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Why evolutionary realism underpins evolutionary economic analysis and theory: A reply to Runde's critique

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Abstract: This paper offers a reply to Jochen Runde's critical appraisal of the ontological framework underpinning Dopfer and Potts's (2008) General Theory of Economic Evolution. We argue that Runde's comprehensive critique contains several of what we perceive to be misunderstandings in relation to the key concepts of 'generic' and 'meso' that we seek here to unpack and redress.

Jochen Runde (2009) has provided a thoroughly critical yet ultimately constructive review of the ontology of 'evolutionary realism' that we have offered as the foundation of our *General Theory of Economic Evolution* (Dopfer and Potts, 2008). We are much honoured to have such a thoughtful and esteemed reader. Anyone of course can make criticism, but Runde has performed a serious scholarly duty in seeking to carefully elicit what (in his view) our intended meanings were, and, in fact even more so, what our meaning (in his view) should be.

But with greatest respect, Runde's article has exposed as many misunderstandings of our framework as the useful advances he offers. The useful refinements and advances you can read about immediately in Runde's article; but here we shall focus instead on the points of difference. And, since we are going to be defensive in what follows, it is important that we make clear that we are in broad agreement with Runde on most points of methodology and economic analysis. But our reply is in the form of rebuttal, arguing that Runde has, we believe, missed several critical connections. The blame for this surely does lie at our feet, for the book is admittedly not a reader's delight. Runde is entirely correct to emphasize that the definitions of our key concepts (and in particular as contained in the book's glossary) are potentially open to misinterpretation. He thus performs a valuable service in seeking to elucidate and to sharpen critically

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some of these definitions, especially in relation to our concept of a 'generic rule' (Runde, 2009: e.g. 363, 370). Yet ours was a deliberate endeavour to lay down a prose version of a formal general theory in as short a book as possible (just 116 pages). We eschewed examples and in-text references and set things out in careful order. Yet we worry that we may have accidentally tripped Runde, who in our opinion seems to have misconstrued several key ideas – notably the concepts of 'generic' and 'meso', which is a serious issue, as both are definitional of our general theory of economic evolution.

Ontological branches

We all agree that ontology matters, and that its near absolute neglect in modern economics has carried considerable cost in terms of lost development of realism in economic theory. But there are some important fundamental differences in approach in which Runde's review of our ontology of 'evolutionary realism' differs substantially from the transcendental 'critical' realist ontology (e.g. Lawson, 1997, 2003) that gathers under the 'Cambridge school' of social ontology (e.g. Lawson *et al*., 2007). We all want more ontology in economic analysis; but we differ as to what that ontology should be and what function it serves in relation to (evolutionary) economic theory and analysis. We do not want our reply here to Runde's specific critique of our ontology to spill out into a fracas of *evolutionary realism* versus *transcendental* or *critical realism*. That is another paper for another journal (see Philip, 1995; Castellacci, 2006). But there are some aspects we cannot avoid because they arise at the very outset.

First, Runde (2009: 376) defines ontology thus:

> The term derives from the Greek, where 'onto' means 'being' and 'logos' can be understood as 'study', 'science' or even 'theory'. The word 'being' has two senses, referring both to what it is to be or exist, and to something that is or exists, an entity or thing … Following Lawson (2004), I will call the former philosophic ontology and the latter scientific ontology.

We agree that these are the two basic meanings of ontology. In fact, when introducing ontology into economics (some time before 'social ontology' and 'critical realism' surfaced), we have, like Runde, introduced the distinction between '*So-Sein*' (what it is to exist) and '*Da-Sein*' (things that exist) (Dopfer, 1970: 3–20). Yet, unlike Runde, we did not dismiss the former as non-scientific (or 'philosophical'), but rather recognized explicitly its significance for advancing valid ontological statements. We started with the conjecture that neither 'materialism' nor 'idealism' are tenable ontological positions, suggesting that the nature of reality is best captured with the ontological notion that both information/ideas ('Idealfaktoren') and matter/energy (Realfaktoren) are the 'Da-Sein' categories that, in their interplay, constitute reality.

