

The role of plans and intentionality in Lachmann economics

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Abstract: The paper elaborates on the concepts of action plans and intentions, both of them central in Lachmann's writings. Human action is rational—action guided by reasons to act—and within a society it implies strategic behaviour. Strategies are plans of action that individuals adopt primarily for reasons to achieve preferred outcomes in light of expectations of the likely strategies and plans of others. Action plans depend on the beliefs, expectations, theories about the world, values, ethical statements, etc. held by each agent on a precise spatial and social location at a particular instant of time—that is, a subjective position. For Lachmann subjectivism relates not only to the direction of human intentions and plans, but also to those resultants of human action that are unintended—that Austrians called spontaneous orders. Departing from an analytical framework that allows us to integrate intentions, actions, and the economic outcome of interaction, we represent the economy as an ecology of plans where phenomena such as entrepreneurship, knowledge, innovation, the structure of capital, etc. are emergent properties. This analytical framework not only illuminates Lachmann's connection with Shackle (and Loasby), but also to the recent literature on evolutionary and complexity, economics. In this sense, the paper shows how Lachmann's contribution to economic theory may well be projected into XXI Century economics.

Keywords: Lachmann, plans of action, intentionality, kaleidic society

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Carrying out a new plan and acting according to a customary one are things as different as making a road and walking along it.

*In the beginning there was a plan.
Loasby (1999, p. 112)*

The role of plans and intentionality in Lachmann economics

1. Introduction

For Lachmann economics is about human action, and therefore it refers neither to mechanical nor irrational action.¹ Action can only be rational, it is meaningful, if it is carried out following a plan of action.

To understand an action means to understand the plan which is being carried out here and now. A phenomenon of human action is an observable event; so, in principle, is the making of plans ... Plans, strategic, economic or otherwise, are observable events. (Lachmann, 1971, p. 12)

As we can see, Lachmann identifies economic action with planned action: conscious behavior can only be understood in the context of a plan, “the coherent design behind the observable action in which the various purposes as well as the means employed are bound together” (Lachmann, 1971, p. 20). Thus, the importance of understanding the dynamism that trigger planned action. The concept of action plan plays a key role in Lachmann economics: “A theory without plans cannot grasp planned action” (Lachmann, 1956, p. 56).

¹ Our approach acknowledges that individuals’ actual actions are composed of planned and unplanned actions. Unplanned action is not something unimportant, residual or trivial; neither is it fully inaccessible to rational knowledge. However, our focus here is on the planned components of action since they allow us to address analytically the activating role of intentionality.

Another central theme in Lachmann is the role of expectations, which are integrated into the action plan at the time of its constitution (original or after a review of the results of action). Action plans refer to projective action, future courses of action and events. In fact, Lachmann tends to understand economic equilibrium as a balance of expectations—in a different way than Hayek (1937). This introduces an important difference with Mises and many other Austrian economists, and puts his theory closer to Keynes and Shackle (Lachmann, 1994 [1976])—and promises an interesting new combination with Loasby (1998).

The outcome of economic activity results from the interactive deployment of intentional—planned—action by agents within the economic system (Rubio de Urquía, 2005), an interaction mediated by institutions (formal and informal) that stabilize the permanent flux of action plans. In Lachmann's words, "[h]uman action in society is interaction. Each plan must take account for, among many other facts, favourable and unfavourable, the plans of other actors. But these cannot be known to the planner. Institutions serve as orientation maps concerning future actions of the anonymous mass of actors" (Lachmann, 1971, pp. 12-13). This approach to the study of economic processes has led to consider, even doom, the Lachmann's position as a radical subjectivism that leads to nihilism.² However, it is, in our opinion, an unjustified criticism, because it is possible to build up a theory of the emergence of complexity within evolving complex systems from the intentional action of agents, their expectations, beliefs, etc.

The emergence of complexity within an economic system is not (necessarily) intentional; but depends on the agents' intentions, even though what happens is not necessarily what is being sought by agents. Observed actions can differ from what was intentionally sought -when they were projected actions- although this is compatible with the fact that intentionality is present in the analytical structure of action. (Muñoz & Encinar, 2014, p. 329)

² Koppl has called this as 'the Lachmann problem'—that is, "the need to have a theory of expectations that builds on the idea of each person's actions are animated by the spontaneous activity of a free human mind" (Koppl, 1998, pp. 71-72).

Apart from its intrinsic value—in fields as special as the theory of capital, for example—, Lachmann's contribution to economic theory goes beyond the foundations of economic processes and complex systems in the activity of the agents. The contribution of Lachmann can be used for a rational reconstruction of economics in an complex and evolutionary approach to economic processes, which relies on the action of the agents, and that integrates key elements as interpretations –with neat connections with Schuetz and Weber (see Lachmann, 1971)—, beliefs, values, expectations, and agents intentionality. From the interactive deployment of agents' intentional action, emerge the patterns of complexity of the economy. Thus, economic theory may be understood as an especial theory of human action (Muñoz & Encinar, 2007). The result is a new vision of economic processes and economics as an ecology of plans (Wagner, 2012) in a *kaleidic society* (Lachmann, 1976; Shackle, 1972, p. 428). The implications of this result, far from leaving the economy in a kind of radical indeterminacy, is a much more solid foundation for a reconstruction of the economic theory of the XXI Century beyond the dominant paradigm, as we will show in the next section.

