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Part 2: Applications of Behavioural Economics

Behavioral rules: Veblen, Nelson-Winter, Oström and beyond

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Abstract [160 words]

Rules as devices for the analysis of economic behaviour have earned increasing recognition since Elinor Ostrom's work was awarded the Nobel Memorial Prize in Economics in 2009. This contribution illustrates the use of such analytical device in three foundational pioneering areas of application: The sociology of Thorstein Veblen, the organisational studies of Nelson and Winter, and Elinor Ostrom's analysis of resource governance systems.

A comparison of their respective uses of the analytical concept of behavioural rules reveals their major objective: the systematic interpretation of empirical observations. While their works provide convincing evidence on the analytical power of rules, neither has realised the full potential for generalisation toward a theory of rule-based economics.

Such generalisation has recently been achieved by Dopfer and Potts. Adhering to 'instrumental realism' their theoretical framework integrates key elements of the reasoning about rules presented here, and achieves general applicability to the analysis of the origination and diffusion of rules, and of their use for economic operations.

1 Introduction

Any economist will agree to the definition of the discipline as the study of the behaviour of agents under conditions of scarcity. Anything beyond this common denominator, however, is subject to debate. Opinions start to diverge when economic behaviour is to be explained. For long and for many, the behaviour of economic agents has been understood as being guided by their pursuit of self-interest. It is actually possible to conceive of this as a rule: "for deciding upon one's economic behaviour, that is, one's operations, consider your self-interest". For

those confident that this one rule serves the purpose of explaining economic behaviour in the best possible way, there is no need to bother and read the remainder of this chapter. However, readers sharing my concern, whether one single rule may actually suffice to explain economic behaviour in a meaningful way, may find this introduction to behavioural rules a helpful reference.

Most economists actually do, and have been relying on a singular behavioural rule system for explaining economic behaviour. How can this be possible? – For answering this question, it helps to consider how the proponents of a singular rule logic have been countering recurring objections to their approach.

For instance, charity is frequently cited as contradicting self-interest. In response, counterarguments first point to related increases in public safety as being linked to self-interest. Next, when challenged for the issue of free-riding, singular rule advocates point to the utility that agents derive from charitable deeds. From their perspective, consuming charity increases utility just like any other consumption.

Consider another example of a challenging question: Why do certain agents abide to a law, even if being caught is unlikely and expected punishment is inferior to the benefits from infringement? How can this behaviour be guided by self-interest? – Following the advocate of a singular rule approach it perfectly can: “It is in the agent’s preferences. Some agents just prefer to respect the law. Doing so increases their utility.”

“But what about the representative agent”, the contender may ask. “Shall we model him as law-abiding or as law-infringing?” Here, the singular rule advocate will suggest modelling the representative agent as ‘law-abiding times $(1-\alpha)$ ’. The contender understands how a single Greek letter can thus help to homogenize economic agents.

“But isn’t there a tendency to trivial offense?” the contender continues. “Agents may be more likely to commit trivial offenses, while refraining from major offenses.” For the singular rule advocate this can also be easily accommodated. He will simply model the representative agent as ‘law-abiding times β times $(1-\alpha)$ ’, where β is a weight for the severity of the offense. The contender is baffled: “Greek letters can even make sure that individual agents are acting consistently!”

“But then”, he may object, “don’t these things change over time?” – The singular rule advocate will firstly point out that this is very unlikely. Secondly, if at all it happens only exogenously, so it cannot be helped. And thirdly, the economy will revert to equilibrium anyways. He admits that some macroeconomists are adding time indices to their models. But this, he stresses, is just to illustrate their use of policy as creating external shocks.

In essence, we are all familiar with this entirely fictitious conversation. Yet, as trivial¹ as it may seem, this imagined discourse contains all cues needed to illustrate the merits of using a multi rule based approach. First, such approach allows for working with heterogeneous agents (between-heterogeneity). Second, it enables the conceptualisation of heterogeneous behaviour in an individual agent (within-heterogeneity). And third, it helps to accommodate change in the behaviour of agents.

In its most general reading, a rule represents a condition-action statement linking a condition to a specific outcome. Accordingly, rules can be formulated in the form: ‘in order to... do...’. Analytically, two distinctions are key. First, treatment of rules and corresponding agent behaviour requires separate analyses. And second, as Hamlin (2014) points out the “distinction between choice under rules and choice of rules” is of utmost importance.

