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Presentation : Semiotics and Economics, the General Framework

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The connections between semiotics and economics have been discussed for centuries in various philosophical contexts, but early writings on the topic remained mostly restricted to the relationships between goods exchanged for money and meanings communicated by means of words or messages. Leibniz was an early semiotician of economics with his reflections on the affinities and differences between the material values inherent in gold, coins, and coinlike tokens as compared to the semantic values of verbal signs (Dascal 1978). Foucault's *Order of Things* (1966) is a grand theory of representation aiming, among other things, at revealing affinities between economic and semiotic order in the cultural history from the Renaissance to modernity. Bauer (1998) and Kliemt (2003) give a general outline of such interrelations between political economy and semiotics since Thomas Hobbes.

In 20th century semiotics, the affinity between semiotics and economics has first been brought into view by Roman Jakobson. With reference to Claude Lévi-Strauss, who had anticipated the idea in some respects, Jakobson declared that both research fields are concerned with the study of communication, although at different levels. While semiotics studies the exchange of messages, economics studies the “exchange of utilities (namely goods and services)” so that both “approach the same kind of problems on different strategic levels and really pertain to the same field” (Jakobson 1971 : 663).

A perspective on economics that has often been interpreted as semiotic *avant la lettre* can be found in part 1, chapter 1, section 1 to 3 of Karl Marx's *Capital* (Erckenbrecht 1973 : 98-119; Goldschmidt 1990; Scheffczyk 1998 : 1456). In this chapter, Marx distinguishes between the use and the exchange values of a commodity, interprets the latter as a “social hieroglyphic” whose meaning needs to be deciphered, and concludes that “to stamp an object of utility as a value, is just as much a social product as language”. As an object of exchange, a commodity

“comes into communication with another commodity [...] and] betrays its thoughts [...] in the language of commodities in order to tell us that its own value is created by labor” (sect. 3.2). However, says Marx, the language of commodities always speaks of the exchange value of its hieroglyphics, never of their use value.

Of mainly historical and terminological interest is that Saussure’s contemporary Maffeo Pantaleoni (1857-1924), an influential Italian economist of his time, postulated a “semiologia” or “semitica economica” in the 1890s and in the first decade of the 20th century. By this term, he designated a science aiming at “bringing together economic facts susceptible to statistical expression” (Mortara 1925 : 215). In the first paragraph of his paper, “Observations sur la sémiologie économique I : Système d’indice unique et système totaliseur”, Pantaleoni wrote :

Le besoin d’une Sémiologie statistique, est peut-être aussi vieux que la Statistique elle-même. Quoi qu’il en soit, l’espérance (ou la persuasion) que les données recueillies par la statistique pourraient servir comme symptômes de conditions économiques qui, bien qu’elles ne soient pas directement observables, ont une importance sociale plus grande que la donnée statistique recueillie, a certainement beaucoup contribué à lui gagner à différentes époques la faveur du public. (Pantaleoni 1892 : 1067)

Pantaleoni thus conceived of “Statistical Semiotics” as a science whose task it is to interpret the “symptoms” of the facts and the tendencies hidden below statistical data collected by economists. Historically remarkable is the introduction of the terms *semiology* and *semiotics* into a sociological context nine years before Naville introduced the term *semiology* in his *Nouvelle classification des sciences* of 1901 (cf. Nöth 2021).

In the first half of the 20th century, apparently without any influence from Marx and without any reference to Saussure, Karl Bühler, in chapter 4.3 of his *Theory of Language*, proposed a semiotic (“sematological”, as he called it,) interpretation of the system of commodities to demonstrate that “the counterpart to significative contact is the exchange of goods”. Goods, in the system of economy, are like the words of the system of language, he argues, when they become general types (legisigns, in Peirce’s terminology) and cease to be mere singular tokens (Peirce’s sinsigns). Bühler’s example is a cigarette brand of his time whose name was “Khedive” : “Factories put a certain mark on cigarettes, chocolate and soap, and guarantee, of the cigarette, for example, that ‘Khedive is Khedive’, one item is like another” (Bühler 1934 : 70-72). What makes goods and money different from verbal signs is the higher relevance of their materiality. “In verbal intercourse, the function of the words is [...] more indifferent to the material (more dematerialized, more abstract) than in the case of the dollar” (*ibid.*). In sum,

