Evolutionary and Institutional Economics Review
https://doi.org/10.1007/s40844-021-00210-8

ARTICLE

The discontinuity between value and price form: tracking the subtraction of the qualitative

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Received: 12 November 2020 / Accepted: 12 March 2021

Abstract

Ruptures represent the pertinent cause of scientific progress. On the one hand, such "scientific breaks" demarcate one type of scientific discourse from another, while simultaneously always putting in place some specific ideological aspect of the science in question. They consequently suture a determinate scientific totality, one that always reflects and serves the ruling class—be it a worldview or a concrete research programme. The article will attempt to trace the notion of value in different economic discourses to outline the historical discontinuities between them. The subsequent aim is to explore the genealogy of quantitative and qualitative determinations of value (ranging from Smith and Ricardo, through Marx, all the way to the marginalists). We will do this by highlighting a shift in the methodological approach of the object of knowledge—a parallax shift of object—i.e. between the positivist and dialectical grounding of notions. In the first part, the paper tracks the impasses arising from the move to mathematized economics via a "marginalist revolution". In the second and third part, it proceeds with examining the rupture in "objective" and "subjective" aspects of value, reviewing different positions from Marx's value form (as sensuous–supersensuous thing) and A. Amonn's compromise based on the "social" form to F. A. von Hayek's and mainstream economics' embrace of the price form. The article concludes with a reaffirmation of Marx's critique of the specific structure of the capitalist mode of production, one in which the subtraction of the abstract/general ("Real abstraction") is central to a synchronous structure of economic categories. It remains the only genuine critical assessment of such a rupture within the domain of economic scientific strata.

Keywords Value form · Price form · Karl Marx · Alfred Amonn · Economic epistemology

The author wishes to thank the anonymous reviewers for their helpful comments.

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Published online: 25 March 2021

Mathematics Subject Classification B13 · B14 · B24 · B25

1 Introduction

Recall the old parable from Adam Smith's *Wealth of Nations* about a butcher who seldom sees his beef or his mutton directly exchanged for either bread or beer. Instead of bartering, he brings the products of his labour to the market and exchanges them for money, but only just so he can immediately use it as a means for acquiring other products of labour from his fellow workers. His commodity is being exchanged on the market for money, as if it were a completely natural and historically universal task. On the other hand, his actions seem to emerge from some unconscious habit, creating a kind of routine, changing forms from a money commodity to other commodities, back and forth. But what did the butcher have to do beforehand? He had to invest his own physical body, time, and energy in a determinate work activity to produce a finished product, one that could be exchanged on the market. Smith's use of such rudimentary parables uncovers the simple grounding and justification for his labour theory of value, i.e. production's concord with human activity, the metamorphoses of merchandise into different commodities, and the site of their circulation and exchange—the market. Where once we encountered shepherds, blacksmiths, and porters, today we see new professions, such as influencers, fitness and lifestyle coaches, personal data managers, and so on. However, their actions remain much the same; they all bring to the market either their crafted products or, as is more usual today, their know-how, while the unfortunate ones can still offer only their own work-capacity—being free to possess and make use of their own labour-power—for exchange among equal but diversified merchandise.

It does not really matter who the individual subjects, whether early craftsmen or today's service or knowledge workers, are. This simple story depicts the very persistence of the dynamic in a historical mode of production, i.e. the capitalist mode of production, nowadays conveniently and metonymically referred to as the market economy. It encompasses all the required economic categories and principles necessary to understand the basic working of a classically-conceived market-evolved community. Smith also makes it obvious from the outset that for him, labour represents the prime category, on which all other categories rest. The labour category not only entails the true essence of man, or conversely, his abilities to reap the wealth of nature, for Smith it also possesses the predicate of labour's continuous divisibility. This attribute can be conceived as the general contribution to the evolution of eighteenth-century capitalism: the division of labour as a core principle and rationale for new economic organization of productive forces in a new becoming of civil society. One has to ask whether the labour category was introduced and discursively centred by Smith only to derive its much more powerful correlate, that of its division, resulting in the everlasting specialization of work. The division of work processes into more elementary activities can be seen through a historical analysis, where it was soon obfuscated by a different and complimentary process, namely automation and

standardization. It, for example, induces individuals to acquire new skills, necessary for them to achieve higher productivity. As was true in Smith's lifetime, so it is today: this process enhances the comparative advantages of whole nations. At the heart of it all lies the fundamental (philosophical) principle of self-interest; individuals and their atomized dexterities provide for better quality final products and through exchange result in rising utility for everyone.

A further point. Before individual labour creates utility by consuming its results, it more significantly represents the sole source of value. Now, this category of value is of quite a particular character, since it embodies a scission (before drawing on antagonistic opposites in dialectics)—an opposition between use value of the product (utility) at its consumption stage and exchange value relating together other commodities (power of purchasing) at a preceding stage of exchange on the market. If labour time is the concrete sole source of value, why do then the commodities exchanged on the market need a price tag? Why not just use invested work hours to evaluate their exchange values? Smith was fully aware of the fact that people have different talents and levels of skill and knowledge, i.e. specialization, that makes this kind of scaling and comparisons both qualitatively and quantitatively difficult and undesirable. Eventually, price-mediated exchange comes to the fore, bringing alongside it the money commodity, a pure metal, a simple coin, a paper banknote, cryptocurrency, etc.—the means of measure in exchange and payment. Smith's proposal has come full circle: production (labour and its division)—circulation (specialization of skills and tasks)—distribution and exchange (exchange values, prices and money on the market)—consumption (utilities or/and re-entry into production). The dialectical interplay between nature appropriation, along with labour capacity and its division, brings us successively to price-mediated money market exchange. A word of caution is pertinent for that particular time of classics: the principle of the division of labour and its magnitude do not yet give the final answer on how people come to intersubjectively value their products of labour.

In this article, we will try to trace, illuminate and articulate the "scientific break" from the objective to subjective value that occurred when economic science progressed from its classical period, proceeding by its critique (of political economy) and finishing up with the marginalist revolution. This body of theory and discourse remains prevalent today in economic historiography. The first part of the article will examine historical cornerstones and steps that constitute the 'Accepted view' of this transition, pertaining to the times before Alfred Marshall finally put all the fragmented pieces into his *Principles of Economics*. A special section will look at the old mercantilist and subjectivist line of argument that led to the complete abolition of the labour theory of value. We touch upon the rise of Walrasian equilibrium and expound on the undecidability of a general equilibrium point in terms of its computability, examining the consequences of this fact for the category of value. A further sub-section will move the debate to a modern-day setting with Friedrich A. von Hayek and the individual's planning at heart of today's broader mainstream orientation. The second part will seek to extricate the return to value form from the present price form by tracking qualitative changes (from objective to subjective and back) relating to Karl Marx's notion of relations of production and Alfred Amonn's social relations among individuals. What connects the first and the second part is a crucial

qualitative loss/subtraction in conceptuality observed in these 'scientific' historical shifts. Our thesis and elaboration in the third part will be that this endless displacement is a consequence of inadequate concept-building, one that can be theoretically outlined with the misapprehension and loss of the concept of real abstraction in economic science—a problem already highlighted by Marx and emphasized by Theodor W. Adorno and "The New Reading of Marx".

