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On novelty and economics: Schumpeter's paradox

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Abstract Is *novelty* as such an *intra* or *extra*-economic phenomenon? Must we, necessarily, treat novelty uniquely as something that, from outside of an economic system, has an influence on it and on its evolution? Is it not a paradox to say that something that has no economic meaning is able to explain economic change? If so, is this paradox present in the Schumpeterian view on development? In this paper, we present what will be called the Schumpeter paradox: denoting nominally 'novelty' and 'creator personality' as its source, and 'norm change' as an analytical tool, is insufficient to separate different fields such as development and growth, if previously (and as a necessary condition) one does not develop a theoretical framework that has a natural place for the elements of 'novelty' and 'creator personality' that can support such a difference. Nobody should pretend that the study of economic development processes is straightforward. There are good grounds for believing that the innovation 'black box' will remain partially closed to economic analysis. However, this does not mean that nothing substantial may be said about novelty and economic development. How to tackle with this topic (and so, with the above-mentioned paradox) will require a change of perspective: a heuristic task should be undertaken. The 'action plan approach' here proposed would provide a coherent analytical framework to tackle with this kind of paradox.

Keywords Novelty · Development · Action plan · Self-transformation · Economic change

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1 Introduction

The recent discovery of an unpublished text by Schumpeter on *development*¹ constitutes a unique occasion for reflection on the old topic of *novelty* in economics. In his paper, Schumpeter tackles the problem of defining the concept of development, and he considers an ambiguity that is inherent within any such definition. The source of the ambiguity is, in his opinion, in the habitual conception of development in the particular sense of defining the process under which something that is essentially unchanging, unfurls or unfolds itself. ‘[E]xpressions such as development or unfolding suggest the idea that some of what is developing has to remain identical.’ (Schumpeter [1932] 2005).

The alternative point of view, according to Schumpeter, unites the idea of development with that of novelty, where this latter is understood as the appearance of something that is intrinsically new, i.e., something that is not contained within the environmental data and that is not a logical consequence of the unfolding of the previously existing state. This is Schumpeter’s argument which, as Hume’s with argument (Hume [1739–1740] 1978), relies on the fact that pure logic can never produce a new idea. However, something that is intrinsically new could be a logical consequence of the unfolding of the previously existing state if this previous state is defined widely enough to include connections (Potts 2000) that no one has yet made; but which is one of very many possible logical consequences (*possible* logical consequences but not *necessary* logical consequences).² Throughout this paper, novelty refers to the occurrence of something that has not previously happened inside the *structural elements* of the economy, as will be seen. In the Schumpeterian approach, novelty ‘as such’ is a central point of discussion, since it is a substantial explicative factor of the transformation of one economic reality into another. This non-identity—that distinguishes between growth and development—is a consequence of novelty. Therefore, a fundamental economic problem arises in Schumpeter’s work: in his view, novelty has an extra-economic explanation.

Recent works in evolutionary economics, following the Schumpeterian tradition, recognize that novelty plays an essential role in explaining *economic change*. However this topic has a difficult analytical treatment.³ A central focus of evolutionary dynamics is processes which have the capacity of expanding their state space through the generation of previously non-existing states. In this sense, evolution is seen as ‘the *self-transformation* over time of a system under consideration.’ (Witt 2003a, p. 13).

As Witt (1993, p. 91) points out, theories of evolution have to satisfy three necessary conditions to explain self-transformation. ‘They must (1) be dynamical;

¹ Schumpeter ([1932] 2005 *Entwicklung*. [Development] Festschrift offered to Emil Lederer in honour of his 50th birthday on 22 July 1932.

² That is the impossibility, at least for human beings, of deducing all possible consequences of all possible combinations that opens up the possibility of continuing endogenous novelty. Agents need to cope with their inherently incomplete, fallible, and therefore conjectural knowledge of the world. For this they build fairly stable interpretative frameworks and action procedures which permit them to make decisions in a context of substantial uncertainty (in the sense of Knight 1921).

³ Foster and Metcalfe (2001, p. 9) place the inclusion of novelty into the economic discourse at the frontier of evolutionary economics. In the context of economic policy making, Witt points out that ‘[d]ue to the epistemological boundaries implied by the very nature of novelty, instrumental policy analysis reaches its logical limitations here.’ (Witt 2003b, p. 86)

(2) deal with nonconservative systems (...); (3) cover the generation and the impact of *novelty as the ultimate source of self-transformation.*' (Italics added.) Conditions (1) and (2) are necessary ones, but not sufficient to explain self-transformation. Then, if *growth* is understood as an 'incremental adaptation to changes in the economic data' (Becker et al. 2002, p. 3), these two conditions cover economic growth. On the other hand, if 'development' means endogenous structural self-transformation (as will be shown in Section 5), the third condition is essential: the role of novelty has to be clarified in this context.

However, this seems not to be the case: '[u]nfortunately, novelty is an amorphous concept. By definition, the informational content, the meaning of the properties of what newly emerges, cannot be anticipated.' Witt (1993, p. 92).

It should be noted that *not to explain novelty within the explanatory domain of theory would mean not to explain, in fact, development.* i.e., not to explain endogenous structural self-transformation. Is it not a *paradox* to state that something that has no economic significance is the principal determinant of (endogenous) economic change?⁴

A clue is provided by Witt himself: '[i]t is therefore sometimes thought that theoretical constraints cannot be imposed on the infinite realm of possible novelty, which thus implies that novelty must be treated as exogenous.' (Witt 1993, p. 92) Yet, according to him, this view is unnecessarily restrictive, as it leads necessarily to the above mentioned paradox.

Witt's distinction between the emergence and the dissemination of novelty is a proposal to overcome these difficulties.⁵ However, as he notes, two main explanatory problems arise. On the one hand, there is a necessity to provide explanations for the phenomena and conditions without knowing the meaning of the (next) emerging novelty. This kind of problem gives rise to what Witt calls *pre-revelation analysis*. On the other hand, another kind of problem arises once novelty has revealed its meaning: this is the *post-revelation analysis*. As a result, any theory of evolution has two tasks: '(1) to explain how, under what conditions, novelty is being generated within the explanatory domain of theory; and (2) to explain what happens as a consequence of novelty having emerged within the domain. The bulk of explanatory efforts usually focuses on the second task.' (Witt 2003a, p. 13).

Therefore, the mere recognition of novelty as a key element in explaining economic change is not sufficient. It is necessary to identify certain general and permanent principles that could explain the role that novelty plays in the explanation of evolution within the economic domain. However, it demands, as Witt (2003c, p. ix) points out, as previous step a *heuristic task*. This task consists in formulating concepts and instruments that permit one to describe and to analyze economic change and its interplay with novelty. (This task is the 'new task' Schumpeter [1932] 2005 himself proposed to the profession.) Hence, novelty would not remain an amorphous concept, as its properties, morphology, and meaning could be explored.

The approach proposed in this paper focuses primarily on this heuristic task: developing a conceptual framework within which to analyze the role of novelty in

⁴ Metcalfe (2004, p. 158) points out a similar (and very close) paradox: 'entrepreneurial behaviour is pervasive yet economic theory, with one or two very significant exceptions, has virtually nothing to say about either its significance or about its origins.'

⁵ 'Self-transformation can be split into two logically (and also usually ontologically) distinct processes: the emergence and the dissemination of novelty.' (Witt 1993, p. 13)

explaining economic change. This approach is based on the concept of an (economic) action plan, defined as the *projective linkage* of actions (means) to objectives (ends). The action plan approach, as will be seen, includes the element of connectivity (Potts 2000; Loasby 2001a) of actions to objectives, and pays special attention to the role of (changing) objectives in the explanation of economic change (Cañibano et al. 2004).

We begin with two main hypothesis. The first states that to treat novelty as something that has no economic meaning as the principal determinant of economic change, is a *paradox*: an exogenous explanation of an endogenous phenomenon is a contradiction in terms. Thus, in order to overcome this paradox, a new approach that permits an endogenous treatment of novelty is required. The second main hypothesis is that *action plan approach allows us to show the endogenous link between novelty and economic change*: this explains how and under what conditions novelty emerges *within* the explanatory domain of theory, and hence, how the previous paradox might be solved. If action plan approach is able to fulfil this objective, it will reveal its heuristic value.