The concrete word is a significative entity, whereas the dollar is and remains rooted among goods, though in its paper form, it does closely approach significative entities. For even if it cannot be eaten, one receives something for it in purchase, which in general cannot be said of the “coinage of language”. (Bühler 1934 : 71)

Since the relevance of semiotics to the foundations of economics came to the fore with Lévi-Strauss and Roman Jakobson, and analogies and differences between linguistic signs and material objects of culture were on the agenda of structuralist semiotics anyhow, generations of semioticians have approached the most

diverse issues of economics from semiotic perspectives. Prolific research fields at the crossroads between both disciplines have been the semiotics of advertising (Beasley & Danesi 2002), marketing (Lawes 2020), consumer behaviour (Berger 2010), or the semiotics of money (Wennerlind 2001; Brandt 2017). Semiotics has also been the framework within which economic issues have been approached in the contexts of cultural criticism, (critical) discourse analysis, and media studies (Jessop 2004; Colaizzi & Talens 2007; *Ocula* 16, 2015).

In the West, during the second half of the 20th century, the predominant research paradigm at the crossroads of semiotics and economics was structuralist semiotics, which reached its climax of interdisciplinary influence in the 1970s. Saussure's concept of semiotic value, his theory of the arbitrariness of the signifiers in relation to their signifieds, and his view of language as a semiotic system were the sources of inspiration for semioticians who wrote on the affinities between linguistics, semiotics, and economics (Rossi-Landi 1975) as well as on commodities, values, and the economy as a sign system. With such methodological tools, semioticians pursued the purpose of ideological criticism and of unmasking the strategies of persuasion of the mass media in their alliance with powerful capitalist enterprises.

In Eastern Europe, however, studies at the crossroads of semiotics and economics took a different direction. In times when critical discourse semiotics, as practiced in the West, was denounced as subjectivist, idealist, formalist, or bourgeois (*cf.* Grishkova & Salupere 2015; Baer 2013 : 22) and when research of the members of the Moscow and Tartu School semioticians was turned towards linguistics, literary, and cultural studies, a technocratic alliance between economics and linguistics was briefly envisioned by leaders of the planned economy in Europe's Communist Block. The volume *Ökonomische Semiotik* of 1972, simultaneously published in East-Berlin and in Moscow (*Ekonomičeskaja Semiotika*), was a document of the attempt of leading economists to instrumentalize semiotics for the purpose of improving the efficiency of their planned economy. According to this project, the task of semiotics in the economic field of activity was "the analysis and structuring of existing sign systems for a more effective handling of the instruments for the control of economic processes", as summarized by Gekeler (1975 : 113). An offspring of this tradition seems to be the formalist approach to "economic semiotics" (*semiotică economică*) developed in Romania (Baileșteanu 2005; Lungu 2016). It postulates a semiotics of economics based on Charles Morris's semiotic triad of syntax, semantics, and pragmatics and aims at "axiomatizing" the science of economics by means of tools from symbolic logic.

As this overview reveals, even though a close connection between semiotics and economics was realized when both sciences were emerging, until today the corresponding unified research program remains marginal to both and may be even judged to be declining. The main reason is that, different from semiotics proper, economics did not explore the semiotic dimension of economic action any further, which fits into the more general pattern of ignoring the role of language as well as of culture in the economy. At the same time, the growing mathematical complexity of economics and the development of methods that differ fundamentally

from semiotic research (such as econometrics) heightened the barriers between the two disciplines.

However, there is also a deeper philosophical reason for this situation. Interest in language has recently been increasing in economics, for example, in the context of “narrative economics” (Shiller 2019). This tendency goes hand in hand with the rise of behavioral economics. Here, the interesting point emerges that narratives, though certainly conceived as economic imaginaries that could be approached by semiotic methods, are mainly seen as dysfunctional. Narratives have effects on economic behaviour, but these are interpreted as biasing and distorting reality, apparently even confirmed in psychological experiments. Reality would be accessible to rational agents, whereas narratives lead them astray. This is conspicuous when both micro-behaviour (Kahneman 2011 : 199ff, 386ff) and macro-phenomena (Akerlof & Shiller 2006 : 51ff) are considered : narratives belong to the “animal spirits” that interfere with rational analysis and decision making. In other words, ordinary language is considered the source of economic pathology. As a consequence, even innovative approaches such as “narrative economics” fail to take language seriously as a medium which is fundamental in enabling any kind of economic action in a complex division of labor that requires close coordination among millions of agents. If at all, language is “cheap talk” (Farrell & Rabin 1996). Rational actors can, in principle, lift the veil of language and see reality as it is. In scenarios of cause and effect, they can identify the material incentives that other actors face. Thus, they can reconstruct their decision-making situations without relying on any kind of symbolic representation, which after all, rational actors would exploit as a means of cheating and faking.