2 A brief and historically 'accepted' overview of the concepts: value and price

An irritating question remains unresolved to this today: what are the underlying conditions that establish the relations of exchange between one commodity and another? Smith's unambiguous answer was the magnitude of labour embodied in either of the final products. This leads us to the next question: Is the value of grain the same regardless whether the fields experience a season of drought or one with significant precipitation and sunshine? Smith wittingly escapes this quandary by positing that actual value depends on "the higgling and bargaining of the market", separating value based on labour from market-determined value. We again see the argument reduced to the known paradox of water and diamonds, i.e. use and exchange value. Marx was one of the least inclined to this explanation, hence his endeavour to demystify the relation of substance in his famous passage "why this content assumes that form", deploying the categories of abstract labour, socially necessary labour time and so on. While we will come back to this, we must first focus on the emergence of the utility theory, originally and significantly proposed by Ferdinando Galiani and the Italian mercantilists of the eighteenth century. For the first time, value became a purely subjective category, relating determinate amounts of one product and another. According to these interpretations, the relative scarcity and utility constitute the ultimate grounds for commodity values. Hereafter, the economist's tale of value becomes historical and natural; from Daniel Bernoulli's hypothesis of the logarithmic (expected) utility function to a re-discovery of utility theory in the works of William Stanley Jevons and Carl Menger. As to Jevons, his thoughts on the magnitudes of value stem directly from Jeremy Bentham's pleasure and pain principle, introducing an individual's solemn experience of consummate objects. Recall that Jevons in *The Principles of Political Economy* posits use value as roughly equivalent to cardinal utility, while exchange value is used to describe the relation between two commodities in their mutual and quantitative exchange relationship—exclusively a ratio of different units of measure in exchange (e.g. a tonne of pig-iron being equal to an ounce of standard gold). On the continent, Menger is known for directly linking the immediate causal chain of human wants with want-satisfying things, i.e. goods threading a network of interrelated ratios in a system of social exchange. We can deduce two unique motives for economics from this: (1) the scarcity of physical quantities of goods and (2) a subject's ability to identify and rank his needs. Once these have been cast as scientific preconditions, all of the classical economics from Smith, Ricardo, Malthus and all the way to Marx collapses

with the consequential abolishment of labour as substance of value, but also with the doing away of any problem of the form.

Needs, utilities and ratios relying on prices are everything one needs to explain an intuitive equilibrium in exchange—neatly formalized in a textbook equation: $MU_A/P_A = MU_B/P_B \ldots MU_X/P_X$.

The discipline of economic inquiry renounced, in the name of its scientific character, its essential symbiosis with labour and opted for Jevons's three axioms of value:

(1) Value in use = total utility.
(2) Esteem = final degree of utility.
(3) Purchasing power = ratio of exchange.

One asks themselves whatever happened to Smith's conjecture that

> "Labour, therefore, it appears evidently, is the only universal, as well as the only accurate, measure of value, or the only standard by which we can compare the values of different commodities, at all times, and at all places." (Smith 1937: p. 36).

Value has in retrospect ceased to be universally determined by labour (Smith) or according to (relative) exchange values in relation to scarcity of labour (Ricardo), now being wholly determined by subjective factors of pleasure and pain, as well as esteem and usefulness (textbook economics).

2.1 The path of the nineteenth century subjectivists: Léon Walras and the consequent problem of computable undecidability of a general equilibrium

Meanwhile, in Lausanne, Switzerland, Léon Walras set himself the task of scientifically incorporating human needs, relative scarcity, and prices of inputs and outputs into a coherent and closed system of general equilibrium. The system of equations and the mathematical turn had a double aim: (1) to affirm the scientific character of economic categories as scientific concepts organised as laws and (2) to outline a general circuit from production to consumption in a steady state. At the time, the general maxim was that axioms, laws and proofs are to be regarded as headlamps for a pure economic science—achieving the same standards as astronomy, mechanics, physics and mathematics—in such a way as to together sustain an empirically rational methodology of economic phenomena. Herein the category of value becomes subsumed under the system of linear equations constituting general equilibrium, where absolute quantities and relative (price) ratios are now the prime objects. Walras remains faithful to Galiani when he posits that "the scarcity is personal or subjective, while exchange value is real or objective." (Walras 1926: p. 103) Value is then determined by the unity of subjective scarcity and a good's relative capacity of being exchanged on the market at a certain price. Once such a definition of value is in place, there appears a common denominator in the form of a utility/

price ratio for all tradable goods, as well as those of inputs (land, labour, capital)—it follows that heterogeneous qualities become homogenous objects. Menger made the last sundering act by installing a disjunctive fusing of the classical dichotomy of use and exchange value simply into a concept of economic value, doing away with and rendering opaque any substance attributed to value. Further still, and similarly to the purely subjectivist Menger, the logician Jevons reproached this same process by deductively subsuming qualitative predications into classes under the concept. If we take the notion of value, we can derive qualities such as use, exchange, economic, utility… all of which can be summarized in different classes of qualities that are ad hoc determined, but can also be omitted from manipulating quantitative variables in equations, because only numeric operations on different quanta are needed. Such bracketing of qualitative attributes of categories opens the path to exclusive numerical calculus—what we have gained is the quantitative dynamic of categories, the arithmetic and algebraic operations while retaining their qualitative (bracketed) determinations (Jevons 1890). This is likewise the perspective that separates Jevons's method from the one used by Walras: while the former always subordinates mathematics to deductive logic—his handling of qualities and quantities making use of logical operators –, the latter relies on mathematical algebra and calculus for sorting economic categories in a quantitative and systematic manner, turning them into economic laws on the principle of free competition—e.g. the outputs of exchange, based on price variables and ratios between different goods. What both have in common is that value appears to them only by being mediated through price ratios.

