

# Classifying Heterodoxy

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**Abstract:** This paper draws upon the scholarship of interdisciplinarity to argue that Economics, like all disciplines, should be open to a wide range of theories and methods, and the study of all relevant phenomena. A classification of the different methods and theory types used by scholars identifies key strengths and weaknesses of each. Different schools of heterodox [that is, non-neoclassical] economics, as well as neoclassical economics itself, emphasize different sets of theory and method. Each thus has a unique contribution to make to a holistic understanding of the economy. At present, different heterodox schools, like neoclassical economics itself, tend to act as if it were thought that their theory and method were superior. This paper urges a quite different attitude: different heterodox schools, as well as neoclassical economics, should be seen as complements rather than substitutes. That is, the insights of different schools of thought within Economics can and should be integrated just as disciplinary insights are integrated within interdisciplinary scholarship. The classification also identifies valuable theory types not presently embraced by any heterodox approach. Heterodoxy needs also to embrace the causal linkages between economic and diverse non-economic phenomena; the paper outlines a strategy for organizing the complex understandings that emerge from such a project. Some might recoil at the complexity of an academic enterprise that embraces such a wide range of phenomena, theory, and method; this paper shows how these diverse investigations can be organized in terms of the classifications presented such that all economists could readily appreciate the contributions of others. The paper also makes suggestions regarding the daily practice of heterodox economists, and draws lessons for heterodoxy from interdisciplinary research practice.

**Keywords:** Classification, Heterodox economics, Interdisciplinarity, Theory, Method, Phenomena

## Introduction

Heterodox or non-neoclassical economics does not so much reject the practice of neoclassical economics[1] as the practice of *only* neoclassical economics. To be sure, some heterodox economists suggest that mathematical modelling and/or rational choice theorizing are deeply flawed, but few would go so far as to maintain that neoclassical economics has nothing at all to contribute to scholarly understanding of economic behaviour. However, while the desire to encourage the use of a wider range of theory and method is perhaps laudable, there is an obvious difficulty in a community of scholars organizing itself around a pledge to diversity. As interdisciplinary scholarship has shown, disciplines and subdisciplines are each characterized at any point in time by a narrow shared set of 'acceptable' theory and method. The coherence of disciplines and subdisciplines comes from these shared understandings: members of these communities of scholars can easily converse and, importantly, readily judge each others' work according to narrow standards appropriate to the favoured theory and method (see Klein, Salter and Hearn). In neoclassical economics, for example, the favoured theory and method each lend themselves to quantification, and thus work is generally judged in terms of mathematical content. The scholarship of interdisciplinarity necessarily argues that disciplinary conversations are not incommensurate. It is possible for participants in one conversation to appreciate another, but they must first master its terminology, and that terminology is grounded for the most part in a community's favoured theories, methods, and phenomena of study. [2]

An inclusive heterodox economics must take as its starting point a critique not just of economics but also by extension of the way that most/all fields of inquiry are organized in the modern academy. It is therefore in an important sense an 'interdisciplinary' endeavour, for the heart of the scholarship on interdisciplinarity is a belief that complex issues can be best appreciated by integrating the theories and methods favoured by different communities of scholars (see Newell). While heterodox economists often turn to other disciplines for theories and methods, they also – again like interdisciplinary scholars – appreciate the need to develop new theories and approaches freed from the biases of any discipline. This paper will discuss a variety of ways in which interdisciplinary scholarship can inform an inclusive heterodox economics.

Neoclassical economists, it might be noted, have been much more suspicious of interdisciplinarity than have other social scientists. Confident in the superiority of

their favoured theory and method, they have doubted that they have much to learn from the theories and methods of others. And they have worried that interdisciplinarity would lead to an inevitable dilution of the standards by which scholarship is judged in economics (Szostak, "Econ-Art"). Heterodox economists are regularly punished by this suspicion of alternative theories and methods, and thus the insights of interdisciplinary scholarship should be of particular interest.

Interdisciplinary researchers tend to argue that the academy needs both the specialized research described above and integrative research which synthesizes the insights of different communities in order to obtain a more holistic understanding. Narrow communities with shared theoretical and methodological assumptions have a role to play, but such communities on their own can only generate a congeries of little bits of biased insight. Integrative researchers can recognize the strengths and weaknesses of different pieces of specialized research and tie the insights of different groups of specialized researchers into a coherent and superior holistic understanding. At present, the institutions of academia emphasize specialized research and teaching: interdisciplinary research and teaching survive and occasionally prosper but the standard structure of autonomous departments is obviously better suited to inward-looking than outward-looking scholarship.

If interdisciplinarity were more firmly entrenched in the academy, then the plea for integrating across theories and methods in the study of the economy would appear obvious rather than revolutionary. The pretence of neoclassical economists that one theory and method should suffice would be laughable in such an environment. The project for a heterodox economics can benefit greatly from looking beyond economics to ask how the scholarly enterprise as a whole should be organized. If the ideal academy contains groups of specialized scholars and groups of integrative scholars, then heterodox economics needs to grapple with two questions:

- What range of theories and methods should be applied to the study of economics?
- How should these be integrated?

While heterodox economics is founded on a belief in flexibility, it is nevertheless quite possible for one heterodox economist to be more suspicious of the efforts of another heterodox economist than of the efforts of neoclassical economists. Neoclassical economics, after all, benefits from a very detailed theory and method worked out over decades, while heterodox economists often of necessity are making very tentative theoretical or methodological assertions. Heterodoxy could thus

benefit from a detailed appreciation of the value of several theories and several methods, and also of how the insights gained from these can be synthesized.

It has been argued above that economists in general and heterodox economists in particular should embrace an interdisciplinary appreciation of the value of employing multiple theories and methods. They should appreciate the value of diverse communities of specialized research but seek to integrate the insights of these communities. Such a project not only flies in the face of the reification of specialized research within the academy, but may strike some scholars as unbearably complex. This paper will not only continue to argue for the desirability of an interdisciplinary outlook within economics but will show how this complexity can be addressed. In particular, it will describe how the insights from diverse theories and methods can be organized in such a way that members of one community of economists can readily appreciate the insights of another.

The next sections of this paper will begin by briefly reprising classifications of scholarly theories and methods I have developed elsewhere (especially Szostak, "Classifying"). These classifications are then applied to economic analysis, highlighting the unique contributions that different methods and types of theory have to make. A classification of human science phenomena is then introduced, and an appreciation urged of the diversity of causal relationships that economic inquiry needs to engage. A brief discussion follows of the biases that affect all scholarship. The succeeding section then discusses an idealized process of integrative analysis. In each case, lessons for the practice of heterodox economics are drawn.