This judgement is not only true for what is often referred to as “mainstream” economics, but even for strands of research that more explicitly refer to signs, symbols and language in the economic process. Even these authors, however, do not explicitly discuss semiotics. An important example is Aoki’s (2001) theory of institutions, which argues that the information processing functions of institutions essentially builds on “public representations”, *i.e.*, signs. Here, signs would obtain a core position in understanding how institutions shape economic behaviour (Herrmann-Pillath 2012). However, when discussing the role of language in the context of Searle’s (1995, 2010) analytical philosophy of institutions, Aoki tended to agree with the position articulated by Hindriks and Guala (2011) that ultimately, what counts in determining behaviour are incentives that are not mediated by language. This position emerges in many contributions even of economists outside the mainstream, such as when discussing money, probably the archetypical phenomenon amenable to semiotic analysis of the economy (Smit, Buekens & du Plessis 2011).

We can conclude that the specific economic model of the rational agent in many respects blocks the view on signs and semiotic processes in determining economic action and economic phenomena. This relates with the subjectivism of the notion of utility, which is until today the defining feature of economics as a separate discipline in the behavioral and human sciences, and the implied behaviorism in empirical approaches to behaviour, especially when it comes to

quantitative methods as the gold standard for empirical testing. In excluding subjective utility as an explanandum in economic science, and only focusing on observed behaviour (“revealed preference”), economics does not need to refer to any kind of analytical category that refers to signs, meaning and related concepts. In particular, there is no systematic reference to population level external artefacts (pace Aoki’s “public representations”) that would structure the ways how individual decisions are conditioned and work together in generating aggregate behavioral patterns (Ross 2014 : 239ff), beyond the pathology of narratives.

This sobering analysis must be balanced by observations on opportunities for strengthening interaction between semiotics and economics. One is the growing interest of economists in all aspects of culture (e.g. Alesina & Giuliano 2015). Although culture is mostly treated in terms of exogenous values and beliefs amenable to quantification (e.g., linguistic differences in pronoun use as indicators of collectivism, Tabellini 2008), the step towards a deeper analysis in semiotic terms seems straightforward to take. In behavioral economics, there is the rich literature on framing, which explicitly discusses the role of cues and signs in determining choices (e.g., Bowles & Polanía-Reyes 2012), though still refraining from drawing the radical conclusion that there is no “unframed” reality that would be directly amenable to rational scrutiny and evaluation. Neuroeconomics, so far heavily geared towards naturalizing the category of subjective utility, can be connected to important movements in the neurosciences that assign a strong role to symbolic intermediation, as in cultural neuroscience (Harbecke & Herrmann-Pillath 2020).

Hence, we think that the time has come for orchestrating a “semiotic turn” in economics. An essential precondition is that both semioticians and economists must become literate in the other field. An obstacle to a closer rapprochement is that many semioticians who explore economics stay in the Marxist tradition, even leveraging the status of heterodoxy and thus blocking friendly acceptance by the majority of economists. Trends such as narrative economics open the door widely for semiotic contributions, which can tie up with the economics discourse. At the same time, economists must open their views to the fundamental symbolic dimensions of economic behaviour and coordination in groups of economic agents (as envisaged by Kliemt 2003). In this regard, one obstacle is the openly hegemonic stance by economists, objectively documented in the asymmetry of its interaction with other fields (Fourcade, Ollion & Algan 2015). Whereas other social sciences are receptive to economic contributions, discernible in citation statistics, economists mostly ignore or are very selective in receiving theories from other fields. For example, even behavioral economics, grounded on the recognition of psychological factors, has developed its own conception of its relation to psychology with distinct methodological standards, thus factually blanking out many possible references to psychological research that does not fit into that mold (Tyler & Amodio 2015).