The paper is organized as follows. Section 2 develops what we will call Schumpeter's paradox. Section 3 shows how this paradox is, in some way, present in recent research on this topic. These two sections refer to the first hypothesis. Section 4 presents a new conceptual framework, the action plan approach and its implications. Section 5 deals with the relationship between novelty and economic change (endogenous structural self-transformation). Sections 4 and 5 refer to our second hypothesis. The paper finishes with several concluding remarks.

2 Schumpeter's paradox

In relation to Schumpeter's views on novelty, we have noted two related points: (1) there is a fundamental element that distinguishes development or growth, i.e., novelty; (2) this element is linked with the very definition of development. Schumpeter considers that development can be explained, within the pure economic scenario, once the link between novelty and development has been located. 'By 'development' (...) we shall understand only such changes in economic life as not forced upon it from without but arise by its own initiative, from within.' (Schumpeter 1934, p. 63) This link is the *entrepreneur*, who is the bearer of novelty;⁶ this is the individual who alters the environmental data, who breaks symmetries and who introduces jumps. (Schumpeter 1934, pp. 81–82) Between novelty and development, the only connection is the figure of the entrepreneur—he is the link between two disjoint worlds: the world in which novelty is generated, and the world of economics.

Here then, in our opinion, lies *Schumpeter's paradox*. According to the Schumpeterian view, the entrepreneur (or 'creator personality' *sic*) allows, at most, that novelty has a name (that is, a label) and a location: 'a designation, in our case 'creator personality', merely provides a name, and at best a locality, for novelty, but nothing has been explained. Novelty is the true centre of everything that must be

⁶ 'The 'entrepreneur' is merely the bearer of the mechanism of change' (Schumpeter 1934, p. 61, n.1). However, Schumpeter ([1932] 2005) does not use this term, but rather the wider term 'creator personality.'

accepted as indeterminate in the most profound sense, and always coexists with a wide area of, in principle, determined circumstances and processes—a distinction to which I attach a certain importance because it appears to provide the essential solution to the opposition of determinism and indeterminism, as far as such a contradistinction makes sense in each particular science.' (Schumpeter [1932] 2005).

Thus, it seems that Schumpeter considers the entrepreneur as a black box from the point of view of economic theory. It is the label that, exogenously, introduces new data into the environment, acting as a vehicle of transmission of novelty (he/she is the bearer), but we *do not know* anything about *how* novelty is generated nor how it is incorporated. He concludes: '[f]rom the methodological standpoint of any adaptation-theory, novelty is incomprehensible' (*sic*: the term refers to *verstehende*). (Schumpeter [1932] 2005, p. 113) This argumentation is the base for establishing our first hypothesis: a mere exogenous explanation of an endogenous phenomenon is a contradiction in terms.

Schumpeter searches for a manner in which the transmission of novelty can be integrated (via the entrepreneur) into what he considers to be the most solid economic paradigm: the Walrasian system.⁷ Within this system, the current economic conditions are expressed in terms of 'norm': 'we would like to imagine all of the concrete relationships amongst the concrete data (at a historical point in time) that correspond to the Walrasian system as akin to a matrix, whose elements would have to be interpreted as the components of a vector. In what follows we summarily refer to these components as the 'norm' of the economy.' (Schumpeter [1932] 2005).

The consequence of novelty in such a system can only be understood as a change in the norm. Effectively, the incorporation of novelty introduces a jump (leap-like change) in the norm that is so important that it cannot be explained in terms of laws of motion that describe a gradual process of change from one norm (state) to another. Hence, '[t]his kind of 'novelty' constitutes what we here understand as 'development', which can now be exactly defined as: transition from one norm of the economic system to another norm in such a way that this transition cannot be decomposed into infinitesimal steps. In other words: steps between which there is no strictly continuous path.' (Schumpeter [1932] 2005, p. 115).

Once the question has been established in terms of a Walrasian system as a change of norm, Schumpeter considers the possibility of tackling many of the phenomena linked with development from the point of view of economic analysis, with one exception: there is no possibility of relating the different norms from purely economic postulates, since they are reliant upon the very essence of the matter, the kind and intensity of novelty that appears. 'As a rule—and nowhere more than in the economic sphere—we can therefore also predict a great deal about the phenomena associated with development. Only in one instance is prediction impossible (...) namely, regarding the substance of the matter, the kind and intensity of the novelty itself that might be arriving. We can also express it in this way: states can be derived from one another only within the same norm, that is, if the, respectively, earlier state is a variation from the representation of the norm of the equilibrium, and the following state appears to nothing but gravitate towards precisely this equilibrium. *But within the scope of any particular science, one norm*

⁷The exact way in which this idea is to be understood is debatable. Foster (2000, pp. 318–319).

can never be derived from another, with the sole exception of what above was termed growth.’ (Schumpeter [1932] 2005, p. 116, underlined in the original).

The paradoxical result is shown by the following question. Is there any essential difference between the Schumpeterian economic theory of *development* and the Schumpeterian view of *economic growth*?⁸ On the one hand, his theory of development attempts to explain it from the generation and transmission of novelty that produces transitions from one norm to another; but this novelty is *a fortiori* exogenous in his approach, because it is not itself explained. On the other hand, in relation to growth, he considers that the changes in the states of the economic system can be derived from one another *within* the same norm. Novelty *as such* is not required in this case.

However, denoting *nominally* ‘novelty’ and ‘creator personality’ as the source, and ‘norm change’ as an analytical tool, is insufficient to separate different fields such as development and growth, if previously (and as a necessary condition) one has not developed a theoretical framework that has a natural place for the elements ‘novelty’ and ‘creator personality’ that can support such a difference. Simply denoting such terms nominally, and therefore not explaining them (except as exogenous factors), blurs the boundary between what is development and growth, to the point that the boundary may even disappear.

Witt’s third condition (the theory must cover the generation and the impact of novelty as the ultimate source of self-transformation) is essential for the explanation of development: the role of novelty—and then, the content of entrepreneurship—has to be clarified in this context, as a necessary condition for the explanation of the transition from one norm to another. In the absence of this third condition, there is no means of explaining such a transition; such an explanation could only account for changes within the same norm. This may impede our ability to distinguish analytically between growth and development.

Any explanation of development that considers structural endogenous self-transformation would require a better analytical representation of novelty. Its role as generator of economic change should be clarified and, as a consequence, the role of the entrepreneur (not as a mere bearer) should be clarified, too. However, this may require a previous heuristic task (a ‘new task’), as has been noted.

3 Novelty in evolutionary economics

For evolutionary economists, the works of Schumpeter constitute a the most influential precedent (Nelson and Winter 1982). They agree with Schumpeter that the principal theme is economic change. Indeed, the dynamic processes studied by evolutionary economics cover changes in the economic aggregates—income, market shares, the evolution of productivity, etc.—produced by the continuous influence of entrepreneurial *innovations*; the emergence and diffusion of behavioral rules (routines), institutional change, industrial dynamics, etc. (Dopfer and Potts 2004; Saura et al. 2003).

⁸Some authors may conclude that there is no substantial difference, and hence, ‘[d]evelopment also shows that Schumpeter’s most important problem, the scientific explanation of novelty, remained unsolved.’ (Becker et al. 2002, p. 23).

Contrary to the positions of the neoclassical economists,⁹ for evolutionary economists economic growth is not the immediate phenomenon to be explained,¹⁰ but rather is an emergent property of the endogenous *transformation* process of the economic system. This self-transformation process is what constitutes their central theme of interest. As Witt (2003c, p. ix) points out, '[t]here is nothing invariable in the economy except its constant change. Technological change and the corresponding restructuring of industry are obvious examples.' In evolutionary economics, the dynamic properties of the economy depend on its structure, which in turn changes endogenously according to a dynamic process that depends on both production and the accumulation of novelties (innovations).

If evolution is defined as the self-transformation over time of a system, the question is: which is the source of self-transformation? (Foster and Metcalfe 2001; Witt 2003a; Metcalfe and Foster 2004) On the one hand, Foster and Metcalfe see the process of endogenous structural transformation (evolution) as a process consisting of at least three stages: variation, selection and feedback. (Saura et al. 2003, p. 66; Foster and Metcalfe 2001, pp. 9–10)¹¹ From the interplay between these stages, the qualitative transformation and structural change, fitness, etc., are all derived. However, in their view, the true engine of the evolution of the economy is the *generation of variety*: it is its own fuel, and 'to a substantial degree the innovation process is endogenous to the economic system.' (Foster and Metcalfe 2001, p. 10).