A variety of differing conceptions have come to be linked to the term ‘rule’ with definitions varying from narrower to broader, equating or competing with the existing concepts of law, norms and beliefs, habits, routines, and many more. Regardless of these definitional issues, there are a number of important contributions using a multi-rule approach: Sections 2 through 4 documents the ‘reasoning about rules’ that can be found in the works of Veblen, Ostrom and Nelson-Winter. Section 5 then shows how their understanding of rules can serve as building blocks of a rule-based economics.

2 Thorstein Veblen: Determinism of economic behaviour

“The whole canon of his work and thought was beyond economics and fell primarily in the realm of cultural anthropology” (Ault and Ekelund 1988:431). This assessment of Veblen’s work points to the ‘nature of man’ as being centre-stage in Veblenian analysis. While being known best for his analysis of institutions, his works actually build on a distinct concept of individual behaviour. Veblen sees the economic agent as ‘a coherent structure of propensities and habits’ (1919b: 74). By the term ‘habit’ he denotes what one would nowadays consider a behavioural rule. Importantly, his analysis of institutions equally builds on behavioural rules. As Veblen puts it, “institutions are an outgrowth of habit” (1909:628).

¹ Those involved in economics teaching will remember similar objections being raised by the most impertinent among their students. As these questions typically interfere with the desperate efforts of the lecturer to leave an imprint of advanced mathematics on undergraduate students interested in human behaviour, they do not receive the reflection they deserve. Even where they do not curb the precious time reserved for teaching marginal calculus, they tend to be neglected for what they really are: a challenge to general equilibrium theory.

Heterogeneous habits as evolving patterns of behaviour

Veblen figures as one of the earliest opponents of a single-rule system in economics. For orthodox economics, he identifies “a preconception of normality”, that is, an “archaic habit of thought” to reduce “facts and events to terms of fundamental truth” and to make them “square with the requirements of definitive normality” (1898b:378–9). In essence, ‘definitive normality’ precludes the very existence of heterogeneity: “the human material with which the inquiry is concerned is conceived [...] in terms of a passive and substantially inert and immutably given human nature” (1898b:389).

Criticising this ‘state of economic science’, Veblen observes “the apparatus being invested with a tendency to equilibrium at the normal, and the theory being a formulation of the conditions under which this putative equilibrium supervenes” (1898b:383). Significantly, for Veblen, “the scheme arrived at is spiritually binding on the behavior of the phenomena contemplated” (ibid:383–4). Accordingly, “Features of the process that do not lend themselves to interpretation of the formula are abnormal cases [...] and are neatly avoided” (ibid:384).

In contrast, Veblen himself understands of such ‘abnormal’ features as represent entirely natural elements of a developmental course in the economic system. In his view, “each society and each stage of society had its own set of habits” (Ault and Ekelund 1988:435). This qualifies behaviour as being heterogeneous not only in a historical, but also in a spatial dimension. What is more, the term ‘set’ hints to Veblen’s understanding of economic man as a ‘multi-rule agent’. This worldview of Veblen’s, obviously, originates from his fortunate reasoning as a ‘cultural anthropologist’.

Veblen’s recognition of a multitude of behavioural rules becomes even more apparent in one of his early qualitative empirical studies on “the instinct of workmanship” (1898a). Veblen starts his argument by pointing out a central axiom of orthodox economics: “men desire above all things to get the goods produced by labor and to avoid the labor by which the goods are produced” (1898a:187). From the observation that many individuals work beyond the degree required to secure their livelihood, Veblen derives the existence of the said “instinct of workmanship”. As a behavioural rule it rivals the rule of ‘status’ followed by members of what Veblen later identifies as a ‘leisure class’ in his *opus magnum* (1899b).

Institutions as groups with shared rules

In Veblen’s understanding the very same ‘leisure class’ represents an institution (Veblen 1899b:22). In the same vein he also counts ‘ownership’ and ‘money’ as institutions (1899b:ibid, 1899a:405). From this, it becomes obvious that institutions in a Veblenian

reading are not restricted to formal organisations. For Veblen, an institution refers to the sharing of a specific rule by a group of stable size where the rule may be considered “the dominant economic and legal feature of the community’s life” (1899b:117). In the case of the leisure class, ‘consumption for status’ is the shared behavioural rule, for ownership the social rule of ‘respecting property’, and for (fiat) money the cognitive rule of ‘trade goods against paper’. In essence, Veblen’s understanding of institutions follows a population approach.

Evolution of rules as innovation and adaptation

A witness of the industrial revolution, Veblen was sceptical about the contemporary neglect of technological progress in economic theory: To Assume, that “the state of the arts remains unchanged, [...] is [...] an exclusion of the main fact” (Veblen 1899a:421–2). Veblen also specifies the ‘locus of change’ in the process of evolution: “The physical properties of the materials accessible to man are constants: it is the human agent that changes, –his insight and his appreciation of what these things can be used for is what develops” (1898b:387–8).

