason rather than confining their criticisms to cases where actual problems were apparent. Popper said that a liberal society requires a framework of conservative values (O’Hear 2009, p. 211). However, O’Hear seems here to be doubly mistaken. First, in his (1949), Popper maintains that rationalists can and should criticise and try to improve inherited traditions. His point is that criticism presupposes prior traditions, that it cannot begin from nothing; but it can be turned against any of the inherited traditions, just not against all of them at the same time (1949, pp. 131-32). Second, this was not a change: Popper had made the same points in his Open Society with his strictures about ‘canvas cleaning,’ the attempt to abandon all inherited institutions and start from scratch (1945, I, pp. 166-68).

3. O’HEAR’S CRITIQUE

I distinguish five strands in O’Hear’s critique of Popper’s views. I adumbrate and comment on each in turn.

3.1 Ethical Consensus

One of the supposed advantages of an open society is that it enables disputes in society to be resolved peacefully: by discussion and continual monitoring of policies we may get nearer to the truth or obtain better views. However, in science a consensus can be reached because there is fairly general agreement within the scientific community about the aims and methods appropriate to science. But in an open society there is not any general consensus about the aims of human life, or about ethics more generally (O’Hear 2009, p. 208).

O’Hear is mistaken in thinking that agreement on policies requires agreement on the aims of human life or ethics. The aim of any critical discussion, in science or outside of it, is to get better solutions to a problem or a set of problems; and the method employed is conjecture and criticism, that is, considering a range of possible solutions and evaluating the implications of each to enable us to rate the solutions as better or worse. Different branches of science have their own sub-aims and they may have their own peculiar methods. For instance, in the social sciences we try to understand the behaviour of people in social situations and we employ the method of situational analysis (Frederick 2013); whereas in natural science we try to understand the behaviour of matter, for which we propose statements of universal laws which we test against statements of observations; and within particular natural sciences there are more specific methods which are more or less peculiar to those sciences, for example, involving telescopes in astronomy, microscopes in biology, or sonar in plate tectonics. In morals and politics we try to understand what we ought to do, for which we propose general principles or policies which we test against the consequences of acting on them. Some of these principles or policies assume disagreement about the aims of human life. In an open society we will be concerned, amongst other things, to find the best set of laws that allow people to pursue aims of life that they define for themselves. Further, a critical discussion of ethics may be intended to reach agreement on an ethical view rather than presupposing it. Part of the point of Popper’s ‘negative utilitarianism’ was to enable us to compare ethical principles as better or worse according to how much suffering their adoption would cause. So, O’Hear has not succeeded thus far in drawing a contrast between discussions in science and discussions of policy. However, he goes on to develop the point.

3.2 Irresolvable Disagreements

Popper hopes, says O’Hear, to secure consensus on policies by insisting that any acceptable policy be aimed at what otherwise unconnected individuals can agree is the removal of suffering and injustice. But it is often difficult to get agreement on what constitutes suffering or injustice. What some consider the serious oppression of women, others consider to be according women their proper role and status; some think abortion clinics an injustice (to the unborn), others think their absence, and the prevalence of back-street abortions, causes suffering. Even if we all agree that spina bifida is an evil, there will be disagreement over whether it is permissible to abort babies with the condition or to undertake
research on embryos in attempts to find a cure. In such circumstances, policy is not likely to be based on agreement. It is more likely to be based on what the majority will tolerate. Of course, such pragmatism may help to avoid violence or bloodshed, which is not to be dismissed, but it is a different thing from agreement, leaving us quite a long way from getting nearer to the truth or goodness or genuine welfare (O’Hear 2009, pp. 208-9).

O’Hear seems to conflate two different points there. His first point is that it is often difficult to get agreement on what constitutes suffering or injustice. That is true; but difficult does not imply impossible. Popper intends that agreement on statements about cases of suffering or injustice can be used to evaluate policies, in a way similar to that in which agreement on statements about observations are used to falsify theories in science. It is sometimes difficult in science to get agreement about observations; but such difficulties may be resolved by the further development of theory.

For instance, during the Renaissance there were rival theories about the motions of heavenly bodies. The heliocentric theory maintained that the motion of the sun around the earth was merely relative and that the earth underwent an absolute non-linear motion. The geocentric theory maintained that the sun’s non-linear motion was absolute and that the earth’s non-linear motion was merely relative to the sun. There was therefore disagreement over some of the observation statements against which the rival theories were tested, with heliocentrists insisting that they observed a merely relative non-linear motion of the sun, and geocentrists maintaining that they observed an absolute non-linear motion of the sun. But after the explanatory and predictive success of Newton’s theory, which introduced a new force of gravity and attributed absolute non-linear motions of a body to the action of a net force on that body, the geocentric theory was no longer plausible, and agreement was reached that we observed a merely relative non-linear motion of the sun. The evaluation of Newton’s theory as successful depended, of course, on there being some observation statements about relative motions to which agreement was obtained.

So, current disagreement about what constitutes suffering or injustice in cases like abortion need not be permanent. There are other statements about suffering and injustice to which agreement can be obtained and those statements may be used in the evaluation of new theories about the human predicament some of which may have implications that persuade some people to revise their current assessment of what constitutes suffering or injustice in cases like abortion.

In the longer term, there need be no insuperable barrier to evaluating rival policies about abortion and such like in view, amongst other things, of their implications for suffering and injustice.

O’Hear’s second point, which is independent of the first, is that practical decision-making often cannot wait upon the development of theory, so decisions on policy often have to be made in the face of stark disagreements about the implications for suffering or injustice. In such cases, what decision is made depends not upon which policy is agreed to be best (for none is) but upon majority voting. I think that O’Hear is right to point out that this shows that the analogy between an open society and a scientific community is weaker than Popper thought.

Further, the criticism can be strengthened. In any large society, questions of public policy are decided by a political process which often involves horse-trading between organised groups pursuing their self-interest. Even in a liberal democracy, the policies that are pursued are those that are agreed, not by a majority of the adult population, but by a majority of elected politicians acting under the influence of pressure or incentives from organised interests. Such a process is very unlike the process through which scientists, who are trying to understand the world, may come to a consensus (if they do) about which theory has at the present time best stood up to criticism.

We might attempt to require that policy decisions take account of the implications for suffering and injustice by means of a constitutional provision that prohibits political decisions from conflicting with the currently best social-scientific findings. The aim would be to prevent the government from fulfilling any of the wishes of organised groups, or of the citizens, that run counter to the contemporary deliverances of social science concerning which policies minimise suffering and injustice. That would still be democracy, in that the citizens could vote out a government that appears to be failing; but it would be a constitutional democracy bounded by scientific findings. However, such an arrangement would give substantial power to scientists, who would then be subject to lobbying from organised interests; and, since power corrupts, one would expect that, in such a polity, scientific standards would be degraded, with science being eventually transmogrified into politically expedient, or politically motivated, junk (which some argue has already happened in the case of climate research). This seems to be a reductio ad absurdum of Popper’s assimilation of an open society to a scientific community. Political pow-
er is inherently irrational from the point of view of socially desirable outcomes (Olson 1965, 1982, 2000).

3.3 Solidarity

O’Hear says that it is utopian to think that a disposition to criticise might on its own be enough to hold a community together. For instance, projects such as the European Union actually loosen the bonds which tie a people together, by eroding the sentiment and prejudice on which a form of life depends. Once these ties are eroded, the liberal and critical community may not have within itself enough self-belief to defend itself effectively against an enemy which believes in something positive and does not feel constrained by the niceties of rational discussion and openness. No doubt part of what we fought for in World War II was the values of tolerance, liberalism, democracy, free speech and the rule of law. But other values, such as patriotism, may also have been crucial to the willingness of people to fight and shed their blood (O’Hear 2009, p. 210).

O’Hear may be right here. It does seem questionable whether a society of critical rationalists could summon the sort of collective unity needed to fight against Nazism without the support of some, perhaps subliminal, atavistic prejudices of a nationalistic or ideological sort. I do not know the answer.

3.4 Undesirable

O’Hear opines that, even if a society which is completely open and relentlessly self-critical is possible, it is doubtful whether it would be desirable; it might be a managerial nightmare of continuous self-scrutiny and endless target setting (O’Hear 2009, p. 210).

That is a very disappointing criticism because it expresses the attitude of the sloth. If we want to improve ourselves and each other, we need to keep scrutinising and criticising and then taking appropriate action in response. It does indeed involve an effort; but a better life can be worth striving for.

3.5 Unquestionable Principles

O’Hear rejects Popper’s demand that the institutions, policies and principles of an open society should be open permanently to critical evaluation. Some policies and institutions, he says, form a framework of unquestioned values that must be beyond criticism, such as our basic laws in favour of free speech or property or against torture. Islamic immigrants to the West see themselves as belonging to political communities defined by their religion, rather than by the nationhood of the societies they are living in. Some of them also have a long-term aim of bringing the places in which they live under Sharia law, and regard the institutions and customs of the West as decadent and infidel. When such radically diverging views are held by significant and vocal minorities, Popperian openness is not sufficient by itself to maintain an open society. In Britain, Muslims protesting the use of freedom of speech to publish cartoons mocking the prophet Mohammed have been imprisoned for speaking freely. Practically restraining those who use their freedoms to undermine freedom might be sensible; but what it shows is that openness can flourish only given agreement among citizens on fundamental liberal values, including openness (O’Hear 2009, pp. 209-13).

It is false that an open society requires an unquestioned framework of values or principles. In actual liberal societies there is often debate about free speech, property and the admissibility of torture; and the laws of these societies evolve partly in response to such debates, in the sort of tentative and piecemeal way that Popper commended. For most of the twentieth century, liberal societies were infested with large and vocal groups of people who subscribed to a political ideology, Marxian socialism, that was opposed to liberal open societies, and that regarded the institutions and customs of the West as decadent. Many of those people actively pursued the long-term aim of bringing the places in which they lived under a Marxian socialist regime that suppressed freedom and other liberal values. Yet the liberal societies have survived. Marxian socialist ideology, though it still has its advocates, has been defeated by argument, including most importantly the argument from experience: wherever such socialism has been tried it has had bad, often disastrous, outcomes. The defenders of Marxian socialism try to dismiss the refutations by claiming that none of the socialist experiments was ‘true socialism,’ despite the fact that, until failure became evident, they had championed every one of the experiments (see, for example, Niemetz 2017). But such ad hoc manoeuvres show the Marxian socialists to be either deceivers or self-deceivers. The debates about Marxian socialism presuppose that the principles and values of open societies are held open to criticism, because they require the free discussion of the relative merits of liberal versus rival societies. One of the strengths of a liberal order is that its framework of principles and values is con-
stantly debated and tested in critical argument and stands up better to such treatment than does its rivals.