On the other hand, Witt focuses on self-transformation as the main phenomenon to be explained. In his view, 'this phenomenon can be split into two logically (and ontologically) distinct processes: the *emergence* and the *dissemination* of novelty.' (Witt 2003a, p. 13; italics in the original.)¹² This distinction permits one to treat evolution as more than just dynamics: the emergence of novelty deals with

⁹ Although Aghion and Howitt (1992; 1998) consider their models to be a natural progression of the ideas of Schumpeter (for example, the idea of 'creative destruction'), we can state that as far as the theme that we are discussing here is concerned, they cannot be considered to be a significant conceptual step forward. In fact, these models do not recognize the existence of an economic agent that generates novelties. Rather, they only consider an agent that merely introduces previously existing novelties into the stockpile. Furthermore, entrepreneurial activity fades, in many models, into an arbitrage condition. This same seems to be the case with Romer (1990) and Grossman and Helpman (1991). Additionally, earlier models of endogenous economic growth (Romer 1986; Lucas 1988) do not explicitly take into account innovation. (Romer 1994) They also tend to confuse novelty with innovation. For instance, 'the term [innovation] is used in an inclusive sense, to encompass all the pertinent activities—the process of invention as of successive improvement before introduction, as well as the act of introduction itself.' (Baumol 2001, p. 30n) Furthermore, Baumol only deals with innovation in the sense of the introduction (diffusion) of inventions.

¹⁰ For a comparison between neoclassical (endogenous) growth models and evolutionary ones, see Saura et al. (2003).

¹¹ Foster and Metcalfe use the term 'development' instead of 'feedback'. They recognize (p. 9) that '[t]here are good grounds to for believing that the innovation 'black box' will always remain partially closed.' However, they also think that 'to a substantial degree the innovation process is endogenous to the economic system so that development and selection are subject to mutual interaction.' (Ibid., p. 10) This interaction has to do with processes of generation of knowledge that the agents deploy.

¹² Witt's quotation continues: 'in the economic domain, given the discipline's focus on human action, novelty is usually seen as emerging from a newly discovered possibility for action which, once taken, is called an innovation. However, any attempt to innovate is likely to trigger, and be accompanied by, learning. When the news of the innovation spreads the innovation can disseminate by imitative learning.' See also Witt (2003a).

processes which have the capacity of expanding their state space through the generation of previously non-existing states.

Both cases, Foster and Metcalfe's 'generation of variety' and Witt's 'emergence of novelty' refer to what has been pointed out as the third condition for a theory to be a theory that explain self-transformation: the theory must cover the generation and the impact of novelty as the ultimate source of self-transformation. Several proposals to explain this emergence have been submitted. For some authors, novelty is linked to problems of knowledge (Loasby 1999). Both firms and consumers (Loasby 2001b) *intentionally* initiate processes of search with the objective of improving the technology of the firm by incorporating new techniques or by imitation of existing ones (Nelson and Winter 1982), or explore a notional set of innovative opportunities that incorporates both changes in the old technological paradigm (incremental innovation) and new ones (paradigm change) (Chiaramonte and Dosi 1993; Silverberg and Verspagen 1996).

For some economists, as mentioned above, innovation (novelty) is conceived as the result of a process of acquisition of information–knowledge, partially pre-existent and tacit, to solve specific problems. Potts (2001, p. 8) points out that the growth of knowledge thereby involves the destruction as well as the creation of connections ('Note this says that novelty may originate by the destruction of a connection and so knowledge may also accrue in this way'). Other economists point out that an important source of novelty is, precisely, the interactions that occur within an economy that introduce *unforeseen* consequences (emergence) into the system, since it is a complex system. From this point of view, the processes of self-organization and its properties are central (Dopfer and Potts 2004). It should also be pointed out that the evolutionary framework has begun to incorporate consumption (Fatás 2002), and its consequences for growth and economic change. From this perspective, modern economic systems are characterized by 'incessant introduction of new consumption opportunities that are always subject to transformations from the productive sector.' Bianchi (1998) and Witt (2001)—inspired, at least partially, by Scitovsky (1976)—are very interesting references.

Indeed, evolutionary economists recognize that a key element in explaining self-transformation is the emergence of novelty. They have paid special attention to innovations, their generation (emergence), diffusion and effects on the structure of the economy, which certainly constitutes an important forward step. However, according to Witt, the bulk of explanatory efforts usually focuses on what happens as a consequence of novelty having emerged within the domain of theory.

Additionally, a theory that anticipates the kind and content of novelties that will appear seems to be a contradiction in terms. This would seem to lead us to a 'blind alley'. In terms of Schumpeter's paradox, if the essential element in explaining economic change (development) is the emergence (generation) of novelty, then not to explain how and under what conditions novelty is being generated within the theory is equivalent to not explaining development. At most, what is explained is the dissemination of novelty. Dissemination is an element of economic change, but it is not the essential element in explaining economic change. To explain the emergence of novelty seems to be the only way to solve this paradox. But, what does it mean? What is 'to explain' the emergence of novelty?

To say that a theory that anticipates 'novelty' is a contradiction in terms does not mean that *nothing* at all can be said about the structure or morphology of novelties and how they enter the economy (and the consequences they bring). In

fact, if this task of explaining 'novelty' is not undertaken, the above mentioned paradox remains unsolved. To explain the emergence of novelty, the morphology of novelty and how it enters the economy is a necessary task in the explanation of economic change. Furthermore, our first hypothesis on the paradox in relation to novelty and economic change allows us to formulate the following idea: it is necessary to introduce a heuristic task that consists in formulating concepts and instruments that permit us to describe and to analyze economic change and its interplay with novelty. This task consists of developing a conceptual framework to analyze the role of novelty in economic change. Our proposal is an approach based on the concept of (economic) action plan.

At this point, it is possible to formulate our second main hypothesis: *the action plan approach allows us to show the endogenous link between novelty and economic change*. So, if it explains how and under what conditions novelty emerges *within* the explanatory domain of theory, then the paradox might be resolved. Sections 4 and 5 explore this hypothesis.

4 An introduction to the action plan approach

Why Schumpeter's paradox remains in diverse forms should affect the perception we have of economic change. However, as has been said, this implies a revision of the concepts employed in the analysis—a heuristic (pre-analytic task) is required in order to explain economic change.¹³ In this section, we present the action plan approach: the definition, morphology and properties of action plans (Sub-section 4.1) and its implications (Sub-section 4.2).

4.1 Action plan: definition, morphology and properties

An action plan is the agent's *projective linkage* of actions (means) to objectives (ends). It is a system in which actions and objectives are *ordered* at a given instant in time in a projective manner.¹⁴

The very nature of action plans is the *projective* character of the orderings involved. This refers not only to the fact that time—and timing—play central roles in explaining human (economic) action, but also that actions and objectives need to

¹³ The importance of this previous (pre-analytic) task has been stressed by Witt. Indeed, '[a]ll economists, as Schumpeter says, in *History of Economic Analysis*, are driven by a 'pre-analytic' view of things.' (Swedberg 1991, p. 31) The same idea could be applied to appreciative theorizing (Nelson 1995, p. 50).

¹⁴ The concept of 'action plan' is not new in economics. It can be found in the work of economists of different traditions, such as Keynes (1936), Hicks (1939), Stackelberg (1943), Eucken (1939), Debreu (1959), Malinvaud (1999), Boulding (1991), Metcalfe (2004)—who talks of 'entrepreneurial plans'—, etc. For some authors, plans are merely a name (Debreu, Malinvaud). For others, especially Eucken and Rubio de Urquía, it is a central concept—a keystone—of their works. In his recent works, which inspires this one, Rubio de Urquía (1994, 1998, 2003, 2005), departing from the concept of action plan, has proposed the following definition of economic theory: 'we understand Economic Theory has the following object of study: (1) how and why economic agents who interact in an environment adopt some action plans—projective linkages of actions (means) to objectives (ends) and (2) which results are produced, and why, on the agents and the environment' (Rubio de Urquía 2005, pp. 61–62).

be *imagined* before they are deployed by agents. Moreover, the set of actions and objectives can be manifold: material or not; located at any point in time; possible in some physical sense or not; able to be expressed in monetary terms or not; etc. The action plan is therefore a rather general *open* structure.¹⁵

Human (economic) behavior cannot be understood only on the basis of the existent reality or on past reality. It is also necessary to consider future ‘unreality’ because it is in the future that goals are located, the objectives formulated by individuals and groups of individuals. Actions (producing, consuming, innovating, working, organising, etc.) are conditioned by agents’ desired (Pareto 1909; Shackle 1972, 1979) and pursued goals which vary greatly and are subjected to change over time (Cañibano et al. 2005). As a consequence, diversity and changes in pursued goals should be considered key explanatory elements of the process of self-transformation of social and economic systems. Important features of novelty generation and innovation processes may be addressed by focusing on the dynamics of the agents’ formulation of goals. These are the imagined realities deemed as possible and desired towards which the agent orients his action (Loasby 1996). This is also a source of complexity (in a broader sense than Metcalfe and Foster 2004).