That being said, there is another possibility of intensifying the interaction between economics and semiotics, applying economics in semiotics. This might smack of another form of “economic imperialism”, hence a manifestation of hegemony. Yet, this distinct oscillation between two movements of cross-disciplinary

integration has proven to be productive in the new field of neuroeconomics, which is both applying neuroscience in economics, and economics in neuroscience. Indeed, the movement from economics to semiotics is a major topic in Rossi-Landi's semiotics of economics, which starts out from extending the classical economists' and Marx's concept of labour on semiotics, in terms of approaching language as production of messages. With reference to mainstream economics, a promising and rich field of research is the economic theory of signalling, so far closely connected to biology in the context of evolutionary game theory (e.g. Skyrms 2010).

This thematic issue of *RS/SI* explores the transdisciplinary connections between economics and semiotics, which have hitherto only been a topic for a few semioticians and some heterodox economists. There are no mainstream economists among the contributors, and in preparing the issue, it became evident that even heterodox economists often do not see the point of semiotics. This reveals a dilemma. Heterodox economics is caught in a sectarian trap, having many different schools of thought who rigidly defend their respective cores and thereby reproduce the hegemonic stance of mainstream economics vis-à-vis newcomers. It remains to be hoped that this special issue stimulates a closer interaction between economics and semiotics.

The topics of the papers presented here fall into three groups. The first has its semiotic framework in Saussure's semiology with its further development in structuralist semiotics, when the Saussurean premises concerning the analogy between linguistic and economic systems (Nöth) merged with Karl Marx's ideas on the analogy between symbols and commodities (Petrilli / Ponzio, D'Urso, Vaughan and Dantas). In this framework, the focus is on semiotic *systems* and their elements, defined as signs with the dyadic structure of a signifier associated with a signified.

The second group consists of papers that take inspiration in Peirce's pragmatist semiotics (Wible, Herrmann-Pillath and Macedo). Within this framework, the sign is a triadic entity constituted first by the sign as it presents itself in processes called semiosis, second, by the object represented by the sign, and third, by the so-called interpretant, which is the effect exerted by the sign on its interpreters. Peirce's pragmatism, the doctrine that focuses on the *practical bearings* that signs tend to have in processes of semiosis, is also the frame of reference for the papers by Hiedenpää and Baker. This framework opens the vista on institutional economics, as another field apart from Marxism, to construct a bridge between semiotics and general economics.

The third group of papers explores other ramifications of applied semiotics in their connections with economics. John Hartley's frame of reference is Lotman, the outstanding figure of the Moscow-Tartu school of cultural semiotics. Todd Oakley shows how semiotics relates to critical realism and institutional analysis in economics. Bernard Lamizet discusses power and political economy, and Florian Coulmas inquires into the linguistic iconography of money as reflecting hegemonic

relations in politics.

Winfried Nöth's contribution, "Ferdinand de Saussure on the Affinities Between Economics and Semiotics", opens the first series of papers that discuss semiotics in relation to economics within the Saussurean paradigm. The study, which has its focus on Saussure's theory of value and his conception of goods and words as signs of a semiotic system, brings new insights on the topic from several of the sources of Saussure's Course. Nöth pinpoints two fundamental difficulties of the Saussurean analogy. The first is that the relationship between signifier and signified is indeterminate, and the second is that signifiers in economics may be much more complex than single words are in language, according to Saussurean linguistics. Both observations, deflationary at first sight, actually evince productive perspectives on cross-disciplinary integration. If post-Saussurean semiotics sees more clearly that signs in economics are complex, a bridge becomes possible between semiotics and narrative economics. Indeed, semiotics could provide a microfoundation of narrative economics in its endeavor to analyze the mechanisms that link signifiers with their signifieds. This is particularly true of the ambivalent term "value", which has inspired so many Marxist interpretations of the semiotics of use value and exchange value. In the Saussurean dualism, as Nöth shows, the monetary value, *i.e.*, the price of a good, may appear to be a sign, but of what? The same prices refer to myriads of different goods, and not directly to a specific type, which, in Saussurean semiotics, lies not the materiality of the object of reference but in the signified or concept. Indeed, this problem reflects directly a semiotic deficiency in economics, as pinpointed previously : via the construct of subjective utility, economics tends to blank out how "goods" emerge as types, such as "apples" with distinct economic properties, different from "cheese" and so on. Furthermore, it is also possible to consider goods as signifiers of their pecuniary value. Indeed, this is fundamental for economic arbitrage: what matters is that buying and selling whichever goods creates profit.