## **Theoretical flexibility**

A typology of the types of theory used by scientists was developed in Szostak ("Classifying"). Among its many uses, this typology allows scholars to appreciate much more readily the simple fact that every type of theory has differing strengths and limitations. Every theory should specify answers to five questions:

- *Who is the agent?* Every theory describes some process, and must thus involve some person(s) or thing(s) that sets the process in motion. There are two important distinctions here: non-intentional agents (as in most of natural science, but also the study of institutions) versus intentional agents; and individuals, relationships, or groups.

- *What 'action' is undertaken?* There are three possibilities, passive reaction, active action, and attitude change, which map imperfectly onto the six types of agent.
- *What is the decision-making process?* Non-intentional agents cannot make decisions, but provide constraints or incentives for others. Intentional agents can make use of one or more of five types of decision-making: consequential/rational (the sort emphasized by neoclassical economists), intuitive (one does what one's gut indicates), rule-driven (one follows some rule or rules), process/virtue oriented (one behaves honestly or courageously, and so on), and tradition based (one does what others in one's group do). In the case of intentional relationships and groups, scholars must also ask how individual preferences are aggregated.
- *How generalizable is the theory (where is it applicable)?* A continuum between nomothetic (very generalizable) and idiographic (not very generalizable) theory can be identified.
- *What is the time path of change?* There are five broad possibilities for a system of phenomena: return to the original equilibrium, move to a new equilibrium, continuous movement of some realizations of phenomena in a particular direction, cyclical movements, or a stochastic outcome.

Some scholars would attempt to simplify this typology by arguing that at least some of these options should be ignored: eschew either individual agency or group agency, eschew the study of actions or of attitudes, ignore rational decision-making or ignore anything but rational decision-making, develop only nomothetic or idiographic theory, ignore equilibria or anything but equilibria. Examples of scholars taking each of these extreme positions are legion (with many interpretivist scholars rejecting the type of theory and method employed by economists). There is no space to argue against each here (see Bunge, Szostak, "Classifying"), but note that to accept any one of them is to argue that some community of scholars has been completely wasting its time. That is, if an economist were to claim that only rational choice theory should be applied in human science, then the efforts of generations of sociologists and political scientists to study relationship or group agency, attitude formation, or non-rational decision-making must be completely ignored. It is suggested here that heterodox economics should eschew such a stance.

Every theory can be placed within this typology. Some theories, like rational choice theory, give explicit answers to all five questions (primarily individuals,

actions, rational decision-making, nomothetic, with a strong tendency toward equilibrium analysis). Others, like action theory or functionalism, provide clear answers to a couple of questions, but controversy rages with respect to others. The typology thus serves a couple of valuable purposes. It guides theorists to be more precise in their answers to all five questions. It allows those within a particular theoretical 'camp' to appreciate the sources of controversy. And it allows scholars to much more readily compare and contrast different theories. Table 1 (from Szostak, "Classifying") provides a brief summary of how a variety of grand theories fit within the typology. The discussion below will highlight how a variety of theory types would be useful in economic analysis.

It was argued above that the problem with neoclassical economics is its *exclusive* reliance on a narrow set of theory and method. The next paragraphs will discuss the advantages of widening the theoretical discourse. This should not be taken as an attack on neoclassical theory but rather a critique of reliance on only neoclassical theory. It will be argued that the economy is not characterized *exclusively* by individuals making generalizable equilibrium-generating rational decisions.[3]

Heterodox economists can and should identify a set of characteristics that a set of alternative theories should possess if the scholarly community is to fully appreciate economic activity. Note that what is *not* needed is a single alternative theory that embodies each of these characteristics; rather several alternative theories that embody at least one of these are called for. Indeed, some of the alternatives are mutually inconsistent, and thus require multiple theories. There is scope then for a variety of heterodox (non-neoclassical) approaches, though each of these should ideally be integrated into a more holistic understanding. This section will identify the full range of heterodox possibilities; it would take an entirely different paper to evaluate how well any of these are at present pursued.

*Agents.* The arguments above suggest strongly that methodological individualism must be supplemented by theories that operate at the group or relationship level. The theoretical argument is that societal aggregates have emergent properties not inherent in the individuals that created them (Bunge). The relationships we enter, groups we join, and technologies and institutions we create all generate consequences unforeseen by any constituent individuals. It makes no sense to argue that these unforeseen effects lack causal significance (Kincaid, ch.3). The empirical argument is again that countless scholars over generations have found

analysis of relationship, group, or non-intentional agency valuable. Human science has in recent decades witnessed an often-heated debate between methodological individualism and its antithesis. In most human science disciplines, it is now recognized that individuals both shape and are shaped by the societies in which they live. In other words, there is causation in both directions between individual-level and societal-level phenomena. Economics has been among the slowest to move toward this type of plurality.

Game theory, despite its many shortcomings, can be celebrated for focusing on relationships. Yet, casual empiricism suggests that relationships are often guided by altruism rather than strategy, and economists have been notoriously slow in engaging altruism. Moreover, psychologists would warn against treating relationships as games (the classic work is Berne). With respect to groups, economists tend to assume that these can be understood entirely in terms of the individuals that comprise them. Many sociologists still go to the other extreme, and assume that individual behaviour is entirely determined by group affiliations. The community of heterodox economists must urge the integration of theories at individual, relationship, and group level.

Non-intentional agency should also not be neglected. As with groups, economists tend to assume that institutions simply reflect the individuals that create them. Yet, individuals lack perfect foresight, and institutions often survive dramatic changes in economic environment, and thus institutions often exert incentives and constraints never imagined by their creators. Theories of how institutions evolve are thus an essential component of economic understanding.

*Behaviour:* Neoclassical economics is focused almost entirely on 'active action.' One advantage that would flow from theorizing institutions (above) is that the many situations in which humans passively react to institutional incentives and constraints can then be appreciated. The new institutionalism can be celebrated for emphasizing institutional constraints, but critiqued for too often assuming that institutions reflect the rational intent of their creators.

Neoclassical economics generally assumes away 'changes in attitudes': individuals are assumed to be rational and un-sullied by peer pressure, preferences are assumed to be inherent, and even attitudes toward risk, leisure or time preference are taken as given. Economists have been forced by macroeconomic instability to entertain the possibility that 'expectations' might change, though many have given in to the temptation to assume that this occurs entirely rationally.[4] The failure

of super-competitive markets such as stock exchanges to behave in accord with standard theory has led some to posit non-rational changes in expectations (including group processes like bandwagon effects), but these arguments are viewed by many as beyond the pale. Heterodox economists must thus be open to theories of attitude formation that are not constrained to conform to simplistic views of entirely rational decision-making.