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Axiomatization

This was a clear ontological position, but it was only a conjecture. When studying this issue further, it became apparent that Alfred North Whitehead (1926/1979) and Charles Sanders Peirce (Peirce, 1958, 2004) not only took a similar ontological posture, but also gave it a sound scientific basis and a new language (cf. Juniper, 2008). Inspired by their work, we have sought to render our ideas into 'natural' (or 'empirical') *axioms* (Dopfer, 1989), thus arriving at the core of our ontology:

Axiom 1: All existences are matter/energy actualizations of idea/information.
Axiom 2: All 'bits' of idea/information associate with others, forming a 'deep' informational structure.
Axiom 3: Ideas/information stabilize and evolve in an ongoing process of physical actualization in time and space.

This is the ontology employed and made explicit in our book. The axiomatic statement of our ontology is complete, but we did not elaborate on its various ramifications, subtleties, and nuances, and while we did refer to some of our previous works on ontology (e.g. Dopfer, 2001, 2005; Potts, 2000; Dopfer and Potts, 2004a), we are aware that most readers will not have tuned into that literature and may well indeed have been left, as Runde says, 'breathless' in view of the high-level abstractions of the narrow-focused version presented.

What is scientific ontology?

Runde distinguishes between 'philosophic ontology', which applies to the analysis of 'what it is to be or to exist', and 'scientific ontology', which deals with 'the study of entities or things that exist'. Runde suggests that we confine our analysis to the scientific branch of ontology and leave to philosophers or non-scientists the other branch. Yet we shall argue that a clear ontological position on the issue of 'what it is to be' (So-sein) is not only relevant in general, but that 'evolutionary realism' (one possible substantive expression) has a profound and direct impact on theory formation in particular.

We start with the view that ontological statements about 'what it is' are generally non-scientific, or respectively should be treated as such. Runde's borrowed edifice of 'social ontology' rests on this premise, though neither he nor the progenitors of the approach are particularly explicit about its systematic underpinnings. Yet irrespective of such a possible deficiency, the crucial issue here is to make our own posture intelligible, which can be done most reliably by turning to the philosophical works of Alfred North Whitehead and Charles Sanders Peirce. When developing their 'organic/process philosophy', they declared explicitly that their major intent was to restate ontology on the basis of a careful study of major findings of the modern sciences, that is physics and particularly biology, as well as the social sciences. Being themselves major

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figures in science and logic, they followed a methodology of 'cross-disciplinary in(ab-)duction' (see Dopfer, 2005). Modern ontology had in their view to be '*scientific ontology*', that is it had to have a sound empirical basis that could be furnished only by modern science. Considering this, the distinction between philosophic and scientific ontology that Runde adopts is ill-founded.

We contend that the only systematic scientific support that modern ontology has ever received is with the first, not with the second of the two areas that constitute ontology. All evidence we have come across suggests concluding that the ontology of 'evolutionary realism' has a scientific basis, while Runde's adopted 'social ontology' lacks one.

Why ontology at all?

Neoclassical economists do not usually engage in ontological discussions. This is not because they would consider it useless *per se*, but rather because of a prior confidence that their work ultimately rests on valid ontological foundations in which economic reality can be modelled on the basis of a mechanistic background model. As such, if there is any foundational issue at all, it does not concern the validity of ontological premises, but rather its so-called 'micro foundations', which is a drive for the methodological consistency of theory, not the ontological consistency of method and theory.

Heterodox economists, however, do not start from such a presupposition, but instead question the basic validity of a mechanistic ontology (Dopfer, 1988, Potts, 2000). They search for valid ontological foundations, and our discussion about ontology in the General Theory book is part of this common endeavour. Our primary concern is with the validity of the ontological foundations. Validity is a key criterion, but it is one that is relevant only as it can be usefully translated into a practical procedure of theory formation. Ontology must be *instrumentally adequate* in that it should be applicable when formulating evolutionary economic theory. There must be *ontologically warranted 'realism'*, but that must be stated in a way that it meets accepted methodological requirements. We have called this stance 'instrumental realism' (Dopfer, 2004). So let us be clear: there is *evolutionary realism* as well as *instrumental realism*. The former is ontological, the latter methodological. Both have been designed to provide us guidance in our attempt towards adequate theory making.