Economic science always had the propensity to seek an appropriate scientific model by which it could (re)present itself. The list at the time was inexhaustible and ranged from Newton's *Principia*, Faraday's laws of electromagnetic induction or electrolysis, all the way to the laws of thermodynamics. But what has differentiating between objective and subjective conditions actually lead to? There remains a minimal gap when one considers both the objective and subjective character[1] of value popping out of price-mediated exchange. No such thing is possible in Menger's strict universe where exchange is understood solely subjectively. The objective conditions of value, i.e. labour, that appeared in the works of Smith and Ricardo were on the other hand also tied to capital, represented as the value of production costs. Unfortunately, only a handful of critical economic historians nowadays share the view that they are important. Marx, being the last to concur with this fact, by introducing the notion of abstract socially necessary labour in relation to the concrete labour-time, he followed all the way through the evolution of objectivity of value. It has to be said that Jevons and Walras had moved somewhat closer to objectivity,[2] claiming there are some intrinsic qualities in exchanged goods, but which, however, are neither logically significant nor can be mathematically quantified, leaving Menger with the extreme position of a subject's judgement of taste when it comes

[1] Even before the marginalists of the nineteenth century, it was already present in the writings of the Italians (B. Davanzati, G. Montanari, F. Galiani), the French (J. B. Say, F. Quesnay, A. R. J. Turgot, É. B. de Condillac), and others (Schumpeter 1987).

[2] Roughly demarcating Jevons and Walras from Menger's more radical views.

to valuing goods. The question spans economic history, going from Ricardo to Mill and the Marxists, to neo-Ricardians, such as Piero Sraffa, and marginalists: How does one get from values to prices (exchange ratios)? For Menger, this is a trivial problem, a specific occurrence traced to the current state of market forces, the demand and supply of active participants, making the issue irrelevant. He thought he had resolved the problem by positing a new notion of economic value. The matters are slightly different for Jevons and Walras. Remember, they do not share the synthetic notion of economic value; for them the utility theory with the postulate of scarcity also rests on costs of production that combine in exchange ratios, reflected in prices and consequently in general equilibrium. In the end, prices are the form of appearance of production costs (the supply side) and relative utilities in satisfying needs (the demand side). And Alfred Marshall has, instead of finally resolving the subjective–objective character of value in any applicable way, rather provided his scissor metaphor of subjective value and objective costs, thus mystifying the debate even more with his temporal analysis (Marshall 1959). Nevertheless, as noted by Schumpeter, the marginalists have "in other words, […] established what A. Smith, Ricardo and Marx had believed to be impossible, namely, that exchange value can be explained in terms of use value." (Schumpeter 1987).

The "marginalist revolution" at first hand signified the transition from an objective to a subjective theory of value, whereas it later primarily became the name of a new economic scientific paradigm. Mathematized economics, now relying on equations of marginal units—products, costs, revenues, etc.—and ending with a generalized science of equilibrium models under different conditions (free competition, monopoly, oligopoly, monopolistic competition, etc.) The transition from pure to applied economics resulted in the complete abolition of the initial division in value (use-value and exchange-value), for there was now only economic value leading to the deduction of prices in a complete price system based on the law of diminishing returns. Walras made it his *modus operandi*, operating with absolute and differential quantities and equations:

> Strictly speaking, it is quite sure that value does not exist: there are only ratios of values or prices. But I have proved in my *Éléments d'économie politique pure*, or in the first four memoirs of my *Théorie mathématique de la richesse sociale*, which resume it [i.e. the *Éléments*], that these ratios of values or prices are mathematically equal to the ratios of the *intensities of the last wants satisfied*, i.e. of the *raretés* for each consumer. In the first two memoirs, I have established that this equality occurs in the exchange of two commodities as well as in the exchange of several commodities for one another (Walras 2005: p. 4).

A quick view of today. Looking back, we see just how far things have progressed since the introduction of Walrasian (analogue computational) equilibrium, which was later reconfigured and modified into a contemporary economist's toolkit: we have seen the rise of contemporary rise of the Arrow-Debreu general equilibrium

(ADGE), Scarf's development of computable general equilibrium (CGE) theory, Kydland and Prescott's work on the real business cycle (RBC), and the emergence of dynamic stochastic general equilibrium (DSGE) via the recursive competitive equilibrium (RCE). What made a general equilibrium, with all its variants, possible is the ability to locate an equilibrium point, in CGE for example, by means of equating *Brouwer's Fixed-Point Theorem*[3] with the *Walrasian Economic Equilibrium Theorem* (proved by H. Uzawa's *Equivalence Theorem*[4]), which also underlays, for example, Samuelson's *Economics*. Kumaraswamy (Vela) Velupillai's ground-breaking research on computability and algorithmic mathematical economics (Velupillai 2012) in hindsight uncovered the questionable estimating calculations of equilibrium via fixed points in economic model-building, and hence further philosophical implications. Using recourse theory, he shows that the fixed point's equivalents to general equilibrium[5] are actually unconstructifiable, and thus incalculable and/or undecidable. In terms of our discussion, we are suddenly faced with the following issue: what is the epistemological wager of these mathematical fallacies? In contemporary philosophy, mathematics plays an important role: either to be understood as the formalization of the real (J. Lacan) or as the science of being qua being (A. Badiou). Accordingly, we will come to understand it here as a verifying (algorithmic) machine—uncovering flaws in the conceptual development of fundamental notions (value, price, money, equilibrium, etc.). Mainstream economics has once again dropped the ball (as in the case of value). It completely neglected and obfuscated emerging problems, this time using the above equivalence notions, regardless of the premises they depend upon. On the other hand, Marx was much more aware of the importance of not leaving notions undetermined or even omitted, wittingly devising them within a different epistemological structure, one we will examine in detail later on.

2.2 The path to the present: F. A. von Hayek and the problem of pure subjectivism

There is one more figure we particularly have to credit for the contemporary hegemony of the price form. An heir to Menger's Austrian tradition, but among others also an adherent to E. Mach and L. Wittgenstein, i.e. the Vienna Circle philosophically and F. Knight, G. Stigler and the Chicago camp economically—Friedrich A. von Hayek. His sceptical Kantianism—neo-Kantianism married with positivism—towards any objective essence in the world, i.e. any uncovering of necessity in the character of things is untenable, since the world as we perceive it is exclusively the

[3] Formally: Let f: $\mathbf{S} \rightarrow \mathbf{S}$, where f is continuous. Then, there is $\boldsymbol{p}^* \ \boldsymbol{S}$, such that $p^* = f(\boldsymbol{p}^*)$; the simplest statement of this theorem goes as follows: if we have a function mapping from S into itself there exists an element where $f(x) = x - a$ fixed point.

[4] A Theorem introduced by Hirofumi Uzawa (1962). It equates the Walrasian Equlibrium Existence Theorem with the Brouwer Fixed Point Theorem. For criticism see (e.g. Tanaka 2009).