*Decision-making.* The decision-making methods listed above are complementary. Individuals characteristically draw on all of them in their daily lives, acting fairly rationally when making major financial decisions, following intuition in romance, choosing clothes based on what others wear, following a variety of rules (be nice to strangers), and striving to behave in a certain way. Particular decisions may reflect all five. In judging what qualifies as responsible behaviour, an agent may have recourse to cultural guidelines, evaluation of likely consequences, the Golden Rule, and gut feelings. *It would be useful if theorists focussing on any one of these types of decision-making were aware of (and ideally spoke to) the possibility of other influences.* Behavioural economists have begun to explore the variety of ways in which individuals make economic decisions, and their efforts must be seen as a key component of the heterodox project – and also an example of how new (and in this case explicitly interdisciplinary) communities of scholars can be formed to perform some of the tasks of the broader heterodox enterprise. When group or relationship decision-making is involved, theorists will need to address how individual decisions are aggregated as well.

Economists have over the years devoted a great deal of energy to showing how rational decision-making can overwhelm other forms of decision-making: for example, in a marketplace with lots of buyers and sellers the equilibrium price may reflect rational calculation even if some buyers and sellers are not behaving rationally. It is then too easily assumed that this is always the case. Heterodox economists will want to identify precise circumstances in which other forms of decision-making have an important effect on outcomes. Such research may often be idiographic in nature, but there may also be a nomothetic element in such theorizing for the four non-rational forms of decision-making addressed above are ubiquitous in human societies.

*Generalizability.* Economic theory tends to be 'nomothetic': it is assumed to apply broadly. The typology suggests that all scholarly fields of inquiry will benefit from a mix of nomothetic and idiographic theory. Economists have under-studied both institutional change and technological innovation, because these lend



themselves poorly to standard theory and method. One important way in which this is the case is that each technological or institutional innovation is necessarily unique. And thus theorization in both areas needs to leave scope for idiographic elements that may have important influences on the direction and speed of both types of innovation. In particular, economists like to assume that both technology and institutions tend inexorably toward some optimal outcome, whereas economic historians are more cognizant of path dependence: the possibilities today depend on the technology and institutions inherited from yesterday (Szostak, "Economic History"). Heterodox economists should more generally be open to theories that stress the importance of unusual or 'one-off' occurrences.

*Time-path.* Economic theory has long emphasized equilibrium outcomes, though not exclusively. This in part reflects the ease of modelling equilibrium outcomes (and thus reflects a disciplinary desire to have theory and method in accord), but also often reflects the assumption of rational decision-making: agents who think carefully about what they are doing will often move toward an equilibrium where no agent can do better. It is likely, though not essential, that reliance on non-rational decision-making will generate processes of dynamic change, perhaps in unpredictable directions. The importance of idiographic influences and/or path dependence also suggests non-equilibrium outcomes.

The three main types of non-equilibrium theory – stochastic, cyclical, and directional – may all be useful in describing certain economic processes. Random mutations within evolutionary theory can generate stochastic processes (and heterodox economists can usefully ask to what extent human decisions characterized by imperfect foresight can be accurately modelled as 'random'). Selection environments of a certain type may reward several mutations in a particular direction (such as the oft-heard argument that societies inevitably become more complex through time); non-random mutations may also impart directionality to evolutionary processes. Various versions of complexity theory (see Colander) can also be useful in capturing processes characterized by movement in a particular direction rather than toward equilibrium.

The preceding paragraphs have suggested a variety of ways in which theories other than rational choice would shed light on economic activities. An inclusive heterodox economics would ideally have a place for all of these. The bulk of the theorizing of heterodox economists must fall under one or more of these five headings:

- Stressing groups, relationships, or non-intentional agents
- Stressing passive reaction or attitude formation
- Examining the four of the five types of decision-making outlined above that are non-rational
- Emphasizing idiographic elements; and/or
- Stressing either stochastic outcomes, change in a particular direction, or cycles (other than business cycles) rather than equilibria

Less often, heterodox economists may suggest different ways of coping with rational individual decisions and equilibria. As noted above, advocates of one type of theorizing need not at present appreciate others. The classification provides a structure that both clarifies and justifies the common purpose of what otherwise might be seen as completely independent theoretical endeavours. A heterodox economist focused on attitude formation can more readily perceive a commonality of purpose with a heterodox economist focused on rule-based decision-making.

The task of integrating across these various theory types would be greatly facilitated if at least some general journals became theoretically pluralistic. Those fearful of theoretical flexibility will worry that the task of judging the work of others becomes more difficult if all scholars do not begin from the same theoretical premises. They might – or not – take solace from the experience of journals in Business or Public Policy, or a variety of other “interdisciplinary” fields, which manage to maintain standards despite embracing theoretical and methodological diversity. The typology of theory types presented above helps greatly in this respect. First, it shows us that the number of theory types is manageable, for there are generally only a few possibilities with respect to each of the five questions. It is not difficult to imagine a field of scholarship of the size of economics having many experts in each type. Indeed heterodox economists should be celebrated for their expertise with respect to different types of theories (and methods). Moreover, the typology provides a handy guide to the sorts of questions for which each type of theory is particularly well suited.

Note that the typology provides guidance on what to expect from a certain theory type even if no such theory has yet come to the attention of scholars. While it is likely that some theorist in some human science discipline has developed a theory that would fit every cell in the typology (excepting, hopefully, those that are impossible, such as combinations of non-intentional agency and attitudes), it is

nevertheless true that a survey of the main 'grand' theories in human science suggests that coverage is uneven (see Table 1). Heterodox economists can and should strive as a community to ensure that theorizing is pursued across each of the five headings outlined above.

Arnsperger and Varoufakis note that heterodox critiques of neoclassical economics are often rebuffed through recourse to arguments from exception: Economists can, for example, point to examples of work that relaxes the assumption of rationality. Arnsperger and Varoufakis hope that a more carefully defined set of neoclassical 'meta-axioms' will not permit such a response. However, it would seem that with respect to at least one of their meta-axioms – equilibrium modelling – exceptions could again be proffered. The strategy advocated here emphasizes several ways in which the economics discipline could usefully expand its use of a range of theories. If group agency, non-rational decision-making, and/or attitude formation are important characteristics of the economy, then the discipline should embrace coherent bodies of research along these lines rather than rare 'exceptions.' Arguments from exception provide a weak response to such a critique. This is even more so the case when similar arguments are made with respect to method.