Liberal societies can also survive the presence of Islamic fundamentalists by remaining open societies, so that the propositions and consequences of Islamic ideology can be criticised and its bad and disastrous outcomes publicised and debated. The Islamists do not need to be expelled or silenced; though they should be imprisoned or punished in some other way if they either act violently or incite violence in a heated context in which acts of violence are very likely to follow immediately. The British imprisonment of Muslims who were expressing their ideology or denouncing the cartoons of Mohammed or proposing that blasphemers be executed (in situations where such expressions were not incitement to immediate violence) was a step away from an open society and toward the sort of society that the fundamentalists advocate. From the point of view of those favouring a liberal order it was a dreadful mistake. The introduction of laws against ‘hate speech’ is a similarly dreadful mistake.

It may be, however, that O’Hear is sensitive to a significant difference between the Marxists and the Islamic fundamentalists that he has not succeeded in articulating. For, although the Marxists held illiberal views that they were disinclined to give up in the light of criticism, they were generally tolerant of contrary views and inclined to use argument rather than force to try to change them. On the whole, they were not so closed-minded as to think it appropriate to use intimidation or violence against people who thought or acted differently. In contrast, in Western Europe today, a large influx of immigrants from countries in which Islamic fundamentalism is dominant has resulted in a relatively large number of people who act, often in groups, to abuse, threaten or physically violate people who do not conform to their restrictive norms, including females who subscribe to Western mores and people who are openly homosexual or transgender, as well as journalists, entertainers, artists, novelists and politicians who represent Islam in a negative way. The criminal law is used against such acts of intimidation or violence; but it is not used effectively when the number of offences is high. That creates a climate of fear in which people decline to use their freedom to act or to express themselves; and that undermines the open society.

In relatively small numbers, people from intolerant cultures can be absorbed into open societies, learn to tolerate the existence of views that differ from their own and even, over time, listen to criticism of their own views and amend them in the light of argument. Indeed, the presence of their illiberal views and closed-minded behaviours (so long as they fall short of intimidation and violence) can strengthen a liberal society, since they provide opportunities for criticism and learning. However, when such immigrants arrive in large numbers and are clustered together, that can make it difficult, for those of them who want to, to shed their inherited norms, as the people in their immediate vicinity endorse or enforce them. Defence of the open society may therefore require limiting, though not prohibiting, immigration from countries permeated by a culture of intolerance. An open society need not have open borders.¹

4. CONCLUSION

Popper championed the open society in which:

• people are free to use their critical rationality to pursue their own course in life;
• freedom of thought and discussion is maintained;
• governments aim to alleviate suffering rather than to secure happiness;
• public policies are always tentative and subject to critical evaluation and correction;
• the ruled are able peacefully to get rid of the rulers.

O’Hear shares Popper’s admiration for liberal, open societies; but he thinks that the survival of open societies depends upon attachment to some non-liberal values and that Popper made a serious mistake in thinking that an open society could survive if it permitted unfettered criticism. Criticism must, says O’Hear, be kept within bounds: a liberal society can flourish, and maintain itself into the future, only if there is a sense among its citizens that they belong to a political community and that their freedoms derive from membership of that community. That in turn requires that fundamental liberal principles and values are

• agreed by all
• indoctrinated
• not allowed to be criticised.

I argued, against O’Hear and in favour of Popper, that a society that draws bounds to criticism is not an open society and that an open society is stronger, and thus more likely to survive, if it permits unfettered criticism of its fundamental principles and values and of everything else. I conceded that, if an open society comes under violent attack from a foreign power, non-liberal values, such as sol-
idarity or patriotism, may be of assistance in mounting a defence; and I suggested that an open society may need to limit immigration from societies which are permeated with a restrictive and intolerant culture. I contended that the inevitable horse-trading between self-interested organised groups that is endemic to politics impugns Popper’s analogy between an open society and a scientific community. The greatest threat to the open society comes from the very nature of politics, which encourages organised groups to pursue sectarian interests at the expense of everyone else. I do not think that anyone knows what the solution to that problem is; but maintenance of open criticism is essential for identifying and debating it.

NOTES

1 I thank Mark Friedman for discussions of these issues that has enabled me to clarify my views.

REFERENCES


1. INTRODUCTION

Discussions of Karl Popper’s epistemology typically exhibit a range of confusions. To some extent that is Popper’s fault. He disdained meaning or linguistic analysis as trivial and scholastic. But that reasonable disdain engendered in him a reluctance to be fussy over terminology; and that reluctance led him to speak loosely, often using terms ambiguously, thereby leaving his expositions unclear overall, and wide open to misinterpretations. To exhibit the value and coherence of Popper’s epistemology it is therefore necessary to restate it in a clear and concise way that regiments the terminology that Popper uses. This paper is an attempt at that task.

There are alternative and equally good ways in which such a regimentation may be accomplished. However, as no-one else, so far as I am aware, has attempted such a regimentation, I recommend that the following exposition should be accepted as standard. The regimentation differs from the terminology I have used in some other expositions of Popper’s ideas (Frederick 2010; 2015; MS). The fact that those expositions differ among themselves in the ways in which Popper’s terminology is explained is itself a testament to the need for a standard regimentation. The references to Popper’s work given below show some places in which will be found his relevant views but, plainly, not necessarily the same terminology.

It may be helpful, before launching into the regimented exposition, which may be a little dry, to give a less formal sketch of Popper’s epistemology so that its broad outlines can be comprehended. On Popper’s view, the growth of knowledge begins with a problem, which is usually an inconsistency discovered either within an inherited theory, or between inherited theories, or between an inherited theory and an accepted observation statement. We attempt to solve the problem by proposing new explanatory theories. We criticise these theories in various ways and we evaluate them as better or worse solutions to our problem. As a result, we usually come to understand the problem better, which leads us to suggest further new theories, which are in turn criticised and evaluated. It may be that we eventually settle on one theory as clearly better than its available rivals (as happened in the case of Newton’s theory in the eighteenth century). That dominant theory may then become a main focus for our criticism, identification of new problems and further development of theory. The attempt to resolve the problems that the criticism of the dominant theory generates may lead to new conjectures which are rivals to that theory and which manage to stand up to criticism better than that theory does, thus leading to its revolutionary overthrow.

The growth of knowledge is thus a process of conjecture and criticism. An important kind of criticism is empirical, that is, the discovery of points at which a conjecture clashes with reality as we experience it. Popper proposes that what makes a conjecture scientific is its susceptibility to empirical criticism, that is, its falsifiability. A conjecture incapable of such an empirical clash is deemed metaphysical. How-
ever, falsifiability may be either direct or indirect; and that enables some conjectures, which are metaphysical in that they are not directly falsifiable, to qualify as scientific because they are indirectly falsifiable. The process of conjecture and criticism leads to progress only when criticisms are not evaded in pseudo-scientific ways. What distinguishes science is not just that its theories are, directly or indirectly, falsifiable but also that its procedures are not ad hoc. That requires that an amendment to a theory that removes an inconsistency identified by criticism is acceptable only if it solves some problem in addition to the problem of removing the inconsistency.

In section 2, I deal with Popper’s demarcation of different types of statement. The terms ‘empirical,’ ‘falsifiable,’ and ‘scientific’ seem to be used interchangeably by Popper and by those who have been influenced by him; but there are two different types of statement that those terms can appropriately be used to distinguish, and each of those types has an important role to play in Popper’s epistemology. Similarly, metaphysical statements are often contrasted with scientific statements, especially in Popper’s earlier work; but Popper recognises, especially in his later work, two types of metaphysical statement, one of which is an integral part of science. In section 3, I turn to Popper’s demarcation of different types of epistemic procedure into rational or irrational or, less broadly, scientific or pseudo-scientific. Popper sometimes calls statements that are defended by means of pseudo-scientific procedures ‘metaphysical’ (1959, section 9) or ‘non-empirical’ (1959, section 20). However, empirical and scientific statements can be defended in pseudo-scientific ways; though, as a consequence, they may suffer amendments which turn them into non-empirical or non-scientific statements. Pseudo-scientific procedures should not be confused with metaphysical or non-empirical statements. I ignore Popper’s theory of verisimilitude because it seems to me to be indefensible. In section 4, I conclude. All citations in parentheses in the following sections are references to works by Popper.

2. THEORIES (STATICS)

One of Popper’s concerns is to demarcate empirical statements from those which belong to metaphysics, logic or mathematics (1959, sections 4 and 5). He offers the following criterion:

(E) an empirical statement is one that is falsifiable (1959, sections 6, 15 and 21).

The term ‘falsifiable’ is defined using the term ‘basic statement.’ The latter is explained as follows:

(B1) a basic statement is one such that

a. it has the form ‘There is a $\phi$ in the spatio-temporal region $k$,’ where $k$ represents a term that denotes a delimited spatio-temporal region, perhaps by means of co-ordinates,

b. it describes something that we could conceivably observe, given our actual powers of observation, so $\phi$ represents a term which connotes an observable property (1959, section 28);

(B2) an accepted basic statement is one which is agreed by observers to describe an observed situation (1959, section 29).

Where the spatio-temporal region denoted by the term represented by $k$ is within our current field of observation, a basic statement may be expressed more colloquially by using an indexical, as in ‘This is a swan,’ ‘That is black,’ ‘Here is a glass of water,’ ‘Over there is a red swan.’

The notions of falsifiability are explained as follows:

(F1) a statement is falsifiable if and only if it is inconsistent with a basic statement (1959, sections 6 and 21);

(F2) a statement is falsified if and only if it is inconsistent with an accepted basic statement which describes a reproducible situation (1959, sections 6, 21 and 22).

A reproducible situation is one that either occurs regularly in nature or which we can bring about regularly by means of experiments. An example of a falsifiable statement is ‘All swans are white.’ It is also an example of a falsified state-
ment, given that statements equivalent to 'This is a black swan' have been accepted in the light of observations.

Here is the explanation of a metaphysical statement:

(M) a metaphysical statement is one which is not a part of logic or mathematics and which is not falsifiable (1959, section 15).

The notion of a scientific statement is explained thus:

(S) a scientific statement is one which, in conjunction with accepted basic statements, and perhaps also some accepted background knowledge or hypothetical assumptions, entails a novel falsifiable prediction which survives attempts to falsify it (1959, sections 18-20).