In Veblen’s understanding, behavioural rules in large part are “handed down from the past” (1899b:191). During this process, however, rules may become subject to change through adaptation, and such change potentially causes further change:

“The growth of culture is a cumulative sequence of habituation, and the ways and means of it are the habitual response of human nature to exigencies that vary incontinently, cumulatively, but with something of a consistent sequence in the cumulative variations that so go forward – incontinently, because each new move creates a new situation which induces a further new variation in the habitual manner of response”

(1909:628).

Veblen only hints to some of the mechanisms through which rules are changing: “Not only is the individual's conduct [...] directed by his habitual relations to his fellows in the group, but these relations [...] vary [...]. The wants and desires, the end and aim, the ways and means, the amplitude and drift of the individual's conduct are [...] of a highly complex and wholly unstable character” (1909:629). The behaviour of agents, thus, is seen to depend on the social context, which – in turn – is subject to change. This interdependency lies at the heart of what Veblen sees as a path-dependent process: “The economic life history of the individual is a cumulative process of adaptation of means to ends that cumulatively change as the process goes on, both the agent and his environment being at any point the outcome of the past process” (1898b:391).

Limitations

Veblen's work has been criticised for being "an economics [...] without theory" (Langlois 1986:5). While he employs the concept of rules (habits) and rule populations (institutions) in a consistent way, it is true that he did not spend much effort on generalising his findings. As a consequence, Veblen's works may be disappointing to the reader looking for explicit theoretical and analytical guidance.

In spite of these limitations, contemporary rule economics is much indebted to Veblen in two respects. First, Veblen's voice was among the early scholarship questioning the appropriateness of single-rule theorising. Through his qualitative empirical work on the development of societies he impressively documented the emergence of a behavioural rule which has largely replaced 'profit maximisation' in growing layers of society: status. And secondly, his analyses of change in individual agents and of the historical development of societies represent important groundwork for the endogenisation of rule adoption and diffusion.

3 Nelson-Winter routines building on behavioural rules

In their own words, Nelson-Winter's "real concern is with organizations" (1982:72). And indeed these scholars are known for their groundbreaking research on the behaviour of organizations. Importantly, however, their understanding of organisational routines builds on an analogy to individual behaviour:

"We propose that individual skills are the analogue of organizational routines, and that an understanding of the role that routinization plays in organizational functioning is therefore obtainable by considering the role of skills in individual functioning."

(1982:73; similar 2002:30)

Nelson-Winter's use of the term 'skill' is particular and slightly differs from its common use: "skills [are] considered as units of purposive behavior" and are "programmatically", in the sense that they involve specific procedures. This exactly corresponds to the definition of 'behavioural rules' in current discourse.

For understanding why Nelson-Winter only sparsely and rather accidentally² use the term 'rule' for designating recurring patterns of individual behaviour, reflecting on their situation

² Compare, for instance, phrases like "the distinction (and relationship) between a behavioral routine or rule and a particular action" (1982:42).

in the early 1980s is helpful. As is the case with every new theorizing Nelson-Winter were carefully developing their language. In fact, 'rule' was not even a candidate in their list of alternative denominations: "plan", "script", "habit"³, "routine" and "program" (1982:74). At that time, the term 'rule' had two predominant uses: as a near equivalent to 'law and regulation' in the studies of Constitutional Political Economy (see, for instance, Brennan and Buchanan 1985), and for designating the process quality of decisions through the compound noun of 'decision rule'. In fact, Nelson-Winter conform to the latter use in their discussion of evolutionary modelling and growth theory, and to the former when discussing policy.

Multi-dimensional heterogeneity in behavioural rules

Drawing on Alchian (1950) Nelson-Winter see *imitation* as one important route for the adoption of behavioural rules. They hold that in the presence of tacit knowledge, the effectiveness of *instruction* will be significantly limited (1982:77). Recurring operations based on behavioural rules then enable their retention, or, in Nelson-Winter's more succinct words, prevents the skill from becoming "rusty" (1982:124). The set of skills, that is, of behavioural rules, which an agent has adopted and retains for operations, is defined in Nelson-Winter as the 'repertoire' of an individual (1982:98). Naturally, every agent acquires an individual repertoire which leads to acknowledging 'between-agent' heterogeneity.