Runde's concern is arguably instrumental, as he does not address the issue of ontological validity. He seems to have something in mind that may be called 'ontological taxonomy', whereby the underlying intention is to put the house of 'social rules' in order. This is of course an important agenda. Moreover, this endeavour reminds us of the work of Linnaeus, who similarly tried to chart the natural world of minerals, plants, animals, and humans using a taxonomy that posited all entities in ascending order of observed complexity. In Linnaeus' pre-Darwinian taxonomy, the characteristics or 'types' of entities were given and

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did not change. It is unclear whether Runde's 'ontological taxonomy' should be interpreted more as a Linnean or Darwinian construal. To qualify as Linnean, it lacks precision; yet to qualify as a Darwinian, it lacks systematic reference to an evolutionary agenda.

Still, there is a more fundamental issue that concerns the principal relationship between social ontology and social theory that is of immediate relevance for assessing the validity of Runde's critique of our generic rule approach. To get to the heart of the matter: How exactly does social ontology differ from a general social theory? What are the systematic criteria for distinguishing between the two? Where does social ontology begin and where does a general social theory lose its status (as theory)? Moreover, what exactly is the methodological procedure employed to construct social ontology? Only if a clear indication were provided as to what procedure is actually employed could a clear-cut border-line be drawn between a social ontology and a general social theory. We contend that Runde fails on each account, thus misstating and misinterpreting the ontology of evolutionary realism and its foundation of evolutionary economic analysis and theory. By way of cross-examining his assessment, let us very briefly state how we deal with this matter.

Levels of scientific enquiry: ontological, analytical and theoretical

Dopfer and Potts (2008) sought to be quite explicit about the various domains, or levels, of scientific enquiry. We distinguished between the ontological and the theoretical level, whereby ontology embraces all reality and, as a consequence, applies to all scientific disciplines or theories as they investigate into reality from various perspectives. Further, we introduced an analytical level that accommodates concepts and language that apply to two or more theories, bodies of theories or disciplines (see also Dopfer, 2001, 2005; Dopfer and Potts, 2004b; Dopfer, Foster, and Potts, 2004).

The introduction of an analytical level allowed us to distinguish clearly between common characteristics (analytical level) and their specific application (theoretical level). For instance, the analytical concept of 'rule' could, in this way, be derived first from the ontological concept of idea/information, and then, in a next step, be applied to theoretical disciplines such as biology and economics, that is as biological rules (genes) and as economic rules (generic rules). We have thus three domains or levels of scientific investigation: the *ontological*, the *analytical*, and the *theoretical*.

There is often a common (natural language) term in all three domains of scientific investigation that depending on its particular application attains a different, domain-specific meaning. For instance, the term 'idea' may be used in an ontological as well as in a theoretical inquiry, and depending on its usage, the term 'idea' will attain its particular meaning. Ontologically, the term 'idea' denotes a (qualitative) difference not expressed in terms of (quantitative)

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characteristics defined by matter and energy. In economic theory, the term 'idea' will attain a more concrete or 'practical' meaning, for instance when talking about new technological, social, or management ideas. We have called ideas at the theoretical level 'generic rules', and on the rare occasions we turn (for illustrative purposes) to the natural language of 'idea', it goes, of course, with a domain-specific connotation.

Yet as Runde both criticizes and (in turn) illustrates, this can be open to misinterpretation. An example of such may be given by referring to the following passage in Runde's review where he criticizes our use of the term 'idea':

> the problem is that D&P cannot literally mean what they say ... in Axiom 1, unless of course the ideas they refer to include those of a superhuman intelligent designer (presumably not something that proponents of an evolutionary approach would want to argue). The reason for this is that there are all manner of things that exist in an evolutionary economy that are presumably not the matter-energy manifestation of ideas – or at least not human ideas – such as the human form itself, other fauna, flora and the minerals and other non-biological endowments of nature used in production.

We agree that many things beyond human ideas are relevant for production, which is surely a trivial point. More interesting is how Runde could have ever conjectured that we could have thought otherwise. Having failed to establish a clear ontological position, Runde can neither introduce a systematic difference between ontological and theoretical levels nor can he define unambiguously the status of ontological categories, such as idea/information. More puzzling is Runde's suspicion that the roots of our approach may ultimately be some form of creationism, that is a hidden assumption 'of a superhuman intelligent designer'. Runde again offers here a 'useful mistake' demonstrating how important it is to distinguish clearly between the existence of an ontological category, for example of idea/information, and the particular assumptions one makes about them. In the traditional mechanistic-deterministic world view, idea/information was assumed to apply to all matter-energy equally (homogeneity assumption), and not to change over time (invariance assumption). Yet the essence of evolutionary realism is that these are (finitely) many and that they are (infinitely) changeable.