[5] Relying on the usage of the axiom of choice (*Zorn's lemma)*, law of excluded middle and the law of double negation.

creative activity of our minds, only spurred on the primacy of the subjective experience. He promulgates this by denying any underlying grounds for distinguishing between essence and appearance. What we are dealing with is just the mind and its ability to organize sensory experience into constructed reality by means of subsuming it under concepts. He consequently took into account and managed to avoid the pitfalls of naïve empiricism inherent in the neoclassical naturalized-science paradigm. Our minds endlessly construe our sense-experience; first into abstractions, defining concepts by directly accessing the concrete world, while on the other hand explicitly rejecting any transcendental departure point. For Hayek, this is how a scientific discourse should be structured, to give meaningful propositions about human affairs and turning away from any content-form gap. We shall not delve into Hayek's elaboration of psychological and neurological systems introduced in The Sensory Order, where he goes further in adding that our perception and experience are subject to a continuous loop of evolution and re-adaptation of concepts, clearly against rationalistic (Cartesian) universality of laws and axioms governing our minds. We will glance at his price system, which is understood as an expanded-knowledge form of an individual's relations. Price form nonetheless remains the representational and mediating form in Hayek's price system, since it tells us about our preferences, wishes, needs, desires, tastes, etc.—an individual's plans for their mutual exchanges and balances. The transmission of knowledge in Hayek's view has to be a decentralized/detotalized process of individual acts: Hayek demonstrates this by explicitly drawing a parallel between the division of labour and the division of knowledge. The crucial point of departure for us here is twofold: first, examining what Hayek calls the axiom of *Pure Logic of Choice* or the rough equivalent to "economic calculus", and second, how raw sensory data experience, according to him, *distributes knowledge and information* according to an individual's conditions, ways of handling with scarce things. The thesis we are putting forward here is that the price form is in this sense *ex ante* reduced to a 'private' reflection of an individual's knowledge.

The axiom of *Pure Logic of Choice* affords to the economic calculus of individual action the classical assumptions of perfect knowledge, known preferences, and a definite amount of scarce resources brought together in a static temporal-spatial constellation. In mainstream economics, it assumes the form of a mathematic-logical equilibrium of particulars and is later extrapolated to a general equilibrium. Hayek, on the contrary, regards such a 'scientific' equilibrium to be utterly inadequate, since it does not take into account the dynamic circumstances of an individual's information, knowledge and plans about objects.

Economic calculus encounters no barriers whatsoever; as we have already argued, quantitative relations of value are determined by marginal rates of substitution and subjective evaluation of preferences in the form of a numerical index(es) of price(s) in a price system. The new substance of the price form is now shifted to information and knowledge, considered as the 'value' of the object of exchange. The dispersion of information among interested individuals becomes the inevitable premise driving the exchange process. Only interested individuals are the subject of any particular exchange of goods, as they are the only true knowing subjects about all the properties necessary to signal the relevant price of a good. Take for instance the demand for copper; everybody who needs it, knows exactly what quantity they need,

the current supply on the local and global markets, and the effective demand and spot prices, in the end forming their particular demand plans for the realization of a purchase or sale. But, according to Hayek, modelling this behaviour in economic theory, as is done in mainstream economics, represents an a priori logical operation of pure choice, devoid of any empirical content when it comes to the analysis of a society's actions. On the other hand, we are faced with a price system qua "communication system" of information. The prices 'in our heads' are our consciousness' reflection on the market status. Here is how Hayek understands the problem and seeks a solution to avoid "scientism" of complex social phenomena:

> These systems [Walrasian or Paretian systems of equations] show merely the principle of coherence between the prices of the various types of commodities of which the system is composed; but without knowledge of the numerical values of all the constants which occur in it and which we never do know, this does not enable us to predict the precise results which any particular change will have. Apart from this particular case, a set of equations which shows merely the form of a system of relationships but does not give the values of the constants contained in it, is perhaps the best general illustration of an explanation merely of the principle on which any phenomenon is produced (Hayek 1952: p. 43).

Even though Hayek envisioned a fragmented or dispersed knowledge about economic affairs and actions with the purpose of steering economics away from tautologies of monomial analysis, his *spontaneous order* in spirit nevertheless resembles a Walrasian general equilibrium of dispersed knowledge. (Although one thought of as an everlasting equilibrium process, rather than a state of equilibrium.)

If we return to our initial problem of value in economic analysis, we cannot really say that Hayek proposed a clear solution. Could we not say that, as regards subjectivist theories, he also flirted with the 'substantialist' camp, substantialising knowledge over labour when it comes to value-creation? We might say he did so negatively, by obfuscating the immediacy of the price system by shifting the object of knowledge. This resulted in both an implicit and explicit move away from production and towards exchange and consumption, from the centrality of price instead of value, where distribution becomes the function of individual expectations in price-terms and practical usefulness of goods. He has this to say on the matter:

> Classical political economy broke down mainly because it failed to base its explanation of the fundamental phenomenon of value on the same analysis of the springs of economic activity which it had so successfully applied to the analysis of the more complex phenomena of competition. The labor theory of value was the product of a search after some illusory substance of value rather than an analysis of the behavior of the economic subject. The decisive step in the progress of economics was taken when economists began to ask what exactly were the circumstances which made individuals behave toward goods in a particular way. To ask the question in this form led immediately to the recognition that to attach a definite significance or value to the units of different goods was a necessary step in the solution of the general problem which

> arises everywhere when a multiplicity of ends compete for a limited quantity of means (Hayek 1969: p. 136).

Hayek's critique of "socialist calculation" was actually a critique of naïve simplicity of an existential proposition of unified measure of value (labour) opposed to the complex wants and desires any particular individual possesses—his individual preference plan and subjective valuation. On the other hand, he also disagreed with the early marginalists (Gossen), accusing them of attempting to impose a cardinal set of utilities (the problem of cardinal utility), resulting in cumulative utilities of aggregated individuals as a social whole (the problem of relative differences in intersubjective utilities' comparison). Crucially for the whole of Hayek's *oeuvre*, all relations pertain to strict atomization without ever succumbing to totalization, which in the last instance, heavily beleaguered him in maintaining an unbiased view of economic theory.

