

## The Revival of Veblenian Institutional Economics

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The novelties of today are a . . . later generation of the commonplaces  
of the day before yesterday.

Thorstein Veblen, *Absentee Ownership* (1923)

Institutional economics is more than a century old. After a period of interwar hegemony in the United States, it suffered from decline and fragmentation, leading to its estrangement from the mainstream of economics (Hodgson 2004). By the 1990s, however, some institutional and evolutionary ideas had re-emerged in mainstream theory and elsewhere. Today, discussion of the role and nature of institutions in economics is commonplace (North 1991; 1994; Schotter 1981; Williamson 1975; 2000). The revival of evolutionary economics was much inspired by the work of Richard Nelson and Sidney Winter (1982), who have since acknowledged Veblen's contribution (Winter 1990; Nelson 1995). More particularly, writing in this journal, Mauricio Villena and Marcelo Villena (2004) have explored some similarities between modern evolutionary game theory and Veblen's evolutionary approach. Overall, there seem to be new opportunities for the revival of a Veblenian institutional and evolutionary economics.

Seven sections follow. In turn they address: key developments in the new institutional economics; some developments in mainstream economics; revised ideas on the human agent and rationality; the reemergence of endogenous preferences; and the recognition of bounded rationality and program-based behavior. Another section situates the new Veblenian economics in the wider context of economic theory. The conclusion outlines a research agenda for the early twenty-first century.

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### ***Evolution in the New Institutional Economics***

In the 1970s and 1980s, a prominent theoretical project in the “new institutional economics” was to explain the existence of political, legal, or social institutions by reference to a model of given, individual behavior, tracing out its consequences in terms of human interactions. The attempted explanatory movement is from individuals to institutions, ostensibly taking individuals as primary and given, in an initial institution-free “state of nature.”

However, this research program could not provide a complete general theory of the emergence and evolution of institutions. Alexander Field (1979; 1981; 1984) argued that the new institutional economics always has to presume given individuals acting in the context of governing rules of behavior. In the original, hypothetical, “state of nature” from which institutions are seen to have emerged, a number of weighty rules, institutions and cultural and social norms have already and unavoidably been presumed.

For example, in attempts to explain the origin of institutions through game theory, some norms and rules must be presumed at the start, and game theory can never explain the elemental rules themselves. Even in a sequence of repeated games, or of games about other (nested) games, at least one game or meta-game, with a structure and payoffs, must be assumed at the outset.

Williamson (1975, 20) famously proposed that “in the beginning there were markets.” Some individuals then go on to create firms and hierarchies, which endure if they involve lower transaction costs. However, the market itself is an institution, involving complex rules. In reality, markets involve social norms and customs, instituted exchange relations, and information networks that have to be explained (Hodgson 1988; McMillan 2002; Vanberg 2001). Markets are not an institution-free beginning.

The institution of private property also requires explanation. It has been argued that it can generally arise spontaneously through individual interactions, involving reputation and other effects (North 1991). However, these theoretical arguments break down with large numbers or radical uncertainty. The possibility of property rights emerging in a complex society without any role for the state has been challenged by writers even within the new institutionalist tradition (Sened 1997; Mantzavinos 2001).

Individuals rely on customs, norms, and language in order to interact. Language itself is an institution. Interpersonal communication, which is essential to all stories of institutional emergence, itself depends on linguistic and other rules and norms. For instance, the shared concept of individual property requires some means of communication using common concepts and norms, both before and after explicit or tacit recognition of property rights can be established. Some prior institutions are always required.

The reception of information by individuals requires paradigms or cognitive frames to process and make sense of that information. We cannot understand the

world without concepts and we cannot communicate without some form of language. As the original institutionalists argued, the transmission of information from institution to individual is impossible without a coextensive process of *enculturation*, in which the individual learns the meaning and value of the sense data that is communicated. Overall there are good reasons why the starting point of a given individual is generally misconceived.

What is being contested here is the possibility of using given individuals as the institution-free starting point in the explanation. Institutions constrain, influence and enable individuals. Accordingly, if there are institutional influences on individuals and their goals, then these are worthy of explanation. In turn, the explanation of those may be in terms of other purposeful individuals. We are involved in an apparently infinite regress, like “which came first, the chicken or the egg?” It is simply arbitrary to stop at one particular stage in the explanation and say “it is all reducible to individuals” just as much as to say it is “all social and institutional.”