The paper is organized as follows. Section 2 introduces the so called action plan approach we have developed elsewhere,³ a particular analytical framework that allows to identify the constitutive elements to be considered (action plans, expectations, interaction, feasibility, consistency, reflexivity, coordination...). This analytical framework is actually in the research agenda of evolutionary economics (see Dopfer & Nelson, 2018, p. 223). Section 3 elaborates Lachmann's themes in relation with section 2. Our main claim is that most of these themes fit that analytical framework, and thus many of his research output (mainly the role of expectations and plans of action) may be integrated or serve as background for new developments in the research of complex evolving systems (Arthur, 2015). The paper finishes with some concluding remarks.

2. Action plans and economics

³ This section draws heavily on (Cañibano, Encinar, & Muñoz, 2017; Harper & Muñoz, 2018; Muñoz & Encinar, 2007, 2014, 2018; Muñoz, Encinar, & Cañibano, 2011).

2.1 *The action plan approach and economics*

Economic processes deploy within global human action in historical time. They consist of process of production of instants of reality. Human action is purposeful action, and thus the need to integrate within the same analytical framework the intentional dimension of action and the evolving nature of the economy. Economics action *qua* rational is planned action—that is, action that follows reasons to act (Searle, 2001). In order to be rational, action needs to be intentional, even if it ends up leading to unintended results due to the complex process of social interaction. Reasons and intentions show up through the action objectives pursued by economic agents. Any consideration of a non-dynamic conceptual framework (in a substantive sense) ends with agents' economic rationality just becoming a mere logical calculation among *given* alternatives (Robbins, 1932)⁴—that is, a pure logic of choice.

However, economic theory must face the fact of the constant emergence and conception of new action objectives, the hierarchical reordering of existing ones, their eventual withdrawal or elimination and the inconsistencies that may exist among them (Rubio de Urquía, 2005) along with changes in the knowledge or the 'invention' of the means needed to achieve those goals.⁵ The implications of the emergence of new objectives generally go beyond the mere acquisition and organisation of knowledge even if they trigger learning processes (Cañibano, Encinar, & Muñoz, 2006).

In order to understand complex socio-economic change and the emergence of novelty, the analytical opening-up of action goals is a necessary step (Encinar & Muñoz, 2006). It is necessary to acknowledge that what directs economic activity is neither only economic calculus nor the acquisition of knowledge, but also the possibility of developing a true open rationality, the rationality of the unexpected in a context of radical uncertainty (Knight, 1921)—as Shackle (1972) taught us, uncertainty is the pre-condition for imagination and creativity. Agents use their imagination (Loasby, 1996) to situate their action goals in a future that they expect, desire or imagine even though they might not really know what to do or exactly how the future will look like.

⁴ This is also the case in Mises (see XXX).

⁵ This is particularly clear in the case of technology. See, for example, Arthur (2009)

In this context, goals and intentionality—that is, the projective nature of human action—necessarily play an essential role in the explanation of economic processes that take place in historical time. The concept of action plan provides us with a template that accommodates the projective nature of action and action goals. An action plan is the agent's (individual or organisation) projective linkage of actions (means) to goals (ends). From a logical point of view, actions and goals have to be imagined before they are interactively deployed by agents within a physical and social milieu. They shape plans at their formation stage. The set of actions and goals can be manifold: material or not; located at any point in time; able to be expressed in monetary terms or not; etc. The action plan is a general open structure.

Individuals and organisations are (analytically) economic agents inter-connected within complex socio-economic systems (Foster, 2005). Agents themselves may be conceived as complex systems (e.g. a human agent) that are in turn elements of a higher-order system (e.g. a firm) (Simon, 1962). “Whether something is inferred as a system or an element depends entirely upon one's level of analysis” (Potts, 2000, p. 70). Both individual and collective agents are endowed with the capacity of acting towards the realities they imagine and consider possible (Shackle, 1979). They can orient their action according to their knowledge and interpretation of reality, according to their beliefs, experience, values, attitudes, socio-cultural conditionings, representations of the world, etc. All these elements define what (Loasby, 1999, p. 10) refers to as a “space of representations.” The concept refers to the set of elements that define each agent's projective space according to its perception of how the world works, what is possible, what is best, what is wanted, etc. The space of representations defines the possible action pathways and endows the agent with elements for ordering and choosing.

The space of representations is configured by cognitive dynamics and ethical dynamics of agents (Rubio de Urquía, 2005). On the one hand, cognitive dynamics refers to agents' perceptions and understandings of reality. This perception is based on accumulated knowledge through past experience, on the present environment where action takes place, and on expectations of future events—a typical Lachmann theme. Thus, cognitive dynamics refers to the evolution of agents' perception of what reality is or might be in the

future. Cumulative knowledge, particularly experience, tacit knowledge, and learning processes play a major role in this development. On the other hand, ethical dynamics refers to the evolution in agents' conception of what reality *should be*.⁶ Action goals orient the action and endow it with sense and therefore with rationality. The ethical content of the agents' representation framework is attached to their system of beliefs, values and attitudes.⁷ These two dynamics are supported by the transformation of the systems of higher order to which agents belong, including the natural and the social environment.

The above definitions and setting of our overall analytical framework allow us to conceive of economic agents as planners (at least partly) that deploy interactively their actions in pursue of their goals according to how they perceive and conceive reality. Of course, agents do not normally deploy one single action plan at a time but several simultaneously or sequentially, which are more or less inter-connected and form which we may call a *bundle* of action plans (Muñoz & Encinar, 2014, p. 322). For simplicity of the argument, we refer only to individual plans.