The analogies between semiotic and economic values have so far mostly been in the focus of semioticians who adopt a Marxist approach. However, to explore the wider implications for economics, it is essential to strip the distinction between use value and exchange value of its Marxist context, since the duality of subjective value and price as indicator of scarcity reproduces the same analytical vistas. The Marxist dimension comes into play when the category of subjective value is substituted by the Marxist labor theory of value. However, it must be recognized that mainstream economics tends to reject the labour theory of value largely.

The most influential author in Marxist semiotics is Rossi-Landi. Andrea D'Urso, in "*Messages-marchandises et homologie entre linguistique et économie à partir de Rossi-Landi*", offers a thorough overview of his ideas with a critical assessment. Rossi-Landi introduced the notion of "linguistic labour" and hence aimed at putting both linguistics and economics on the same theoretical ground, suggested to approach language as a form of production, and defined economics as the science of the production of "commodity-messages". In doing so, Rossi-Landi also transcended the simple Saussurean dualism of signs in arguing that messages, though complex assemblages of signs, are the elementary units of both language

and the economy as forms of human labour. In this, he excludes both production and consumption from the domain of economics. In the parlance of mainstream economics, this would mean that economics is the science of markets mediating between producers and consumers. If this is so, the analysis of markets needs to be based on semiotics. At first sight, this seems to confine semiotics to analyzing what Marx denounced as “fetishism”. However, analogous to Marx’s use of the labour theory of value, semiotic analysis can also explore structural aspects of power and exploitation in controlling the frames and meanings of language and all kinds of sign systems activated in commodity-messages, thus revealing the “fetishism of messages”.

This critical dimension of semiotics is elaborated in Petrilli’s and Ponzio’s contribution “Ordinary Language and Economic Language”, which introduces the notion of “semioethics”. The authors start out from the Saussurean themes and Rossi-Landi’s contribution, with the notion of ‘linguistic work’ in their focus. Recognizing the centrality of labour in both the economy and in the domain of language, they extend the perspective on the whole range of semiotic phenomena among living beings, the broader research program developed by Thomas A. Sebeok, important to anchor the analysis of language in “non-verbal facts”. This extension creates the possibility of defining the notion of “linguistic alienation” in parallel with Marx’s analysis of labour in capitalism. In both cases, the analysis moves behind the veil of the Saussurean homology of exchange in markets and linguistic communication, with its focus on the more basic process of production. Indeed, Saussure’s homology is based on his reading of the emerging general equilibrium theory and the marginalist orthodoxy in mainstream economics, which reveals clearly the critical potential of shifting that homology to semiotics.

Semioethics grounds in recognizing the other-directedness of language. This is the topic of Genevieve Vaughan’s contribution “Revealing *Homo Donans* : Liberating the Unilateral Gift from Commodity Exchange”, which presents a fundamental critique of the homology of language and exchange in approaching language in terms of a gift relationship. The author combines this premise with a radical feminist deconstruction of common semiotic views on language, based on a thorough reading of the psychological research on ontogeny. Fostering the human capacity for communication is an activity of “mothering”, that is, the unilateral fulfilment of the child’s needs. Vaughan argues that we can apply the homology argument in an entirely new way, creating a gift economy according to the model of mothering, thus overthrowing the tyranny of market exchange. In relation to Marxist categories, that would imply moving away from the duality of use value and exchange value in market exchange towards the idea of gift value in other-oriented donations of gifts.

Marcos Dantas’s contribution, “Marx’s Concept of Value : Semiotics of the Commodity and Spectacular Capitalism”, offers a detailed analysis of the relationship between language and the Marxist category of value, which converges with other views on the various forms of alienation that are endemic in what he calls the “spectacular economy”, that is, the creation of use value by profit-seeking agents manipulating the symbolic domain. Dantas highlights the semiotic nature of core Marxian concepts and builds a bridge to our second group of contributions

in introducing the triadic analysis employing semiotic diagrams which render the mediating role of signs between sender and receiver of messages explicit. In centring on the Peircean category of interpretation, triadic analysis contextualizes the sign in the social and cultural environments in which the communication takes place. Dantas explores the many ramifications of this analysis with reference to Marx. For example, consumption obtains a pivotal role in rendering production both functional and meaningful, such that one cannot separate the two, an idea that we can already find with Marx. Accordingly, Dantas reconstructs central Marxian concepts semiotically, in particular, labour.