With Michael Polanyi, Nelson-Winter share the view that behavioural rules might be followed subconsciously (1982:78). Nelson-Winter even argue that "the choice among behaviour options that takes place in the exercise of a skill typically involves no deliberation and it is a constituent of the capability that the skill represents." (1982:82). These arguments are in line with the empirical findings from research on consumers who frequently have difficulty in explaining their choices. Nelson-Winter see behavioural rules as being "context-dependent in various ways" and hold that their effectiveness "is particularly dependent upon detailed features of the *social* context." (1982:87). They also observe that the use of rules for operations also depends on a spatial dimension: "It is the differences between the environment in which a skill (and associated terminology) is developed and a relatively novel environment in which it is exercised that highlight its operational (and semantic) ambiguities" (1982: 91). In essence, this implies two more dimensions of heterogeneity: rules chosen for operations differ between agents in different environments, and even *within* individual agents depending on the respective situational social context.

³ Note the missing citation of Veblen's corresponding concept.

Nelson-Winter then propose that the aggregate of the skills of individuals makes for organizational capabilities. This, they argue, poses important coordination problems (1982:124-6). Organizations are countering these by using control tools such as “selection, modification, monitoring and adaptation” (1982:114). As will be discussed later, a contemporary approach to understanding these control tools relies on conceptualising them as *social rules*.

Dynamics

In contrast to their initial conceptualisation of organisational routines that strongly builds on individual skills, Nelson-Winter do not draw on behavioural rules for theorising about evolution. In their works, the modelling of innovation refers entirely to organisational routines aimed at achieving technological progress (see 1982:14; 2002). In Nelson-Winter’s view, innovation is one possible reaction to “changed market conditions”, with changes in prices serving as their predominant example (1975:163; 1982), the other possible reaction being ‘routinized response’. For describing “the variety of processes, mostly intentional but some not, by which rule changes take place”, Nelson-Winter use the term ‘search’ (1982: 171). In their view, search is equally conducted according to rules. As I will discuss later, such ‘innovation rules’ are conceived as second order rules in contemporary rule-based economics. With Schumpeter, Nelson-Winter hold that “reliable routines of well-understood scope provide the best components for new combinations” (1982:131).

Limitations

Nelson-Winter’s reasoning about rule innovation is strongly guided by two concerns: the intent to position their theorising against orthodoxy; and their focus on analysing the evolution of rules in organisations. As a consequence, their work contains no substantial cues about the processes of change in rules retained by individuals such as the behavioural rules discussed here. In essence, behavioural rules in Nelson-Winter merely serve as a building block for their reasoning about organisational routines in terms of decision rules.

Regardless of these limitations and of some definitional issues, Nelson-Winter’s concept of ‘skills’ contains important clues for our understanding of behavioural rules. Firstly, behavioural rules are seen as units of programmatic behaviour that consciously and subconsciously guide economic operations. Secondly, in rule-based economic theory, there is multi-dimensional heterogeneity: the *repertoire* of rules retained differs between agents, and the choice of rules for operations by an individual agent differs depending on the social context and a spatial dimension. And most importantly, the *repertoire* of individual agents is subject to change, that is, it evolves.

4 Elinor Ostrom's conceptual legacy

Elinor Ostrom is best known for her analyses of common-pool resources. In her *opus magnum* „Governing the Commons“ Ostrom uses case studies as “an empirical basis for learning more about the effects of institutions on behaviors” (1990:xv) and aims to provide “more relevant theories of institutional change for policy analysis” (1990:191). When it comes to criticising economic orthodoxy, Ostrom is less outspoken than Nelson-Winter – let alone Veblen – typically giving implicit reference only: “Where behavior and outcomes are substantially different from the predicted, are there behavioral regularities that can be drawn upon in the development of improved theories?” (Ostrom, Gardner et al. 1994: jacket).

Definitions

In her 1986 presidential address to the Public Choice Society Ostrom noted: “Rules, as I wish to use the term, are potentially linguistic terms that refer to prescriptions” (1986: 5). With policy design as one of her main research subjects, it is not surprising that her understanding of rules at that time closely corresponds to that of scholars in Constitutional Political Economy. In her later writings, however, Ostrom pledges for a broad application of the concept of rules:

“Contemporary scholarship tends to focus on rules that are formally prescribed by a national government, but we must understand the process of rule change at a community level as well, even when the rules-in-use are not formally written by those using them to structure their daily interactions.”

(2011:322).

Such broad understanding of rules has important consequences for empirical research: “the rules affecting much of our behavior are relatively invisible, which challenges our ability to identify and measure them” (2011:318). From this follows the need for extensive qualitative fieldwork in inquiries of complex rule systems: “One needs to examine a full rule configuration, rather than a single rule” (Ostrom et al. 1994:77).