The economic rationality implied by the above premises is an open rationality, in which neither the means for action nor the pursued goals are (*a priori*) given. Agents' intentions and goals may be of different sorts. In particular, depending on their specific conceptions of what the world should be (ethical dynamics), agents may conceive goals of action that are highly transformative, but they may also formulate action plans with little or no transformation potential. Both types of plans are equally rational in this context as far as neither of them is hierarchically superior from an analytical point of view. The hierarchical organisation of agents' goals will be determined in each case by the collective and individual conceptions of how the world should be. Pursuing certain individual or collective goals may trigger high levels of social transformation and learning whereas

⁶ Both individuals and collectives may be characterised by their specific aspirations (Winter, 2007). Although the argument runs at the individual level, "goal setting plays crucial role in decision making in organizations as well as in individuals" (Barlas & Yasarcan, 2008, p. 295).

⁷ It is important to clarify that the words "ethics" and "ethical" are used here in a very technical sense. By stating that agents have a specific conception of what reality should be, which evolves over time, we are neither attaching any particular aprioristic content nor a normative criteria to that conception. On the relationship between morality and economics, see Hodgson (2013).

other goals will not be particularly transformative. The social transformation potential of action plans depends on the specific transformative intentionality, but also on a set of factors, mainly social, that may transcend the economic system at focus. For instance, action plans may be highly innovative but may also fail to be feasible once the agent interacts with its external complex environment or in a context where complementary actions or assets are not available.

2.2 *Ex ante action plans properties*

Feasibility and consistency are two outstanding properties of action plans. The feasibility of an action plan refers to the possibility of its effective realization, e.g., that the sequence of actions and objectives of the plan can be effectively carried out.⁸ However, in practice, plans are more complex than what is possible or impossible: feasibility then refers to the *degree* to which the sequence of actions facilitates achievement of the goals in the plan. Provided that the feasibility of the plan is not complete, the most likely scenario, unfeasibility, is understood as restricted or rationed action: the intended objectives are accomplished in some way, to some extent, but not completely. Technically speaking, *ex ante* feasibility—from a logical and material point of view—and *ex post* feasibility—the possibility of a plan to succeed when interacting with the plans of other agents within the social milieu—should be distinguished. Additionally, an action plan is consistent if it does not present any source of unfeasibility. Consistency of action can be of two types: the first one refers to the adequacy of means in relation to the goals of action; and the second one to the compatibility of goals—that is, the agent does not occur in paradoxes of objectives (Sen, 1993). As in the case of feasibility, the consistency of the plans is usually partial. From a negative point of view, we can identify different sources of unfeasibility. A plan is (partially) unfeasible if it violates physical and/or logical laws or because of the presence of the inconsistency of goals—the pursuit of mutually exclusive goals.

⁸ Schuetz (1951, pp. 166-169) speaks of practicability. In what follows, it is important to point out that projecting -and selecting- a course of action is different from mere fancying. “Projecting of performances (...) is a motivated phantasying, motivated namely by the anticipated supervening intention to carry out the project.” (Ibid. p. 165).

Consequently, the feasibility of an action plan is linked to the presence and degree of consistency that exists in such a plan.⁹

2.3 Interaction and coordination: *ex post* properties

Once agents have constituted and chosen their plans they try to deploy them in interaction and coordination with other agents' plans, potentially producing new social outcomes in the form of products, exchange, rights, relationships, etc. Social reality emerges when agents deploy their intentional actions interactively (Searle, 1995). It is in the process of the interactive deployment of action when the system reveals the extent to which agents *ex post* achieve their goals of action as well as the degree of consistency and feasibility of the plans of each agent. Interaction and consistency are bound through the concept of *coordination of plans*. As has been said, the degree of fulfilment of a plan depends on the condition of consistency when the plan is formed; however, consistency only manifests through feasibility — when the agent attempts to effectively deploy the plan.¹⁰ In this sense, it can be argued that feasibility is the observable expression of consistency. Feasibility and consistency are co-implied and successive properties. A course of action consistent *a priori* would guarantee the possibility of *ex ante* feasibility of the plan. However, feasibility does not effectively occur until plans unfold in interaction: *ex post* feasibility involves the coordination of plans of different agents interacting within a system.¹¹ Increasing *coordination* of action plans implies a *gain of feasibility*.¹²

⁹ It can be shown (Encinar, 2002) that consistency is a necessary condition for the feasibility of the plans because consistency enables effective feasibility *ex post*.

¹⁰ It could be the case that compensating errors may lead to plan completion even though it is based on false assumptions. However, plan completion of everyone's plans is not evidence of Pareto efficiency. See Rizzo (1990).

¹¹ Unlike the neoclassical version, our approach does not take action as an isolated unit: each agent knows that his/her fellow social actors are guided by anonymous typifications of other actors — a knowledge that gives each agent an incentive to fit his/her own actions into the stereotyped patterns expected by others — and other agents must understand the agent if his/her actions are to succeed or have, at least, an objective probability of success (Koppl, 2002, p.113).