A prediction is a basic statement. Its derivation from a scientific statement requires at least one accepted basic statement to be conjoined to the scientific statement. Thus, from a scientific statement, perhaps in conjunction with some accepted background knowledge or hypothetical assumptions, we may be able to derive a statement of the form 'If \( p \), then \( q \)', where \( p \) and \( q \) represent basic statements describing reproducible situations. If we accept the basic statement represented by \( p \) we can derive as a prediction the basic statement represented by \( q \) (1959, section 12). A prediction is novel if and only if what it predicts is unexpected in the light of our background knowledge (1963a, p. 220). One attempts to falsify a prediction if and only if one seeks a situation in which the corresponding basic statement of the form \( p \) and a basic statement inconsistent with the corresponding basic statement of the form \( q \) are accepted.

So, the statement

(1) all swans are white

is an empirical statement because it is falsifiable. But it is a scientific statement only if, when it was first uttered, our background knowledge did not imply that all swans are the same colour and, for some time afterward, the search for non-white swans found only swans that were white. A statement once classified as scientific remains scientific even if it is later falsified, as (1) was after the acceptance of some basic statements of the types 'That is a swan' and 'That is not white', where the two occurrences of the word 'that' denoted, in context, the same thing (a black swan).

If we take Newton's theory to be the conjunction of the three statements of the laws of motion and the statement of the law of gravity, then Newton's theory is a scientific statement because, in the eighteenth century, in conjunction with

- some accepted background knowledge concerning the properties of familiar phenomena, including light and the working of telescopes,
- some accepted basic statements about the (reproducible) positions and motions of objects,
- some hypothetical assumptions, including those concerning the refraction of light and a statement to the effect that there are no other forces acting in the situation apart from those we know about,

it entailed novel falsifiable predictions, about the positions of the planets and the motions of terrestrial bodies, which survived attempts to falsify them.

From (F1), bold theories like Newton's are not falsifiable: they must be conjoined with a bulk of background knowledge or hypothetical assumptions before we get a falsifiable statement. Thus, by (E), they are not empirical statements. So, major scientific theories are often not empirical statements. They are also plainly not axioms or theorems of logic or mathematics (although they generally employ a good deal of logic and mathematics, that is, they include such statements as implicit parts of themselves). Consequently, from (M), major scientific theories are typically metaphysical statements (1959, section 4; 1982, sections 20 and 27). We can nevertheless distinguish such statements from purely metaphysical statements as follows:

(PM) a purely metaphysical statement is one which is not falsifiable and the conjunction of which with accepted background knowledge and accepted basic statements, and with any hypothetical assumptions currently postulated by its defenders, entails no novel falsifiable predictions (1959, section 85).

An example of a purely metaphysical statement is the theory of atomism in the time of the ancients (1959, section 4; 1982, section 20; 1983, pp. 191-92). That theory stated that the world consisted of atoms and the void and that all changes were to be explained in those terms. It maintained that the atoms were too small to be detected and that the void was unobservable, so from (BI) it was not a basic statement. It was also not falsifiable, since no basic statements
were inconsistent with it, so from (E) it was not an empirical statement. Further, in conjunction with accepted background knowledge and accepted basic statements it entailed no novel falsifiable predictions; and its defenders offered no additional hypothesis which could be conjoined with it and accepted background knowledge and accepted basic statements to yield novel falsifiable predictions. Therefore, from (S), it was not a scientific statement.

However, with the progress of our knowledge and the development of the atomic theory to include many hypothetical assumptions about the nature of atoms, the theory generated novel falsifiable predictions which survived attempts to falsify them (as with the kinetic theory of heat), so the theory became scientific (1959, section 85). Further, with the development of microscopes which made atoms observable, some statements of the theory became falsifiable, and thus empirical, because they were then inconsistent with some basic statements (1983, p. 191). Thus, what is a purely metaphysical theory at one time may become an empirical or scientific theory at a later time, depending on the progress of our hypotheses and their testing (1958, pp. 186-88; 1959, section 4; 1982, section 20; 1983, pp. 191-92). What is not a basic statement at one time may become a basic statement at a later time if the invention of new devices, such as telescopes and microscopes, enhance our powers of observation.

The statement

(2) nothing travels faster than the speed of light and God exists

contains as its first conjunct a falsifiable statement that has survived attempts to falsify it (such as the experiment at CERN in September 2011), and as its second conjunct a purely metaphysical statement. Thus (2) is falsifiable, and thus empirical, and is as yet unfalsified. However, it is not a scientific statement because it yields no novel prediction either by itself, or when conjoined with some background knowledge, some currently proposed hypothetical assumptions or some accepted basic statements describing reproducible situations (1957, pp. 132-34).

Basic statements are theoretical statements in that the observable terms employed in them have implications that transcend the particular situation of observation. For example, ‘This is a tree’ is a basic statement to which observers may agree in a particular situation of observation. But if the thing thus described suddenly shed its leaves and retracted its branches, or if it waddled off, or if it screamed when carvings were made on its bark, the previously accepted basic statement, ‘This is a tree,’ would be falsified by the acceptance of the basic statements describing the unexpected behaviour. Thus, accepted basic statements are falsifiable, they may be false and they may later be rejected on the basis of observations (1959, section 29, appendix *x, (1) - (5)).

We have no way of establishing whether a basic statement is true or false. Even if all accepted basic statements were true, a falsifiable but severely tested and unfalsified general statement may still be false, since the next accepted basic statement describing a reproducible situation might falsify it. Similarly, the failure to falsify any of the novel falsifiable predictions entailed by the conjunction of a scientific statement with accepted basic statements, background knowledge and hypothetical assumptions, cannot preclude that the next accepted basic statement describing a reproducible situation will falsify one of those predictions (1959, sections 1, 3 and 82). A severely tested but unfalsified theory may be false. Further, since basic statements may be false, a falsified theory may be true. Thus, we have no way of establishing whether a self-consistent empirical or scientific theory is true or false. By (PM), there is no way of falsifying a purely metaphysical theory. Provided it is consistent it may be true; but it might also be false. We have no way of establishing whether a self-consistent purely metaphysical theory is true or false. With the possible exception of logical and pure mathematical statements, then, we have no way of establishing, for any statement, whether it is true or false.

3. Practice (Dynamics)

Another of Popper’s concerns is to demarcate rational from irrational epistemic procedures and, as part of this, to demarcate scientific from pseudo-scientific procedures. We just noted that, with the possible exception of logical and mathematical truths, and self-contradictions, we cannot establish whether a statement is true or false. Popper thus proposes that the aim of our search for knowledge is to obtain better explanations (1957, pp. 132-34). He then proposes a number of procedures that should help us to succeed in our aim if anything can (1959, sections 11 and 20). Thus, the procedures are proposed as being instrumentally rational. In contrast, epistemic procedures which prevent or undermine our success in achieving our epistemic aim are instrumentally irrational.

Since our epistemic aim is to achieve better explanations, we need to agree on ways in which an explanation may be better than a rival explanation. Here are some ways:
the explanation offers solutions to genuine problems rather than spurious ones (1958, pp. 190-92, 199-200);

• the explanation is consistent rather than self-contradictory (1959, sections 23-24);

• the solutions offered by the explanation actually solve the problems rather than leaving them unsolved, and they better withstand criticism than the solutions provided by rival explanations (1982, sections 27 and 30; 1983, p. 20);

• the explanation solves not only the problems it was proposed to solve, but also other problems besides (1957, pp. 132-34; 1959, section 20; 1982, section 27);

• the explanation generates more novel falsifiable predictions than its rivals and those predictions survive testing (1957, pp. 132-34; 1959, section 20; 1963a, pp. 217, 219-20, 241-42);

• the explanation generates new and interesting problems to solve (1963a, p. 222);

• the explanation is simpler than its rivals (1957, p. 139; 1963a, p. 241; 1982, section 27);

• the explanation corrects its previously successful rivals (1957 pp. 139-45);

• the explanation is either falsifiable or scientific, rather than purely metaphysical, and has survived attempts to falsify it (1959, sections 5 and 20; 1982, section 27).

Popper proposes the following procedures to help us to achieve our aim:

i. we should study, and try to criticise, existing explanations, subjecting them to experimental tests if they are falsifiable or scientific, and we should attempt to propose explanations which offer better solutions to the problems for which the existing explanations provide solutions (1959, section 27, including footnote *1; 1982, section 27; 1994, pp. 40-43);

ii. we should try to identify new problems posed by our study and criticism of existing explanations and try to propose explanations which solve them (1958, pp. 184, 190);

iii. we should state our problems and proposed explanations as clearly and simply as we can (1983, p. 8);

iv. we should subject our proposed explanations to critical scrutiny and seek out and invite criticisms of them, including experimental tests with regard to falsifiable and scientific explanations (1959, section 9);

v. we should accept (at least until it is falsified) an any basic statement that is agreed by observers to describe an observed situation;

vi. where a criticism is telling, we may defend a proposed explanation by modifying it or by combining it with additional hypotheses so that the criticism is rebutted, but only if these manoeuvres allow the explanation to solve additional problems (Popper 1959, sections 6, 19 and 20);

vii. in the case of a falsifiable or a scientific explanation, we may seek to overturn a falsification of it by modifying the explanation or by combining it with additional hypotheses so that the falsification is explained away, but only if these manoeuvres give us a revised explanation which has novel falsifiable predictions that survive attempts to falsify them (1959, sections 6, 19 and 20);

viii. we should abandon a proposed explanation if the problems it is intended to solve are shown to be not genuine problems (1958, pp. 190-92, 199-200);

ix. we should never attempt to justify a proposed explanation but should rather be keen to improve it or to replace it with something better (Popper 1959, sections 1, 8, 11, 85; 1994, section xvi).

Any proposed epistemic procedures which conflict with (i) – (ix) are irrational, given our epistemic aim; and they are pseudo-scientific in connection with falsifiable or scientific statements (1959, section 11). Violations of (i) and (ii) are incompatible with the search for knowledge, since they eschew the attempt to find better explanations. Any violation of (iii) is obscurantist. That damn’s most ‘Continental philosophy.’ Violation of (iv) or (ix) is incompatible with the search for better explanations. Thus, contemporary epistemology is irrational. Violation of (v) ignores our empirical contact with the world and is thus irrational and pseudo-scientific, given our epistemic aim. Violations of (vi) or (vii) are ad hoc. They are thus irrational in a way similar to violations of (iv) and (ix) because they are attempts to buttress a defective existing explanation rather than to seek a better one. Violations of (viii) are scholastic, producing statements which are irrelevant, obscure, confused or trivial. A good deal of contemporary ‘analytic philosophy’ seems to be of that kind.
4. CONCLUSION

Popper’s critical rationalist epistemology is a great advance over traditional and contemporary epistemology. It emphasizes criticism rather than dogmatism, imaginative problem-solving rather than pedestrian fact-collecting or scholastic nitpicking, continual progress rather than stagnation, and insight into the development of scientific and metaphysical theories and the progress of our understanding of the world.