The morphology, that is, the structure, of an action plan can be represented by using simple graphs. Figure 1 shows the basic structure of an action plan in very simplistic terms.

In Fig. 1a we have the following elements. On the one hand, three actions (a_i , $i=1,2,3$) and a single objective O_1 are considered. On the other hand, we have two analytical points in time, t and $t+1$, upon which the action is defined and is carried out.¹⁶ The relationships between the actions and the objectives are indicated by arrows. These arrows represent the linkages of actions to objectives, as well as the sense of the connections. In this example, actions a_1 and a_2 are carried out in t , and action a_3 is carried out in $t+1$. For the case at hand, the three actions are perceived by the agent who produces the action plan as necessary (and sufficient) for objective O_1 to be achieved. A very simple example of this plan is the following: the agent plans to live in his own house (O_1). In order to get it, he buys the services of a specialized firm (a_1) and compares the possible options according to his preferences and earnings (a_2); in the next step ($t+1$) he buys it (a_3).

Figure 1b represents a slightly more complex plan: actions a_1 and a_2 lead to the achievement of objective O_1 at time $t+1$, and this objective, together with action a_3 determine the achievement of objective O_2 at time $t+2$. A variation of the previous example will be useful to illustrate this case: the agent plans to have his own house—now objective (O_2)—but has not enough liquidity. Then, he proposes as an intermediate objective (O_1) to obtain the money—for example,

¹⁵ A close and related concept to action plan is the concept of routine. (Nelson and Winter 1982; Becker 2001) Within the action plan approach, routines may be seen as ‘mechanized’ action plans. For instance, a firm’s investment routine is an adaptation to previously fixed objectives or targets (level of profit, market share, etc.) of previously proved satisfying actions (the investment expenditure share on revenues). The *projective* nature of action is previous to its mechanization in routines. Metcalfe (2004, p. 169 and p. 173) has noted that routines alone are not sufficient to develop a theory of entrepreneurship. However, this relationship is more complex than is here suggested. This topic is a part of the ongoing research by the authors of this paper.

¹⁶ This time dimension can be expressed using indexes; in particular, $a_{1,t}$, $a_{2,t}$, $a_{3,t+1}$ and $O_{1,t+1}$. For simplicity of notation, whenever it is evident, we will not make use of these time indexes.

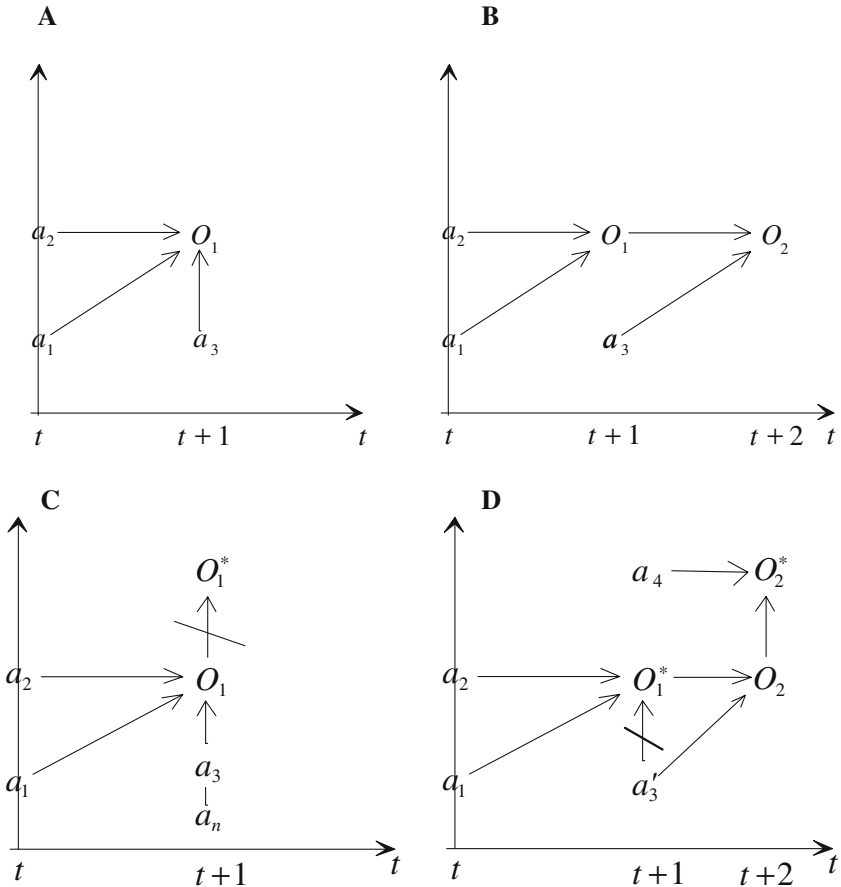


Fig. 1 Some samples of action plans

through a bank loan—that leads to O_2 in the next period. In order to get the money that permits him to reach O_2 , he goes to the bank and asks for a credit—action a_1 —and compares the alternative houses—action a_2 . Now, action a_3 —to buy the house—cannot be taken in $t+1$; he has to wait to get the financial support in $t+1$ —objective O_1 —in order finally to buy in $t+2$ the house and therefore reach O_2 , that is, to fulfil his plan.

Naturally, action plans can be more complex than the simple ones represented here, and as has been shown they can refer to their objectives at several points in time. These basic concepts make it possible to represent any type of action plan imaginable, with hierarchical dependencies among objectives and actions and with as many analytical time moments as needed. Also, it is possible to show some interesting *properties* of action. (Rubio de Urquía 1998, 2003; Encinar 2002; Encinar and Munoz 2005).

A first important property is that the action plans considered do not necessarily have to represent successful or even feasible ones. Actions could lead to the attaining of pursued objectives or not. When the orderings violate logical or scientific laws, it could be said that they are *inconsistent* from a logical or material

point of view. For example, let the objective of a person O_1 be ‘to fly’, and a_1 the physical and human means, and a_2 ‘to jump’ from a window. This represents an inconsistent plan due to technical unfeasibility: the violation of a physical law. In cases like this, the actions involved are not efficient in reaching the pursued objectives. Moreover, objectives could cancel each other out because of a logical contradiction or because of competition for actions needed to reach them. For example, consider Fig. 1c.

In (c), the action plan described contains an objective O_1^* such that it has the particularity to be fundamental in the scale of valuation of the agent—the asterisk in O_1^* is intended to represent the hierarchical primacy of this objective over others. Let O_1^* be to take good care of his *family life*. This is the main objective pursued, and thus the rest of objectives and actions should lead to it and be consequent with it. In this example, suppose that the agent proposes a second objective O_1 , that operates as a means to an end, such as to have a good job, which implies a set of actions (a_1, \dots, a_n) in different or the same periods of time. This gives the agent the possibility of reaching a certain level of income and of assuring a certain standard of life for his family. However, suppose that some elements appear that make it impossible to fulfil the plan in which good family life is the main objective. On the one hand, the agent maintains the strict preference of O_1^* over O_1 , on the other hand, he allocates a growing number of hours to work, in such a way that he has no time for family life. When the agent devotes a maximum number of hours each day to work and to complementary activities (as, for instance, business dinners, cocktails, etc.) and, at the same time, maintains the hierarchy of O_1^* over O_1 , then he is formulating an ‘internally inconsistent’ plan: a day has only 24 h. This means that the agent pursuing O_1 in the way just described is intrinsically denying the possibility of reaching O_1^* , which constitutes a flagrant contradiction.¹⁷

Once plans—with their properties as above mentioned—are carried out, they are carried out in interaction with other plans. Thus, ‘external inconsistency’ is linked to the *interaction among plans*.¹⁸ At the interaction level, at least two different sources of ‘external inconsistency’ might arise. On the one hand, an agent’s action plan may not take into account all the relevant information about the social environment in which his plan interacts with the action plans of other agents.¹⁹ On the other hand, other agents’ objectives and/or their actions may collapse the feasibility (and so the performance) of the agent’s action plan he is trying to deploy. Concepts such as co-ordination, ‘lock-in’ effects, etc., have to do with this level of interaction of plans.²⁰

¹⁷ A formal proof on the relation of ‘internal inconsistency’ and unfeasibility properties of action plans is given in Encinar (2002, Chap. 1).