¹² Hayek (1978) stressed the importance of coordination in his discussion on the empirical tendencies toward equilibrium: he characterized it “by a maximum compatibility of plans and

To link coordination to the above categories, it is necessary to note that *ex ante* feasibility is a *type* of feasibility that corresponds to the individual evaluation of the action plans of the agent, which depends on the (in)consistency of his/her action, while *ex post* feasibility corresponds to an evaluation of the feasibility resulting from the interaction of the deployed courses of action (based on plans) by agents within the system. Because of interaction, when the agent does not observe *ex ante* feasibility redirects his/her attention simultaneously towards *inward* (constitution and selection of plans) and *outward* (the outcome of interaction) properties of the deployed action plan. It is at this analytical stage that the agent *evaluates* the plan, focusing on the *achievement* of his/her goals. The *balance of feasibility* (degree of achievement) reverts in the way in which the agent forms his/her plans, which may imply a more or less substantive revision of his/her bundles of action plans in the future. Thus, both the agent's individual and social dynamics as a whole is a process where the external is caused by and causes the internal process of constitution and (attempt of) interactive deployment of agents' action — a process that transforms the internal and external reality of the agent. In order to gain efficiency, the main task of the agent now consists of removing the sources of infeasibility of his/her action. The “mechanism” that binds the outcome (products) of the action with the establishment of new plans is *reflexivity*.

2.4 Action and reflexivity

Reflexivity—“feedback effects on some process that influences its performance” (Davis, 2017, p. 6)—establishes a bi-directional connection between the formation of plans and the evaluation of the outcome in terms of the achievement of goals after the interactive deployment of action by agents.¹³ At every moment in time, each agent decides upon and executes actions that affect him/her and other agents that interact with him/her. To the extent that this interactive process shapes social reality and produces a balance in terms of the achievement of goals of action, social reality reverts to the configuration of the plans of the agents, who redefine (or create *ex novo*) action plans

dissemination of knowledge, subject to the adaptation to constant change in system's external data” (Rizzo, 1990:16).

¹³ Soros (2013). An extension is Beinhocker (2013).

that consider that balance. Reflexivity is the *dynamic nexus* between individual and social reality; it introduces a fundamental dynamic element. Learning and expectations are linked to reflexivity.

There are at least two sources of gains in feasibility. The first one is the partial (re-) formation of action plans, in which the links of actions/means to goals and among goals are such that inconsistencies disappear or are at least reduced. The second source is the full (re-)constitution of action plans so that the new plans consider the imbalances of feasibility that agents have observed when they have previously interactively deployed their action plans. The former source of gains in feasibility refers to the intrinsic (*ex ante*) feasibility of agents' actions, while the latter refers to extrinsic (*ex post*) feasibility. In both cases, the coordination of action involves reflexivity. Reflexivity is an essential mechanism because it effectively activates the revision of plans at the formation stage.¹⁴

2.5 The role of expectations

As Lachmann stressed from his very early works to the end of his life, expectations are a key element in the determination of the outcome of the process of the interactive deployment of action. Koppl (2002, p. 107), commenting Keynes, points out that ignorance of the future discourages agents' action aimed at the future. Thus, agents plan only where the inner zones of relevancy – that is, the field of action or part of the world the agents think they can control at least in some degree, and the milieu of action or other fields of action not open to agents' immediate domination but mediate connected with the field of action (Schutz, 1946: 124-125)–give them enough subjective predictability to expect the desired result with the required degree of confidence. Agents

¹⁴ However, it is important to note that reflexivity does not necessarily imply increasing coordination; on the contrary, it is perfectly possible to have a type of revision of plans that involves greater discoordination of the individual and social process because reflexivity can introduce or strengthen specific bias in action.

plan for the foreseeable future, and the very concept of expectations contains within it the notion of the predictability of the future.¹⁵

As Hayek (1937, 1945) pointed out, agents plan and act using knowledge to coordinate their activities with other agents. The dynamics of the generation, dissemination and organization of knowledge is a central to economics (Loasby, 1999), but it is by no means the sole element in the explanation of the processes of economic change. First, the interactive deployment of action that produces instants of reality – that include all types of emerging properties such as innovation, development, etc.–depends on agents' thoughts about the future, that is the form and content of their expectations. In a dynamic and non-ergodic process that runs in historical time, expectations are at the base of radical uncertainty. Agents use (develop and adapt) conventions (Keynes, 1936), institutions and technologies to manage uncertainty (North, 2005).¹⁶ However, as we have already seen above, there are other elements that concur in the explanation of economic change that can also be addressed from the perspective of a theory of knowledge. For instance, the dynamics of goal setting, the hierarchical re-arrangement and the eventual removal of goals of action, and especially the intentionality of the agents.

As far as expectations integrate into the action plans of agents,¹⁷ setting and shaping the goals of action as desired future states of the system, they manifest in the interactive action of agents, thus giving rise to the products of action. A possible outcome is the full coordination of action. However, a gradation usually occurs in the coordination as a result of interaction: the system may present some type of blockage provoking which agents do not systematically satisfy their aspirations or expectations, producing rationed

¹⁵ Koppl (2002) has noted a similarity between Keynes (1936, esp. Chap. XII) and Schuetz's (1951) discussions of conventions.

¹⁶ Davis (2017) connects reflexivity, complexity and uncertainty.

¹⁷ “[O]ur expectations about events we do control (...) is our knowledge of the field of action. This knowledge exists in the form of plans we might carry out. The field of action is filled, therefore, with hypothetical propositions. ‘If I do this, that follows.’ The point of our plans is precisely to change events, to move them from the path they would otherwise take.” (Koppl, 2002, p. 107).

action (Benassy, 1986). Out-of-equilibrium (Antonelli & Scellato, 2011)—and thus disequilibrium dynamics—is the ‘default’ state of economic systems. On some occasions, rationed action is relieved or even completely removed if agents conveniently adapt their expectations. If they do not adapt their expectations and actions enough in a situation perceived as rationed action, the system may be locked into an *evolutionary trap* (Muñoz, Encinar, & Fernández-de-Pinedo, 2015). As mentioned above, reflexivity accommodates the feedback and the (eventual) judgment on the achievement of the goals included in the selected and interactively deployed action plans. Based on the evaluation of the outcome of the deployment of interactive action, it is possible to proceed to the analysis of the efficiency of action, which consists of determining the extent to which the plan *is becoming* effective (see Muñoz & Encinar, 2018).