All theories must first build from elements which are taken as given. However, the argument here undermines any claim that the explanation of the emergence of institutions can start from some kind of institution-free ensemble of (rational) individuals in which there is supposedly no rule or institution to be explained. At the very minimum, stories of the development of institutions depend upon interpersonal communication of information. And the communication of information itself requires shared conventions, rules, routines and norms. Consequently, the new institutionalist project to explain the emergence of institutions on the basis of given individuals runs into difficulties, particularly with regard to the conceptualization of the initial state from which institutions are supposed to emerge.

This does not mean that new institutionalist research is without value, but it suggests that the starting point of explanations cannot be institution-free. What is required is a theory of process, development and learning, rather than a theory that proceeds from an original “state of nature” that is both artificial and untenable. In his 1989 lecture on receipt of the Nobel Prize, the econometrician Trygve Haavelmo argued that

existing economic theories are not good enough . . . We start by studying the behavior of the individual under various conditions of choice. . . . We then try to construct a model of the economic society in its totality by a so-called process of aggregation. I now think this is actually beginning at the wrong end. . . . Starting with some existing society, we could conceive of it as a structure of rules and regulations within which the members of society have to operate. Their responses to these rules as individuals obeying them, produce economic results that would characterize the society. (1997, 15)

Haavelmo rightly suggests that historically specific institutions should be brought into the analysis at the beginning. Such a reformulated institutionalist project

would stress the evolution of institutions, in part from other institutions, rather than from a hypothetical, institution-free “state of nature.”

Other recent studies have developed in this direction. Jack Knight (1992) criticizes much of the new institutionalist literature for neglecting the importance of distributional and power considerations in the emergence and development of institutions. Even more clearly, Masahiko Aoki (2001) identifies the problem of infinite explanatory regress in much of the former literature and develops a novel approach. He takes as given not only individuals, but also a historically bestowed set of institutions. With these materials, he explores the evolution of further institutions using game theory. The next step, which Aoki recognizes but does not complete, is to develop a more evolutionary and open-ended framework of analysis.

### ***The Changing Face of Mainstream Economics***

Partly because of insurmountable theoretical problems in general equilibrium analysis (Kirman 1989; Rizvi 1994), during the 1980s by game theory replaced it at the cutting edge of mainstream economics. This meant the abandonment of a general theory of economic interactions. By contrast, the results of game theory depend on the particular rules and mode of play of the game. Instead of everything interacting with everything else in a continuous universal field of infinite connections, game theory assumes a structured world of binding rules and limited interconnectedness (Potts 2000). Game theory is thus more accommodating to ideas of institutions, conventions and rules (Schotter 1981; Sugden 1986). Furthermore, game theory has revealed that standard neoclassical definitions of rationality are problematic, and in some contexts, rationality has ambiguous outcomes (Sugden 1991; Hargreaves Heap and Varoufakis 1995; Gintis 2000).

However, full-blown models of individual interaction in game theory, where every possible human interaction and defined response is considered, and every agent assumes that every other is fully rational, have fallen into widely acknowledged problems of tractability and relevance. In response, some have hinted at an altered direction of research, involving a world where rational capacities are bounded, and specific institutions structure agent interactions (Kirman and Gérard-Varet 1999). Instead of the macro economy being treated as a magnified representative individual, social structure has to be introduced in a population of heterogeneous individuals. This is another open door for institutional analysis.

Experimental economics has also helped to dramatize the institutional texture of social reality. Within experiments, markets have to be treated not as the abstract and universal ether of human interaction but as designed systems of rules. Experimental economists, in simulating markets in the laboratory, have also to face the unavoidable problem of setting up a specific institutional structure with procedural rules. As Vernon Smith (1982, 923) explains: “it is not possible to design a laboratory resource allocation experiment without designing an institution in all its detail.” This challenges the idea that the abstract market is a universal forum of human interaction, free from any specific rules (McMillan 2002).