¹⁸ This topic, the interaction of plans, is a classic Hayekian theme (Hayek 1937, 1945).

¹⁹ The bounded rationality hypothesis is coherent with this approach. As Dosi et al. (1996) have shown, in relation with the origins and nature of the ‘boundedness’. ‘It is not all irrelevant whether it relates mainly to limitations on the memory that agents carry over from the past, or to algorithmic complexity, or to limited ability of defining preferences over (expected) outcomes. (...) Or, more radically, couldn’t it be due to the fact that agents get it basically wrong (in terms of representation of the environment, etc.)?’ (Dosi et al. 1996, p. 8). Thus, in this context, learning processes acquire special meaning.

²⁰ The macroeconomics of rationing equilibrium, for example, could be interpreted within this approach as the incompatibility of demand and/or production plans, that is, as incompatibility of objectives. This implies ‘rationed action’ for the short side of the market. See, for example, Malinvaud (1977); Benassy (1986); and Weintraub (1979).

At this point, we have formulated a set of analytical concepts that allow the development of a new framework that will be used in Section 5, where novelty, and its consequences for economic development, will be treated. Before then, we require a more detailed approach regarding some implications of this framework, which must be done prior to exploring our second work-hypothesis.

4.2 Some implications of the new approach

A deep understanding of the agent's behavior might be proposed, in the simplest possible case, as follows. Let's submit the following sequence of analytical moments of the action plan at a given instant t :

- (a) Constitution of the set of action plans, that is, the production, by the agent, of the set of possibilities of action as perceived which refers to what the agent will do, why he will do it, and how he will do it. This is a fundamental moment, as it will be shown below.
- (b) Selection of an action plan from the set of action plans previously produced.
- (c) Attempt to carry out the selected action plan. This attempt is essentially an interactive process.
- (d) Evaluation of the result by the agent in terms of the objective, once the plan has been carried out in interaction. Note that, once the evaluation has taken place, the agent may be able to revise the structure of his set of action plans, which is a process that has to do with learning—either positive or negative learning.

The analytical moments (a) and (b) are clearly different from (c) and (d). In fact, the constitution as well as the selection of action plans has to do with the individuality of agents. Moment (c) is related with interaction: agents' action plans are carried out interactively, and this is a source of complexity. Moment (d) is related to learning processes. The rest of this sub-section deals with these matters.

The central question that arises is where plans come from. From a logical point of view, plans are constituted—analytical moment (a)—that is, they are *produced* by agents before they are selected and put into interaction. This analytical moment is when agents' *cognitive* and *ethical dynamics* play their essential roles: it is the agent's knowledge and evolution of the perception of what reality is—cognitive

dynamics—and what it should be—ethical dynamics—²¹, that results from learning processes as well as from the *creativity* he deploys that shapes his plans. This analytical moment (a), summarizes all the elements that refer to cognitive and ethical dynamics, evolution of perception, learning processes, environmental dynamics, etc. *Agents' action plans are the reflection of their own cognitive as well as their ethical dynamics.*²² Cognitive and ethical dynamics configure the agent's *action space*: the space that he considers as being possible and/or as being desirable. What agents imagine as possible and desirable states, such as their cognitive and ethical dynamics, is essential to understand the becoming. It is in relation with these dynamics that plans acquire full meaning. This space is essentially a projective one.

Once the plans have been produced, the agent selects—analytical moment (b)—the one he perceives as the better one in the projected (imagined) circumstances he thinks that will prevail. Note that this selection operates *just after* the plans are constituted. Those selected plans are the ones that agents try to carry out in interaction with other agents' plans—analytical moment (c). Agents interact while carrying out their plans:²³ the deployment of plans is an interactive process. Thus, the performance of the interaction of plans and their results in terms of achievement of objectives generate the information that agents evaluate and introduce in a feedback process—or action's 'reflexivity'—into their future plans, that is, induce learning and creative processes.²⁴

The differences between the planned and the effective or, in other terms, the *ex ante* and the *ex post* results, induce this learning—analytical moment (d).²⁵ It is during the evaluation of agents in terms of the achievement of their objectives that the eventual inconsistencies—internal as well as external—of action plans arise: the above mentioned learning and creative processes permit agents to reconsider

²¹ It is important to clarify that we use the words 'ethics' and 'ethical' in a very technical sense. Actually, in this context 'ethics' refers to the creation, destruction and hierarchical organization of ends of action (being the industry world leader, giving birth to a healthy child, maximizing income, fighting poverty, flying to Mars, etc.). Obviously, economics is not about understanding the origin and changes in ends which would belong to the field of study of other disciplines as psychology, anthropology or history, for example. However, it is an undeniable fact that ends change over time as means do.

²² Of course, these dynamics are influenced, but not determined, by the cultural dynamics of the society in which agents live. See Rubio de Urquía (2003; 2005). It is important to note the role of ethical dynamics in the explanation of human action. Some authors might argue that everything can be reduced to a problem of knowledge. For example, this would sum up the position of most Austrian economists, see Hayek (1945). But the same is the case with Kirzner (1992, pp. 152–162) who also discusses 'plans' and Huerta de Soto (1992). However, the above framework action plan shows how a modification in the space of the objectives is also a source of novelty. Thus, development is not only a problem of knowledge but also it is a problem of how agents value and rank different objectives; that is, normative value judgements. (Witt 2003b)

²³ This analytical moment (the attempt to carry out the selected plan and its consequences), which relates with post revelation analysis, is the one that has attracted the attention of researches and the one that is most present in the literature. However, as has been said, it is essential to consider not only this analytic moment but all four in order to have the whole picture of dynamic processes.

²⁴ On the one hand, this argument bears considerable resemblance to Shackle's (1972) view of 'imagining future states of affairs' under true uncertainty. On the other hand, another possible connection is the idea of 'decision cycle' described in Loasby (1976).

²⁵ This learning can be *positive* as well as *negative*. Positive learning increases co-ordination among plans; on the contrary, negative learning diminishes it.

their action plans. As has been said, the process results in the deploying of 'reflexivity' by agents.

From the interactions and induced learning processes arise new phenomena and new characteristics that affect the sets of plans of the agents individually as well as collectively; all this constitutes a complex process. It is in this last sense that we state that the interaction of (selected) action plans give rise to economic processes. *Changes in the content and/or in the morphology of action plans as well the consequences of interaction among them are reasons for economic change.*

An interesting exercise may be to compare the action plan approach with Potts' (2000, especially chapter 5) analytical framework. An action plan is rather similar to 'a network structure that contains elements and connections. This connections constitute knowledge and understanding' (Metcalf and Foster 2004, p. ix). And, as has been said, it is the agent's knowledge and evolution of the perception of what reality is and what it should be that results from learning processes as well as from the creativity he deploys, that shapes his plans, introducing or destroying connections between actions and objectives. These actions and objectives can be given or not given (and thus, they have to be 'invented', 'imagined', by agents).

An important implication of the previous framework may be stated at this point. Economic theory has been understood as the science that studies the process of the constitution of an action under which scarce means (actions) are allocated to alternative ends (objectives). In this context, the object of economic theory seems to be the analysis of the allocation of scarce resources to given ends. Usually, one identifies economic theory with a *technology* that increases the efficiency of resource allocation, and which may allow for the discovery of new uses or applications of resources for *given* ends (objectives). However, the classical vision, captured in the reduced interpretation of Robbins' definition (1932), might be encased as a special case within the action plan approach: it is a 'type' of action in which both the sets of means (actions) and ends (objectives) are given and are effectively known by agents. In turn, under the action plan approach, it is not required, as a necessary condition, that the sets of actions and/or objectives be *given* in any particular sense. Action plans are 'living'—or better, 'open'—and dynamic economic entities, and so they admit any type of incorporation and/or alteration of the parts that make them up.