2.6 The emergence of complex evolving systems

The relationship between structure and performance of a system is a major topic in many fields of study. The behavior of a system depends both on the particular elements of which it is composed and on the particular pattern of connections between them (Potts, 2000). In evolutionary processes, each stage provides the building blocks for the next and so is a necessary precursor for it. Selecting different collections of elements from a rather small set, and linking the members of each collection in different ways is a far more effective means of generating variety, and thus facilitating evolution, at each level than the independent construction of each system. Systems that work are selectively, not universally, connected, and large systems are complex assemblies of smaller systems. Moreover, the connections between different levels —or subsystems— are independent of the internal arrangements at each level. “Near decomposability (very few interactions of elements across boundaries) is often sufficient to ensure a high degree of stability, with the significant qualification of exposure to surprise through the activation of a latent connection” (Loasby, 2012, p. 835).

Recombining connections is the main method of building complex systems. This method is particularly appropriate for processes which must proceed by trial and error, and which cannot be reversed, but which may follow alternative paths to very similar

outcomes—as it is the case of economic processes. Trial and error is typically guided by conjectures which are intended to produce particular results, although most conjectures are refuted and unintended consequences are rather common (Popper, 1972). Another common feature is path-dependence. However, contrary to neo-Darwinian selection, in human-based systems neither random genetic mutation nor selection by differential genetic inheritance is appropriate (Loasby, 2002). People in different circumstances develop different categories (means, actions and goals) which lead them to think and act differently. The boundaries of *interpretative systems* are typically not well defined and categories may be modified in various ways: knowledge and its application are always context-limited. The evolving system (the economy) generates new knowledge which undermines some established knowledge, but which also supplies the elements for further innovation in a creative destruction process. Organizations and institutions frame the growth of knowledge as well as the potential connections between new enhanced capabilities and the services which they might provide, and between new services and productive opportunities.¹⁸ Co-ordination and development are necessarily interlinked; and it is (quasi-)decomposability which makes all this possible.

A major source of knowledge is specialization. Specialization, usually associated with substitution, raises two organizational problems: first the arrangement of contexts within which knowledge is developed (which will affect what kinds of knowledge will emerge); and second the arrangement of ways in which the products of knowledge are distributed (Loasby, 2012, p. 840). However, different “pieces of knowledge” are complementary. Complementarity, a reconfiguration of what is connected to what, plays a key role in evolutionary processes. As Dopfer, Potts, and Pyka (2016, p. 753) show, the concept of complementarity can take two distinct forms in evolutionary economic systems: (a) *downward complementarity* that implies increasing specialization and the division of labor; and (b) *upward complementarity*, that is, the discovery of emergent complementarity between extant or new components and products. Downward

¹⁸ Adam Smith (1980 [1795]) identified the growth of knowledge as the main driver of evolution in economics. As Loasby (2002, p. 833) points out, knowledge consists of domain-limited patterns imposed on events; and the potential for human knowledge is greatly enhanced by specialization between domains, combined with variation within each. As in science, pattern-making and not logic, is the key to knowledge.

complementarity proceeds by division, differentiation and reorganization, whereas upward complementarity proceeds by making new combinations or cross-fertilization among seemingly different inputs (Dopfer et al., 2016, p. 755).¹⁹ Downward complementarity emerges from a process of ongoing modularization that breaks an already existing whole into parts. It is a source of economizing gains, due to specialization at the level of the parts, that results in greater efficiency at the level of the whole. Increasing variety at the modular level also drives increasing economic complexity at the level of substitute inputs. In contrast, upward complementarity is the creation of new wholes from existing parts—it involves recombining existing factors of production to create new technologies, goods and services that can lead to new markets and industries. The connection with Lachmann's theory of capital should be clear.

Discussions about evolution within economics usually focus on variation, selection and retention (Foster & Metcalfe, 2001, p. 6), at the expense of the self-organization of complex systems (Schubert, 2014). Beinhocker (2011) argues that information theory offers the potential to integrate evolution and self-organization as computational processes that can be applied to human social phenomena. According to this view, evolution is a process of algorithmic search through a *combinatorial design space*. Kauffman (1993) conceptualizes evolution as a process of search over fitness landscapes. In economics processes, landscapes are formed by technological and institutional design spaces. Agents seek higher positions—that represent superior levels of fitness—on these landscapes. Fitness depends on purposes, that in the economic sphere are integrated in business plans. Evolution can be characterized as a form of search algorithm—the familiar mechanism of variation, selection and retention—that explores a combinatorial problem space (Beinhocker, 2011, pp. 400-404).

Finally, Beinhocker identifies three design spaces relevant to economic evolution: (1) *physical technologies* (PT) –methods and designs for transforming matter, energy and information from one state into another in pursuit of a goal or goals; (2) *social technologies* (ST) –methods and designs for organizing people in pursuit of a goal or goals;²⁰ and (3) *business plans* (BP) –a third design space that binds PTs and STs

¹⁹ The former is essentially Smithian and Marshallian, the latter is Schumpeterian.