To state this adequately, we introduced the ontological categories of idea/information as differences and change manifest qualitatively as new ideas/information, and so it cannot be described as mere quantitative changes at the level of their physical actualization. We introduced the category of 'idea' not to justify the existence of an intelligent designer, but quite to the contrary, because we wanted to allow for the basic ontological assumption that the world is ever-changing. Indeed, if our analysis had required any metaphysical recourse, we would have turned to one that has 'designed' the perennial powers of incessant creative change.

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Evolutionary realism and the analytic architecture of evolutionary economics

Runde argues that our ontology has little bearing on how our theoretical framework was constructed. He says (p. 371) that our ontology:

> is highly underdeveloped, and that, save perhaps for the way that it informs the notion of all existences being matter-energy manifestation of ideas, it seems to have little bearing on how the micro meso macro framework was developed.

Yet we contend that it is not our ontology but rather Runde's interpretation of it that has little bearing on our theoretical framework. We shall very briefly show how our main theoretic arguments are derived directly from the three axioms; but first let us try to understand how Runde could ever reach this conclusion. Having arrived at this point, the reader may not be surprised that this can be explained only by recognizing the particular nature of his Cambridge school-based 'social ontology'. His posture suggests viewing the whole economic world as a cosmos of social rules, and by that he is led to assume that also we would develop our micro-meso-macro framework from there. This is Runde's (p. 371) conjecture:

> Things are very different with respect to the (scientific ontological) development of social rules. D&P go into considerable detail here, and in a way that is fundamental to how they understand and elaborate the realms of micro, meso and macro.

Yet we do not construct our micro-meso-macro framework from our rule taxonomy. We do no such thing. In fact, our rule taxonomy – in terms of cognitive, behavioural, social, and technical rules – could easily be quite different, for example including different kinds of rules, maybe with greater or lesser generality. Yet it would still be the same theoretical architecture of micro-meso-macro.

Axiom 1 leads to the basic theoretical concept that one rule (idea/information) is actualized in a population of carriers or adopters. We take that to constitute our elementary theoretic unit. Micro is a member of this population. Since the elementary theoretic unit itself is neither micro nor (as a single population) macro (the whole economy), we call it *meso*. The meso unit represents therefore not so much an intermediate position on a quantifiable scale, but rather a theoretic concept for developing and integrating systematically micro and macro.

Macro is a theoretic consequence of axiom 2 (association), which refers to the structure between meso units. The bimodality stated in axiom 1 – a rule and its population – implies that macro has two levels where structure (associations) becomes manifest, namely structure between rules, and between populations. We call these respectively the deep and surface level of macro analysis.

The third axiom then refers to the actualization process that gives us the theoretic concept of a three-phase rule trajectory, and which applies to the

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micro, meso, and macro levels. As such, the micro-meso-macro architecture of evolutionary economics, the centrality of meso within this, and the notion of economic evolution defined in terms of micro, meso, and macro trajectories are all consequences of the three axioms of evolutionary realism.

Runde does not clearly grasp the meaning of *generic*, confusing it with *meso*. Indeed, he continues (p. 363):

> The only apparent difference between the first definition [*Generic*: The analytical domain of rules and their carrier populations] and the first (key) line of the second [*Meso*: The analytical domain of a rule and its carrier population] is that whereas the former refers to rules and their carrier populations in the plural, the latter refers to a rule and its carrier population (what D&P call a 'meso unit') in the singular. What is to be made of this?

We realize now that we could have and should have made this distinction more explicit. Yet in our analysis, we have plainly sought to introduce the fundamental distinction between the generic (rule) level and the operational level of the economy. The generic level is that of rules, carriers, and actualization; it represents the very heart of our analysis. The operational level refers to economic operations such as transactions and production that are performed on the basis of given rules. Runde does not, it seems, recognize this critical distinction between generic in contrast to operant analysis, which matters as our entire framework is set up as a generic approach in contrast to the operant approach, with neoclassical economics as an important exemplar. Therefore, the theoretic concept of *generic* applies to all levels – micro meso, and macro. Of course, one can employ a quantitative measure and associate generic with 'plural', and meso with 'singular', but this is an awkward if not misleading way of stating the nature of our two theoretical concepts.