With Veblen Ostrom shares the understanding of institutions as resulting from rules “commonly known and used by a set of participants to order repetitive, interdependent relationships” (Ostrom 1986: 5). Thus, by referring to ‘sets of participants’ Ostrom implicitly endorses Veblen’s population approach to the definition of institutions.

Ostrom's rules are for organising individuals

Arguably owing to her research focus on local communities, Ostrom holds that rules always exist for a social purpose: “All rules are the result of [...] efforts to achieve order and

predictability among humans” (1994:38). In Ostrom’s view, behavioural rules are thus always pertaining to the social behaviour of agents. Rules exist for the plain purpose of defining a system design. In these designs, social behaviour features as the *object* of rules. Accordingly, rules pertaining to individual agent behaviour as a *subject* are not considered in Ostrom’s approach.

Her empirically developed framework for the analysis of rule systems consists of seven ‘classes’ (1994: Chapter 2), or ‘types’ (2011:323-4) of rules:

- Position rules describing conditions and rights for a position in a social system,
- Boundary rules regulating entry to and exit from the system,
- Choice rules prescribing choice conditions for specific positions,
- Aggregation rules specifying voting processes,
- Information rules indicating transparency levels for specific positions,
- Pay-off rules controlling the distribution of rents, and
- Scope rules specifying quantitative limitations of operations where monitoring of actions is difficult.

With all these types of rules referring to the agent as an object, Ostrom’s understanding of rules closely resembles to Nelson-Winter’s organisational routines. As is shown through her empirical studies of common-pool resource systems, this framework is powerful for mapping the functioning of complex social organisation.

Ostrom’s agent: implicitly heterogeneous and individually rational

Ostrom does not explicitly argue that agents in a community may be heterogeneous. However, she implicitly acknowledges analytically significant differences between agents. This becomes obvious where she states the necessity to distinguish “subsets of appropriators”, that is, of agents in her empirical analyses of common-pool resource systems (1990:210).

In a similarly implicit manner, Ostrom hints to differences in the set of rules adopted by individual agents where she comments on some of the difficulties in her empirical work: “Rule following or conforming actions are not as predictable as biological or physical behavior explained by physical laws” (1994:40).

The only type of heterogeneity that Ostrom explicitly acknowledges refers to a spatial dimension. Thus subscribing to a localist approach (see also Blind 2012a), Ostrom calls for “specialized rules that apply to localities” (1990:214). Note that this type of heterogeneity again does not refer to individual agents but to agent communities.

In contrast to Nelson-Winter, Ostrom sees agents as being entirely conscious of their rules and rule-following. In her view, this results from a need to “formulate” rules (1994:40). If

agents eventually act unconsciously, they follow what Ostrom refers to as ‘internalized norms’ (1990:193). In Ostrom’s view, however, both cases are still in line with “a general conception of rational action” (1990:ibid).

Ostrom’s ‘defense of rationality’ continues in her interpretation of yet another empirical observation. Studying the development of rule systems she observes that the choice criterion in many agents is sufficiency, rather than optimality: “if individuals find rules that work relatively well, they may have little motivation to continue the costly process of searching for rules that will work even better”. (1990:211).

Evolution of rule system as a semi-conscious search process

In Ostrom’s view, the need for theorising about change in rule systems arises from the simple observation that “rules can be changed while physical [...] laws cannot” (1986:6). With Nelson-Winter, Ostrom shares a critical stance where it comes to explaining change in rule systems by means of orthodox theory:

“Profit maximization is a useful theoretical tool for predicting behavior in static market situations; it does not enable a theorist to predict which firms are most likely to survive or to predict innovative technological or institutional changes [...] It is thus not a judicious theoretical strategy to presume that choices about rules are made to maximize some single observable variable.”

(Ostrom 1990:207).

Ostrom’s opinionated statement builds on her general understanding of rule configurations as complex systems with feedback mechanisms: “Change in one rule affects the working of others” (1994:77). As another feature of such complexity, Ostrom points to different layers of rules active in a configuration: “A theory of self-organization and self-governance of smaller units within larger political systems must overtly take the activities of surrounding political systems into account in explaining behavior and outcomes” (1990:190).

In conceptualising the potential origins of change in rule systems, Ostrom relaxes the ‘consciousness condition’ that she upholds for rule action: “Rule changes may result from self-conscious choice or may evolve over time” (1994:77). In her late writings one finds explicit notion of change in rule configurations “as a result of many self-conscious or unconscious mechanisms” (2011: 325). Notably, the latter are seen to “include forgetting” (ibid:326).