However, Popper’s lax use of language obscures his message and generates misinterpretations of his views and much misplaced criticism of them. In an attempt to remedy that I have proposed that Popper’s technical terms be subject to regimentation; and I have used that regimentation to essay a clear and concise exposition of the main points of Popper’s epistemology. I propose that this regimentation should become standard until it is improved upon.

REFERENCES


Before Darwinism was a science, it was a religion. In fact, it remains a religion, even as it has become a full-fledged science.

These are provocative statements, yet they constitute the fundamental thesis of Michael Ruse’s *Darwinism As Religion*. Darwinism didn’t become a full-fledged science until it was attached to the discovery of the structure of DNA and its role as information storage for genetic information. The idea of natural selection and sexual selection certainly made a great deal of sense to many people when Darwin’s books came out, but until one could actually study those things—meaning, you knew the mechanism of information storage, communication, and inheritance—Darwinism remained precisely that: an idea. A good idea, a highly generative idea, but a mere idea nonetheless. Ruse argues that this makes Darwinism at its most scientific mere popular science, and at its most speculative and imaginative, religion.

Why religion? Because much of the work in developing the ideas of Darwinism was done in literature. The implications of Darwinism for ethics, values, and meaning were primarily investigated by literary artists—poets and novelists—and thus demonstrated in complex ways through characters. One could easily view the Bible as a collection of stories and poetry the primary purpose of which is to illustrate the ethics, values, and meaning implied by the Jewish religion (in the Old Testament) and the teachings of Jesus (in the New). Until and unless an idea can be attached to a scientific method of investigation, and so long as those ideas can only be investigated using artistic methods, those ideas remain a religion.

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From this perspective, there are a number of ideas out there that could be classified as religions. Marxism, insofar as it remains an entirely unscientific ideology and yet inspires artists, songwriters, poets, playwrights, and novelists, is a prime example of this kind of contemporary religion. The idea of wormholes in physics is another example, as the implication of the existence of wormholes has been investigated in science fiction, including *Star Trek: Deep Space Nine*. Similarly, Freudianism fared better as a religion—finding immense popularity in a wide variety of literary writers, from the surrealists to William Faulkner—than as a scientific project, even as it launched psychology as a science (a science being made more scientific with neurobiology, much as Darwinism was made more scientific with molecular biology).

Ruse, by the way, is no Christian, so this isn’t an attempt to “bring Darwinism down” to the level of creationism. Rather, Ruse says that Darwinism is a religion because it “tries to speak to the nature of humans and their place in the scheme of things.” If you have that, you have a religion or, if you prefer “a ‘secular religious perspective.’” (p. x). There should be little question that Darwinism implies a great deal about both human nature and our place in the cosmos. Many have taken the latter in particular to mean that we are but momentary specks of dust in the cosmos, and will have as little impact on the cosmos as any given speck of dust (a position Nietzsche takes as he pushes his thought toward—and, fortunately, beyond—nihilism). More than any other set of ideas, Darwinism fundamentally questions, for many people, the existence of God. If organisms evolve through natural selection, there’s no need for a creator God in the traditional Judeo-Christian-Islamic sense. This is very much reflected in the works of artists like George Eliot and Thomas Hardy, both of whom take on the implications of Darwinism full force. In the end, these positions have implications for culture, ethics, and religion—and, ultimately, civil society as a whole.

Ruse begins his project by tracing the early ideas about biological evolution to a number of pre-(Charles) Darwin poets, from Alexander Pope in *An Essay on Man* to the po-
etry of Charles Darwin’s own grandfather, Erasmus Darwin. This parallels the project of Leonard Shlain in *Art and Physics: Parallel Visions in Space, Time and Light*. In *Art and Physics*, Shlain argues that many Modernist artists actually anticipated the discoveries and theories of later physicists, including Einstein and the quantum physicists. As Shlain puts it,

> I propose that the radical innovations of art embody the preverbal stages of new concepts that will eventually change a civilization. Whether for an infant or a society on the verge of change, a new way to think about reality begins with the assimilation of unfamiliar images (1993/2001, p. 17).

Ruse traces something similar happening in literature as artists first anticipate, then consciously wrestle with, the ideas of Darwinism. Indeed, if poetry “says the unsayable,” meaning it’s a kind of “preverbal” verbalization of ideas in their infant form, then it is working in a similar way as the visual arts do during revolutionary periods. As Shlain points out, “Repeatedly throughout history, the artist introduces symbols and icons that in retrospect prove to have been an avant-garde for the thought patterns of a scientific age not yet born” (1993/2001, p. 19). The same is true of metaphors and images in poetry.

Indeed, Ruse repeatedly demonstrates that poets and novelists anticipated the thought patterns of our own Darwinian age, from the loss of meaning to the questioning of the source of values. Thus, pre-Darwinian evolutionary thought has the structure of pseudoscientific thought. After Darwin, though, it takes on the structure of popular science in the way it’s investigated. Given that people are taking Darwin’s ideas more on faith than through evidence provided by scientific investigations (something which cannot actually take place until the 20th century), it is fundamentally more religious in structure than scientific.

Ruse’s story is about how evolution in general and Darwin’s ideas about it in particular affected English culture through literature (the work only deals with the English-language literary writers’ works, something which gives it focus while simultaneously making it feel a bit provincial). In many ways it’s a continuation—Ruse practically says it’s a culmination—of his life’s work, combining his love (literature) with that life’s work (p. xi) on Darwinism and philosophy, Darwinism and religion, Darwinism and culture. Regardless, the work should be attractive to cultural historians and even literary theorists who are interested in the genealogy of Darwinist ideas. Those interested in learning how Darwinist ideas can help one learn more about literature, the way literary scholars like Joseph Carroll and Jonathan Gottschall do, will have to look elsewhere.

Because of Darwin’s social position, it did not take long for his ideas to enter the culture. Elizabeth Gaskell, in *Wives and Daughters* (1866), has a character, Roger Hamley, who is based on Darwin. Ruse notes that “Mrs. Gaskell new Darwin and was distantly related to him” (p. 60), so the inclusion of such a character may have been a sort of inside joke. Even earlier than Gaskell, Dickens makes reference to Darwinian thinking when he has Pip say in *Great Expectations* that his five dead siblings “gave up trying to get a living, exceedingly early in that universal struggle” ([1860] 1948, p. 1: cited in Ruse p. 60). Ruse also notes that Dickens “would have known all about Darwin’s theory because in the weekly magazine he edited, *All the Year Round* (circulation £100,000), he carried two articles in mid-1860 and another in 1861 that discussed the Origin and natural selection carefully” (p. 61). It was already entering the popular culture—and at the time, Dickens was the popular culture.

This connection of a new scientific idea to the popular culture and how the idea was actually developed in the culture is the central theme of this book. Here Ruse traces the development of Darwinism through the works of various individuals thinking through the implications of Darwinism. We can see the development of Darwinism is a bottom-up self-organizing process, and *Darwinism as Religion* shows that an idea like this does not necessarily emerge and evolve within a single kind of order, such as the scientific order. Those familiar with Darwin’s ideas may be familiar with the degree to which economists—especially Malthus, and to a certain degree Adam Smith—influenced Darwin’s thinking on evolution, but few realize the degree to which his ideas evolved within the realm of literature. So here we have an idea—in this case, biological evolution—jumping from the social sciences and literature, into the natural sciences (really, the realm of popular science), and back into literature. The process is really even more back-and-forth than this, as the idea of evolution developed within literary works, jumped into the natural sciences and the social sciences, then back again, and back and forth between the natural and social sciences. The idea is transformed in each spontaneous order—literary, social science, natural science, popular culture—and each order is in turn affected by those changes. Ultimately, civil society as a whole is changed. Especially as Darwinism comes to dominate our thinking.
With chapters titled “God,” “Origins,” “Humans,” “Race and Class,” “Morality,” “Sex,” “Sin and Redemption,” and “The Future,” Ruse wants to make the argument that Darwinism covers all of the standard religious topics. Let’s take the issue of race. While the Bible both makes it clear that we are allowed to engage in genocide and that we are to love not just our neighbors, but our enemies as well, many contemporary Darwinists insist evolutionary thinking means universal cosmopolitanism. E. O. Wilson faced a backlash from precisely these kinds of Darwinians because he dared explain why people are inherently racist and sexist rather than insisting that racism and sexism are socially constructed and thus not really a part of our evolved nature. This was a religious battle within the religion of Darwinism, and is best understood as such. Wilson was a heretic, and the orthodoxy attacked him. And yet, as anyone familiar with the term “Social Darwinism” knows, Darwinism has hardly had a good track record on racial issues.

While Ruse notes that Darwin himself was an abolitionist and generally saw all human beings as part of a single human race, that hardly meant he didn’t think that Western civilization wasn’t superior. Ruse also complains, though, that “It is remarkable the extent to which people were able simultaneously to argue for the abolition of slavery and for unfettered laissez faire in their own factories” (p. 132), further complaining that Darwin opposed unions because the unions worked to ensure equal pay and work for “the good and bad, the strong and weak” and opposed Cooperative Societies because they were anti-competitive and thus seemed to him “a great evil for the future progress of mankind.” Here Ruse exposes his refusal to apply Darwinian thought to economic issues, while Darwin was being completely consistent in his views. Ruse here conflates two kinds of equality—equal treatment under the law and equality of outcomes—that are very much in conflict with each other. This, though, doesn’t really affect his overall message—even if it exposes certain other religious beliefs he appears to hold.

Perhaps because he’s concentrating on poets’ and novelists’ reactions, Ruse mostly skirts the issue of Social Darwinism and, rather, discusses the ambiguities toward race by the Darwinists. Because, as Ruse points out, Darwin and the Darwinists all seemed to believe in progress, they had to explain why Europe had so obviously progressed while much of the rest of the world had not. The explanation everyone seemed to settle on was that it was due to race—an explanation that seemed to fit an evolutionary perspective dominated by the idea of natural selection. In part this occurred (and still occurs) because people do not understand the element of selection as the social level, as opposed to the element of selection at the biological level. At the social level entire groups can be selected for or against based on their institutions. Even then, the individuals within the group don’t have to go extinct, but rather can change their institutions to better adapt to their situations. As a result, the group evolves to protect the individuals in the group. The existence or absence of certain institutions are going to be affected by physical environment, population, exposure to other cultures, and history. If something is working well for a people, why change it? This kind of relativistic equalitarianism, though, was hardly prevalent at the time.