The triadic model of the sign is the topic of James Wible's contribution, "C. S. Peirce's Semiotic and Mathematical Conception of Economics", which introduces the second group of papers. Wible argues that, for Peirce, mathematics was essential also for shaping his philosophical thinking, though mostly evident in his contributions to logic only. Peirce's conception of mathematics was rather broad and relates to his ideas about diagrams as a method of formal analysis, which includes abstract formulae, but also all kinds of graphic representation. As Wible argues, Peirce regarded logic as fundamental to semiotics and vice versa since diagrams establish semiotic relationships. Peirce also showed a keen interest in economics, even in a foundational way. Since Peirce also considered semiotics fundamental to epistemic performance in general, Wible emphasizes that Peirce was the first to introduce the notion of the economy of research in a mathematical analysis, which reflected his familiarity with the emerging marginalism in economics. This reveals that Peirce's incipient economic theory was neoclassical in spirit, which stays in tension with the fact that Peirce was mostly received by the American institutionalist economists who saw themselves in opposition to neoclassical theory. Wible argues that this distorted reception has prevailed until today, as in Herrmann-Pillath's recent adoption of the semiotic triad in his "Foundations of Economic Evolution". However, he continues to show that, eventually, the semiotic triad is compatible with the evolutionary approach championed by Veblen and other institutionalists.

Peirce's triadic semiotics also serves as an essential instrument in Luis Bau Macedo's contribution, "The Semiotics of Development : Towards the Economics of Path Dependence". The author pinpoints the fact that contemporary evolutionary critics of neoclassical theory forgot the Peircean roots of early evolutionary institutionalism, which corroborates Wible's argument. Reinstating Peirce in the modern context can liberate contemporary evolutionary thinking from current connotations of Darwinism and other biological homologies. Macedo approaches economic systems as information processors in which continuously newly emerging patterns of behaviour involving technological artefacts are interpreted in terms of economic functionalities, mostly mediated by markets. In contrast to contributions informed by Marxism, Macedo, following Peirce and the institutionalists, explores the formation of recurrent but incessantly evolving regularities (called "habits" by Peirce and Veblen), and he conceives of the market as a social interpretant. The author also suggests a multi-dimensional set of criteria for the semiotics of development, which introduces new perspectives on normative evaluations.

Herrmann-Pillath's contribution, "A Semiotic Approach to Information in Economics", explores how semiotics can improve our understanding of the concept of information in economics. The paper introduces a new perspective on ongoing discussions about anchoring the semiotics of the economy in its materiality. There is a certain correspondence between the notion of "work" in Marxist materialism (though not seen physically) and "energy" in Herrmann-Pillath's physical approach to economic information. Current economic concepts of information suffer from their neglect of semantic information. Semantic information lends itself easily to semiotic analysis, as recent developments in biosemiotics have shown. The concepts of energy, entropy and economic function are combined in the tradition of Georgescu-Roegen's classical treatment of the thermodynamic aspects of economic growth. The result is a new approach to technological change as mediated by the evolution of designs, which ultimately tie back market-mediated economic functions to fundamental thermodynamic gradients of maximizing energy throughputs and entropy production.

The relationship between Peirce and institutional economics forms the backdrop of Hiedenpää's contribution "*Habits Die Hard : The Semiotics of Wolf Management in Finland*". The paper reflects the author's expertise in ecological economics, thus tying up with wider perspectives of the preceding paper. The author draws on a case study of policies in the biodiversity context, the management of wolf populations in Finland, which easily extends on other cases in which ecological goals interact with society and economy. Peirce's semiotic triad analytically dissects the policy domain into policy objects, policies as signs and policy interpretants. It thus draws attention to the many ways of how interpretive processes influence the realization of policy goals. In this context, Hiedenpää also draws on Peircean distinction between immediate, dynamic and final interpretants to elucidate his findings.

Victor Baker, the geoscientist who introduced the notion of "geosemiosis" to the field of semiotics, contributes a paper that reflects on the failure of economics to deal adequately with the climate crisis and suggests the alternative of "econosemiosis" based on the philosophy of Charles S. Peirce. He argues that conventional economic modelling distorts adequate scientific responses to the many phenomena of climate crisis by introducing assumptions such as discounting future costs and reducing choices to an economic calculus in the present. This falsely suggests that both costs and benefits are present facts. It also blinds the view on future potentialities and results in performative effects (economic "shibboleths") that prioritize present economic interests over other concerns. In contrast, a Peircean perspective approaches the signs of crisis in nature as manifesting evolving potentialities. Baker sketches a metaphysics of future possibilities that prepares the ground for doing economics as econosemiosis. Contra cost-benefit calculus, this means, e.g., taking the possibility (and not mere "probability") of extreme events in the future as a beacon for economic action.