3 Connecting the philosophical categories with the scientific concepts: the not-followed reconciliatory path of Alfred Amonn and Georg Simmel

Paul Samuelson's introduction to *Economics* shows how insignificant the value-determination actually seemed to him. The volume hardly ever deals exclusively with value, staying faithful and consistent with the marginalists in pursuing the scarcity of resources and the (Pareto) efficiency of distribution. To reiterate: economics as a science is, in a sense, from the outset unprepared to fully understand and develop its object of knowledge. Its initial interest, at least in the modern variant from the middle of twentieth century, remains in efficient production, mainly focusing on the reallocation and consumption of merchandise and goods across the globe. When searching for value in *Economics*, it is first mentioned when already in direct relation to price: "The central role of markets is to determine the price of goods. A price is the value of the good in terms of money […]" (Samuelson and Nordhaus 2010: p. 27). And then to money: "[m]odern economies today make extensive use of money, which provides the yardstick for measuring economic values and is the means of payment" (Samuelson and Nordhaus 2010: p. 31). One will not find the preceding debate in official textbooks; the money-price is the sole determinant of economic value, which in turn is a signal for individuals and their subjective plan of needs. This kind of logic results in thinking that moneys and prices exist naturally 'in the heads' of exchanging subjects, simultaneously 'forgetting' any kind of value-determining agent at work. The issue with Samuelson's textbook market-economy concepts is of course the objection Marx posed with the talk about objective forms of thought [Objektive Gedankenformen]. Why is there no value-determining mediation substance on the one hand, while on the other the simplest postulates of "given and stable preferences" or "stage of society's technological possibilities" or the analytical "ceteris paribus" clause hold sway almost unquestionably? Marx's answer always demanded the strict and thorough interrogation of the relationship between inner connection [innere Zusammenhang] and form of appearance

[Erscheinungsform], between content and form, thought as a critique of economic categories; it is precisely the gap separating them that leaves economics in the dark, undetermined. It, therefore, remains one of the most central and elusive confrontations with marginalist and neoclassical elaboration of the reigning price form and money-numéraire valuations in market economies that still anchors us in the realm of crude empiricism.

Alfred Amonn attempted to pursue an intermediate route. He aimed to overcome and fuse together the shortcomings of this "scientific rupture" by mitigating both the philosophical categories with scientific concepts of economics. We can maintain that his neo-Kantian inspired distinction between the object of experience [Erfahrungsobjekt] and object of knowledge [Erkenntnisobjekt] was actually one of the very last attempts to resuscitate the "objectivity" (of social relations; the social, third world aside from the worlds of body and mind) in the 'social' science of economics [Sozialwissenschaft]. Unfortunately, with this approach, he entangled himself with Marx's above problem of interchanging the logical and the real realms in scientific enquiry, leading to confusion in notional unfolding. This pertains in particular to the handling of objectification [Vergegenständlichung] of social relations and the understanding of the social character of labour. However, the problematic Amonn observed and sought to resolve was at a later period taken up by T. Adorno's critique of reigning social structures dominated by "real abstractions". We shall address his conception in the following section. Before we do, let us proceed with Amonn's problem the way Hans-Georg Backhaus sees it: "But mechanics and other 'real' sciences do not in any way operate with 'pure quantities', rather with sensuous perceptible; just the formal sciences, e.g. mathematics and, only seemingly, economics know of such 'pure quantities' that employ Simmel and Sombart." (Backhaus 2012) The price form is the inauguration of the 'pure quantity' of 'living' numbers, or conversely, the evacuation of the qualitative as practiced everywhere in modern economics, from neoclassical to Post-Keynesian economics. We can see the considerable ease with which an economist counts the aggregates—capital, labour, GDP, current accounts, sovereign debts, etc.—numbers as a presupposed qualitative substrate of price form, perceived as an object of economic inquiry. The latter attains its operational objectivity once the numbers are comprehensively ordered on a mathematical-logical basis and achieve their signifying merit in actuality. What role the number plays in the price form is made apparent in H. Reichelt's reading of A. Amonn's critique of economic concepts in his *Objekt und Grundbegriffe der theoretischen Nationalökonomie*, in particular in relation to methodological individualism and the nature of economic theory as a social science. Reichelt points out how the ideality of (subjectivist) methodological individualism (price form as inner relation) is blended with the materiality of social character of value-bearer (price-expressed measure as outer relation) in a market exchange system. How can the intra-subjective reflection of values qua prices become socially valid without recourse to some a priori consciousness, one that is simultaneously subjective and objective? A. Amonn in his *Objekt und Grundbegriffe der theoretischen Nationalökonomie* and G. Simmel in *Philosophie des Geldes*, both in a neo-Kantian manner, were among the last scholars to attempt sorting out the ambiguities of the new current in economics at the time; taking the price form as a presupposed form for a socially-valid value

expression grounded in quasi-empirical quantification, formalized in mathematical syntax and integrated in an economic forecasting model. The recourse to the statement that "[e]conomics is the unity of two worlds, of supersensuous valid one and of sensuously experienced one, divided and combined at the same time," (Reichelt 2013) was more or less one of the last attempts to salvage this distinction, before the rationality of psychological and technical factors (J. Schumpeter) prevailed in social objectivity. The category of value now has its form of appearance in the singularity of price, i.e. its subjective side, while on the other hand, it establishes the amount of units of exchange, its objective side. The factors are thought of as exclusively technical, facilitating a closed-circuit value-price-money for economics.

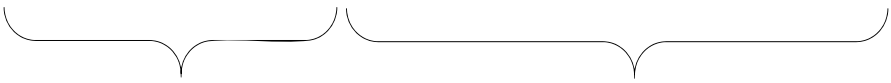
What distinguishes Marx from marginalists and mainstream economists is precisely this shift in the object of knowledge [Erkenntnisobjekt], whose effects we chose to call the *subtraction of the qualitative*. Reichelt refers to it in Amonn in the following manner: "The concept of price in theoretical economics (in Amonn's sense, in particular, his 'object of knowledge' price-form) has to resolve the next problem: Which is the necessary means of expression [Ausdrucksmittel] for this inner relation? Technical quantities cannot stand without also applying the outer relation. But how does one connect the inner with the outer relation, the social relation with the technical one?" (Reichelt 2013)[6] If we rephrase Reichelt's argument, we can clearly see the last fragments of the objective-subjective relation in Amonn's writing waning away; objectivity is articulated with concrete prices that exist firsthand subjectively in the 'heads' of individuals (Amonn 1937). Their determination is solely quantitative, ideally [Ideel] with relations either to numbers or signs, and materially constitutes the contents of the form of value unabashedly in money. Its technicity, whether as a means of exchange, store of value or unit of account, strips it from any 'metaphysical' substance, leaving only its counterpart, price and its form—not merely as an outer relation of different quanta or numbers, but an a priori general inner and social relation of exchanging subjects—as objective unity of value (in Menger's sense). Therefore, the price form with its technical-formal structure mediates the relations of exchanging subjects from the outer means of expression to a functioning automaton of social actuality.