We often forget that ideas are formed within a historical context. Darwinism is hardly any different. It emerged at a particular time, in a particular place, when and where Christianity was weakening. Darwinism was seen by many as a perfect replacement for Christianity, and it has indeed emerged as a replacement for many people. Those who look back and notice the emergence of Social Darwinism and then argue that therefore Darwinism is now inherently racist miss the fact of historical contingency—and the fact of the evolution of ideas themselves. Darwinism is no longer what it was, because we are no longer what we were as a culture. Part of the reason we are no longer what we were is because we are all Darwinists now. Evolutionary thinking pervades the culture, helping us understand our place in the world, racial and sexual issues, economic and social issues, and so on. If we are more egalitarian in our thinking, it’s because through Darwinism we understand that everything alive—flatworm to human, bacteria to redwood tree, and every race on earth—is here precisely because they were the offspring of the winners in the Darwinian struggle for existence. Are you really superior to an earthworm? Can you do the job of an earthworm? Yes, humans are far more complex, but we all have our place in the cosmos. And each and every one of those places are valuable and meaningful. If we take that perspective, the future of the Darwinian religion looks bright.

In the end, Ruse has written an excellent, thoughtful book that takes the reader on an unexpected journey through the development of Darwinism through poetry and storytelling. Darwinians probably won’t like to hear that what they believe is a religion, but not everything we need to hear will be what we want to hear. More, though, this book is an excellent overview of the way ideas enter the culture and evolve within that culture, often by jumping from one social order to another. Darwinism affects our thinking from
philosophy to literature, from religion to politics, from economics to anthropology, from pop culture to high culture—it is one of the most successful religions the world has ever seen. Proponents will argue that its success comes from its ability to better explain the world—but that’s all any religion has ever done or tried to do throughout the history of humankind.

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There is grandeur in this view of life, with its several powers, having been originally breathed by the Creator into a few forms or into one; and that, whilst the planet has gone cycling on according to the fixed law of gravity, from so simple a beginning endless forms most beautiful and most wonderful have been, and are being, evolved.

The title of David Sloan Wilson’s book comes, of course, from this famous final sentence in Charles Darwin’s *Origin of Species*. Wilson wants to bring a better understanding of this view of life to everyone, and he wants to show how this view can help us to live better lives and develop better societies. In this he is only partially successful due, in no small part, to the fact that his interpretive lens is not in fact completely grounded in evolutionary science. I say this with the acknowledgement that nobody’s interpretive frame is or could ever be completely “scientific.” Especially when it comes to the human mind and our social systems and institutions, we have a strong tendency to view the world through an ideological lens, which can distort the way one views the world. If you know Wilson’s ideology is that of a moderate left-liberal, you can actually see him struggling in this book to reconcile his desire for that world view to be correct and what evolutionary theory, biology in general, and ecology in particular seem to be telling him about economics.

There is much to admire in *This View of Life*. Wilson first provides us with a short history of Darwinian thought, and throughout the book he continues to bring us back to Nico Tinburgen’s four questions every evolutionary biologist must ask about any given trait:

- What is its function?
- What is its history?
- What is its physical mechanism?
- How does it develop over the organism’s lifetime?

Wilson argues that these four questions are also questions we must always ask when it comes to the social sciences. To do so makes one an evolutionary thinker. On this I think he is absolutely correct. After showing the relevance of these question to the evolution of the eye, the immune system, and Pacific chorus frog tadpoles, Wilson goes on to apply these four questions to a wide range of topics, from why we have so much myopia and autoimmune diseases, to how we should avoid developmentally inappropriate learning in young children, and from the structure of businesses to the management of the commons. In the latter case, Wilson turns to the work of Elinor Ostrom and her core design principles (CDPs).

Indeed, Wilson makes Ostrom’s CDPs a central part of his set of recommendations as to how to best integrate evolutionary thinking into our thinking about communities and organizations. In fact, the list of CDPs is in almost the very center of the book. The fact that he concentrates on these elements shows both this book’s strengths and weaknesses. If we view this work as a set of evolution-based suggestions for developing stronger communities and organizations—systems small enough that we can keep track of all the people involved—then I cannot recommend this book strongly enough. However, if Wilson intends this work to be a recommendation for how to “consciously evolve” the economy, there are many, many flaws.

Many of the topics of this book have already been covered. Wilson wants to argue against the “blank slate” view of the human mind, but Steven Pinker has already done so in his book of the same name. Wilson also wants to apply evolutionary thinking more broadly, but Matt Ridley has already done this in *The Evolution of Everything*, which I previously reviewed in these pages. In fact, Ridley does a more thorough job of applying evolutionary thinking to all levels of complexity in the cosmos, and he does a better...
job of applying it to understanding large-scale social systems like the global economy. While Ridley’s book is recent enough that Wilson may have been finishing his own book when it came out, it seems odd that Pinker’s works along these lines would garner no mention. Indeed, there are a number of topics that are strangely short on references, including the evolutionary psychology of morals (Chapter 4), a topic which has had more than its fair share of popular books. That being said, Ridley’s book may actually make for a fine companion piece to Wilson’s, since Ridley’s focus is primarily on cosmos, while Wilson’s is primarily on taxis, with each mostly ignoring the other aspect. The two together provide a much more complete, complex picture.

An aspect of this book all social scientists should take seriously is in the chapter on the evolution of morals, where Wilson discusses multilevel selection—meaning, both individuals and groups—as the source of our morals. He notes that if there were only individual selection, morals as we know them would not have evolved. From an individual standpoint, it makes a lot of sense to steal, cheat, rape, and murder. However, such behavior is bad for developing trust among groups, and groups are going to outlast individuals, and protect those individuals, if the groups can stay cohesive. To create trust and other behaviors that improve social coherence, moral rules against theft, cheating, rape, and murder—and in favor of gift-giving, fairness, altruism, and loving-kindness—would evolve, as would a tendency to punish those who violate those moral rules. The evolution of goodness makes sense if you are doing your analysis at the right level of selection: the tribal group.

Indeed, Wilson dedicates chapters to small group evolution, the evolution of individuals, and the evolution of large groups, in that order, because we are each born into small groups—families, tribes, communities, cultures, etc.—which in turn develop each of our personalities and world views, which then in turn affects the ways in which we interact in large-scale groups. This would come to no surprise to Nona Martin and Virgil Storr (2008), who argued that culture affects the people’s attitudes toward business and markets, and can prevent people in those cultures from creating healthy economic or other social orders. Oddly, Wilson does not spend a great deal of time discussing culture, which also evolves according to the small group—individual—large group formula, with the larger culture in turn affecting the small group (and, of course, individuals). Or, perhaps it’s not all that odd. After all, while Wilson seems pretty sure of himself on economic issues, I somehow doubt he would be so sure about applying his formulas to the various aspect of culture, including artistic production. Wilson’s weakness lies precisely in his inability to understand the larger-scale group dynamics of, say, a national or global economy. His idea work well in small groups with strong bonds, but he completely neglects weak-bond large groups.

While small groups—individual—large group analysis is important for explaining certain motives (or the lack of them), personality, family structures, social psychology, and so forth, the things generally studied by economists don’t typically need this analysis. No matter how you were raised, the second unit of something has less value to you than the first at that particular time. Marginalism and the law of supply and demand apply to all human beings, regardless of the way they were raised.

Part of the problem is that Wilson does not seem to understand that there is a difference between organizations and the social ecological systems in which they survive—which is to say, he doesn’t seem to understand that there is a difference between cosmos and taxis. This is a problem for his overall world view, because he seems to think that what will work in organizations will also work for the economy at large. While he fortunately explicitly rejects central planning, he also rejects “laissez-faire” because he cannot imagine how that would work out in a firm—and because he seems to think that “laissez-faire” means that we should all just leave each other alone and never help each other. If that last sentence was confusing, that’s because Wilson’s thinking on the economy and especially laissez-faire is confused. He dismisses the idea of the invisible hand, yet affirms that nature is full of examples of groups doing well despite the fact that the individuals don’t have the wellbeing of the group in mind—thus affirming what he denies! In another example of this confusion, Wilson several times mistakenly applies Schumpeter’s idea of “creative destruction” to the internal workings of a firm.

This being said, the book is actually full of good advice for business management. For example, Wilson points out that too many people think failure should be avoided rather than used as a learning experience. The result is that if you make a mistake nowadays, it’s all too common to get canned right away. There are no second chances anymore in business or politics. Yet, without failures, we cannot learn. More, a culture which primarily punishes any sort of failure will find people concealing those failures. This creates a more corrupt culture overall.

He also recommends creating artificial emergency situations to keep people working at peak performance, and creating a business culture in which constant evolution is
always expected. Businesses should, like Toyota, encourage employees to find and report problems—this would create a culture in which “no problems” means there’s a problem. At the same time, Wilson laments the fact that people don’t readily adopt these ways to run a business, though they have been wildly successful where they have been correctly adopted. He finds the same problem in people’s failure to adopt successful CDPs. Part of the problem in the past, no doubt, has been that people have had to reinvent the wheel each time. Should these methods become more widely known and understood, perhaps many of our businesses would be more successful, more efficiently run, and better places for people to work. That is one of the benefits this book could bring.

In other words, This View of Life is probably a wonderful business book, but it’s a less than impressive economics book. In this sense it very much reflects the fact that knowing how to run a business in no way translates to understanding how an entire economy works. Business leaders’ proclamations on the economy cause a great deal of eye-rolling among economists precisely because knowledge and understanding about business does not necessarily translate to knowledge and understanding about the economy—or vice versa. The same, it seems, is true of understanding biological evolution. In the realm of economics, Wilson seems to have confused individual organisms with the ecosystem in which they live. While there may be some superficial similarities at certain scales (see Camplin 2011, where I explain the differences between hierarchical organizations and scale-free spontaneous orders), the fact of the matter is that there are very important differences between the two such that it’s vital you do not mistake one for the other. As Hayek observed, we cannot apply organizational structures to spontaneous orders, nor spontaneous order structures to organizations:

If we were to apply the unmodified, uncurbed, rules of the micro-cosmos (i.e., of the small band or troop, or of, say, families) to the macro-cosmos (our wider civilization), as our instincts and sentimental yearnings often make us wish to do, we would destroy it. Yet if we were always to apply the rules of the extended order to our more intimate groupings, we would crush them. So we must learn to live in two sorts of worlds at once. (Hayek 1991, emphasis in original)

Ludwig von Bertalanffy also warns us in General Systems Theory that equating human social systems to biological systems would lead to tyranny. This is due to the fact that the biological molecules that make up each cell are completely subordinated to the telos (purpose) of the cell. To equate society to a cell, and humans to the biochemicals, is to say that the individual humans involved are not important, are in fact replaceable, but that the society as a whole, its goals and purpose, is what matters. I have little doubt that Wilson would not want such an outcome; yet, such is the danger of his equating our social systems to organisms rather than to ecosystems. His focus on the small group unfortunately makes him blind to the different dynamics of the larger group.