5 Novelty and economic change: Schumpeter's paradox reconsidered

The *second* main hypothesis of this paper now can be attacked: the action plan approach allows to show the endogenous link between novelty and economic change. Before we explore the way in which this hypothesis might be established and its implications in terms of Schumpeter's paradox (Sub-section 5.3), it is necessary to state the role of novelty and economic change within the context of action plan approach (Sub-sections 5.1 and 5.2).

5.1 Novelty in the context of the action plan approach

How can we treat the idea of novelty within the framework proposed? Where and when does novelty emerge? From the application of our conceptual framework to novelty, we can state the following propositions:

- (1) The key analytical moment in which novelties are *located* before their deployment in the economic processes is when the agents' action plans are being constituted.
- (2) Novelties emerge because (i) agents discover or invent new actions and/or (ii) agents discover or invent new—in the sense of unheard-of—objectives. On the one hand, a *new action* can consist of the introduction of an entirely new one linked to an existing objective (a radical understanding of novelty (Witt 1996)) or the change or cancellation of the links between those actions and the (new) objectives. On the other hand, a *new objective* can consist of the introduction of an entirely new one, or in a hierarchical change of an already existing objective. Note that (i) and (ii) focus on the 'production of choice' by agents. This is the key to the incorporation of the idea of 'novelty' into economic processes.
- (3) The *emergence* of novelties can be both (iii) the result of an agent's internal dynamics, and/or (iv) the result of interaction processes. The former refers to conscious and intentional acts undertaken by agents; the latter refers to unexpected products of interactions among action plans.²⁶
- (4) (Necessary Condition) Novelties operate because agents incorporate them into their action space through their action plans. Wherever novelties emerge—see (3) above—if they are going to produce any effect it is because, necessarily, novelties have been previously incorporated into agents' action plans.
- (5) Novelties are *disseminated* through the interaction of agents' action plans. Agents *evaluate* the results of interactions and learn; they perceive (or not) the inconsistencies of their plans and revise (or not) their configurations. Thus, the dynamics of interaction are complex. This evaluation can be done in presence or absence of novelty.

As a *corollary*, it can be concluded that, given the above statements, *novelty can be incorporated within the economic domain of the theory.*

Propositions (1)–(3) refers to Witt's pre-revelation analysis: they are an explanation for the phenomena without knowing the meaning of the (next) novelty. Proposition (4) is a transitional one: it links pre- and post-revelation analysis. Novelties to operate need to be inserted in the action plans of the agents. Finally, proposition (5) has to do with post-revelation analysis. Here it is possible 'to explain what happens as a consequence of novelties having emerged within the domain.' (Witt 2003a, p. 13) Novelties have then revealed their meaning.

The emergence of novelty can be represented in several ways. Figure 1d adapted from (b), shows how the appearance of a new objective, O_2^* , that is

²⁶Schumpeter's ([1932] 2005) example of Mantegna's innovations could be interpreted as a conscious and individual act undertaken by this painter. The 'Renaissance style' produced unexpected innovations in painting as result of painters interactions.

hierarchically superior to O_2 , alters objective O_1 , converting it into O'_1 . This in turn affects action a'_3 which no longer leads to objective O'_1 (crossed out arrow) and the appearance of a new action (or means) a_4 . This action plan is much more complex than the previous one, and it will probably require far greater co-ordination to implement. All of this is a source of novelty

Two practical examples follow. Example 1: a firm decides to become the industry world leader. 'Being the industry world leader' is the objective that articulates the action plan of the company and that arranges the structure of intermediary actions. Research and development activities may lead to the discovery of a new technology, as seems to be the case of the IBM System 370 that Bresnahan and Malerba (1999) present. The introduction of System 370 would then be used as a means to approach or to maintain market leadership, and the introduction of the new technology is the condition imposed by the new objective now pursued. How can this 'innovation' be understood uniquely from a cognitive point of view; that is, as a consequence of 'learning' without any other qualification? In our view, this statement is, in part, a result of cognitive dynamics, linked perhaps to the discovery of the possibility of becoming an industrial leader. However, the formulation of the *objective* 'being the industry world leader' is itself a creative action: the company is inventing its objective (end). This 'invention' constitutes an example of an innovation in objectives.

Example 2: consider the impact on production and consumption spaces and on the relationships between agents of an electoral campaign with the lemma 'Internet for everybody'. This program has been proposed in the Spanish region of Castilla-La-Mancha and consists of installing technical facilities (networks, computers, etc.) in small villages and giving Internet courses to their inhabitants. In this case, 'Internet for everybody' is a new and hierarchically superior objective. The emergence of the new objective transforms the initial agents' plans. Now social communication is linked to a particular technology, the Internet. New needs for infrastructure arise: what is required is 'communication via Internet'. Actions are redirected to the design of the new kind of communication technology. But reaching the new objective requires additional actions to disseminate a special kind of knowledge consisting of skills for Internet use. The policy measures to disseminate the necessary skills also open new possibilities of interaction among agents. New ways of interaction might emerge transforming the spaces of action of agents and producing economic change.

Note that, in the examples above, novelty enters from the change in objectives. Changes like this are primarily dependent on ethical dynamics.²⁷

5.2 Economic change in the context of the action plan approach

We have identified the place of novelty within the action plan approach. Novelty enters into plans in several ways: as new actions or as new objectives, or as new combinations (connections) of both. In order to show the endogenous link between novelty and economic change, it should be established what is understood by

²⁷ A paper that concentrates on novelties in objectives—or what is called in that paper 'ethical innovations'—is Cañibano et al. (2004). Related questions about the means–ends relationships in the field of economic policy making have been explored in Witt (2003b).

economic change. Economic change means (economic) ‘dynamic endogenous structural change capable of inducing or generating novelties.’ (Rubio de Urquía 2003, p. 64) Such a definition demands further specifications about what is the meaning of ‘structures’ and ‘novelties’ in this context.

Let be G_t a society formed by successive contemporaneous groups of agents (individuals and organisations). These groups deploy their action plans in mutual interaction. There is also at every point in time a state of the environment, e_t , in which agents deploy their actions. As a consequence of interaction, the action of each agent can alter the dynamics of other agents, and it can alter e_t as well. The reverse is also true: other agents’ action and changes in e_t can alter the dynamics of the first agent.

The idea of global dynamic transformation of a social or economic system may be represented as follows.²⁸ At any given instant t , consider the diverse *structural elements* that characterize the whole system G_t . These elements are: the cognitive dynamics of each agent, δ_{it}^c ; his ethical dynamics, δ_{it}^e ; the cultural and informational dynamics of the whole society, $D_{G_t}^{\text{inf}}$; and the state of the environment, e_t . These structural elements configure the agents’ action space at each instant. This action space is at the base of the constitution of action plans—analytical moment (a).

The global dynamics of the whole society, denoted $\Delta(G_t)$, is, in general, the iterative dynamics of transformation, instant to instant, from G_{t-1} to G_t . Formally, $\Psi(\delta_{it}^c, \delta_{it}^e, D_{G_t}^{\text{inf}}, e_t) \rightarrow \Delta(G_t)$. Note that this expression does not denote a functional relationship in a mathematical sense. It designates a way to represent a ‘causal’ structure among these elements.

Once the structural elements have been specified, the definition of economic change acquires full meaning. On the one hand, structural change refers to processes that transform the structural elements $(\delta_{it}^c, \delta_{it}^e, D_{G_t}^{\text{inf}}, e_t)$ that configure the agents’ action spaces and the agents’ action plans. On the other hand, *novelty* refers to the occurrence of something that has not previously happened inside *any* of these structural elements and thus in agents’ action plans. (Rubio de Urquía 2003, p. 65) This is the link between novelty and economic change within the action plan approach.

²⁸ Rubio de Urquía (2003), specially the Section III, and Rubio de Urquía (2005), Section B.