In the course of change in rule configurations, Ostrom identifies „variables that are most likely to affect decisions about continuing or changing rules”, citing “expected benefits,

expected costs, internalized norms, and discount rates” (1990:192-3). The first two of these obviously reduce to the net benefit of a discrete change in rules and are entirely operational. Equally, discount rates reflect a single cognitive rule, namely the rule of preferring current over future pay-offs. From the perspective of contemporary behavioural rule economics, her notion of ‘internalised norms’ is key. These norms represent cognitive rules of normative content that govern the individual behaviour of agents. For the adoption and retention of this class of rules Ostrom identifies “internal psychic and external social cost” (1990:206) as the main influencing factors. Unfortunately, Ostrom only devotes but a single page on this in the exposition of her inductively derived theoretical framework (1990:Chapter 6).

Limitations

Ostrom’s inductively derived theoretical framework is only general to the analysis of common-pool resource systems. While it may be extended to cover other systems of social rules as well, it remains highly specific in its contribution to a rule-based economics. In essence, Ostrom’s work is essential to the scholar concerned with the design and enforcement of rules for governing the *social* behaviour of agents. It is, however, much less instructive in explaining the evolution of rules⁴. Also, Ostrom’s work hardly contributes to understanding the rules guiding agents’ *individual* behaviour.

Adding to her empirical focus on common-pool resource systems, one can identify Ostrom’s preoccupation with game-theoretic argument as explaining the origin of these limitations. Game theory – for all its merits – does hardly allow for accommodating quality and heterogeneity. It is only in her reasoning about rule choice and rule innovation that Ostrom briefly departs from the track of game theory. In essence, this means that most of her work remains loyal to the single (behavioural) rule dogma of orthodox economics: self-interest⁵.

In spite of these limitations, her work represents a groundbreaking step towards a theory of rule-based economics. First, because she has demonstrated how ‘reasoning with rules’ allows for obtaining superior empirical results. Second, and likely even more importantly, because her work delivers strong argument supporting the cause of heterogeneity in economic theorising. This becomes evident where she argues that a rule-based economics should strive for “a framework rather than a model [...] because one cannot encompass (at least with current methods) this degree of complexity within a single model” (1990:214).

⁴ The theoretical contribution describing factors likely to enhance rule innovation in terms of ‘institutional innovativeness’ spans less than one page in her *opus magnum* (1990:211).

⁵ Note how even the adoption of norms (rules guiding individual behaviour) enter her model in terms of “internal psychic and external social cost” (Ostrom 1990:206).

5 Reflections and synthesis

One finds hardly any explicit reference to Veblenian thought in the works of Nelson-Winter and Ostrom. While the former derive much inspiration from Schumpeter's writings, their *opus magnum* does not mention Veblen a single time (see Fagerberg 2003: 128)⁶. Equally, Ostrom's "Governing the Commons" does not relate to Veblen at all. This finding also extends to both Nelson and Winter's and Ostrom's other works.

For understanding such absence of explicit references, it may help to reflect on the intentions of Nelson-Winter and Ostrom. Through their corresponding works, they aimed at diffusing radically new ideas into a wider audience in economics. In pursuing this objective, they have avoided to overtly take reference to scholarship discredited in the view of many economists, such as Veblen's.⁷ Put simply, these authors may have consciously avoided referencing Veblen (see also footnote 3) for the sake of propagating their own ideas more effectively.

However, the absence of such manifest linkages has little – if any – significance for the existence of implicit commonalities. At closer inspection, one finds important linkages between the works of Veblen and those of Nelson-Winter and Ostrom. Nelson-Winter share with Veblen two fundamental convictions. Firstly, they acknowledge Veblen's view that economic agents act according to a multitude of rules in contrast to the singular rule world purported in much of received economic thinking. Secondly, they share Veblen's understanding that rules do not represent a *fixum*, but that they evolve. Ostrom, in turn, endorses Veblen's understanding of institutions as a community of common rule followers. Thus, commonalities refer to the heterogeneity of agents and agency, of the historicity of economic development and of institutions as rule populations.

As another observation from the study of the works of Nelson-Winter and Ostrom, cross-references between these contemporaries are scarce and of a rather general nature. This absence may be seen as a 'side-effect' of the strong focus on their respective research areas: large organizations (Nelson-Winter), and resource governance systems (Ostrom). As a consequence of such focus on very complex phenomena and the analytical depth of their

⁶ In spite of both Veblen and Winter holding a Yale PhD!

⁷ For instance, Lionel Robbin's 1932 *Essay on the Nature & Significance of Economic Science* contains a representative judgment on Veblen's work: "In the history of applied Economics, the work of a Jevons, a Menger, a Bowley, has much more claim on our attention than the work of, say, a Schmoller, a Veblen, or a Hamilton. And this is no accident. The fruitful conduct of realistic investigations can only be undertaken by those who have a firm grasp of analytical principle and some notion of what can and what cannot legitimately be expected from activities of this sort." (compare p. 116 of Robbins' 1945 extended and revised 2nd edition).

models, producing an integrated theoretical approach to the study of rules governing economic behaviour in general was but a secondary objective to them.