²⁰ These ideas of PT and ST are inspired on Nelson (2002).

together in enterprises or projects that pursue economic goals. Economic evolution is then a process of co-evolutionary search through these three design spaces. As new PTs and STs are discovered and rendered –by means of deductive-tinkering–, they are combined and recombined into new business plans which are rendered into businesses, whose activities then change the PT and ST fitness function, leading to changes in the business plan fitness function and so on, creating a co-evolutionary dynamic.

Innovation is a process, a sequence of events that consists of serial, qualitative changes in the state of the economic system. Innovation entails continual flux, change and qualitative transformation of restless structures (Metcalf, 2014). As new combinations of inputs, outputs, activities and skills, emerge, old ones are disrupted and disappear. Innovation thus involves things coming into and going out of being (Schumpeter, 1934 [1983]), systems acquiring and losing properties, and the making and breaking of connections. The piecemeal reshuffling of new combinations that dispersed entrepreneurs and co-creative users carry out day by day, within and between micro and meso levels, is the real source of innovation and economic development.²¹

Entrepreneurs –the agents of change (Gerschlag, 2012; Metcalf, 2004)–initiate innovation and carry out new business plans, actively exercising their creative abilities to experiment with new combinations. Intentionality is at the basis of entrepreneurship (Munoz, Encinar, & Canibano, 2011). Human intentionality is just one –perhaps the most important– of any number of possible strategies for sampling design space. Innovative entrepreneurship comprises four main activities: (1) interpretation and extraction of meaning from the market in the discovery of profitable opportunities to market new products (making and testing entrepreneurial conjectures); (2) specifying new combinations of resources to produce new kinds of outputs or existing outputs in a new way; (3) economic calculation (a mindset for computing profit and loss) in order to appraise the economic value of potential new capital combinations; and (4) market making. All of these activities are involved in forming business plans. Strategy, as an expression of intentionality in an action plan is the glue of PT and ST.

²¹ Economic change is a historical, evolutionary process whose outcomes (all kind of novelties, technology, emergent capital patterns) depend critically upon the particular trajectory of learning—what has already been discovered and produced in the past (David, 2001).

For example, the evolution of capital structures depend on the experiments (trials) that entrepreneurs undertake with the different adjacent states – which includes structures, modules, links, etc. Any capital structure only becomes productive once it is connected to, and combined with, other structures in a business plan (Harper & Endres, 2010, pp. 32, 40). Capital structures are not silos that can exist independently of human action; they always have to fit into a larger pattern and are institutional and socially embedded. Every capital structure is an experiment in itself, a conjecture that may be refuted. All beliefs and expectations about new forms of capital goods and services are fallible and subject to refutation – by the market mechanism, for example – at any time. Through a process of trial and error elimination, entrepreneurs try to discover the constellation of demand for services. If their plans fail, entrepreneurs have to revise their conjectures and reshuffle their capital portfolio –here again modularity plays a key role. Moreover, capital structures are perpetually incomplete: they are always half-completed projects from the forward-looking planning perspective of prospective capital users. Finally, business plans always entails divergent interpretations and expectations about the nature and economic significance of capital structures, the kinds of users and uses it will attract, and its connections with other kinds of capital goods. Actors can reach different judgments about the relationships of complementarity and substitutability that hold among them. Divergent interpretations and expectations are perhaps the main challenges for economic development.

3. Action plans in Lachmann economics: Interaction, complexity and the kaleidic society

This section puts in relation Lachmann economics with the developments presented in section 2. Mostraremos cómo muchas de las contribuciones y planteamientos de Lachmann encajan in evolutionary economics and complexity and economics literature.

3.1 The centrality of action plans in Lachmann writings

(to be completed)

Without doubt, the main connection of our approach with the work of Lachmann is the concept of action plan. Lachmann identifies rational economic action with planned action: conscious behavior can only be understood in the context of a plan, “the coherent design behind the observable action in which the various purposes as well as the means employed are bound together” (Lachmann, 1971, p. 20). According to Parsons (1998, pp. 42-43) “the argument that purposive or intentional behavior can only be understood in the context of a plan is reiterated in Lachman later work: ‘Phenomena of human action ... display an *intrinsic* order we dare not ignore: that which the human actors assigned to them in the making and carrying out of their plans’ (Lachmann 1990: 136, emphasis in original).” Thus the centrality of the concept: “a theory without plans cannot grasp planned action” (Lachmann, 1956, p. 56).

For Lachmann economics is a theory of human action, and therefore cannot be mechanical or irrational. This is, in his opinion, the main flaw of mainstream economics.

The fatal weakness of all mechanistic theories is that they must let human action appear ‘determinate’, if only by man’s own plans, and are thus prevented from understanding the acts of the mind that constitute these plans. (Lachmann, 1956, p. 56)

Hence the importance of understanding the dynamics that trigger the planned action.

To understand an action means to understand the plan which is being carried out here and now. A phenomenon of human action is an observable event; so, in principle, is the making of plans ... Plans, strategic, economic or otherwise, are observable events. (Lachmann, 1971, p. 12)

Lachmann distinguished three levels of subjectivism: of wants—people desire different things—; of ends and means—people have diverse (and erroneous) ideas about the best way to achieve a goal; and of active minds—that can produce interpretations and possibilities that the economist cannot imagine in advance (Koppl & Mongiovi, 1998, p. 4). “The mental activity of ordering and formulating ends, a locating means to them,

making and revising plans, determining when action has been successful, all these are its forms of expression” (Lachmann, 1982).