You may have noted a curious phrase above: “conscious evolution.” Wilson uses this term to argue that we should try our best to guide our social orders using our understanding of evolution. Somehow, evolution occurred just fine for billions of years, but now we have to take our own social evolution into our own hands—we cannot trust it to the same kinds of forces which worked to create us and to get us here. The very idea of “conscious evolution” smacks of intelligent design—a theory I know Wilson would dismiss out of hand. Yet, somehow, intelligent design seems sensible to him at the human level—though, of course, his intelligent design is absent a divine designer. He argues that if engineers can design complex systems, then we should be able to do the same with complex social systems. To this end, one wishes he would read his Hayek (whom he cites several times) more carefully. The fact that engineers can seemingly perform miracles with physics doesn’t mean people can accomplish the same things at two magnitudes of complexity beyond physics. Even the most complex physical systems come nowhere near the complexity of social systems.

Wilson’s world view works well with small social units—firms, communities, families, churches, and so on—but would be impractical and impracticable at larger scales. Of course, he may be right that we would all be happier in smaller-scale communities—but then we would lose all of the benefits of living in the Great Society, including such benefits as reduced racism, reduced sexism, increased wealth, and increased mobility. These are all things Wilson would no doubt celebrate, but which are made possible through the weak-bond, large-scale spontaneous orders that make up the Great Society. That being said, his observation that we need more competition in order to find better ways of living is something with which I could definitely agree. Does this mean that Wilson would favor charter cities, seasteading, and the breakup of large political units like the United States and China into smaller city-states? These
are all ways, after all, of using evolution to find better solutions for living.

Whatever Wilson’s answers to such questions, and regardless of the serious flaws I find in his economic analyses, I highly recommend this book. There are many insights regarding evolution—especially multilevel selection—which social scientists would do well to integrate into their understanding. Fortunately, many of the scholars most influenced by Hayek already engage in such analyses, even if they don’t explicitly say that is what they’re doing. I think it would benefit them to know that that is indeed what they’re doing. And while Wilson is still fighting battles in economics from 50 years ago (who still believes in *Homo economicus*?), his insights for creating healthier businesses and other organizations is quite valuable. Economists who can stop their eyes from rolling over what he says about laissez-faire, Hayek, and Schumpeter will see that there is much to gain from *This View of Life*.

REFERENCES

The Model Thinker by Scott E. Page is a courageous attempt to boil-down a handful of major mathematical models into their essence. It distills both traditional models such as linear regression and game theory as well as “modern” complexity theory models developed over the past 40 years based largely on network science and non-linear systems theory. Page’s motivation is to fill the gap between his YouTube.com lectures, which he practices in front of his dog, and the written word. I say it is a courageous attempt because the models cover a broad swath of disciplines and topics, which he tries to make accessible to the semi-mathematical reader. Like a good sauce, sometimes the topics are simmered too long, and sometimes they need more simmering. Nonetheless, he has produced an encyclopedia of important models. This is not easy to do and his attempt is commendable.

According to Page, we all need to become many-model thinkers. The first 3 chapters define a many-model thinker as someone who considers many models when modeling reality. Dogmatically sticking with one model often leads to the wrong answer. Instead, Page advocates, “the application of ensembles of models to understand complex phenomena.” There should be no argument with this goal, but I think it takes up entirely too much of the book.

I became uncomfortable with these preliminary chapters when Information was defined as “names and partitions [of] data into categories.” I was taught that Information equals entropy. This misdirection is rectified in chapter 12, where he discusses Shannon’s theory, but I found it distracting. Page claims data is transformed into information, and information is transformed into knowledge, which leads to wisdom. These form a wisdom hierarchy, and the job of the modeler is to traverse this hierarchy. Personally, I found these chapters unnecessary. They delayed my access to the rich set of models that make up most of the book.

The book needs editing. Grammar and meaning are totally lost in sentences like, “The core idea is that many-model thinking produces wisdom through a crowd of a diverse logical frames (p. 1).” Or, how about, “Given that the brain differs at each level, we need multiple models, and those models differ (p. 11).” It doesn’t improve later on, when grammatical chaos strikes again on p. 32, “Attempts to constructing a collection of diverse, accurate models can encounter similar problems.”

After a rough start, the book gets down to business in chapter 5: Normal Distributions. Hundreds of books and articles have been written about how the Normal Distribution is the wrong distribution to use to describe the highly connected and complex world. Page uses it like the rest of us, to explain why long-tailed distributions are better. He sets us up for chapter 6: Power Law Distributions. This is where the influence of the Santa Fe Institute begins to show. Unlike many authors writing about the long tail, Page successfully identifies the root cause of long tails— the lack of independence among measurements made along the x-axis. In a complex hyper-connected world, almost everything is dependent on something else. In other words, chance is conditional. This dependence leads to complex behaviors like preferential attachment and other forms of self-organization. I was a bit disappointed that Page does not give credit where credit is due, for example, Per Bak created the self-organized criticality model that underlies so much of complexity theory. One can even go back further and recognize economist Friedrich Hayek’s concept of spontaneous order, which influenced Bak and others. Old ideas often re-appear in new forms, and a book like this should show how great ideas emerge and flow together.

The next three chapters cover standard linear models, non-linear S-shaped adoption models, and game theory models in workman like fashion. Chapters 18 (System Dynamics), 19 (Feedback), and 22 (Cooperation) complete the topics needed for students from across many disciplines. Chapter 10: Network Models, introduces the reader to the new discipline of complex networks. The coverage is some-
what dated, which impacts the treatment of contagions in networks in the following chapter. An updated chapter on networks should include spectral analysis and note the use of eigenvalues as a measure of centrality in search algorithms such as Google’s original PageRank search algorithm.

Chapter 11: Broadcast, Diffusion, and Contagion should also describe the use of spectral radius in place of degree centrality to explain how contagions spread in networks without ideal scale-free, small world, or random topologies. Real world networks are not pure. Rather, they are combinations of hubs, clusters, and random connections. Spectral radius is more general and applies to mixed-topology networks. Similarly, a modern treatment of “nearest-neighbor contagions” would be appreciated, because they more accurately describe the spread of misinformation known as “fake news” — a topic of interest over the past few years.

Page takes us on a journey through a wide variety of topics, which is one of the book’s most impressive features. This voyage begins in earnest with chapter 20 (Spatial and Hedonic Choice), which is important to the study of politics and economics. The lack of careful editing shows up again, however, on p. 229, where the word “six” should apparently be “eight” to match Figure 20.1. Typos persist on the next page where the Spatial Competition Model defines “C>”, instead of “C>0.”

Chapters 13, 17, and 26 threaten to establish the foundations of deep learning in artificial intelligence (AI). Random walks and Markov chains (Markov clustering) are common tools used in classifiers, e.g., convolutional neural networks. I think the emphasis of pure mathematics versus algorithms exposes one of the deficiencies of the book. By restricting models to mathematics versus computer algorithms and heuristics, Page overlooks a segment of tools useful for many-model thinking. Not every model is amenable to pure math. The book would be much more useful and powerful if it incorporated algorithms as well as mathematics. Connecting Markov chains, learning, and classification with AI would make the book more appealing to the modern reader.

Chapters 23 through 25 are important in decision analysis and could be expanded into an entire book of its own. Remaining chapters cover a broad spectrum of fields and provide numerous examples from politics, economics, and drug addition. It is a most ambitious undertaking.

Finally, there is no index. It is obvious from the extensive Notes and Bibliography sections that the author has thoroughly researched his topics, hence more the pity that the publisher did not include an index. An index and good editor (to fix grammar and clarity) would greatly enhance this important book. I put my copy on the shelf marked “reference,” and expect to use it more often than Google for finding models.
As a European political theorist and former advisor to Portugal’s President Soares, Espada brings a unique perspective to the analysis of the Anglo-American tradition of liberty, which he views as worthy of both study and emulation. As far back as Montesquieu, continental writers have remarked upon the admirable political achievement of England, and later, the United States. This is the tradition that blends liberty with orderly institutions that integrate diverse activities and beliefs under the rule of law while reconciling civil conflicts and political competition in predictable ways. The book stands out from typical scholarly fare in discussing the author’s personal intellectual development and friendships with various thinkers, some of whom are the subjects of the book’s chapters. Espada also briefly mentions his own political activity. In a recognition of the intergenerational character of liberal learning, Espada also notes the impact of the various texts discussed on his own students in their intellectual development. This slender volume, then, is personal, political, and philosophical; with hints of an intellectual autobiography, it analyzes a tradition of thought with a view to resuscitating it, and encourages Europeans to engage with it in the present.

A tradition has been called a ‘flow of sympathy’. This book is the eliciting and elucidation of a sympathy, described, in a saying of Popper’s as the gentlemanly quality of not taking oneself too seriously, while simultaneously taking one’s duties very seriously, especially “when most around him speak only about their rights” (p. 2). Stated this way, it sounds like an unusual approach to governing, which is usually thought to involve grand ideas, major institutions, and large-scale actions. But the point of this book is, in a sense, to implore us to consider that not taking oneself too seriously is in fact the very essence of governing in a free society. Quoting from a conversation with Isaiah Berlin, about the many dissidents who had emigrated to or been exiled in Britain:

They were allowed to live and express their views in this country. Britain has always been a tolerant country. They acknowledged this, but most of them used to complain that the English did not take them seriously. Now I ask you: is this not, somehow, a condition of toleration? I mean, if you start taking everyone and everything terribly seriously, can you actually continue to tolerate them as much as if you simply live and let live? (p. 75).

The book reads as a graceful extended essay rather than a dry treatise, and does not pretend to critically exhaust its subjects. In just two hundred pages, it covers Karl Popper, Ralf Dahrendorf, Raymond Plant, Gertrude Himmelfarb, Irving Kristol, Raymond Aron, Federich Hayek, Isaiah Berlin, Michael Oakeshott, Leo Strauss, Edmund Burke, James Madison, Alexis de Tocqueville, and Winston Churchill. There are other figures, brought in as foils and critics as well—Madison contra Rousseau, for example, and, Cranstion contra Plant. Instead of an exhaustive treatise, it builds a case for a kind of political ecumenism based around what Espada argues is a salutary understanding of political order. In pointing out that adherence to the tradition of Anglo-American liberty is consistent with various political affiliations and intellectual orientations, Espada is surely correct. The variety of authors he has included shows that while the tradition may be Anglo-American it is available to anyone who understands it. It is an intellectual tradition, not one owned solely by the English or the Americans.