## **Methodological flexibility**

There are, broadly speaking, some twelve distinct methods employed by scholars (often in combination):

- Experiments (including natural or quasi-experiments)
- Surveys
- Interviews
- Mathematical models (and simulations, which some would treat separately)
- Statistical analysis (often, but far from always, associated with models)
  - including secondary [that is, collected by others] data analysis
- Ethnographic/ observational analysis [some would distinguish 'interactional' analysis in which the investigator interacts with those under observation]
- Experience/ intuition [some would treat this as an important subset of observational analysis, since we are in effect 'observing' ourselves here]
- Textual (content, discourse) analysis
- Classification (including evolutionary analysis)

- Mapmaking
- Hermeneutics/ semiotics (the study of symbols and their meaning)
- Physical traces (as in archaeology)

Some would treat 'evaluation' of programs as distinct, though it can be seen as a combination of some of the above methods. Similar arguments can be made with respect to 'demography', case study, feminism, and perhaps also hermeneutics. Certainly, 'case studies' involve the use of one or more of the above methods.

These methods can each be evaluated in terms of the questions that were asked of theory above: how well does the method cope with different types of agency, behaviour, decision-making process, time path, and degree of generalizability? In asking these questions a handful of supplementary questions arise: how many agents can a method handle? (Interviews deal with fewer agents than do surveys, for example.) How well can the method identify the four criteria for identifying a causal relationship (see Singleton and Straits): correlation between variables, temporality (the cause must generally precede the result), dismissal of alternative hypotheses, and recognition of intermediate variables (certain cultural attitudes might influence growth through effects on work effort or investment or trust)? (Participant observation under-performs experiments here, for example.) Does the method allow for induction: the identification of phenomena or links beyond those in existing theory? (Experiments under-perform participant observation here, excepting the numerous historical examples of experimental serendipity.) Does the method allow scholars to follow agents through time and space? (Mapmaking is of special importance here.) Table 2 (from Szostak, "Classifying") summarizes how ten of the twelve methods, including those most commonly used by economists, fare in terms of these ten questions. In most cases evaluation was straightforward: of course face-to-face interviews usually engage fewer agents than surveys. Several works on research methods were consulted, and these almost always suggested the same evaluation (see Szostak, "Classifying", for details).

Evaluating all twelve methods in terms of these criteria shows that each method has strengths and weaknesses. For some scientific questions, one method clearly excels. Notably, experiments are unrivalled for the analysis of non-intentional agents. Even here, though, experiments are fallible, and scientists should supplement experimental evidence with evidence from other methods. More commonly, a particular scientific question lends itself to study by various methods. Yet the analysis falls far short of 'anything goes': for any research question some methods

will be more useful than others. Just as one would eschew interviews in analyzing chemical compounds, one would find case study methods superior to statistical analysis for the investigation of an idiosyncratic and qualitative historical process.

Most critically, certain methods will be particularly good at investigating particular theories, for they have strengths with respect to the agents, actions, decision-making, time path, and/or generalizability posited by that type of theory. It should be stressed that the typology used to evaluate methods grew out of the typology used to identify theory types. A method focussed on individuals will be able to provide support for a theory grounded in individual agency, while a method focussed on relationships will tend to provide evidence for the importance of these. Since it is easier by far to use statistical analysis to 'test' models that embrace generalizable individual-level rational actions that generate equilibrium results, it should hardly be surprising that economists also embrace a theory with exactly those elements.[5] Other methods, especially various 'case study' methods such as interviews and observation and textual analysis, but also experiments, provide invaluable insights when investigating other types of theory.

Methodological orthodoxy is thus supportive of theoretical orthodoxy. Ragin argues at length for the differential advantages of examining a few data points in detail, versus analyzing many. If heterodox economists wish to posit relationship agency, emphasize attitudes or non-rational decision-making, investigate idiographic relationships, and/or explore non-equilibrium outcomes, they will likely find that mathematical modelling and statistical analysis are not ideally suited to their needs. If heterodox economists choose to battle neoclassical economics on a battleground of econometric analysis, they will fare much less well than they should. Thus the success of heterodox economics will depend on convincing (many members of) the economics profession of the validity of alternative methods. Some success with respect to experiments has already been achieved, though economists still all too readily dismiss experimental results on the grounds that the laboratory cannot adequately mimic real life. Resistance to surveys and interviews is still strong: economists are so accustomed to assuming that outcomes will be those that would have been generated rationally that they fail to appreciate the value of asking intentional agents why they do (or did) what they do. Historical (text-based) case studies are appreciated within the field of economic history: ironically econometrics is still the favoured method in that field though most of the insights of the field regarding both institutional and technological innovation have inevitably reflected detailed case analysis (see Szostak, "Economic History"). The typology of strengths and limitations of

methods described above (see Table 2) may convince (some) economists to embrace a wider range of methods. Heterodox economists should not respond to the emphasis of neoclassicals on mathematical modelling and statistical analysis by reifying an alternative method but by appreciating the value of all methods.

Some methods have limited inductive potential. Philosophers of science (at least those who believe that scientific understanding can advance) recognize that scientific understanding advances best when both induction and deduction are employed. A purely deductive enterprise can easily become un-tethered from reality, while a purely inductive enterprise can too easily miss the connections between diverse observations (Gower 254). Statistical analysis is primarily a deductive tool, designed to see how accurate a depiction of reality a particular model is, and/or to establish the strength of certain posited relationships. Some statistical techniques, such as VAR regressions, do encourage the inclusion of variables not mentioned in theory. But data limitations (and theoretical presuppositions) limit the range of variables included (Valiela 16-7). Researchers may be surprised by some of the results that they obtain when they first design a mathematical model. And they may be tempted by poor results in testing their model to look elsewhere.[6] But in general, the methods favoured by neoclassical economists have limited inductive potential. Economists are guided instead to play with the same old set of variables over and over. This, as we shall see in the next section, provides yet another set of distinctions in terms of subject matter that heterodox economists should embrace.

## **Phenomena**

This paper has stressed the importance of theoretical and methodological flexibility. These two kinds of openness in turn both support and reflect openness to the investigation of a wider range of phenomena. Theories that ignore attitudes and assume rationality discourage the investigation of culture; inattention to cultural variables in turn reinforces theoretical narrowness. As well, the dominant method does not just guide economists away from induction but also guides them to downplay phenomena which are hard to quantify and/or for which data do not exist. As noted above, technological and institutional innovations are necessarily unique. While some aspects of these processes are quantifiable, the uniqueness of each innovation guarantees that case study analyses will always be important. It was noted above that communities of scholars choose a mutually compatible set of

theory and method. This argument can be extended to phenomena: scholarly communities select a set of phenomena to examine that are well suited to their theory and method. Theoretical and methodological flexibility is thus closely associated with analysis of a wider set of phenomena. Here too, scholars may worry about being overwhelmed by such a range of causal interactions. Again, it is useful to provide an organizing device.