Late in her career, Elinor Ostrom addressed the need for such generalisation: “If we are to make headway in understanding how rule systems change, and develop a general theory of institutional change, we must widen our view and study a much more diverse set of rule systems” (2011:335). For furthering that purpose, she designates Dopfer and colleagues’ deductively derived theoretical framework (Dopfer 2001; Dopfer 2004; Dopfer 2005; Dopfer and Potts 2008; Dopfer 2012) as a “very interesting approach” (2011:333).

A unified rule taxonomy

Continuing the quest for a common terminology in rule-based economics (see Ostrom 1986:4) Dopfer has developed a unified concept of rules. His rule-based approach (RBA), Dopfer argues, may be referred to as a “Schumpeter–Veblen program” (Dopfer 2012: 157) and unites the essentials of the works introduced here.

The RBA proposes a taxonomy of four classes of rules (Dopfer and Potts 2008:6-10): cognitive, behavioural, social and technical. As a mutually exclusive and collectively exhaustive concept, this taxonomy allows for fully capturing the diversity of economic phenomena and helps to resolve definitional issues such as Veblen’s “mental habits” (see 1898b; 1919a:40), Nelson-Winter’s ‘decision rules’ and Ostrom’s distinction of strategies from rules (2011:321-2), which may all be more aptly understood of as cognitive rules. In a similar vein, Nelson-Winter’s ‘organizational routines’ and ‘control mechanisms’ as well as Ostrom’s ‘information rules’ (2011:Table 2) pertain to the category of social rules. And prominently, Nelson-Winter’s skills and Ostrom’s ‘internalized norms’ correspond to the behavioural rules discussed here. Appendix 1 specifies these commonalities.

The RBA captures evolution as a diffusion process of a novel rule during which an increasing number of agents adopts that novel rule; potentially at the expense of a pre-existing rule. In that context, Veblen’s understanding of a “leisure class” and of “ownership” as institutions (Veblen 1899b:22), mirrors the RBA reading of institutions as rule populations with stable adoption rates. To provide another example, consider the problem of the reach of rules coded in law from the introduction to this article. By the theoretical concept of populations of agents retaining a rule, the RBA conceives of “abiding to law” as a rule in itself⁸.

⁸ The extent to which this latter rule has been adopted and retained in a society also aptly explains for the existence of “institutional voids”.

Adding to the distinction of rule classes, the RBA introduces *three orders of rules*, similar but fully general to Nelson-Winter's hierarchy of rules (1982: 18). They help to understand the different ways in which rules are active in the economic system. At the centre of orders, '1st order operational rules' provide the direct base for operations and represent a direct equivalent to Ostrom's earlier 'operational rules' (Ostrom 1990: 50) including her 'choice', 'position' and 'pay-off rules' (Ostrom and Basurto 2011: Table 2). In turn, rules controlling the overall functioning of an economy are designated as '0th order constitutive rules'. They represent the constituent basis on which all economic activity takes place and define the "opportunity space of permissible 1st order operations" (Dopfer and Potts 2008:9). In Ostrom's writings, this order of rules is referred to as 'constitutional choice rules' (1990: 50) and as 'boundary rules' (2011:Table 2). Finally, there are rules pertaining to change and innovation in a social system. Nelson and Winter refer to these as 'search rules' (1982:20). In Ostrom, we find examples of this order of rules where she refers to 'collective choice rules' (1990: 50). The RBA restates these mechanisms in a more general terminology by denoting as '2nd order mechanism rules' any rule that impacts on the propensity to create, adopt and retain new rules. Appendix 2 summarises these correspondences.

Beyond this helpful unification of terminology, the rule-based approach generalises an important number of further phenomena. For instance, it makes explicit the distinction between rules and corresponding operations that is still partly implicit in both Nelson-Winter's and in Ostrom's writings. It also fully generalises processes of change and employs heterogeneous agents open to learning. It thus represents a fully general framework to "the study of the evolution of human societies" as envisioned by Ostrom (2011:333).

Back to the field: the RBA in empirical research

As the RBA itself does not include practical guidance on how it can be used for developing hypotheses in empirical research, and on how the analysis can be operationalised, I have elsewhere developed a corresponding methodological template (Blind and Pyka 2014). We propose a four-stage methodology that starts with setting a response rule population, an investigation period (owing to historic time), as well as a spatial delimitation (owing to the susceptibility of agents to the social context).