Experimental economics has also pointed to a situated rather than context-independent conception of rationality. On the basis of extensive experimental observations, Smith (1991, 881, 894), has gone so far to consider how “institutions serve as social tools that reinforce, even induce individual rationality” and “how decision making is mediated by institutions.” Smith concluded that rationality does not emerge on the basis of cognition alone, but only through “ongoing social interaction with other agents.” Reviewing the results of experimental economics, Graham Loomes (1998, 486) proposes that generalized rational preferences should be replaced by “rules of thumb specific to the particular structure of the decision task in hand.” On the basis of experimental evidence, Loomes (1999, F37) rejects the idea that “that people come to problems armed with a clear and reasonably complete set of preferences, and process all decisions according to this given preference structure.” Both modern experimental economics and game theory have revealed the limitations of all-purpose, context-independent rationality and pointed to the institutional influences on rationality itself.

Finally, the increasing use of simulations and agent-based models in economics brings similar lessons (Judd et al. 2006). In specifying the decision-rules of artificial agents, the universal canons of rationality are of little use. Instead one has to specify the particular data inputs and decision algorithms. Furthermore, an agent-based model is a system with unpredictable, emergent properties that cannot be reduced to properties of individual agents (Lane 1993; Kirman and Gérard-Varet 1999).

However, I do not paint an entirely optimistic picture of current developments in mainstream economics. Regrettably, formalism has overshadowed substance, and economics has fragmented into separate technical specialisms, to the extent that broader conversation and deeper methodological inquiry are thwarted (Blaug 1997). Nevertheless, there are some important new opportunities.

### ***Changing the Economic Mind***

Significantly, recent work in psychology and elsewhere has moved away from the “deliberative thinking paradigm” (Maes 1991) that dominated postwar cognitive psychology. Researchers have argued that this paradigm downplays both the temporal and the situated aspects of human reason. Instead of assuming that individuals proceed largely by building representative models of their world in their brains, they have emphasized that human cognition depends on its social and material environment and the cues provided by structured interactions with individuals and artifacts. Human cognitive capacities are thus not reducible to individuals alone: they also depend upon social interactions and structures (Donald 1991; Lave and Wenger 1991; Hutchins 1995; Clark 1997; Nooteboom 2000; Lorenz 2001; Nelson and Nelson 2002).

This paradigm shift involves a move away from the idea of the mind as an independent rational deliberator, toward a view of the mind as a controller of embodied activity located in a larger system including the body and its social and

physical environment. For each individual agent, the material and social context of activity helps to constitute meaning and action. Thought and action are inseparable from their context. In teamwork, for example, individual activity is cued and enabled by its situation, including the behaviors of others (Cohen and Bacdayan 1994).

The familiar idea in economics of the primary and given self, with its all-purpose rationality, is undermined by these developments. The adoption of a context-dependent, situated rationality is consistent with an institutional economics in which agency and structure are both important and mutually constitutive. Reasoning is impossible without, and inseparable from, its institutional and material context.

These developments are slowly beginning to affect economics. For example, Douglass North (1994) examines the limits of the rational-choice framework and points to the importance of ideologies and cognitive classifications. North links these “classifications” and “mental models” with their institutional and cultural context:

A common cultural heritage provides a means of reducing the divergence in the mental models . . . and constitutes the means for the intergenerational transfer of unifying perceptions. . . . Belief structures get transformed into societal and economic structures by institutions . . . The relationship between mental models and institutions is an intimate one. Mental models are the internal representations that individual cognitive systems create to interpret the environment; institutions are the external . . . mechanisms individuals create to structure and order the environment. (1994, 363)

This recognition of social influences on individuals places North very close to the original institutionalist tradition (Groenewegen, Kerstholf, and Nagelkerke 1995; Rutherford 1995; Pålsson Syll 1992). He accepts that institutions or a “common cultural heritage” can somehow reduce divergences between the mental models held by different individuals, or otherwise effect individual beliefs or goals. This leads us back to a theme in the old institutional economics concerning the role of institutions in molding preferences. Hence, the boundaries between the original and the “new” institutionalism are now less clear (Dequech 2002).