Hundreds of key phenomena investigated by human scientists were identified in Szostak ("Schema", "Classifying"). One of the key results of Szostak ("Schema") was that some causal relationship could be found between virtually any pair of these phenomena.[7] That is, human science is best conceived as one complex undertaking rather than as a set of distinct practices loosely linked to each other. The present organization of the human sciences is predicated on an implicit and misguided assumption that there are largely distinct domains of economic, political, cultural, social, literary, linguistic, and other activities. That is, disciplines – especially in the context of limited interdisciplinary collaboration -- only make sense if it is assumed that the links among disciplinary phenomena are much more powerful than links across disciplines. However, economic transactions are embedded in a host of cultural, political, and other understandings (and vice versa). The economy is clearly an open system: the phenomena embraced by any economic model are causally linked in both directions to a host of phenomena outside the model (Lawson, "Reality"). Human science as a whole may embrace a closed system, but no one discipline can (Szostak, "Schema"). We cannot understand the economy without understanding how economic phenomena influence and are influenced by cultural, political, psychological, and social phenomena.

Lawson's critique is important since neoclassical economists are all too prone to simply ignoring the elements left out of their models. Endogenous growth theories, for example, bring technology into growth theory only at the cost of ignoring all of the non-economic influences on the pace and direction of technological innovation.[8]

The argument made here is of course complementary to the arguments made in previous sections. A theoretically and methodologically flexible profession of economists would naturally look at a much wider set of phenomena. In turn it should be clear that methods that investigate attitude formation might inform an appreciation of cultural influences, and theories that do not assume rationality might support an appreciation of psychological influences.

Natural scientists struggle to identify the 'range of applicability' of their theories: under what range of temperature and pressure will a particular chemical reaction occur, for example. Human scientists do a much worse job of this. Theories are often assumed to apply widely, or rejected when they fail to apply to a particular case. In Economics, one obvious implication is that instead of simply assuming rational decision-making, one should ask under what circumstances other sorts of decision-making might be important. More generally, economists should strive to identify along which causal links, and under what conditions, a particular theory has explanatory power. While no one theory may provide exclusive guidance to any one link, each will be more powerful along some than others. And thus one important task in integrating across different theories is carefully identifying the 'range of applicability' of each, and this can only be done with reference to an *exhaustive* list of relevant phenomena.

At the start of this paper it was suggested that there are important commonalities between interdisciplinarity and heterodox economics. In urging theoretical and methodological flexibility alone, this commonality need not be obvious. The disciplinary homes of alternative theories or methods need not be emphasized. With respect to phenomena, however, it is obvious that other disciplines study political, cultural, and psychological phenomena. Translating the argument for heterodoxy into terms of phenomena thus serves to highlight the fact that heterodoxy is an inherently interdisciplinary project. Economists can learn much from other scholars who take these other phenomena as their focus. The possibilities for useful communication will be enhanced if these others (and/or interdisciplinary scholars) also worry about links between these phenomena and economic phenomena.

This analysis also highlights the complexity of the heterodox project. As noted above, flexibility with respect to theory and method is quite manageable. There are only a handful of possibilities with respect to each of the five dimensions in the typology of theory. And there are only a dozen methods. With respect to phenomena, however, there are thousands of causal relationships among hundreds of key phenomena (and even more if these are further disaggregated). This degree of complexity may seem overwhelming, and might encourage the squeamish to retreat to the analysis of a comforting handful of phenomena. Yet our collective understanding of the economy cannot be artificially constrained to be considerably less messy than reality. This does not mean that simplified theories and models have no place, but that attempts should be made to integrate our understandings of



all relevant causal links into an integrated whole. As we shall see below, evaluating the strengths and weaknesses of the theories and methods that have been employed is a critical step in the integrative process. One component of that step is to ask to what extent results are driven by unrealistic assumptions.[10] Individual models necessarily simplify, but one of the purposes of integration is to transcend these simplifications.[11]

If heterodox economists are to embrace the full range of interdisciplinary causal interactions, and wish to do so without themselves producing a congeries of incommensurate titbits of understanding, then these diverse insights need to be *organized*. This in turn means that heterodox economists should aspire to consensus on terminology for these hundreds of key phenomena, and carefully identify in their research which particular causal links among these they are examining. As noted above, Szostak ("Schema", "Classifying") established the feasibility of developing a hierarchical classification of the phenomena of interest to human science: each phenomenon gains a precise definition for the classification itself establishes both what sort of phenomena it is and what it is not (by distinguishing it from other phenomena). Postmodern scholarship has done us a service in suggesting that concepts are necessarily ambiguous; the approach recommended here suggests that the level of ambiguity can be severely reduced such that scholars within and across disciplines can generally understand what each other is talking about.

## Scholarly practice

The classification of scholarship involves not just phenomena, theory, and method, but also the daily practice of scholars (Szostak, "Classifying"). Having suggested how heterodox economics should approach theory, method, and phenomena in earlier sections, it is useful to briefly engage practice here. This discussion serves to reinforce the arguments for plurality made above while identifying some important strategies within scholarly practice for achieving plurality.

In the so-called 'science wars' those who characterize science as a flawless march toward enhanced understanding have engaged those who characterize science as driven instead by cultural and personal biases alone. As in most debates of this type, integration between these extremes is desirable: Biases and errors afflict scientific practice but arguably do not prevent the gradual accretion of

understanding (Ziman). The rate of expansion in understanding can be enhanced if scholars are familiar with the full range of possible biases and errors, and attempt to limit these (see Szostak, "Classifying", ch.5).

Heterodox economists are well aware that a discipline with a strong preference for a particular theory or method can provide powerful disincentives for scholarly exploration of alternatives. Scholarly insights are built upon and revised by a community over time: new theories and methods can hardly be as precise as those that have been discussed for decades. Moreover, economists can be expected to forget or downplay the possible biases and errors associated with rational choice theory, mathematical modelling, or econometrics; it is thus all too easy for a paper involving survey research to be rejected while a similarly flawed econometric analysis is accepted. In other words, unusual errors and biases will be penalized more than common errors and biases. Moreover, referees in economics often pick at the weakest points in an article or manuscript while ignoring the insights that it may provide (see Freedman). While referees should of course spot weaknesses, they should strive to also appreciate what is good and novel in a paper. A hypercritical stance makes it hard for new ideas to emerge. A discipline that changed its standards of judgment so that it consciously looked for what was good in a piece, as well as what was flawed, would provide a much more fertile home for heterodox economics.

As noted above, economists worry that it will be difficult to maintain 'standards' if the profession comes to embrace multiple theories or methods. The fact that there are only a dozen methods, broadly defined (and a manageable set of theory types as well) potentially provides a powerful response: a large academic discipline could develop expertise in each of these. That discipline would have to embrace multiple communities with recognized expertise with respect to certain theories and methods; these could be relied upon to referee different types of papers. Heterodox economists should thus be valued for their different areas of expertise. Yet all economists should strive to read works employing different theories and methods. Familiarity with Tables 1 and 2 would help scholars to appreciate papers drawing on theories and methods that they are not themselves expert in. Rather than judge papers in terms of their adherence to an artificially narrow set of theoretical and methodological preferences, economists could instead judge them by more basic academic standards: is the question addressed of interest?; does the paper enhance our understanding?; are the assumptions and outcomes clearly stated?; and is the paper placed within the broader literature?