Why was it that Amonn's endeavour to elaborate the centring of the price-form along with methodological individualism and a subjectivist theory of value was bound to encounter a Marxist critique? We can see this in I. I. Rubin's reply in "Alfred Amonn und das Objekt der Theoretischen Nationalökonomie" (Rubin 1929). Amonn correctly identifies the inadequate handling of the object in economic science for its reduction of social relations to those between people and things. The price form presupposes the relation between exchange-relating individual subjects, simultaneously also reflecting a complete social structure; it implies a de facto totality of social actuality. In sensu stricto, Rubin sees the answer in tearing away social relations from the social material production process. Rubin (1929), while Amonn wanted to find an intermediate route, negotiating both value and social relations

[6] We have tried to show elsewhere how Marx's value form can be read in the structuralist way with an absent cause—the operation of subtraction of the structure (see Kranjc 2019).

(Amonn 1936). His attempt to invoke exchanging individuals through price form to social rationality was for Rubin a clear break with Marx's analysis of a concrete form of social production process. Both Rubin's and Reichelt's critique conjoin in denying the technical-formal methodology implied by Amonn's proposition, especially in the part of a sufficiency of individual exchange to sustain the existence of social relations among individuals (Amonn 1911). The following schematic shows the dividing line between Marx's, Amonn's and Hayek's objects of experience (and knowledge):

Marx's schema:	**Amonn's schema:**	**Hayek's schema:**
Social relations (Verhältnis) among people	Social relations (Beziehung) of people	Communication network of indviduals
Relations of production	/	Division of knowledge among individuals
A determinate type of social relations of production	A determinate type of social relations	A determinate type of individual relations
(exchange among commodity-producing individuals)	(individual exchange relations)	(information exchange about individual plans)



Value form | Price form

Individual exchange relations are the starting point and the principle based on which individuals take their designated places within the process of exchange, be it businessmen or owners of capital, workers or landowners, unemployed persons, or farmers. Amonn nevertheless attempts a reboot of neoclassical economics, returning to Marshall's partial equilibria and Walras's general equilibrium. Once such a parallax shift of object[7] has been accomplished, i.e. the separation between exchange and production, or conversely, detaching exchange from its base or "value-formation" [Verwertung], we have actually lost/gained the crucial ability to differentiate between feudal, capitalist or any other mode of production. Why lost or gained? If we paraphrase Samuelson's reference to his mentor J. W. Gibbs, we have gained the universality of economic science, written in mathematical language.[8] However, the price to be paid for its usage

[7] We refer here to K. Karatani's (*Transcritique*) (Karatani 2005) and S. Žižek's (*The Parallax View*) (Žižek 2006) usage of the notion "parallax".

[8] Fritz Matchlup has struck the true essence of Samuelson's methodological article "Economic Theory and Mathematics—an Appraisal", AER, 42, 1952, by pointing to the "pseudo-problems of the qualitative essence", where the problem of essence is represented right with the conceptual character of value (p. 66). The question, one overshadowed by K. Gödel, arises whether "mathematical language" is capable of supplying all the qualitative moments of the concept value or is it rather a pseudo-problem of "translations" among different languages.

is relatively high for economists: first, economics is faced with the continuous accusations of their categories being of pure quantitative character, useful in mathematics, astrophysics, conditionally in mathematized physics, but inoperable in economics; and second, all quantities expressed with the price form necessarily presuppose the means of their expression in prices; there is always an ex-nihilo presupposed money commodity. The commensurability of products is already presupposed in price form as a unity of external technical relations of pure quantities and inner social relations of exchanging individuals—an objectively valid social form. Marx would have been very unhappy with this solution: he would have liked to have known just where this pertinence of form comes from and why this content would assume the form it does. No answer is given to this question by any of the aforementioned economists, because for economics, the problem does not exist; once the price form is presupposed and individuals finish doing their valuations 'in their heads' the process is at its end. In this case, one cannot speak of "real and empirically measured facts", but rather of ideal enumerable digits, existing in the subjects' consciousness.

Amonn's case designates two sides of the same problem: on the one hand, the content and form of value immanent to economic science of "pure quantities", and on the other, the incompleteness of formal systems or languages in retaining the qualitative moments (the undecidabilities, etc.). We mentioned the critique of the first side in the context of Rubin's insistence on determinate social form of relations of production, namely the incidence of commodity labour (as labour force) and its specific site in the structure of the capitalist mode of production. However, such a structure is made obsolete in Amonn's handling of social relations [Austauschbeziehungen], which are grounded solely on the formal seller—buyer axis. As Rubin succinctly observed, it was a decisive break and shift between Marx's and Amonn's understanding of social relationships; from the production process to exchange process. When this is done, the price form supersedes the value form seemingly naturally, evolution-like, the exchange relations become the content of the form of exchange and entirely devoid of any production ballast. Now, to the second part of our problem, i.e. the objective value stemming from price form. Backhaus justifiably questions the shortfalls in the conceptions of price phenomenon, as its "substance" and "measure" are not empirically quantifiable physical currents of goods, nor do they attain any qualitative determinations with mathematical expression in itself. The problem of the concept of price persists in a subject's "pure thought and ideally countable" self-conscious images of economic objects. "The objective similarity is a metaeconomic condition of possibility, not just for determining the scaling of economic quanta, but also adding, and even further to lay down the equations between monetary and real levels of macroeconomic analysis." (Backhaus 2011) The similarity of these (macro)economic categories can only ever be pre-imposed, for they do not sustain any quality of their own—as opposed to e.g. temperature, colour, length. Rather, they are 'abstract' quantities of capital, value-added, debt, etc., that which relies on sensuous-supersensuous character of economic categories (value, money, interest, etc.)—their un-decidedness.

4 A solution?: a specific subtractive structure entailing the real abstraction

Marx's dialectical unfolding of notions not only addresses the empirical content of categories (the quantitative volumes of products and aggregates, such as investments or savings, etc.), but also deals with the qualitative moment immanent in a category's unfolding. On the other hand, when it comes to price form, economists made a compromise to do away with the labour theory or any other substantialist theory of value and go for the simplicity of money-mediated exchange ratios. Volume three of Marx's Capital explores the transitional processes of values onto their forms of appearance (profits—interests, rents) as "metamorphoses", but it does so from an entirely different epistemological perspective of object-analysis. The other serious issue is the question of money-commodity; before we can even speak of exchanges among commodities, we first have to reduce their heterogeneous nature to a common base. Even if we do away with labour as substance, what remains is the problematic handling of the concept of money that 'equates' all products as a homogenous objective-value unity [Objektive Werteinheit]. Recall how Marx posits the commodity exchange mediating values with a general equivalent that de facto already always is money. Only through a "social act" [gesellschaftliche Tat] or force can an object actually become money, but there already exists a presupposition of a general equivalent of products, making them homogenous as values. Marx does not have to succumb to premises and axioms as G. Debreu, F. A von Hayek or P. Samuelson are obliged to when handling monetary market exchange, since his dialectical approach retains the inner-theoretical unfolding of commodities as values to money, i.e. he upholds the gap between content and form, thereby opening the continuous path of analysing the trinity formula (capital-interest, land-rent, labour-wage). As Marx puts it:

> In the case of the simplest categories of the capitalist mode of production, and even of commodity-production, in the case of commodities and money, we have already pointed out the mystifying character that transforms the social relations, for which the material elements of wealth serve as bearers in production, into properties of these things themselves (commodities) and still more pronouncedly transforms the production relation itself into a thing (money). All forms of society, in so far as they reach the stage of commodity-production and money circulation, take part in this perversion (Marx 1991: p. 965).
>
> In capital—profit, or still better capital—interest, land—rent, labour—wages, in this economic trinity represented as the connection between the component parts of value and wealth in general and its sources, we have the complete mystification of the capitalist mode of production, the conversion of social relations into things, the direct coalescence of the material production relations with their historical and social determination. It is an enchanted, perverted, topsy-turvy world, in which Monsieur le Capital and Madame la Terre do their ghost-walking as social characters and at the same time directly as mere things (Marx 1991: p. 969).

Every economic science remains the captive of an "enchanted, perverted, topsy-turvy world" for refusing to account for "irrational", "a-conceptual" [begriffslose] forms, ones it nonetheless automatically uses. Here, the price-form of production cost is a form of alienation; the scientific world closed in on itself, where natural scarcity and rational principle operate as the sole two modes of production, distribution, exchange and consumption. But let us continue with value and money. When it comes to price form, it conveys a value expression, be it in numéraire, currency, index points, basis points, etc., formally satisfying the necessary conditions of measuring unit and quanta for a ratio-type equation. In Walras's *Éléments d'économie politique pure* one can observe how value can be posited as an a priori consequence of scarcity, simultaneously determining exchange value—and in one single stroke also presupposing money-commodity for transaction's counterpart (Walras 1926). The relation between two exchange values is simply expressed with money, which by the same token as a corollary also determines the value-standard, i.e. the unit of value. Walras posits such "empirical" quantifications to more closely conform economics to a prestigious group of mathematical and physical sciences. Following Walras' line of reasoning, we end up in a peculiar rationalization of mathematic formalization, superseding any kind of experience of the sensible by deducing theorems, lemmas and proofs on economic categories (market, exchange, production, utility, etc.) exclusively from formal syntax.

We have sketched how economic discourse treated the concept of value and tried to show where the "break" occurs. The analysis relied on different historical approaches to economic theory, from classical, Marx's to Austrian and other perspectives. The classical and Marx's account of human labour as substance of value has been replaced with subjective aspirations of individual knowledge-reflective subjects keen on bargaining through a price mechanism. Although human labour and craftsmanship are still needed to mould and transform different materials to introduce a final product onto the market, we encounter value on the side of the subjective (individual expectations) unique dynamic of market forces. We should point out that this parallax move in conceptual comprehension is not the result of economic science's inquiry into scarce resources and their allocation; it is the result of a different kind of competition: between research programmes, particularly with a scientific-methodological-philosophical take on epistemological questions. Apart from Marx, this aspect can be clearly seen also in the case of Alfred Amonn, who wanted to shift the object of economics from that of resources (Wirtschaftswissenschaft) to social phenomena (Sozialwissenschaft) (Amonn 1911: pp. 161–162). The aim was to bridge the gap between Marx's formulation of social relations of production and the opposing (quasi-)empirical subjective plans of individuals. He was indeed from the Austrian bend when it came seeing the market-based economy as one populated with exchanging individuals taking on objective unity of value represented with the price form and in the price system (Amonn 1935). The unsurpassable difference between him and Hayek was the understanding of the social relation: for the latter it meant a technicality, while for Amonn it represented a supersensuous property of the social world. How does the supersensuous character come to be? Precisely through the mediation of money—the pure materiality of price abstractions in our consciousness.

To recap what we have thus far said on price form expressed with money: there has to exist something, an object of interest, for two opposite sides in exchange, each of which has to have both, use and exchange value, or at least some other form or support [Träger] of this unity. Once this is achieved, we have the necessary conditions for a price(tag) to exist, but we have not yet sorted out the riddle of money commodity (and—for the Marxian-inclined reader—neither have we addressed the problem of the value-substance). Textbook economics sees it as logically deducible from a good's relative scarcity and our need for it. Amonn, on the other hand, and his objection to the existence of a social relation mediated by prices is ripe for further study amid its conceptual weakness. This dimension remains opaque also in Hayek's argument; he circumvents it with yet another a-conceptual form, i.e. the subjectively inclined order of "tacit knowledge", of distinct usages of things. Such pragmatism can only lay the groundwork for a retroactive positing of price form as an a priori form of our consciousness that once again brings with it the concept of value.

The "New Reading of Marx" of Backhaus and Reichelt tracks the "metaphysical category" of value by Georg Simmel, providing an answer for the divide between objective and subjective value; the encounter of the notions of price and money in the consciousness of exchanging subjects. Here, consciousness is given the task of providing ex nihilo the concept of money out of price content to operate as an objective factor for economics. If we paraphrase Marx, money and price did not emerge 'in human heads', neither accidentally nor simultaneously; rather, they are the dialectical outcome of an unfolded contradiction of social relations in a determinate mode of production. Put conversely, for Hayek to deduce the price evaluation of products, the price already has to have some qualitative determination, a presupposed moment, with some third—a general equivalent in the form of money commodity. Think of each separate quantum of things, without any qualitative reference of measure, just in itself; it is completely senseless to compare one with the other. Methodological individualism can formally expect of individual subjects to rely on their sober judgement of every good, but can it really account for all simultaneous relations between goods? It does not, for consciousness uses the general equilibrium as a necessity to relate objects of exchange and uses a social act to pinpoint a money commodity that de facto sutures the exchange process in universal units. Also, it can deal with Jevons's or Walras's *ratios of prices*, meaning they are model-laden abstractions, but once the absolute prices are the object, there is a categorical difference for the latter on their subjective–objective or sensuous-supersensuous character. How to overcome this? The students of Theodor Adorno, Backhaus and Reichelt opt for his understanding of "real abstraction"[9] to equilibrate the diverse range of products on some abstract generality (i.e. labour)—a third. What does