3.2 Interaction and balance of expectations

(to be completed)

Por su formación en Berlín en la escuela historicista con **Sombart**, antes de su contacto con la obra de Shumpeter y la lectura de Pareto y de los economistas austríacos, Lachmann desarrolló un gusto especial por la historia. De ahí su siempre interés porque la economía explicase los procesos de producción de la realidad histórica –y de su interés, compartido con Mises y Hayek, por la relación entre teoría (económica) e historia. “Lachmann viewed historical events as the outcome of purposeful human action that originates in the formation of plans. Since it is purposeful action that economists seek to understand, their principal task, according to Lachmann, is to elucidate the mental processes by which plans are formed” (Koppl & Mongiovi, 1998, p. 4). As early as 1943 Lachmann insisted that ‘it is the subjective nature of ... beliefs which impart indeterminateness to expectations as it is their mental nature which renders them capable of explanation’ (Lachmann, 1943, pp. 72-73)

Como vemos, Lachmann vincula realidad histórica con acción planeada, dependiente de expectativas. As it has been shown in sub-sections 2.1 and 2.2 we can know many properties and characteristics of the action plans, how are they formed –of which dynamics depend on–, selected and revised. The logical place where these internal dynamics of formation, selection and (attempt of) interactive deployment of the plans of the agents coincide with the external reality (both social and physical) to the agents is in interaction. And as a result of the balances of the ex post feasibility of the planned action, reflexivity switched on again –by means of a feedback mechanism– with the formation (renewal, etc.) of the plans of the agents. It is in the formation of agents’ plans when they have to take into account the (expected) action of others. In Lachmann words: “[h]uman action in society is interaction. Each plan must take account for, among many other facts, favourable and unfavourable, the plans of other actors (Lachmann, 1971, pp. 12-13).

As we pointed out *supra*, one possible outcome of interaction is ex post unfeasibility or rationed action. Lachmann no era ajeno a esto, y al contrario que otros economistas austríacos—y aproximándose a Keynes en este respecto— reconocía esta posibilidad —de ahí su opinión de que el libre mercado por sí solo no era la panacea de los problemas económicos. The possibility of malinvestment is an example of this Lachmann (Lachmann, 1956): malinvestment is the outcome of erroneous expectations. (Volveremos sobre este punto más adelante.)

Los agentes, cuando forman sus planes de acción, integran en ellos sus expectativas —patterns, experiments... Loasby...—. Los agentes económicos reales no son agentes pasivos, sino active minds that imagine and set their own goals of action. for Koppl, this basic characteristic poses what he has called the Lachmann problem: “the need to have a theory of expectations that builds on the idea of each person’s actions are animated by the spontaneous activity of a free human mind” (Koppl, 1998, pp. 71-72). Y ligado a este problema, otro que aún inquietaba más a muchos de sus colegas y críticos, la posibilidad de que la economía cayese en una especie de resbaladero hacia el nihilismo como consecuencia de que, en principio, las expectativas podrían ser cualesquiera. Sin embargo, para poder alcanzar sus objetivos de acción, los agentes económicos tratan de desvelar —en rigor imponer— patterns a los future events and courses of action —based in subjective probabilities— que le “garanticen” una mayor probabilidad —subjettiva— de éxito. Sus planes de acción funcionan como hipótesis científicas (Loasby) que ensayan en la realidad y que, por un procedimiento de prueba y error, les permite aprender. El papel de las rutinas de comportamiento y de las instituciones es vital en este punto, en cuanto que reflejan pasados patrones de comportamiento que resultaron especialmente exitosos (comprobar aquí las conexiones con North 2005 y Blind sobre reglas...).

3.3 Recombinantion and the emergence of complexity (to be completed)

Una combinación sugerida por Loasby (1998) es vincular Lachmann con Simon, en lo que se refiere a la teoría de este último sobre la formación (emergencia) de sistemas complejos. Esto aplica especialmente bien a uno de los temas económicos fundamentales de Lachmann: Capital structure (Lachmann, 1956).

Structure and quasidecomposability -> complexity and evolution (disequilibrium dynamics)

En los procesos de recombinación es esencial el papel de las complementariedades, complementariedades que además pueden ser de dos formas distintas y con muy diferentes implicaciones como se ha señalado en referencia a (Dopfer et al., 2016). -> conectar esto también con Recombination and Entrepreneurship (the role of intentionality), malinvestment y capital reshuffling.

3.4 Processes, structure and evolution: the kaleidic society (to be completed)

Un tema central en economía evolutiva y en complejidad es la relación entre proceso, estructura y evolución (economic change). La economía está siempre evolucionando Nelson 2018. Siempre cambio permanente, flux, etc., mucho más evidente, por lo acelerado, en el presente.

Far from being static however, the economic system is evidently restless (Metcalf, 2004: 158). Modern evolutionary economics (Nelson and Winter, 1982; Dopfer, 2005, 2013; Dopfer and Potts, 2008, 2014) has challenged the mainstream approach by focusing on the explanation of mechanisms leading to systemic self-transformation. The essence of a genuinely dynamic economy is that knowledge changes, evolves and is organized in historical time (Hayek, 1937; Loasby, 1999, 2001, 2008; Shackle, 1972; Boland, 1978; Bausor, 1982). There is neither evolution nor transformation without time. In evolutionary environments, agents learn because they do not know everything, they are assumed to have “bounded rationality” (Simon, 1962): “[b]ecause they lack perfect knowledge these agents are likely to try to improve their knowledge” (Witt, 2003: 79). For evolutionary economists, learning is the core process underlying the emergence of novelty. More specifically, the emergence of technical and institutional novelties and the learning processes that take place at the individual and organizational level are considered the most important processes leading to innovation (Lundvall, 2002, 2003; Edquist, 2005), and therefore underlying economic evolution.