## **Integrative analysis**

One of the key themes of this paper is that heterodox economics is in many important respects an interdisciplinary endeavour. This section briefly reviews a 12-step idealized process of interdisciplinary analysis developed in Szostak ("How to") and reprised in Szostak ("Classifying"). Since heterodox economics overlaps with interdisciplinary analysis, it is useful to explore how heterodox economists should approach each of these steps.

*1. Start with an interdisciplinary question:* any question that draws on insights from more than one discipline. Note that a researcher might not know at the moment that they formulate a research question whether it will require interdisciplinarity. Heterodox economists need not feel a need to explore interdisciplinary questions but should be open to doing so. This step may at first seem banal. But Solow (74) notes that economists should start by looking at reality and asking what is going on, but that model-building economists tend to skip that step. Heterodox economists should be aware that some research questions are more attuned to the internal dynamic of a particular research community than to a considered interest in understanding how the world works.

*2. Identify the key phenomena involved, but also secondary phenomena.* The interdisciplinary literature in general is silent on how interdisciplinary researchers should go about identifying key and subsidiary phenomena. In order not to be seduced by the existing literature, and thus continue to ignore relevant phenomena just because other scholars have, it is advisable for the interdisciplinary researcher to reflect on this question independently. Exposure to a list of all of the possible phenomena of interest would be invaluable here. Heterodox economists could then usefully ask themselves at the start of a research project what political, cultural, or other phenomena might be of particular importance.

*3. Ascertain what theories and methods are particularly relevant to the question at hand. As with phenomena, be careful not to casually ignore theories and methods that may shed some lesser light on the question.* The sorts of questions that interdisciplinarians investigate are likely to involve different types of agent, action, decision-making process, and time path. The typology will thus guide heterodox economists, like interdisciplinarians, to draw upon multiple theories. The very insight that scholars should generally seek a complex amalgam of

theories, rather than one grand theory, is itself invaluable. A similar argument applies to method.

*4. Perform a detailed literature survey.* Present methods of document classification in libraries serve the interdisciplinary researcher poorly: Szostak ("Classifying", ch.7) discusses how systems of document classification grounded not in disciplines but in classifications of phenomena, theory types, methods, and so on could allow researchers of all types, but especially interdisciplinarians, to identify relevant research from diverse disciplines (and beyond) for any topic. In particular, works at present are rarely classified with respect to the theory and method employed. Heterodox economists operating within the present limited systems of library classification must be aware that much relevant research will be classified under different disciplines and terminology. Sadly, interacting with scholars from other disciplines is often the best way to get a handle on these possibilities, though such a strategy depends on the idiosyncrasies of one's contacts.

*5. Identify relevant disciplines and disciplinary perspectives.* Note that disciplinary perspectives are self-reinforcing: the theory will be applied in a manner congenial to the method(s) and phenomena embraced by the discipline; overall philosophical and ideological outlooks will both influence and reflect the theories, methods, and phenomena. Heterodox economists, as noted above, need to be aware of the biases inherent in the economists' worldview. If they will borrow theories and methods from other disciplines, or even definitions of phenomena, they must be similarly cognizant of the worldview of those disciplines and thus the biases that may be embedded in such works. The interest of heterodox economists in matters of ontology and epistemology and ideology prepares them well for this task, though it is dangerous to assume that any disciplinary perspective can be precisely defined.

In general each discipline tends to exaggerate the causal importance of its phenomena and the range of applicability of its theories and methods. Economists often exaggerate the rigor of their own standards relative to other human sciences. And they ignore the biases in those standards. Nevertheless it is true that other human science disciplines are often guilty of even less firmly grounding their theories in empirical analysis. If heterodox economists display a useful scepticism of results emanating from other disciplines, they can model an appropriate interdisciplinary attitude while assuaging some neoclassical concerns regarding the heterodox project.

**6. If some relevant phenomena (or links among these), theories or methods identified in (2) and (3) have received little or no attention in the literature, the researcher should try to perform or encourage the performance of such research.**

As mentioned at the start of the paper, heterodox economists face two distinct tasks: developing novel (at least to economics) theoretical and/or methodological approaches, and integrating across these. While most of the interdisciplinary process reprised here emphasizes the second task, this step emphasizes the first. And its place in the process shows that such investigations can be stimulated by a holistic look at an important economic question. That is, researchers focused on explaining how the world works rather than testing a theory or method will be more likely to embrace diverse theories, methods, and phenomena. It should be emphasized, though, that the interdisciplinary process is iterative, and thus heterodox economists can also start out with a theory and/or method in mind and then search for meaningful applications.

**7. Evaluate the results of previous research.** This must often involve some degree of mastery of the theories, methods, and perhaps phenomena implicated in that research. Heterodox economists, like interdisciplinarians, can bring several key insights to this task.

- If some key phenomena were excluded from previous analysis, the impact this may have had on results can be assessed. See step 6.
- Since no theory or method is perfect, results using different theories and methods can be critiqued from a general understanding of the strengths and weaknesses of different theories and methods.
- Moreover the particular way that a disciplinary researcher applied a theory or method will reflect the overall 'disciplinary perspective' of the discipline in question (see step 5): this perspective can first be identified and the question of how this perspective influenced the results investigated. Familiarity with the variety of biases that can creep into both scholarly and non-scholarly research can be invaluable here. Note that while disciplines are an important source of bias, human nature, individual psychologies, and the diverse roles that people play in society are also sources of bias.

**8. Compare and contrast results from previous disciplinary or interdisciplinary research.** This step obviously interacts with the previous one. It cannot be stressed too much that the goal of heterodox economics should not be to overturn neoclassical theory and method. Rather the goal is to more carefully establish

their range of applicability, and integrate their insights with those provided by alternative theories and methods.

**9. Develop a more comprehensive/integrative analysis.** While this may involve some sort of unifying theory, it is more likely to involve a complex combination of theories, each shedding light on different (possibly overlapping) pieces of the puzzle. It is likely as well that analysis using different methods will be drawn upon to argue for why one theory is favoured in some places but not others. If more than one theory is involved, the range of applicability of each should be specified (as well as the evidence used to reach these conclusions). If evidence from multiple methods is utilized, the strengths and limitations of these must be compared. A classification of method can guide researchers as to which are the most appropriate to apply to certain types of phenomena or causal links.

It is natural that heterodox economists stress the insights of their approach, and the limitations of neoclassical analysis. In the end though, the limitations of the former and advantages of the latter must also be appreciated.