In the second stage, we establish the ensemble of rules potentially influencing the size of the response rule population that Ostrom refers to as 'rule configuration'. For identifying these rules we suggest to connect extant theoretical work in economics to that of other disciplines, and to include insights derived from interviews of experts, as well as of rule adopters and rejecters.

The third stage commits to the extraction of those rules from the configuration that effectively have caused change in the response rule populations. In essence, this represents an *ex ante* significance test. For effecting this test, we propose to assess all rules in the configuration against two criteria for identifying instances of change during the investigation period: (a) Change in the size of the respective rule populations, and (b) change in the strength of influence on the response rule population. Rules, for which either or both criteria are different from zero, qualify as part of a changing sub-system, i.e., as part of the causal core of the model of change.

Finally, in the fourth stage we develop and test corresponding hypotheses pertaining to causal relationships between factor rules and the responses. For doing so, we suggest to distinguish subgroups of agents in the response rule population, an approach already successfully employed by Ostrom.

A number of recent empirical investigations have built their inquiries on Dopfer and Potts' rule-based approach (Blind 2012b; Grebel 2013; Wäckerle 2013). For example, in a study of entrepreneurial attitudes in contemporary Japan (Blind 2012b), the rule-based approach was instrumental for conceiving of such attitudes as a 2nd order cognitive rule. Relying on the methodology sketched above, it was also possible to quantitatively evidence the sustained influence of a rule pertaining to the status of self-employment, or in Veblen's words "employment proper to the several classes" (1899b:1).

6 Conclusion and outlook

For long, orthodox preconceptions have prevailed as the dominant cognitive rule that has effectively hindered the furthering of economic theory. Veblen was one of the early observers of this phenomenon: "having once been accepted and assimilated as real, though perhaps not as actual, it becomes an effective constituent in the inquirer's habits of thought, and goes to shape his knowledge of facts" (1899a:422). The reasoning about behavioural rules in Veblen, Nelson-Winter and Ostrom presented here has documented their respective contributions to the project of liberating economic theory from these preconceptions.

'Diversity and change' may serve as common label for the empirical work of Veblen, Nelson-Winter and Ostrom. Veblen's stance is representative of this: For him, each society and each stage of society has its own set of habits. Here, the 'set of habits' encompasses 'diversity', and the 'stages of society' result from 'change'. In turn, Nelson-Winter have used firms for an integrated analysis of both phenomena. Arguing that firms have different 'search processes',

they posit that change will occur, and that it will occur in diverse ways. Among the three contributions discussed here, it is Ostrom's work that relies most strongly on empirical observation for (inductive) theoretical reasoning. Employing a less general concept of discrete heterogeneity – through agent subgroups – she arrives at a fully operational framework for dynamic studies of common-pool resource systems. Recently, Dopfer and Potts have achieved systematic synthesis of the main theoretical postulates of Veblen, Nelson-Winter and Ostrom in their *General Theory of Economic Evolution* (Dopfer and Potts 2008).

While Ostrom once argued that “no one can legislate a language for a scientific community” (1986:5), Dopfer and Potts have offered the heterodox community a common terminology for accommodating the theoretical body of Veblen, Ostrom and Nelson-Winter. At the same time, the rule-based approach represents what Ostrom had asked for: an analytical framework, rather than a theory. Combined with an appropriate empirical methodology (e.g.. Blind and Pyka 2014), it promises to become an influential device in the adjustment process of some prevailing ‘preconceptions’, which – as Veblen holds – happens “only tardily and concessively” (1925: 49).

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Appendix 1: Rule classes in Veblen, Nelson-Winter, Ostrom and Dopfer-Potts

Classes of rules				
	Subject rules		Object rules	
Dopfer-Potts	Cognitive	Behavioural	Social	Technical
Veblen	Mental habits	Instincts (e.g. of workmanship); ideal of conduct		-
Nelson-Winter	Decision rules (e.g., investment rule)	Skills	Organisational routines; capabilities; control mechanisms	Technology
Ostrom	Strategies	Internalised norms	Information rules	-

Appendix 2: Orders of rules in Veblen, Nelson-Winter, Ostrom and Dopfer-Potts

Orders of rules			
Dopfer-Potts	0 th order Constitutional rules	1 st order Operational rules	2 nd order Mechanism rules
Veblen		Habits	
Nelson-Winter	'Institutional matters' (e.g., property rights, contracts)	Procedure rules	Search rules
Ostrom	Constitutional choice rules	Operational rules; position rules; pay-off rules	Collective choice rules; information rules