In handling the diverse group of thinkers he has assembled, Espada emphasizes certain themes that allow us to see this sympathy for Anglo-American liberty as a sort of tableau. He stresses Popper’s fallibilism and critique of ‘dogmatic rationalism’; Dahrendorf’s criticisms of utopianism and defense of civil society; Plant’s theory of basic needs is warmly treated, but his redistributionism is criticized; with
Kristol and Himmelfarb, we get attention to the moral underpinnings of a free society, something arguably neglected in certain accounts. Similarly, we see Burke’s attack on the extreme rationalism of the French revolutionaries and his liberality toward the Irish and Americans; Madison’s embrace of a skeptical and limited politics; Oakeshott and Hayek on general, non-instrumental law and open economies; and Tocqueville’s admiration of the intricacies of the US Constitution born of skepticism about the ultimate scope of political action.

Espada invites the reader to transcend partisan differences and explore the shared political sympathies that support a tradition of liberty. But this brings up an important point. At the risk of overplaying similarities, Espada urges us to recognize that there is a manner of thinking about both the grand theoretical issues of political philosophy and the more mundane activities of arranging and sustaining institutions that comprehends a wide breadth of competing political parties and positions. The Anglo-American tradition as he sees it, can accommodate most of the important differences in European and Anglo-American political parties, and provide them a better overall field of debate in which to work. And Espada never seems unaware of the important differences between his subjects.

A tension in the work comes from its interweaving of the personal, political, and philosophical. At times Espada argues directly from theoretical concerns to political ones, or from political to philosophical concerns. But the breadth and variety of authors he has marshaled suggest that theory and politics definitely do not blend and support one another in a straightforward way. There are important differences between these authors philosophically—deductivism, empiricism, idealism, natural law, deism. And more than one of them explicitly questions whether theory can directly inform practice. Yet this has not kept them from either recognizing the value of liberty, or seeing liberty’s enemies clearly.

The book’s triple structure—personal, political, philosophical—shows in its organization. First, Popper, Dahrendorf, Plant, and Himmelfarb and Kristol, called “Personal Influences,” are either Espada’s direct teachers or colleagues and friends. It is in these leading chapters that we find the major part of Espada’s own story and development, including the anecdote that reveals Karl Popper’s deep and abiding appreciation for Churchill, who, according to Popper, “literally saved Western civilization” (p. 2). Next, Aron, Hayek, Berlin, Oakeshott, and Strauss are called the “Cold Warriors.” Oakeshott, for one, insisted so firmly on the separation of theory and practice that he might spin a little in his grave to hear the appellation, and this is not a particularly engaged group of thinkers. However, they all did see the evils of totalitarianism and in various ways rose to oppose it, unlike some other notorious twentieth century intellectuals. These thinkers were brought to Espada’s attention by those he met personally or studied under; and so, while the book opens in scope to more renowned figures, it remains reflective of Espada’s own journey. Finally, “Ordered Liberty” treats a trio of major thinkers in classical liberalism, Burke, Madison, and Tocqueville. The Madison chapter, the only comparative one, unfavorably compares Rousseau’s unlimited theory of general will with Madison’s theory of limited government. In addition, Rousseau’s name occurs in several places, ever-ready to force people to be free; thus lurking as a bête noir of the liberal tradition.

The triple structure is also reflected in how these thinkers are treated. The “Personal Influences” are introduced to us through sketches that give us revealing glimpses of these scholar’s lives, attitudes, and, in some cases, political roles. The author’s acquaintances and friendships with them are noted not for name-dropping effect, but rather to show their generosity of spirit and convey Espada’s gratitude for their guidance. It is the kind of thing that normally remains in the secret history of a scholar’s life, known only through the grapevine. The significance of discussing it openly is to stress the importance of learning from concrete individuals, and sharing in a common endeavor to understand political life. Learning comes conversationally. These figures’ biographies relate, in various ways, to their staunch antitotalitarian views. And, Espada analyzes their most critical philosophical contributions and suggests how these relate to their defense of liberty.

While Espada never met the “Cold Warriors,” he recounts the personal effect of studying their work, at what stages of his life he did so; and, touches upon how his students respond to their teachings. Here, too, he covers the key points such as Oakeshott’s distinct views of rationalism and of law, Hayek’s views on spontaneous order, and Strauss’ critique of modernity. Unfortunately, in a slender volume such as this, more extensive treatment of, for example, how Oakeshott and Popper’s views of Rationalism differed, or what Popper would have thought of Strauss’ historiography, have to be left to another occasion.

For the thinkers in “Ordered Liberty,” the treatment is again partly personal, focusing on their significance for the author’s own intellectual development, but primarily on how Espada’s students respond to them, while cover-
ing the critical issues such as the nature of political association, the importance of balanced and blended institutions, and the value of tradition not as a past standard to be raised again, but as a present inheritance of available intellectual and cultural resources. Montesquieu never gets a chapter to himself, but does appear in several places as a keen and appreciative observer of the English system, and there are a number of cameos that tease the broader story of Anglo-American liberty as a strand of our shared European inheritance: Guizot, Halévy, Gellner, Shills, Constant, Quinton, and others, including usual suspects like Hobbes and Pascal.

It is, of course, far too short a book to do full justice to even the thirteen or so main subjects. To ask it to seek out deeper springs of modern liberty would be unfair. Espada’s focus is on post-French Revolutionary sources. Interestingly, under consideration here are a collection of heavyweight opponents of the extremism that emerged from it, and, we can guess by implication, of the inspiration that that cataclysm has given to generations of immoderate and extreme political movements continuing to this day. The absence of older authors, though, cuts off a full sense of the tradition on which these later authors depend. In the case of Britain in particular, there is a nearly millennium long practical tradition of political conduct and the common law, which supports the sympathies explored here, even when elements of that practical tradition can be formulated theoretically. For its variety of its subjects, and for the way it weaves in the personal and political, this book would be an excellent resource to introduce undergraduates to the Anglo-American tradition, especially if accompanied by materials going deeper into the tradition, to convey that modern Anglo-American liberty rests on more than opposition to Rationalistic extremism.

The later chapters aim to be synthetic and cumulative, bringing together the various issues surveyed in these thirteen thinkers. Unfortunately, these sections are marred by the outright repetition of certain passages earlier in the book, which robs this brief work of potential depth. The books ends in its political mode, with an examination of the question of Brexit—written a couple of years before what we have now seen happen—and offers practical, if still very general advice on how Europe and Europeans would benefit from becoming a bit more Anglo-American in their approach to European integration. It is a striking hypothesis and an unusual defense of the European project. In essence, Espada argues that in matters such as Brexit, the European Commission and member states could be more tolerant of difference within a legal structure that allows a meaningful degree of subsidiarity. In particular, he cites Dahrendorf’s 1990 work *Reflections on the Revolution in Europe*, and its distinction between normal politics and constitutional politics as highly important. From Dahrendorf: “In matters of constitutional politics there are...only two ways, the closed or the open society, whereas in normal politics a hundred options may be on offer, and three or four usually are” (p. 195). Dahrendorf’s idea is brought in to bolster European support for a generally open society, within which there can be robust debate—provided extreme rationalism is expunged (pp. 197, 199).
The summer of 2018 marked the ten-year anniversary of one of Pixar’s most revered films. Yes, it has been ten years since the release of “WALL•E.” This charming movie about a sentient, lonely robot captured the hearts and souls of children and adults alike, grossing $533.3 million at the Box Office (Box Office Mojo). That being said, the movie, when analyzed through the eyeglasses of an economist, falls flat on its face. It is smacked in the butt by the basic economics text the writers saliently failed to read. Its biggest error is the creation of a megacorporation that has taken over the world, and within this one giant firm we see asinine, critiques of consumerism and advertising. Second, it blames capitalism for making the Earth uninhabitable for human beings. This paper will criticize “WALL•E” from an economic lens, hoping to shine light on the gross inaccuracies the film portrays. Section II is a plot summary of the movie. In Section III we discuss the impossibility of One Big Firm taking over an economy. Consumerism will take up Section IV. Advertising will be discussed in Section V; we conclude in Section VI.

PLOT SUMMARY

“WALL•E” begins with an outer space shot of a horribly polluted Earth. You can see the distinction between the land and the water, but the land is entirely brown and barren. As we move toward ground level, we are bombarded with abandoned skyscrapers, infrastructure, and machinery. WALL•E enters the picture, and we are introduced to his only (apparent) friend, a cockroach. As WALL•E moves around compressing garbage, we see the relics of the once bustling human civilization. This civilization was run, in effect, by one company: Buy-n-Large. We see many ancient buildings adorning the red, white, and blue “BnL” logo, buildings such as a Buy-n-Large Ultra Store, a Buy-n-Large Gas station, a Buy-n-Large Bank, and a Buy-n-Large Transit station. As we follow WALL•E around, we see him creating trash cubes to stack; we also view “dead” WALL•E’s. Our WALL•E is the last one working, and more than likely he became sentient because of this, we are led to believe.

One day, WALL•E finds a healthy seedling growing in a refrigerator, and he promptly takes it back to his home. He then later notices a red laser and attempts to catch it. In pursuit of the laser, he is lead outside the abandoned city and a spaceship almost lands on top of him. The ship drops off a white robot and quickly leaves. The white robot, EVE, begins her visit to the planet by scanning anything that catches her eye; WALL•E follows her around like a puppy dog. During her exploration, EVE and WALL•E go to a supermarket, and you can see a sign saying, “Evacuation Sale.”

After a long day of scanning, WALL•E takes EVE back to his home, and to impress her, shows her the plant seedling he had found. She scans the plant, recognizes it as life, places it inside her, and shuts down. The spaceship returns and picks up EVE, and WALL•E clings onto the ship as it blasts into outer space. We catch a glimpse of an apparently failed colony on the Moon, and we see a billboard promoting a mall that is “coming soon!”