**10. Reflect on the results of integration.** This step should be mandatory. Researchers should reflect upon their own biases. Having a list of potential biases to refer to can be very helpful in the identification of – generally subconscious – biases. Researchers should reflect on any steps they have omitted from the interdisciplinary process, and the potential costs of the omission(s). They should reflect on the weaknesses of the theories and methods used in their comprehensive vision. Heterodox economists, in stressing both the insights and the weaknesses of their analyses, can hopefully mitigate the economist tendency to see only the latter, while facilitating the revision and improvement of their analyses that generates advances in scholarly understanding.

**11. Test the results of integration.** Are there implications of the integrative framework that can be empirically evaluated? Can the integrative framework be applied in some way? The researcher should be careful of biasing such tests and should also be prepared to adjust the analysis in the face of new information. Economics, and even more so other human sciences, does not adequately test its theories against empirical reality. Heterodox economics must pursue higher standards of empirical testing. Heterodox economists should test their theories against the widest range of method and evidence. They must appreciate that we can have the greatest confidence in theories (whether nomothetic or idiographic) that are validated by multiple methods.

**12. Communicate the results.** One insight of interdisciplinary analysis is that different communities speak different languages. These are not incommensurate as some postmodernists suggest (or interdisciplinarity would be impossible), but communication across communities is fraught with misunderstanding. Heterodox economists should strive to use a vocabulary that appeals not just to other heterodox economists. They should naturally try to speak to neoclassical economists. They should also appreciate audiences beyond economics. Scholars in other disciplines may prove particularly receptive to heterodox insights. Interdisciplinary fields such as political economy or economic sociology are especially valuable audiences. And heterodox economists can usefully (but responsibly) address the wider public: neoclassical economists only rarely bother to do so and thus leave a market niche for the heterodox public intellectual.

## **Concluding remarks**

This paper has attempted to describe what it argues should be the broad contours of the heterodox economics enterprise. That is, it has identified the full range of theory types and methods that should be investigated, and pointed to the importance of engaging the phenomena studied by other disciplines. It has identified strategies within scholarly practice for the pursuit of theoretical and methodological plurality. It has argued that this heterodox enterprise overlaps with interdisciplinary scholarship, and can thus usefully pursue strategies for integrative analysis. The purpose of heterodox economics is not to supplant neoclassical economics but to integrate across a broader range of theory, method, and phenomena. Heterodox economists are urged to pursue two complementary strategies: specialized conversations grounded in diverse theories and methods; and the integration of these into a holistic understanding. This paper has essayed to describe the strengths and weaknesses of the widest range of theory and method. Heterodox economists need to appreciate the value of the full range of heterodoxy. Yet this inclusive heterodox enterprise will drown in complexity unless the resulting insights are organized in terms of causal links reflecting an exhaustive list of phenomena, in concert with classifications of theories and methods.

**TABLE 1: Typology of Selected Theories**

<b>Theory Type</b>	<b>Who? Agency</b>	<b>What? Action</b>	<b>Why? Decision-making process</b>	<b>When? Time Path</b>	<b>Where? Generalizability</b>
Most Natural Science	Nonintention various types	passive	inherent	various	various
Evolutionary Biology	Nonintention individual	active	inherent	not same equilibrium	nomothetic
Evolutionary Social Science	intentional individual (group)	active	various	not same (any) equilibrium	nomothetic
Action Theory	intentional individual (relationship)	action (attitude)	various; often rational	various	generally idiographic
Systems theory; Functionalist	various	action and attitude	various; emphasizes constraints	new equilibrium	generally nomothetic
Psychoanalytic	intentional individual [look within]	attitudes	intuition; others possible	various	implicitly nomothetic
Symbolic Interactionist	intentional relationships emphasized	attitudes	various	stochastic	idiographic; some generalizing
Rational Choice	intentional individual	action	rational	usually equilibrium	nomothetic
Phenomenology	intentional relationships (individuals)	attitudes (actions)	various	various	various

Source: Szostak ("Classifying" 94).



**TABLE 2: Typology of Strengths and Limitations of Methods**

Criteria	Classification	Experiment	Interview	Intuition/ Experience	Mathematical Modelling
Type of Agent	All	All; but group only in natural experiment	Intentional individuals; relationships Indirect	Intentional individuals; others indirect	All
Number Investigated	All	Few	Few	One	All
Type of Causation	Action (evolutionary)	Passive, Action	Attitude; acts indirectly	Attitude	All
Criteria for identifying a causal relationship	Aids each, but limited	Potentially all four	Might provide insight on each	Some insight on correlation, temporality	All; limited with respect to intermediate, alternatives
Decision-making Process	Indirect insight	No	Some insight; biased	Yes; may mislead	Some insight
Induction?	Little	Some	If open	Yes; bias	Little
Generalizability	Both	Both	Idiographic	Idiographic	Both
Spatiality	Some	Constrained memory	From memory	From	Difficult to model
Time Path	No insight	Little insight	Little insight	Little insight	Emphasize equilibrium
Temporality	Some	Constrained	From memory	From memory	Simplifies

Criteria	Participant Observation	Physical Traces	Statistical Analysis	Survey	Textual Analysis
Type of Agent	Intentional individual; Relationships groups?	All; groups and relationship indirect	All; groups and relationship indirect	Intentional individuals; groups indirect	Intentional individuals; others indirect
Number	Few; One group	Few	Many/all	Many	One/few
Type of Causation	Action (attitude)	Passive, Action	Action, Attitude	Attitude; acts indirectly	Attitude, Action
Criteria for identifying a causal relationship	All, but rarely done	Some insight to all four	Correlation and temporality well; others maybe	Some insight on correlation	Some insight on all
Decision-making Process	All	No	No	Little	Some insight; Biased
Induction?	Much	Much	Some	Very little	Much
Generalizability	Idiographic; nomothetic from many studies	Idiographic; nomothetic from many studies	Both	Both	Idiographic; nomothetic. from many studies
Spatiality	Very good; Some limits	Possibly infer	Limited	Rarely	Possible
Time Path	Some insight	Some insight	Emphasize equilibrium	Little insight	Some insight
Temporality	Very good up to months	Possibly infer	Static, often frequent	Longitudinal somewhat	Possible

Source: Szostak ("Classifying" 138-9). Note: The 'criteria' reflect the ten questions listed in the text above.

## Endnotes

[1] For the purposes of this paper, neoclassical economics can be seen as an application of rational choice theory (defined below). Neoclassical economics emphasizes the behaviour of individual agents in markets, and tends to assume rational decisions, and generalizable and equilibrium outcomes. The use of this theory is associated with the use of mathematical modelling and/or statistical analysis, and emphasis on a subset of the relevant phenomena. This paper will argue that neoclassical economics so defined cannot be considered to be entirely right nor entirely wrong, but is one valuable approach among others to the study of economic phenomena and processes.