### ***Endogenous Preferences***

North is one of several leading economists who now admit endogenous and situation-dependent preference formation in economics (Akerlof and Kranton 2005; Bowles 2004). In contrast, from the 1940s to the 1990s, the concept of endogenous preferences was criticized as theoretically unnecessary within economics and inconsistent with its basic theoretical approach (Stigler and Becker 1977). The rehabilitation of endogenous preferences is a major development and brings us closer to a major theme of the original institutional economics. This move should be reinforced by the consideration of issues of cognition and meaning.

All processes of rational decision-making depend on acquired cognitive frames for the selection, prioritization, interpretation and understanding of the huge volume of sensory stimuli that reaches the human brain (Hodgson 1988; North 1994). The attribution of meaning to this apparently chaotic mass of data requires the use of acquired concepts, symbols, rules and signs. It is significant that artificially intelligent systems in moderately complex environments require framing procedures to structure the incoming information (Pylyshyn 1987). Any form of rationality in a minimally complex environment relies on cognitive framing, selection and interpretation to make sense of its information inputs.

These rules and means of categorization and understanding have to be learned in a social context. This learning is sometimes entirely tacit and involves unconscious reactions to stimuli (Polanyi 1967; Reber 1993). Through a combination of conscious and unconscious processes, socialization and education help to create the cognitive apparatus that is necessary for “rational” or any other processes of decision-making. Rationality is not prior to, but requires, an existing social structure. Individual rationality depends on cultural and institutional mechanisms and supports.

Human reasoning capacities are thus linked to their evolving social and biological contexts. Rationality is not detached from the world; it is situated in and operates through specific cues, triggers and constraints. These structures and circumstances are part of our biological and social heritage. Among them are institutions that frame our cognitions, enable some behavioral options and constrain us from others.

The idea of endogenous and context-dependent preferences ties in with a more open-ended and evolutionary approach. If in principle every component in the system can evolve, then so too can individual preferences. Of course, most economists recognize that preferences are malleable in the real world. But they have often taken the assumption of fixed preferences as a reasonable, simplifying assumption. However, some malleability of preferences may be necessary to explain fully the evolution and stability of institutions. Institutional stability may be reinforced precisely because of the reconstitutive capacity of institutions to change preferences (Hodgson and Knudsen 2004).

It is one thing to claim that institutions affect individual preferences; it is another to explain their causes and effects. An explanation is found in the writings of Veblen (1914; 1919) who examined how circumstances and constraints lead to the formation of habits, which in turn provided the grounding for changed preferences and beliefs. Through the individual mechanism of habit, the framing, shifting and constraining capacities of social institutions give rise to new perceptions and dispositions within individuals. This is a key element in the Veblenian legacy.

Institutions are enduring systems of socially ingrained rules. They channel and constrain behavior so that individuals form new habits as a result. People do not develop new preferences, wants or purposes simply because “values” or “social forces” control them. Instead, the framing, shifting and constraining capacities of social institutions give rise to new perceptions and dispositions within individuals. Upon

new habits of thought and behavior, new preferences and intentions emerge. As a result, shared habits are the constitutive material of institutions, providing them with enhanced durability, power and normative authority.

The mechanism through which culturally and institutionally specific rules of cognition and action become imprinted in the human mind is through the formation of habits. All reason, deliberation and calculation depend upon the prior formation of habits. Habits are formed through repeated thoughts or behaviors in a specific type of social setting. Habits are individual neural connections and mechanisms, but they bear a social imprint. Reconstitutive downward causation, from specific social structure to individual, operates by creating and molding habits.

The rediscovery of the role of habit in human behavior and the realization of the powerful role of institutional constraints, together point to the development of a research agenda focused on the reconstitutive effects of institutions on individuals, and on the degree to which institutional evolution may depend on the formation of concordant habits (Hodgson and Knudsen 2004).

However, just as the individual cannot reason or act without a prior repertoire of habits, some conditions and triggers are necessary for habits to be formed. The infant individual has to be “programmed” to discern and respond to specific stimuli so that the repeated behaviors that lead to the formation of habits can become possible. This is where instincts come in. Any “programming” involves inherited (genetic) instincts, which have slowly evolved over millions of years. For example, although language is largely built up through social interaction in a culturally specific context, its initial acquisition requires instinctive mechanisms (Pinker 1994). The initial learning of a language requires the initial help of instinctive triggers, notwithstanding the immense impact of culture and social environment on each individual. To some degree, this is the case with other human capacities. To think and act in social and natural environments, some initial guidance and predispositions are necessary to identify key stimuli and trigger appropriate responses, before habits develop.