The ship takes WALL•E and EVE to the Axiom, which is the spaceship that the humans have been living in since leaving Earth. We are greeted with a huge “BnL” logo, as well as robots seemingly doing absolutely everything. They are coordinating the spaceship’s landing, maintaining and cleaning it, etc. WALL•E and EVE find themselves in a cor-
Without an external market with which to compare, any firm would be operating blindly and aimlessly, irrationally allocating resources. Any prices that would be assigned to exist, there must be an external market in which people are aghast. A firm can estimate an implicit price when an exchange was internal, there would be no way for the entrepreneur’s action was socially beneficial or not. If he has made a profit, that is a signal that he is using resources in a way that satisfies consumers sufficiently and it thus rational. This requires freely developed prices, and for these to exist, there must be an external market in which people can buy and sell. If one firm were to own all the resources in the process of making a product and were the sole producer, there would be no economic calculation:

\[ I \text{f there were no market for a product, and all of its exchanges were internal, there would be no way for a firm or for anyone else to determine a price for the good. A firm can estimate an implicit price when an external market exists; but when a market is absent, the good can have no price, whether implicit or explicit. Any figure could be only an arbitrary symbol. Not being able to calculate a price, the firm could not rationally allocate factors and resources from one stage to another (Rothbard 1962 [2009], p. 613).} \]

Without an external market with which to compare, any firm would be operating blindly and aimlessly, irrationally allocating resources. Any prices that would be assigned would be meaningless. The point is, the OBF would be in

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WALL•E follows EVE into the main headquarters of the ship. The Captain’s wheel scans EVE, then calls for him. We see all the previous captains lined up like presidents in the Captain’s chamber. This officer is aghast that a probe has come back positive, and the chamber goes into lockdown. He watches a message from the old Buy-n-Large CEO tell the humans returning to our home planet, and it is depicted through cartoons during the credits that the people begin to farm and rebuild civilization on Earth.

**ONE BIG FIRM (OBF)**

The most egregious economic error in this movie is arguably one of its core components: Buy-n-Large. The movie centers around one megacorporation that has taken over the world economically, and maybe even politically. This company has taken over the super, nay, ultra-stores, gas stations, banking, transit, and even cleanup and spaceships. The same business firm that made the mess is now in charge of cleaning up the world and sending humans into space to boot. This company has conquered everything. But is this plausible? Alas for the writers at Pixar, not really.

To allocate resources in an efficient manner, external markets are necessary to provide prices. When given prices that accurately reflect the desires of consumers, and the costs of satisfying them, it is only through the calculation of profit and loss that economic efficiency (and economic rationality) can be attained. Costs are subtracted from revenue, and the remainder serves as an indication as to whether the entrepreneur’s action was socially beneficial or not. If he has made a profit, that is a signal that he is using resources in a way that satisfies consumers sufficiently and it thus rational. This requires freely developed prices, and for these to exist, there must be an external market in which people can buy and sell. If one firm were to own all the resources in the process of making a product and were the sole producer, there would be no economic calculation:

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precisely the same position as world socialism: it would have to live in a world without prices that indicate scarcities and evaluations. It would not know whether to use steel or titanium for railroad ties. The latter would be stronger, but might well be needed for other, even more important, goals. What percentage of clothing and textiles should cotton comprise? Again, it is impossible to answer such a question without market prices. With no interest rates, a price that appears throughout the economy, neither the central planner, or the OBF manager, would know whether to allow the tree to grow for another year, or cut it down now. Similarly, which would be better, to build a road through or around the mountain. The former would cost more, now, but would economize on transportation costs later. There is no non-arbitrary way to make any such determination without market interest rates.

How is it then that the Soviet (USSR) economy was able to endure for the several decades it was in power? This is because these central planners were able to access western market prices, through such vehicles as the Sears and Roebuck catalogue, which listed the prices for thousands of goods. They had available to them the doings of the Chicago Mercantile Exchange, for more such information.

From 1917 to 1922, the USSR central planners ignored such information. Pure communism was the order of the day. But the economy tanked to such a degree that even they began to utilize prices determined in the west, under their New Economic Plan. But this option would be unavailable to the OBF. It would have to wallow in the type of ignorance the USSR escaped.

Then, there is the issue of how the OBF could form in the first place. Supply curves slope in an upward direction. This means that the more someone purchases, the higher, and higher, and even higher price he must pay. Therefore, it is impossible to “corner the market” for any one good, such as coal, or wheat, or cows. If someone tried to do so, he would face elevated prices, the larger a position he took in this item. But the OBF is not trying to corner the market for one product. To succeed, it must do so for all goods and services created.

Also, “the bigger they are, the harder they fall.” Under the free enterprise system, there is an upper bound for firm size. When this is exceeded, inefficiency erupts. The managers cannot take cognizance of what all the employees are doing. They start to act at cross purposes. “Too many cooks spoil the broth” and the OBF comprises every “cook” on the planet who is employed. A manifest impossibility, practically speaking.

One Big Cartel would have the same problems as One Big Firm. The prices would be meaningless, and any exchanges made would be akin to an individual trading with himself. The cartel would not know the economic value of its goods and services and would thus be making wholly irrational decisions. This issue is not even all or nothing. The larger the firm or cartel were to get, the more irrational its actions would become as the external market became less and less of an indicator of the society’s preferences and alternative costs. The more irrational its actions were to become, the more losses suffered by the company. Smaller commercial entities would be able to outcompete these giants.

Cartels, too, are subject to failure from two sources (Rothbard 2017). Internally, each member of such an organization has an incentive to “cheat” the others, by producing more than its allotment. Externally, if ever the cartel begins functioning, and through its cutback of output raises prices, its greater profits will attract new entrants.

But let us, arguendo, assume that a firm or cartel like this could be established. What would it be able to do? In short, nothing of substance. On the consumer side of things, “[s]ince…consumers’ demand curves for a firm are always elastic above the free-market equilibrium price, it follows that the cartel will not be able to raise prices or earn more from consumers (Rothbard 1962 [2009], p. 660).” If they cannot raise prices, can they at least exploit laborers by lowering wages and increase profits that way? Any reduction in wages below marginal productivity would create an entrepreneurial opportunity to compete with the OBF or cartel and offer workers a higher wage. This would end the universal cartel and return wages to marginal productivity levels. So even if such a monolithic company were able to be created in the first place, it would not be able to do anything that would exploit consumers or workers. It would soon enough topple into bankruptcy.

CONSUMERISM

Another salient target of this film is consumerism. The ruined remnants of earth dramatically illustrate that a completely consumerized market was to blame. It got so out of hand that there were even plans for a mall on the Moon.

It was originally believed by all good progressives that the overthrow of the capitalist system and installment of a socialist regime would increase the standards of living. This, presumably, would eliminate the inherent contradictions of free markets. Once history proved that free markets did more to increase the wealth and well-being of more humans
than any other system known to man (Gwartney et al., 1996), tactics needed to change. Enter consumerism. Now the problem is not that capitalism will not produce a sufficient amount of wealth for everyone, but that it will create too much wealth! What an interesting pivot by the anti-marketeers. We are now too well off.

But consumerism is not a problem everywhere in the world. It is only a problem in wealthy countries, that is, those which embraced markets. Poverty, much less consumerism, were viewed as social issues in the 1500s. No, prior to capitalism, it was believed that there will always be a small minority living in prosperity (by 1500s standards) and a large majority living in poverty. C'est la vie. The fact that we have evolved to the point of even considering that we are too well off is hardly an indictment of capitalism. What a remarkable turn of events we have seen in the last two hundred years.

It cannot be denied that the debate of consumerism is a check in the win column for capitalism. The law of diminishing marginal utility applies to nonmaterial goods—like leisure—as well. We do not desire goods, material and nonmaterial, ad infinitum. At some point, the good in question will cease being scarce in the eye of the actor and will thus lose value and will stop being desired. If we had the ability to spend all day lying in bed, eventually we would become restless and wish to do something more productive. Rockwell (2006) writes:

There's no dog-eat-dog. Competition is really nothing but entrepreneurs and capitalists falling over themselves in a quest to win the hearts and minds of the consuming public… if by ‘consume’ we [mean] to purchase products and services with our own money in order to improve the human condition, who can’t help but plead guilty?

Value is subjective, and it is illegitimate to compare utility interpersonally, so a debate over the proper amount of consumption is absurd.

The role of money is also seldom included in this conversation, at least properly. Money is innocent when it comes to consumption—the Federal Reserve is not. The topic of “excessive” consumption cannot be discussed without including the role the government plays in encouraging consumption. By continually manipulating the supply (and thus the value of money), the government injects a higher level of uncertainty into the economy. This, in turn, raises individuals’ time preferences, causing increased present consumption and decreased saving, which results in slower economic growth. All this is due to the Federal Reserve (and central banking as a whole). The only legitimate defense, then, of the “excessive” consumption charge today is economic intervention by the state.

ADVERTISING

Now let us consider the film’s attack on advertising. This practice is often made out to be evil and manipulative, compelling consumers to purchase many things they do not actually need. This point of view can be summed up by Felicia Cosey’s description of what happens in “WALL•E”: “In WALL•E, it is the promotion and advertisement of BnL’s goods and services that engender the passengers’ desires to make purchases of the goods and services offered to them” (Cosey 2018).

Notice the verbiage. BnL engenders the passengers’ desires. This is a typical weasel word for this type of argument. People are powerless against advertisers. A quick little commercial with a catchy jingle, and, presto, they have our money. Those in the advertising industry might well reply: “If only it were that easy!” Regardless of what anyone says, we are all skeptical of all advertising and are not quick to purchase anything shown to us. BnL didn’t engender anything. They offered goods that they hoped would satisfy their customers’ desires. It was up to the customers whether or not to purchase. This specious power oft attributed to advertisers in false and insulting. Humans are not programmable, predicable beings. We have free will. Our choices are our own, and in a free market we cannot and are not compelled, nor “engendered,” to buy anything from anyone. Capitalism is voluntary and mutually beneficial ex ante.

CONCLUSION

Pixar makes wonderful films. Thus, the appalling lack of economic sophistication depicted in “WALL•E” is even more egregious than would otherwise be the case. The worst villain of the film, Buy-n-Large, is an all but economic impossibility. One giant firm would be tantamount to a centrally planned economy and would fail miserably in allocating resources efficiently. No firm would even get anywhere near the size of BnL as losses would increase immensely as it enlarged. Consumerism as an objection centered around “excessive” consumption only makes sense in the context of a central bank manipulating the money supply and raising individuals’ time preference. Lastly, advertising has no
power in the people in the market. To argue that it does ignores human action and is insulting to human intelligence and free will. The moral of this movie? Don’t turn to cute films about lovable, sentient robots for economics lessons. Turn to economics books. Or, infuse robots with a bit more economic sense.

REFERENCES


to see a fully liberal tradition as outlined above.

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