However, economic change is a process of *self-transformation*. Given the above presented elements, *two conditions* are imposed in order to assure self-transformation.²⁹ Firstly, it is necessary that—at least from time to time—mutual interaction of agents' action plans *generate endogenously structural changes in G_t* . That is, endogenous change means changes in the agents' dynamics, not only in their cognitive dynamics, as has been recognized by evolutionary economics, but also in their ethical dynamics. Secondly, at least with certain frequency '*novelties*' are produced.³⁰

5.3 Novelty and economic change: an endogenous link

The action plan approach allows to us show the endogenous link between novelty and economic change. Hence, if (1) economic change is a process of self-transformation, (2) self-transformation requires generation of endogenously structural changes and the production of novelties, and (3) structural changes are changes such as something that has not previously happened inside any of the structural elements happens (novelties), then the endogenous link between economic change and novelty might be shown via the action plan approach. In other words, when any structural element changes—(1) and (2)—, novelty arises (3) and, then, a new action plan is configured. This new action plan in which novelty has already emerged induces economic change³¹ giving rise to processes of dissemination of novelty; that is, generating economic change. It should be noted that the entire analytical reasoning is now *within* the theory domain of action plan.

It is important to stress that, within this approach, any change in the structural elements could be represented: changes in agents' knowledge (and understanding) as the result of learning processes (cognitive dynamics), changes in agents' objectives (ethical dynamics), changes in the environmental data, etc. Thus, in this approach, the source of change is endogenous and, simultaneously, *open*: any element could change. Development is, on this approach, the consequence of the deployment via the dynamic and complex interactions of agents' action plans that *contain*, as a necessary condition, an aspect of novelty.

²⁹ Not every dynamical system is a *self-transformed* one. A model which introduces exogenous variations of some characteristics of a population and explores the consequences of such exogenous shocks could be a dynamic one and even could explain structural change, but it is not an endogenous explanation. Another model that changes endogenously (for example a Brownian motion) is dynamic but it is not necessarily self-transformed (evolutionary in Witt's terms 2003a, p. 12). A model to be self-transformed needs the two above conditions.

³⁰ Rubio de Urquía (2003, p. 68). It is interesting to compare this approach to that of 'development perspective': '[B]y 'development perspective' we mean the explicit consideration of the *generation* and diffusion of novelty.' (Cantner and Hanusch 2002, pp. 183–184. Italics added.) In parentheses they add: 'For the following we restrict this novelty to the phenomena of technological change and innovations—well aware of the fact that also the analysis of the generation of institutions, cultural change or the development of law could be analysed in a similar fashion (Nelson 1995) or even as a phenomenon of co-evolution.' (Ibid., p. 184) Note that this view is compatible with the Three-Stage Scheme (Foster and Metcalfe 2001, p. 6) that gives rise to the following logical chain: (economic variety+market co-ordination)→differential growth→structural change→differential accumulation of knowledge→renewed economic variety (Ibid., p. 13). Our approach points out the origin of 'variety'.

³¹ The necessary condition (see 5.1 above) should be satisfied.

At this point, Schumpeter's paradox should be reconsidered. In explaining a *transition* from one norm to another—'norm change'—the role of novelty has to be clarified as a necessary condition (Witt's 1993, third condition). As Schumpeter noted, in the absence of novelty, there is no room to explain such a transition: it would only be an explanation for changes within the same norm, that is, for economic growth. However, to cover the generation and the impact of novelty as the ultimate source of self-transformation within the theory domain was the previous condition for explaining development. A heuristic task was required. The action plan approach is a proposal: the change in the structure of action plans is the real reason, under this approach, why a process that unfolds itself does not maintain its 'identity', as Schumpeter observed. This allows us to understand the *dynamics* as self-transformation. Changes in the structural elements of the economic system are causes and consequences of changes in interactive action plans. In this context, novelty 'as such' is an endogenous element. (A close argument on economic self-organization can be found in Metcalfe 2004, p. 170.)

Finally, it should be pointed out that, under the action plan approach, there is also a natural place for Schumpeter's entrepreneur ('creator personality'): he is the analytical subject who is 'especially' capable of introducing new objectives, new actions or new relations between actions and objectives, into his action plans. The agent is especially capable of generating novelty, and thus of stimulating development.³² Furthermore, a clear image of novelty and of entrepreneurship (Metcalfe 2004, p. 157) and of their respective economic implications in terms of self-transformation are two faces of the same coin.

Schumpeter's demand for undertake a 'new task' (Schumpeter [1932] 2005, p. 118) to explain development is at the base of this work. Hence, a theoretical framework has been proposed that could provide a natural place for 'novelty' and 'creator personality', and that could support the difference between fields such as *development* and *growth*. Within the action plan framework, such terms are not only nominal terms; they have a substantial meaning within the theory domain.

6 Concluding remarks

In this paper, we have presented Schumpeter's paradox. This paradox is also present in different forms in evolutionary economics. To deal with it, a new approach, based on the concept of action plans, has been proposed. This approach is inclusive of novelty as the generation of *new economic plans*, and includes the arousal of endogenous self-organized structural change. Under the action plan approach, novelty is better integrated, or endogenized, within the theory domain. It should remain clear that novelty is not to be explained from within economics. However, its location, role and consequence within the action plan are explained. The most up-to-date theories have only addressed the consequences (dissemination) of novelties. We propose an approach in which there is also a place for the emergence of novelty: if our proposal is accepted, we can no longer conclude, as

³² There is also room for the 'active consumer' who, once again, may be interpreted within this approach as an agent who is capable of taking 'new preference' objectives from those new ends, which when incorporated into his plans induce changes not only in his own consumption patterns but also in the production of goods and services that respond to this consumption.

Schumpeter does ([1932] 2005, p. 113) that '[n]ovelty is the true core of everything that must be accepted *as indeterminate in the most profound sense* and always coexists with a wide area of, in principle, determined circumstances and processes' (italics added). It will remain indeterminate only as far as its exact content is concerned, not its morphology and its linkages with economic change.

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References

- Aghion P, Howitt P (1992) A model of growth through creative destruction. *Econometrica* 60:323–351
- Aghion P, Howitt P (1998) Endogenous growth theory. The MIT, Cambridge, Massachusetts
- Baumol W (2001) The free-market innovation machine. Analyzing the miracle of capitalism. Princeton University Press
- Becker M (2001) The concept of routines twenty years after Nelson and Winter (1982). A review of the literature. Mimeo. Paper presented to the EAEPE Conference, Siena
- Becker M, Eßlinger HU, Hedtke U, Knudsen T (2002) Schumpeter's unknown article development. Mimeo
- Benassy JP (1986) Macroeconomics: an introduction to the non-walrasian approach. Academic Press
- Bianchi M (ed) (1998) The active consumer. Novelty and surprise in consumer choice. Routledge, London
- Boulding KE (1991) What is evolutionary economics? *J Evol Econ* 1:9–17
- Bresnahan T, Malerba F (1999) Industrial dynamics and the evolution of firm' and nations' competitive capabilities in the world computer industry. In: Mowery Nelson (eds) Sources of industrial leadership. Studies of seven industries. Cambridge University Press, UK
- Cantner U, Hanusch H (2002) Evolutionary economics, its basic concepts and methods. In: Lim H, Park U, Harcourt (eds) Editing economics. Essays in honour of Mark Perlman. Routledge, London
- Cañibano C, Encinar MI, Munoz FF (2004) Ethical Innovation: a new approach to innovation processes. Paper presented to the DRUID 2004 Summer Conference on 'Industrial Dynamics, Innovation and Development' <http://www.druid.dk>
- Cañibano C, Encinar MI, Munoz FF (2005) 'Innovative intentionality' and dynamic capabilities: some reflections on the role of intention within innovation processes. Paper presented to The DRUID Tenth Anniversary Summer Conference 2005 on 'Dynamics of Industry and Innovation: Organizations, Networks and Systems' <http://www.druid.dk>
- Chiaromonte F, Dosi G (1993) Heterogeneity, competition, and macroeconomic dynamics. *Struct Chang Econ Dyn* 4:39–63
- Debreu G (1959) Theory of value. An axiomatic analysis of economic equilibrium. Cowles Foundation Monograph 17
- Dopfer K, Potts J (2004) Evolutionary foundations of economics. In: Metcalfe S, Foster J (eds) Evolution and economic complexity. Edward Elgar, Cheltenham UK, pp 3–23
- Dosi G, Marengo L, Fagiolo G (1996) Learning in evolutionary environments. Papers 9605, University of Trento, Computable and Experimental Economics Laboratory
- Encinar MI (2002) Análisis de las propiedades de 'consistencia' y 'realizabilidad' en los planes de acción. Una perspectiva desde la Teoría Económica. PhD Thesis. Universidad Autónoma de Madrid