This understanding of the dual and complementary roles of instinct and habit in the formation of preferential dispositions was central to the psychology of William James (1890), which was hugely influential for Veblen (1914). In psychology today, after the hegemony of behaviorism from the 1920s to the 1960s, Jamesian and other evolutionary approaches are now enjoying a renaissance in psychology (Degler 1991; Plotkin 1994; 1997). The key Veblenian concept of habit has also re-emerged in modern psychology (Ouellette and Wood 1998; Wood, Quinn and Kashy 2002).

### ***Bounded Rationality and Program-Based Behavior***

“Rational economic man” has fallen upon hard times recently, after being banished from some avant-garde circles within economics itself. In this respect, experimental economics has had a major impact (Kahneman 1994; Kagel and Roth 1995). It has even given credence within mainstream economics to the idea of “social preferences,” involving non-selfish, “other regarding” and cooperative motives (Fehr and

Fischbacher 2002). Overall, experimental economists have convinced many of their colleagues that the evidence does not support the “lightning calculator of pleasures and pains” lampooned by Veblen (1919, 73) long ago.

Faced with this shift of opinion, a last refuge of the supporters of the long-venerated principle of rationality in economics has to be to define it simply in terms of behavioral consistency or transitivity: if  $X$  is preferred to  $Y$  and  $Y$  is preferred to  $Z$  then  $X$  must be preferred to  $Z$ . In the first place, this axiom is difficult to falsify, because choices are never made in identical contexts. Assume apparent intransitivity occurs:  $X$  is preferred to  $Y$ , and  $Y$  is preferred to  $Z$ , but  $Z$  is preferred to  $X$ . However, this can be explained away by showing that the three pairwise comparisons did not take place under identical conditions, or were separated in time or space. Hence, the individual instances of  $X$ ,  $Y$  or  $Z$  in one choice situation are not strictly identical to those in another. Furthermore, one cannot identify the  $X$ ,  $Y$  and  $Z$  without knowing the meanings and interpretations that people give to these situations. These problems make behavioral consistency very difficult to observe in practice.

Another basic objection to the rationality-equals-consistency argument is that it refers to behavioral characteristics, rather than any essential attribute of human agents themselves. Animals, bacteria and robots can also be regarded as “rational” by this criterion. It strips the concept of rationality of any of its previous associations with human deliberation and conscious calculation.

The confusion between notions of rationality-as-behavior and rationality-as-deliberation has dogged the debates surrounding what Herbert Simon (1957) called bounded rationality. Simon himself was clear that he was referring to limited deliberative or calculative capacities, not to behavioral regularities or the lack of them.

The rationality-as-behavioral-consistency postulate tells us little about human agency or the origins of individual preferences. Instead, Veblen’s (1914) account of the evolution of instincts and habits focuses on the fundamental dispositional sources of human emotions and behaviors. Rationality, in the more adequate sense of conscious deliberation and calculation, itself depends on habits and instincts as props (Hodgson 2004; Plotkin 1994).

Both instincts and habits are rule-like dispositions: in circumstances  $A$  the organism strives to do  $B$ . Sets of rule-like dispositions are linked together into what we may term *programs*. The biologist Ernst Mayr (1988) argued for an alternative perspective along these lines. Instead of simply assuming that agents hold beliefs and preferences, the paradigm of program-based behavior ties in with an explanation of their evolutionary emergence, through both natural selection and individual development. Evolution involves both the adaptation of programs to changing circumstances and the elimination of other programs through selection.

While the rational-as-consistency model simply sets out assumptions that are consistent with behaviors, the paradigm of program-based behavior focuses on the explanation of the dispositions behind any act. The paradigm of program-based behavior has been applied to economics by Viktor Vanberg (2002; 2004) and has strong similarities with John Holland’s (1995) theory of adaptive agents.