Runde (p. 363) concludes:

> given the almost identical way in which the two definitions are phrased and the observation that 'Meso is always generic', the reader might be forgiven for concluding that D&P regard the two domains as one and the same thing.

We would hope not. But if any methodological clarification is in place, then it should be the following: generic is not with 'plural' but with *general*, meso not with 'singular' but with *particular*. All evolutionary economic analysis is generic, and such generic analysis is focused on meso analysis.

Correspondingly, the misunderstanding Runde brings to the concept of meso, he then consistently also affords to *micro* (p. 364):

> While according to D&P's general definition, the 'generic' explicitly comprises the domain of rules *and* their carrier populations, micro – and therefore micro generic – is explicitly restricted to the *individual* rule carrier as 'the building block of meso analysis' (D&P 27). D&P cannot have it both ways. Either the general definition of generic needs to be reformulated in way that avoids

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> reference to carrier populations, or the definition of micro needs to be revised so as to include carrier populations as well as individual carriers.

Yet we maintain that neither *generic* nor *micro* needs to be redefined. Generic micro is a member of generic meso (population) and the latter is a component part of a generic macro structure. For instance, an individual is a member of a meso population, constituting an institution A, and the latter is a component part of an institutional macro structure composed of many meso institutions A, B, C.... Our argument in the book is arguably more intricate and complex than this, but this simple exposition may suffice to demonstrate that the overall theoretical structure is coherent and does not require redefinition.

Subjects and objects

Runde is also critical of the distinction we make between subject and object, both as carriers, and between subject rules and object rules. Occasionally, he uses in this context various (analytical) terms adopted within the framework of Generalized Darwinism (Hodgson, 2002; Aldrich *et al.*, 2008). In our unified approach, the term carrier embraces subjects, that is humans with 'subject-ive' characteristics, and objects, that is entities that do have 'object-ive' characteristics, for example techniques, machines, tools, or social blueprints. We have introduced the distinction to analyse the co-evolution between subject rules and object rules, on the one hand, and to have a sound analytical basis for the theoretical discussion, when both are involved in a particular theoretical instance, on the other hand.

While Runde underrates the significance of the former, he has the following to say about the latter (p. 373):

> the subject rule/object rule dichotomy is a false one to the extent that it suggests that the rules that organize social organizations or technology ('object rules') and those governing the activities of individual actors ('subject rules') are different types of rules. In many cases, in my view, the opposite is true, namely that subjects and objects are governed by the same rules.

This begs the question: What are the 'same' rules? What makes for the difference to which the 'same' refers? We conceive individuals as being embedded in an organization defined by social rules and/or technical rules. In an economy, the two rule sets are mostly interconnected and effect a given operation. The individual is a carrier of cognitive/behavioural rules that is governed by and is based upon the organizational rules it reacts to and influences. In no way are the rules governing cognition and individual behaviour the same as those that serve as blueprints for organization of the social and technical world. A clear distinction between the two not only opens up the possibility of assessing cognitive economics issues (where 'cognitive rules' abound), but also helps when analysing issues where both necessarily play a role. For instance, a firm has organizational rules that govern the organization of people. These are object

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rules. But that organization also carries subject rules in the agents that constitute that organization. Now both of these can change independently. Without this distinction, we are bound to rely on a representative agent conception, as any individual can be replaced by another without changing the actual organization.

Generic individualism and choice

Runde is also unimpressed with the alleged locus of individualism and choice in our framework. He charges, in effect, that by smuggling generic individualism and choice back in, we are implicitly rejecting social concepts of existence and denying the importance of social rules.

> And if so, generic methodological individualism would suffer from very much the same kind of deficiency as the more familiar 'operant' (D&P 22) version of methodological individualism associated with mainstream economics: i.e. just as there are no preconstituted 'atomistic' agents that exist independently of society and that can then be treated as the 'building blocks' of larger social phenomena, there may be no such thing as purely preconstituted rule carriers that can be analysed independently of their location in society. (p. 374)

The conclusion that we feature 'preconstituted atomistic agents' is only possible if one ignores our whole framework where individuals are seen to interact in complex ways in the population meso as well as in the structured macro context. These complex interactions form the very core of our framework. So we agree that there is no such thing as a pre-constituted isolated rule carrier.