Evolutionary economics –inspired by Schumpeterian economics (see Schumpeter, 1912, 1934)– has prioritized the explanation of learning and innovation, as important processes underlying economic evolution. This is the case also of innovation studies as far as they share a Schumpeterian approach to economic change (Martin, 2012). However, the concept of bounded rationality does not overcome the problem of knowledge in economics; learning processes are not sufficient to understand how agents deal with complex environments (Loasby, 1999: 3).

(The Shacklelian connection...) -> this provides a connection with evolutionary economics planteamiento menos estructurado pero con muchao más fundamento teórico (appreciative theorizing).

La economía evolutiva ha reconocido recientemente el papel fundamental de la intencionalidad (Muñoz & Encinar 2011-2014 EE).

The most fundamental one is the central role played by human purpose, understanding on belief, and deliberate decision making in the economic (cultural) evolutionary processes going on. (Nelson, 2018, p. 26) ... A wide range of business plans may be conceived, discussed, and analyzed, before a firm decides whether or not to go into a new market. (Nelson, 2018, p. 27).

What economic actors do in any context is molded by the objectives they have there and their beliefs about what actions are likely to be effective in pursuing these, and that the analysis can predict or explain changes in behavior that occur when the context changes on the basis of these presumptions (Nelson, 2018, p. 17)

Innovation clearly involves the imagining of courses of action (16) to map out new courses of action. (Nelson, 2018, p. 16). The central importance evolutionary economists place on search, problem solving, and innovation, in the processes that generate what economic actors do leads them to put particular emphasis on how the ways of doing things that are available to an economic actor come to be evident or are discovered or imagined or constructed. (Nelson, 2018, p. 16)

Modern neoclassical theory has abstracted the presumption that economic actors mostly act with purposes in mind and some knowledge about how to achieve them ... this abstraction of goal oriented behavior does not provide an adequate general basis for understanding the diverse actions being taken in an economy marked by continuing innovation and flux. (Nelson, 2018, pp. 12-13) -> NOTA

There long has been a tradition of research and writing involving economists and other social scientists working to develop a characterization of purposive individual and organizational behavior that squares better than neoclassical theory with what is known about behavior empirically ... Evolutionary economics clearly share this broad point of view. (Dopfer & Nelson, 2018, p. 223)

Implicaciones for policy making (ver Loasby) Shackle era muy poco optimista en relación al papel del economista como experto que orientase la política económica... bastante parecido era el planteamiento de Lachmann. De nuevo la razón está en el evolving complex nature of economic processes unbounded to imagination and experimentation.

4. Concluding remarks

The paper elaborates on the concepts of action plans and intentions, both of them central in Lachmann's writings (see Lachmann, 1956; Lachmann, 1971; Lavoie, 1994). For Lachmann economics is a theory about human action that as such cannot be mechanistic nor irrational: For him the fatal weakness of modern economics—with its insistence on formalism—is its mechanistic character, what makes human action appear as 'determinate'. On the contrary, our experience shows that human action is purposeful and guided by reasons to act which implies that ends are not given and expectations are not data, but provided by the agents that interact within a society: it implies strategic behaviour. Strategies are plans of action that individuals adopt primarily for reasons to achieve preferred outcomes in light of their own expectations of the likely strategies of

others (Ostrom, 2013). “To understand an action means to understand the plan which is being carried out here and now” (Lachmann, 1971, p. 12), that is, within a particular institutional setting and in historical time. Action plans depend on the beliefs, expectations, theories about the world, values, ethical statements, etc. held by each agent on a precise spatial and social location at a particular instant of time—that is, a subjective position. Thus the need to understand the acts of the mind that constitute, select and (try to) interactively deploy these plans (Lachmann, 1956, p. 56).

For Lachmann subjectivism relates not only to the direction of human intentions and plans, but also to those resultants of human action that are unintended—that Austrians called spontaneous orders (Lavoie, 1994).

In this paper we have departed from the so called ‘action plan approach’ to integrate intentions, actions, and the economic outcome of interaction within an analytical framework that allows us represent the economy as an ecology of plans where phenomena such as entrepreneurship, knowledge, innovation, capital structure and complexity—among others—are emergent properties. This framework not only illuminates Lachmann’s connections with Shackle and Loasby, but also to the recent literature on evolutionary economics (Dopfer & Potts, 2014; Nelson et al., 2018), complexity (Arthur, 2015; Wilson & Kirman, 2016), and, to some extent, is not at odds with recent developments in bottom up system modeling—as is the case of ABM (Tesfatsion, 2016) and AI (Russell & Norvig, 2010). In this sense, the paper shows how Lachmann’s contributions to economic theory may well be projected into XXI Century economics.

What is still needed? In our opinion there are two main issues that need further elaboration in Lachmann’s economics and a big challenge. As Lachmann himself realized—and Koppl designates as the Lachmann’s problem—“the need to have a theory of expectations that builds on the idea of each person’s actions are animated by the spontaneous activity of a free human mind” (Koppl, 1998, pp. 71-72), and integrating within the theory, in a more substantive way, the role of institutions, collective action, etc. In connection with this last point, a big challenge emerges: how to develop from his radical subjectivist position a theory of the protean and kaleidic economy in which not

any arbitrary thing could happen. Perhaps, after all, Lachmann's critics might be right and economics is impossible; however, "once we accept that economics is impossible, we can begin to understand it—and even enjoy it" (Loasby, 1991, p. 2).

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