The third group of articles begins with John Hartley's contribution "Zombie Semiotics and the Economics of the Apocalypse". This paper conceives of economics as a part of the semiosphere in the sense of Lotman, the Tartu founder of cultural

semiotics. Hartley emphasises the role of translation and communication across different semiotic domains, such as the diversity of languages and their role in driving creativity and novelty. The backdrop is the ubiquity of “zombies”, outdated and factually anachronistic legacies of the past. Hartley presents examples of zombies from the sphere of economic ideas as well as in the form of artefacts of colonialism. According to Hartley, shaking off this deadwood is the core challenge in tackling the current crisis. This process requires a radical opening of horizons of discourse, such as in the “Greta” phenomenon, herself becoming a sign of the fatal fallacy of systematically ignoring the future generations in current economic behaviours, both in policies and business. In this sense, Hartley also links up with the semioethic concerns voiced by Petrilli and Ponzio.

Todd Oakley proposes “A Critical Realist Theory of Money and Finance” with the subtitle “Social Cognitive Semiotics as Metatheory”. The author explores intellectual cross-overs in revealing the close affinity between critical realism and Peircean semiotics. To him, critical realism is an important sequel to institutional economics in modern heterodoxy. The perspective of critical realism is productive when the economy is approached in terms of its social ontology and when the question is asked of how economic entities come into being. The archetypical case is money, which is only sustained via semiotic performative powers. This view can contribute to the economic theory of financial markets, especially on the much-debated and practically important issue of the valuation of companies, especially at crucial junctures, such as IPOs. Taking the example of the failure of “We Company”, Oakley shows how this company was constituted semiotically as an object, and how it eventually collapsed in shifts of the underlying semiotically mediated processes of social cognition.

“*La sémiotique de l'économie politique : une sémiotique du pouvoir*” is the title of Bernard Lamizet's contribution. The author adopts a different methodological angle when he investigates how semiotic processes constitute the perception and construction of economic conditions, if not the economy as such, as when considering the notion of “economic crisis”. He makes a point explicit that is in the background of many other contributions. Semiotic processes are deeply entangled with power insofar as they determine how individuals approach economic reality and how they respond, for example, when “fear” becomes a predominant motive of action (Lamizet points to Brexit as an example). Therefore, the author makes the case for a “semiotics of power” as a central issue of political economy.

The volume concludes with Florian Coulmas's paper “For What It's Worth : Power of Symbols and Symbols of Power”. The author also deals with the theme of power when he points to an intriguing observation, namely that the number of currencies in the world is in the same order of magnitude as the number of languages. This is a surface phenomenon manifesting that both currencies and languages relate to structures of hegemony and power in human groups competing over influence, territorial reach or outright domination. Rare are the cases when currencies would not carry the hegemonic language in its inscriptions. This insight underlines the importance of considering the semiotics of power in the study of economic phenomena. The Euro is a case in point.

From a birds-eye view, the papers presented in this volume, while transcending the divisions between the diverse schools of thought in economics, Marxist, neoclassical, institutionalist and so on, address several core issues that deserve to be put on the agenda for future research on semiotics and economics.

First, there is the urgent task to relate semiotics and economics in the respective cutting-edge developments in the individual disciplines, such as in the context of the incipient “narrative economics”.

Second, economics has too often been suggesting a clear-cut analytical distinction between production and consumption, but when we approach the relationship between the two from the semiotic perspective, this distinction is bound to vanish. Abandoning this divide between them could possibly allow for conceptualizing new economic systems based on semiotic transformations, such as the ones on the agenda of ecological economics, so far with only few references to semiotics.

Third, and continuing the second, we must show how semiotics can contribute to economic policies, similar to its applications in marketing. Semiotics must move from general considerations to specific applications in order to demonstrate its relevance to economics. One case in point is the semiotic construction of expectations about future states of the economy, arguably the crucible of modern economic thought since the Keynesian revolution, and specific applications in fields such as research on central banks and their communication with the public.

Fourth, semiotics and economics must rest on a common foundation, in the sense of a general semiotics able to integrate other sciences and tie up with new developments in economics that integrate science selectively, such as neuroeconomics. This leads back to the early days when both economics and semiotics emerged as separate disciplines, and thinkers such as Saussure clearly recognized their close affinity.

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