[2] Frederic Lee argued at the 2006 AHE conference that there were many exciting links between heterodox communities, but noted that such links require a mutual understanding of the essence of the other community. The classifications outlined in this paper should facilitate such understanding.

[3] Arnsperger and Varoufakis argue that 'rationality' is not an essential neoclassical meta-axiom, but rather preference satisfaction/maximization. The argument for other types of decision-making still holds. They identify two other meta-axioms: methodological individualism and equilibrium orientation. I would argue that emphasis on actions over attitudes and on generalizability are equally characteristic of neoclassical economics.

[4] In Szostak ("Evaluating") I discuss how macroeconomists, faced with the failure of macroeconomic theories to explain the Great Depression, have seized on expectations as a saviour: people were pessimistic in the early 1930s and optimistic later. This has occurred despite the fact that no macroeconomic model, or even all in combination, can explain why people should have switched (rationally) so dramatically from pessimism to optimism.

[5] Lawson ("Reorienting") has provided a profound ontological critique of mathematical modelling in economics. Such models, he argues, are applicable only to closed systems in which each causal relationship can be specified. The goal of interdisciplinary scholarship is not one universal theory of everything but rather a complex amalgam of theories that each shed light on different aspects of reality. No theory, then, can be expected to encompass every relevant causal link. All theories must abstract from reality to focus upon one or a few causal links. Mathematical models, whether intended to express or test a theory, likewise

cannot be held to a standard of non-exclusion. Seen in this light, the ontological critique is entirely consistent with the argument made here for plurality.

[6] Reder notes that among economists the greatest fame is accorded to those who develop mathematical models or apply/develop sophisticated econometric techniques. It is possible to achieve some lesser degree of fame in a field for the discovery of empirical anomalies.

[7] Phenomena do not cause other phenomena but rather realizations of one phenomenon affect the realizations of other phenomena. A particular attitude toward punctuality might, for example, have an impact on the level of economic output, but both 'attitude toward punctuality' and 'economic output' would be considered to be real enduring phenomena.

[8] More generally, the fact that different theoretical or methodological practices are grounded in different ontologies or epistemologies or methodologies broadly defined does not prevent theoretical or methodological plurality. Interdisciplinary scholarship indeed warns scholars to beware of the 'disciplinary perspectives' in which disciplinary research is grounded. An implicit belief in closed systems is an important component of the disciplinary perspective of economics, and should be utilized to evaluate rather than reject the discipline's theories and methods.

[9] Szostak ("Schema") argued that the list of phenomena provided there was nearly exhaustive, for it reflected a mixture of deduction and induction: hundreds of works were consulted and the phenomena addressed in each were placed within the classification. The point to stress here is that the classification can be expanded if/when new phenomena are identified.

[10] Space prevents a lengthy discussion of the debate in economic methodology regarding the realism of assumptions. Realist philosophy guides us to seek to understand causal mechanisms, and thus be suspicious of theories that rely on unrealistic assumptions to generate reasonable predictions. We must worry that a change in circumstances would cause these theories to make unreliable predictions. Yet some unrealistic assumptions (such as *ceteris paribus* itself) merely simplify a complex reality in a way that enables scholars to focus attention on particular causal mechanisms.

[11] The emphases in this section on causal links and interdisciplinary linkages are consistent with the application of realist philosophy to economics urged in Lawson ("Reality") and elsewhere.

## References

- Arnsperger, Christian, and Yanis Varoufakis "What Is Neoclassical Economics?," *Post-autistic Economics Review* 38 (2006): 1-12.
- Berne, Eric *Games People Play: The Psychology of Human Relationships*. New York: Grove Press, 1964.
- Bunge, Mario *Social Science Under Debate: A Philosophical Perspective*. Toronto: University of Toronto Press, 1998.
- Colander, David *The Complexity Vision and the Teaching of Economics*. Cheltenham: Edward Elgar, 2000.
- Freedman, Craig Why Economists Can't Read. *Methodus* 5:(1) (1993), 6-23.
- Gower, Barry *Scientific method: an historical and philosophical introduction*. London: Routledge, 1997.
- Kincaid, Harold *Philosophical Foundations of the Social Sciences*. Cambridge: Cambridge University Press, 1996.
- Klein, Julie T. *Interdisciplinarity*. Detroit: Wayne State University Press, 1990.
- Lawson, Tony *Economics and Reality*. London: Routledge, 1997.
- Lawson, Tony *Reorienting Economics*. London: Routledge, 2003.
- Newell, William H., ed. *Interdisciplinarity: Essays from the Literature*. New York: College Board, 1998.
- Ragin, Charles F. *Fuzzy-Set Social Science*. Chicago: University of Chicago Press, 2000.
- Reder, Martin *The Culture of Economics*. Chicago: University of Chicago Press, 1998.
- Salter, Liora, and Alison Hearn *Outside the Lines: Issues in Interdisciplinary Research*. Montreal: McGill-Queen's University Press, 1996.
- Singleton, Royce A. Jr., and Bruce C. Straits *Approaches to Social Research*. 3rd ed. New York: Oxford University Press, 1999
- Solow, Robert "How Did Economics Get That Way and What Way Did it Get?," *American Academic Culture in Transformation: Fifty Years, Four Disciplines*, Thomas Bender and Carl E. Schorske. Princeton: Princeton University Press, 1998.

Szostak, Rick *Econ-Art: Divorcing Art from Science in Modern Economics*.  
London: Pluto Press, 1999.

Szostak, Rick "How to Do Interdisciplinarity: Integrating the Debate", *Issues in Integrative Studies* 20 (2002), 103-22.

Szostak, Rick *A Schema for Unifying Human Science: Interdisciplinary Perspectives on Culture*. Selinsgrove PA: Susquehanna University Press, 2003.

Szostak, Rick *Classifying Science: Phenomena, Data, Theory, Method, Practice*.  
Dordrecht: Springer, 2004.

Szostak, Rick "Evaluating the Historiography of the Great Depression: Explanation or Single-Theory Driven?" *Journal of Economic Methodology* 12:1 (2005), 35-61.

Szostak, Rick "Economic History as It Is and Should Be; Toward an Open, Honest, Methodologically Flexible, Theoretically Diverse, Interdisciplinary Exploration of the Causes and Consequences of Economic Growth" *Journal of Socio-Economics* 35:(4) (August 2006), 727-50.

Valiela, Ivan *Doing Science: Design, Analysis, and Communication of Scientific Research*. New York: Oxford University Press.

Ziman, John *Real Science: What It Is and What It Means*. New York: Cambridge University Press, 2000.

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