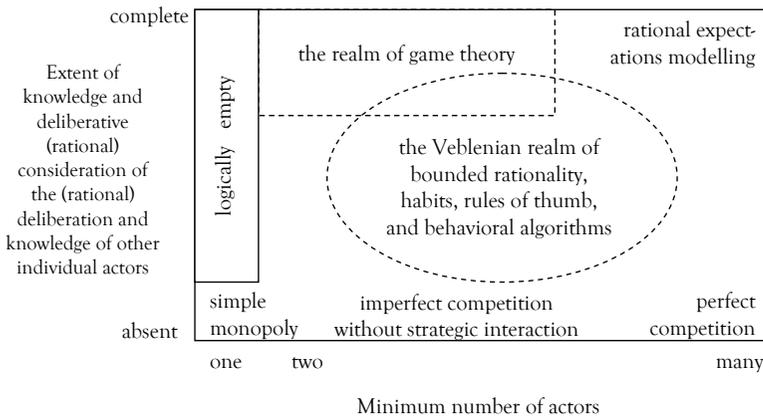
**Veblen on the Landscape of Modern Economic Theory**

To depict the modern relevance of Veblenian ideas, Figure 1 maps the landscape of theoretical depictions of individual interactions in economics. The horizontal dimension refers to the minimum number of actors in the theory concerned. The vertical dimension refers to the assumed extent of knowledge and deliberative (rational) consideration of the (rational) deliberation and knowledge of other individual actors in the theory.

Starting with the bottom-left corner of the figure, simple monopoly refers to elementary monopoly theory – without price discrimination – where the monopolist merely faces an aggregate demand curve, and individual consumers do not otherwise come into the picture. In the bottom-right, perfect competition beholds the price-taking competitive firm of the textbooks. For most of the twentieth century, economic theory explored the linear region at the bottom of this diagram, between simple monopoly and perfect competition, including early theories of imperfect competition without strategic interaction.

Rational expectations modeling came to prominence in the 1970s, and appears in the top-right corner of the figure. These models assume that agents become aware through experience of the “true” underlying model of the economy. Assuming a sufficient number of other competing agents who are all similarly informed, the well-known result is that government macroeconomic policy is ineffective. It also widely known that this result does not hold up even with partial relaxations of these assumptions (Haltiwanger and Waldman 1985).

**Figure 1: Mapping the Domain of Economic Theory**



The widespread adoption of game theory in the 1980s led economists into new territory. Strategic interactions were considered with a limited number of actors, often with the “common knowledge of rationality” assumption that not only individuals are rational but also everyone believes that all others will act rationally. Hence every player takes account of what every other player does and knows that the others do so. Long reasoning chains like “if I think that she thinks that I think . . .” emerge, often creating intractable logical problems of self-reference and infinite regress (Hargreaves Heap and Varoufakis 1995).

Game theory occupies an upper region in the diagram. Between it and the monopoly-competition axis at the bottom lies the realm of Veblenian theory. Like game theory it assumes a structured world of limited interconnectedness, dominated by rules. Unlike much game theory, it adopts a more limited view of individual deliberative and calculative capacities. Decision-making takes place in the context of complexity and radical uncertainty, limiting the chains of logical reasoning concerning the likely reactions of others to different behaviors. The analytical focus on equilibrium becomes less central, unlike the upper and lower regions in the figure. Its ontological fundamentals involve institutional structures and algorithmic learning processes involving habits and rules (Hodgson 1997; 2004; Potts 2000; Dopfer, Foster, and Potts 2004; Arthur 2006). Following Veblen (1899; 1919), it upholds that generalized Darwinian evolutionary principles of variation, inheritance and selection apply to social as well as biological processes, despite huge differences at the level of detail (Hodgson and Knudsen 2006).