- Encinar MI, Muñoz FF (2005) El 'despliegue' de los planes de acción personales y la 'dinámica social'. In: Rubio de Urquía R, Urena EM, Muñoz FF (eds) *Estudios de Teoría Económica y Antropología*. AEDOS—IIIES Francisco de Vitoria—Unión Editorial, Madrid, pp 585–613
- Eucken W (1939) *Die Grundlagen der Nationalökonomie*. (Spanish translation: *Cuestiones Fundamentales de Economía Política*. Revista de Occidente, 1943, Madrid)
- Fatás FJ (2002) *Evolución de los espacios de consumo y crecimiento económico. Una aproximación desde la economía evolutiva*. PhD Thesis. Universidad de Zaragoza
- Foster J (2000) Competitive selection, self-organization and Joseph A. Schumpeter. *J Evol Econ* 10:311–328
- Foster J, Metcalfe JS (2001) Modern evolutionary economic perspectives: an overview. In: Foster J, Metcalfe JS (eds) *Frontiers of evolutionary economics. Competition, self-organization and innovation policy*. Edward Elgar, Cheltenham UK, pp 1–16
- Grossman G, Helpman E (1991) *Innovation and growth in the global economy*. The MIT, Cambridge Massachusetts
- Hayek FA (1937) Economics and knowledge. *Economica*, February: 33–54
- Hayek FA (1945) The use of knowledge in society. *Am Econ Rev* 35:519–530
- Hicks JR (1939) *Value and capital: an inquiry into some fundamental principles of economic theory*. Clarendon Paperbacks, Oxford
- Huerta de Soto J (1992) *Socialismo, cálculo económico y función empresarial*. Unión Editorial, Madrid
- Hume D (1978) In: Selby-Bigge LA (ed) *A treatise on human nature*, 2nd edn. Clarendon, Oxford, [1739–1740]
- Keynes JM (1936) *The general theory of employment, interest and money*. MacMillan, London
- Kirzner IM (1992) Economic planning and the knowledge problem. In *the meaning of the market process*. Routledge, London
- Knight F (1921) *Risk, uncertainty and profit*. Houghton Mifflin, Boston
- Loasby B (1976) *Choice, complexity and ignorance*. Cambridge University Press, UK
- Loasby B (1996) The imagined, deemed possible. In: Helmstädter E, Perlman M (eds) *Behavioral norms, technological progress and economic dynamics*. University of Michigan Press
- Loasby B (1999) *Knowledge, institutions and evolution in economics*. Routledge, London
- Loasby B (2001a) Time, knowledge and evolutionary dynamics: why connections matter. *J Evol Econ* 11:393–412
- Loasby B (2001b) Cognition, imagination and institutions in demand creation. In: Witt U (ed) *Escaping satiation. The demand side of economic growth*. Springer, Berlin Heidelberg New York, pp 13–27
- Lucas R Jr (1988) On the mechanics of economic development. *J Monet Econ* 22:3–42
- Malinvaud E (1977) *The theory of unemployment reconsidered*. Basil Blackwell
- Malinvaud E (1999) *Leçons de théorie microéconomique*, 4e éd., Dunod, Paris
- Metcalfe JS (2004) The entrepreneur and the style of modern economics. *J Evol Econ* 14:157–175
- Metcalfe JS, Foster J (2004) Introduction and overview. In: Metcalfe JS, Foster J (eds) *Evolution and economic complexity*. Edward Elgar, Cheltenham, UK
- Nelson RR (1995) Recent evolutionary theorizing about economic change. *J Econ Lit* 33:48–90
- Nelson RR, Winter S (1982) *An evolutionary theory of economic change*. Harvard University Press
- Pareto V (1909) *Manuel d'Économie Politique*. Librairie Droz, Paris, [1981]
- Potts J (2000) *The new evolutionary microeconomics. Complexity, competence and adaptive behaviour*. Edward Elgar, Cheltenham UK
- Potts J (2001) Knowledge and markets. *J Evol Econ* 11:412–431
- Robbins L (1932) *An essay on the nature and significance of economic science*, 2nd edn. Macmillan, London, 1969
- Romer P (1986) Increasing returns and long-run growth. *J Polit Econ* 94:1002–1037
- Romer P (1990) Endogenous technological change. *J Polit Econ* 98:S71–S102
- Romer P (1994) The origins of economic growth. *J Econ Perspect* 8(N1):3–22, Winter

- Rubio de Urquía R (1994) Ética eficiencia y mercado. In: Melé D (ed) *Ética, mercado y negocios*. EUNSA, Pamplona, pp 49–71
- Rubio de Urquía R (1998) A short note on the anthropological foundations of economic science. In: John-Peter Pham (ed) *Centessimus annus. Assessment and perspectives for the future of Catholic social doctrine*. Libreria Editrice Vaticana, Vatican City, pp 165–173
- Rubio de Urquía R (2003) Estructura fundamental de la explicación de procesos de 'autoorganización' mediante modelos teórico-económicos. In: Rubio de Urquía R, Vázquez FJ, Muñoz FF (eds) *Procesos de autoorganización*. IIES Francisco de Vitoria—Unión Editorial, Madrid, pp 13–96
- Rubio de Urquía R (2005) La naturaleza y estructura fundamental de la teoría económica y las relaciones entre enunciados teórico-económicos y enunciados antropológicos. In: Rubio de Urquía R, Urena EM, Muñoz FF (eds) *Estudios de Teoría Económica y Antropología*. AEDOS—IIES Francisco de Vitoria—Unión Editorial, Madrid, pp 23–198
- Saura D, Vázquez FJ, Muñoz FF, Rodríguez A, Fatás F, Roa MJ (2003) Una síntesis de las aproximaciones neoclásica y evolutiva al crecimiento endógeno. In: *Avances de Investigación*, N1: <http://www.iiesfv.es>
- Schumpeter JA (1932[2005]) *Development*. Translated by Becker MC and Knudsen T. With an introduction by Becker MC, EBlinger HU, Hedtka U and Knudsen T. *Journal of Economic Literature*, Vol. XLIII, No. 1, 108–120
- Schumpeter JA (1934) *The theory of economic development. An inquiry into profits, capital, credit, interest, and the business cycle*. Transaction, Harvard, 1983, Translated from the German by Redvers Opie
- Scitovsky T (1976) *The joyless economy. An inquiry into human satisfaction and consumer dissatisfaction*. Oxford University Press, Oxford
- Shackle GLS (1972) *Epistemics and economics*. Cambridge University Press, UK
- Shackle GLS (1979) *Imagination and the nature of choice*. Edinburgh University Press, Edinburgh
- Silverberg G, Verspagen B (1996) From the artificial to the endogenous: modelling evolutionary adaptation and economic growth. In: Helmstädter E, Perlman M (eds) *Behavioural norms, technological progress and economic dynamics*. University of Michigan Press
- Stackelberg (1943) *Grundzüge der theoretischen Volkswirtschaftslehre*. (Spanish edition augmented, and revised by the author, translated as *Principios de Teoría Económica*. Instituto de Estudios Políticos, 1946, Madrid)
- Swedberg R (ed) (1991) *Joseph A. Schumpeter. The economics and sociology of capitalism*. Princeton University Press, Princeton
- Weintraub ER (1979) *Microfoundations. The compatibility of microeconomics and macroeconomics*. Cambridge Surveys of Economic Literature, Cambridge UK
- Witt U (1993) Emergence and dissemination of innovations: some principles of evolutionary economics. In: Day RH, Chen P (eds) *Nonlinear dynamics and evolutionary economics*. Oxford University Press, pp 91–100
- Witt U (1996) Innovations, externalities, and the problem of economic progress. *Public Choice* 89:113–130
- Witt U (ed) (2001) *Escaping satiation. The demand side of economic growth*. Springer, Berlin Heidelberg New York
- Witt U (2003a) Evolutionary economics and the extension of evolution to the economy. In: Witt U (ed) *The evolving economy*. Edward Elgar, Cheltenham UK, pp 3–34
- Witt U (2003b) Economic policy making in evolutionary perspective. *J Evol Econ* 13:77–94
- Witt U (2003c) Preface. Witt U: *the evolving economy*, pp. ix–x. Edward Elgar, Cheltenham UK