Yet Runde's critique does not stop here, as he is arguing that within 'atomism' we support a narrow concept of cognition and individual behaviour:

> it would be severely misleading for D&P's notion of *generic choice* to be extended to rules in general. While we may sometimes have occasion to reflect on a set of rules and decide to adopt them, in most cases the rules that affect us and which we live by are not the sorts of things that it is open to us to accept or reject... Far from being the objects of conscious choice, moreover, agents generally learn to act in ways appropriate to those rules in a subliminal way, perhaps even without their ever having internalized the rules concerned in even a subconscious way. (p. 375)

First, generic choice is only one (although an important) aspect of a micro trajectory. The trajectory comprises a whole set of variables defining generic cognition and behaviour, such as learning, adaptation, etc, all organized in terms of a three-phase trajectory of origination, adoption, and retention of a generic rule. Our book in Chapter 3 has an entire section on generic cognition and behaviour that seeks to make clear how generic choice is just one part of a broader theoretical package. We recognize that generic choice is made by individuals. Yet we also recognize that choice is always part of a social process. There is

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as we say (Dopfer and Potts, 2008: 23) both generic individualism and generic populationism.

Second, there are various kinds of rule, but not all rules require the same amount of conscious deliberation. Learning skills or adoption will be often conscious, but there are many social rules that will be adopted and followed by individuals unconsciously. A rule can be variously consciously or unconsciously adopted, as many rules are, and yet unambiguously exist (i.e. as relevant for evolutionary economic analysis).

Third, Runde argues that in any relevant 'model of man', that the subconscious must also be allowed for. Runde wants deeper analytic conception of man, but this is a key part of the model of *Homo Sapiens Oeconomicus* that we provide of the economic agent as a complex rule-making and rule-using agent. While a more explicit version of a 'neuronal model' that includes a discussion on the archeocortical and neocortical areas, and the left and right brain hemispheres etc., has been developed elsewhere (see Dopfer, 2004), there is sufficient discussion in our book that allows one to conclude that *Homo Sapiens Oeconomicus* is but a far cry of *Homo Oeconomicus*. Of course, we agree that besides 'conscious' there are also subliminal and subconscious ways to govern the complex process of the creation, choice, selective adaptation, and the temporary retention of the rules in the process of economic evolution.

Conclusion

In sum, Runde argues that we should use a social ontology; that we should adopt a social rule approach; and that our language should be sharper, better. All are fair points to make, but our contention is that Runde has failed to recognize the essential purpose of ontology in general and the purpose of the ontology of evolutionary realism in particular – in its significance for the systematic construction of evolutionary economic theory.

Runde (pp. 376–377) wants us to replace major concepts and terms with something more conventional, and that links better with a social rule approach, specifically suggesting that:

> D&P would have been on far safer ground had they stuck rigorously to a more conventional conception of rules, and presented what they call 'ideas' as generally accepted 'types' along with an account of how these may condition how people interact with the physical or social objects concerned.

Thus, Runde proposes to use the term 'rule' only to refer to social rules, and to replace all other rules by the term 'type'. In this way, he suggests not to talk about a cognitive rule but of a 'cognitive type', not of a behavioural rule but of a 'behavioural type', not of a technical rule but of a 'technical type, and so on. We do not see this as offering a particular language improvement. Ontologically, social rules are like technical rules, in that they are both an idea. There is no

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reason to split them at the theoretical level and call one (social) 'rules' and the others 'types'. We think our generic language is actually better because it captures how what exists from the ontological perspective is also what matters from the perspective of evolutionary economic analysis.

When the Austrian Emperor Joseph II first heard one of Mozart's new symphonies, he is reputed to have said 'Too many notes' – to which the young composer then replied, 'There are just as many notes, Majesty, as are required, neither more nor less.' With all due modesty, we feel similar about our ontological and theoretic framework, namely that there are just as many ontological and theoretic concepts as required, neither more nor less.

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