In some senses, Veblenian institutional economics is more general than the monopoly-competition axis of neoclassical economics. At the center of neoclassical economics is the idea of rational choice in the context of scarcity. Scarcity is rarely defined, but what is important and universal is scarcity in a *relative* and *local* sense, concerning *immediate* availability of capacities and resources for an agent. It is now widely acknowledged that human computational and deliberative capacities are scarce (in a relative sense). For those that wish to employ them, human skills and competences are also of limited immediate availability. Furthermore, especially since the rise of the new institutional economics, it is now realized that the essential institutional context of human activity cannot be established without costs: institutions are neither immediately available nor a free good. Institutional construction is costly, in terms of time, resources and human effort. In these senses, *both deliberative rationality and social institutions are scarce* (Pagano 2000). Following Veblen’s (1899) famous work on the *Leisure Class*, we may add another dimension, namely social scarcity. Pure Veblenian goods are positional goods like power and status, which involve zero-sum outcomes and invoke social limits to their consumption (Hirsch 1977; Pagano 1999). Overall, Veblenian institutional economics involves an extension and deeper understanding of the principle of relative scarcity and thus, in this respect at least, is more general than the neoclassical position.

The Veblenian approach adopts a basic social ontology of habitual dispositions and institutional systems of rules. It also follows Veblen in adopting Darwinian evolutionary principles in the social domain. Such conceptions are

plentiful in Veblen's writing, but they were given less emphasis by other leading institutionalists, including Wesley Mitchell, John R. Commons, John Maurice Clark and Clarence Ayres (Hodgson 2004). They were equally downplayed in some sympathetic interpretative writings on Veblen's theoretical legacy.

We must be critical of some longstanding interpretations of Veblen's ideas. For example, the idea that Veblen's psychology was behaviorist, that he saw individual behavior as being almost entirely explained by culture or institutions, or that he upheld a "Veblenian dichotomy" between institutions and technology, are all contradicted by multiple statements his own writings (Hodgson 2004; McFarland 1985; Waller 1999).

In particular, does the work of Ayres represent a direct continuation and development of Veblenian precepts? Compare the philosophical and psychological premises of the two authors, alongside their views of the nature and role of institutions in society. For example, Veblen emphasized and never abandoned the concept of instinct; but for Ayres it was an anathema. Veblen understood that ontological or "metaphysical" presuppositions that could not be validated by evidence were necessary for any theory; but Ayres – like all positivists – eschewed metaphysics. Veblen emphasized the role of the individual alongside institutions and culture; but for Ayres the individual was wholly subordinate to culture. Veblen attempted to apply Darwinian principles to social evolution; but Ayres underplayed the significance of Darwinism for the social sciences. Veblen saw institutions as both constraining and enabling human action; but Ayres concentrated on their conservative and constraining aspects.

### ***Conclusion***

In the foregoing discussion, I have touched upon a significant number of emerging research areas, involving a substantial literature, which have acknowledged or unacknowledged Veblenian connections. This survey has shown that Veblenian evolutionary concerns have a widespread relevance to the development of economics today, even if their Veblenian pedigree is overlooked or forgotten. I conclude by summarizing some cutting-edge Veblenian areas of research.

- The development of an evolutionary concept of human agency, based on the concepts of habit and instinct, as rehabilitated within modern psychology and in modern pragmatist philosophy. Such a refined concept of the individual agent acknowledges the biological basis of human existence, and the role of habit in learning and decision-making, with appropriate expressions in economic theory and agent-based modeling.
- The development of a multiple-level theory of socio-economic evolution, involving the selections of institutions as well as individuals, and based on modern refined definitions of key concepts such as replication and selection.
- The development of an ontology of institutions, leading to refined definitions and classifications of institutional types, the building of a theory of institutional

evolution, and an enhanced understanding of the role of institutions, culture and technology in economic growth and development.

- The development of a new formulation of the micro-macro relationship, involving interactions between heterogeneous agents – rather than representative agents or aggregations of similar agents – and focusing on the emergent properties of this interaction at the macroeconomic level.

The above list is very far from exhaustive, but it is a sample set of opportunities for a modernized Veblenian approach to make a significant scientific impact. Such approaches have to be well grounded in an understanding of the literature in institutional and evolutionary economics and in modern work in methodology. With such provisos it is possible to use simulations and other modeling tools to help build a superior alternative to existing mainstream theory. Such formalism has a place if it is set in an appropriate interpretative framework (Hodgson 2006). But above all the suggested changes involve a paradigm shift in substance rather than technique. Veblen's mission of a "post-Darwinian" economics may at last be conceivable in a fuller and richer sense.

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