[9] The first usage of the phrase "Real abstraction" is accredited to Georg Simmel in his work *Philosophy of Money* (cited in the last section). Indeed, it was the work of Alfred Sohn-Rethel *Geistige und körperliche Arbeit* that first extensively explicated on this notion and had later also lead T. Adorno to think of exchange abstraction [Tauschabstraktion] as a central critical concept (see Sohn-Rethel 1989: pp. 221–226).

this real abstraction entail? First, it postulates the existence of economic value as a metaphysical category, if value should have any objective site in actuality. Meaning it exists in a 'between space' [*Zwischenwelt*], residing both within consciousness and also outside of it; Simmel here talks of a parallel between Plato and Medieval universalities, that of *ante rem*, *in re*, *post rem*—the moment in re of value always residing in a thing in and for itself (and not as only post rem, as is the case for subjectivists). The equivalent, value expressed in money units, therefore belongs to the supersensuous order of things—this is what conjoins with Marx's *objective forms of thought* [*objektive Gedankenformen*] in a capitalist mode of production. The long-standing pertinent problem of subjectivist theory of value therefore remains: if, for us, the valuations exist only 'in our heads', how are we to think social objectivity when it comes to the universal character of value in capitalism? Economic science supplied us with an aporetic abstractionist-positing-in-advance of concepts like purchasing power, capital stock, value-added, etc. to cover up the dilemma. Purchasing power can formally be turned into univariate content of the price form with considerable ease, closing in the circuit from production to consumption for macroeconomics. The question nevertheless endures: where does all this come from? Marx's now already notorious answer that economists (of his as much as our own time) have all occupied themselves with the question of content and their conditions, but have neglected the parallel unfolding of forms pertaining to this content—commodity form, value form, capital form and all higher orders of forms. And if we follow Marx's argument all the way through, we must accept that "*in money realised price and its substance [wealth itself]*" is introduced via money as a singular commodity, whose generality embodies all particularities of the exchanged merchandise. Forming a completed totality of commodity-universe money is then always subtracted from the exchange process and is *absent* in the end result. Marx's dialectical unfolding of the notion can be summarized, conversely, in the following way: a set of concrete types of labour also contains labour in general, abstract labour closing in on totality, only insofar as this abstract labour is subtracted *from the structure*. Through dialectical steps, Marx develops an analytical scission of these notions (commodity, value, money, etc.) onto two levels: the sensuous and the supersensuous (abstract). This remains one of the cornerstones for our concurrent critique of economic categories.

Simmel very much believed it is not all about the *quantitative measurements in the heads*, allowing for the existence of an "other between-world" with reference to Marx's thesis on an alienated science of political economy. Austrians and currents of mainstream economics did away with labour as substance of value/commodities, as they stripped market exchange of any abstract universality (money commodity) without any consequence. Marx on the other hand, at least form *Grundrisse* onwards, proposed a specific structure of capitalist relations of production in which labour in general should be perceived as an abstraction, as an abstraction subtracted from production totality that mediates social objectivity. Simmel was well aware of this when he wrote the following passage in *The Philosophy of Money*:

> As soon as one realizes the extent to which human action in every sphere of mental activity operates with abstractions, it is not as strange as it may seem

> at first glance that not only the study of the economy but the economy itself is constituted by a real abstraction from the comprehensive reality of valuations. The forces, relations and qualities of things—including our own nature—objectively form a unified whole which has to be broken down by our interests into a multitude of independent series or motives to enable us to deal with it. Every science investigates phenomena that are homogeneous and clearly distinguished from the problems of other sciences, whereas reality ignores boundaries and every section of the world presents an aggregate of tasks for all the sciences (Simmel 2009: p. 42).

The science Marx proposed indeed addresses these issues because it encourages thinking about the conditions behind a possible science capable of resolving the specific structure of sites in a determinate (capitalist) mode of production. If the real abstraction has any serious enterprise in sublating the hegemony of the positivism of price form, it is precisely to engage the notional world of economics negatively, imposing a gap where the subtraction of the qualitative can appear.

Funding  This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie Grant Agreement No. 893027.

Declarations

Conflict of interest The corresponding author states that there is no conflict of interest.

References

Amonn A (1911) Objekt und Grundbegriffe der theoretischen Nationalökonomie. F. Deuticke, Wien
Amonn A (1935) Zu den methodologischen Grundproblemen. Z Für Natl 6(5):616–631
Amonn A (1936) Wesen und Bedeutung der Wirtschaftswissenschaft. Z Für Natl 7(3):306–325
Amonn A (1937) Zwei offene Fragen der allgemeinen Preistheorie. Z Für Natl 8(3):265–296
Backhaus H-G (2011) Dialektik der Wertform. Ça ira-Verlag, Freiburg im Breisgau
Backhaus H-G (2012) Der widersprüchliche und monströse Kern der nationalökonomischen Begriffsbildung in Marx, Adorno und die Kritik der Volkswirtschaftslehre. Ça ira-Verlag, Freiburg im Breisgau
Hayek FA (1952) The counter-revolution of science. Free Press of Glencoe, New York

Hayek FA (1969) Individualism and economic order. University of Chicago Press, Chicago
Jevons WS (1890) Pure logic and other minor works. Macmillan, London
Karatani K (2005) Transcritique on Kant and Marx. MIT Press, Cambridge
Kranjc U (2019) The absent cause and Marx's value form. Filoz Vestn 40(3):49–71
Marshall A (1959) Principles of economics. Macmillan, London
Marx K (1991) Capital, vol III. Penguin Books Ltd, London
Reichelt H (2013) Neue Marx-Lektüre. Ça ira-Verlag, Freiburg im Breisgau
Rubin II (1929) Alfred Amonn und das Objekt der Theoretischen Nationalökonomie. Unter dem Banner des Marxismus 3(1):128–149
Samuelson PA, Nordhaus W (2010) Economics. McGraw-Hill, Boston
Schumpeter J (1987) History of economic analysis. Routledge, London
Simmel G (2009) The philosophy of money. Routledge, London
Smith A (1937) An inquiry into the nature and causes of the wealth of nations. Random House, New York
Sohn-Rethel A (1989) Geistige und körperliche Arbeit: Zur Epistemologie der abendländischen Geschichte. VCH, Acta Humaniora, Weinheim
Tanaka Y (2009) Undecidability of Uzawa equivalence theorem and Cantor's diagonal argument. Appl Math E Notes 9:1–9
Velupillai KV (2012) Computable foundations for economics. Taylor and Francis, London
Walras L (1926) Éléments d'économie politique pure, ou, Théorie de la richesse sociale. L. Corbaz, Lausanne
Walras L (2005) Studies in applied economics. Routledge, London
Žižek S (2006) The parallax view. The MIT Press, Cambridge