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RESEARCH ARTICLE

On money as a conventional sign: revisiting Aristotle's conception of money*

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Abstract

Regardless of the historical evolution of money, some passages of Aristotle's works shed light on its meaning and nature. This paper will attentively consider these passages. The first section presents Aristotle's thoughts on money. While the second section analyses money as a unit of measurement, the third section deals with its conventional nature, and the fourth draws from the theories of signs elaborated by John Poinsot and Charles Peirce to expand the explanation of the nature of money as a sign. The conclusion considers three levels of consideration of money based on Aristotle's thoughts: (1) universal abstract money, (2) instantiated in specific currencies, and (3) the actualization of their properties and potentialities in actual economic dealings.

Key words: Aristotle; money as a conventional sign; nature of money

> Sleepless, possessed, almost happy, I reflected that there is nothing less material than money, since any coin (a twenty centavo piece, for instance) is, in truth, a panoply of all possible futures. Money is abstract, I said over and over, money is future time. It can be an evening just outside the city, or a Brahms melody, or maps, or chess, or coffee, or the words of Epictetus, which teach the contempt of gold; it is a Proteus more changeable than the Proteus of the Isle of Pharos. It is unforeseeable time, Bergsonian time, not the hard, solid time of Islam or the Portico. Adherents of determinism deny that in the world there is only one possible event, ed ist an event which could have happened; a coin symbolizes our free will.
>
> Jorge Luis Borges (1949), *The Zahir.*

The topic of the nature or essence of money has produced an abundant literature without reaching a uniform conclusion. It has drawn the attention of famous philosophers, sociologists, and economists such as Aristotle, Nicholas Oresme, David Hume, Adam Smith, Ferdinando Galiani, Georg Simmel, Max Weber, Carl Menger, Georg F. Knapp, John Maynard Keynes, Karl Polanyi, Ludwig von Mises, Friedrich von Hayek, and Joseph Schumpeter, among others.[1] In the passage quoted above, Borges implicitly refers to the traditionally stated functions of money: unit of account, medium of exchange, and store of value. What is more, he stresses its abstract condition and saleability and relates it with a

*This work has benefitted from comments by John Davis, Julián Giglio, Wade Hands, Rodrigo Laera, Carlo Natali, Fernando Tohmé, Eduardo Scarano, Alejandro Vigo, and three anonymous referees. The usual disclaimer applies.

[1]'The subject of money has fascinated wise men from the time of Aristotle to the present day because it is so full of mystery and paradox'. *The New Encyclopedia Britannica*, 15th edition, 1985, Vol. 24: 333, from Alla Sheptun, 'Philosophy of Money' (https://www.bu.edu/wcp/Papers/Econ/EconShep.htm).

conception of time, even considering it a symbol of free will! The nature of money deserves to be thoroughly investigated: this paper aims to do just that, as ambitious as it may seem. As one of the anonymous reviewers of this paper sharply asserts, 'these are all the questions that have perplexed all those mentioned in this text and many more'[2]. Consequently, it would clearly be presumptuous to assume that this paper can resolve these perplexities. I will be only too pleased to contribute some thoughts to the discussion on the nature of money, resorting to Aristotle's ideas on it. His description of its essence, its essential properties, and the links between them can be applied to contemporary fiat money analysis. He also provides criteria for discerning whether digital monies are actually monies or not. However, this article does not address this topic.

The question about the nature of money has been linked with theories about its origin, about which we can only postulate hypotheses (Lawson, 2016: 961). Although there are various theories on the origin of money, they can be grouped under two main positions. One position maintains a spontaneous evolution of money. A second position upholds that money is a product of intentional design. When considering money as a social institution, these two approaches relate to different corresponding conceptions of social institutions.

I maintain that discerning the essence of money does not necessarily imply carrying out historical or archaeological studies to decide whether one thesis about the origin of money prevails over the other. As Simmel asserts from the beginning of his *Philosophy of Money*, the question of the essence of money is not historical but philosophical, while the question of the origin of money is not philosophical, but historical (cf. 2004: 54). Here, I will not deal with the latter. Referring to Aristotle's theory on money, Schumpeter asserts that, though presented in a 'genetic form', it is 'a theory in the ordinary sense of this term, that is to say, an attempt to explain what money is and what money does' (1954: 60). He also adds the following question and its answer, 'Is it valid procedure to trace as far back as we can the history of an institution in order to discover its essential or its simplest meanings? Clearly not' (1954: 61).

Besides, in fact, natural experiments have demonstrated that money originated according to both theories can coexist side by side. My country, Argentina, has an unfortunate history of monetary problems. On the positive side, the country has become a real laboratory of economic practices. I have witnessed, as Gómez (2018, 2019) carefully describes it, how different monetary systems, spontaneous, evolutionary, internally regulated, and systems adopted from other countries, can actually work together at the same time[3]. This is not an abnormal phenomenon. Zelizer adopts a similar concept of multiple kinds of money, based on the history of money in the United States between the 1870s and the 1930s. She provides different examples of monies and states (1994: 20–21):

> These objects have no common physical characteristic; they qualify as distinct monies because of the uses and meanings people assign to them, because of the distinctions they represent in everyday social life. Social monies certainly include officially issued coins and bills, but they also include all objects that have recognized, regularized exchange value in one social setting or another.

It is also worth noting that money has evolved over the years from its earliest forms – commodity monies with a strong physical support – to current fiat money and even more abstract forms of it.

[2]I have also benefited from this reviewer's suggestion to read Keynes (2013: Chapter 1), Orléan (2014: Chapters 1–5), Ingham (2020: Chapters 1–3 and 2018), and related papers of Lawson (2016, 2018): I found them very much enlightening. However, in this paper, I will not concentrate on relating Aristotle's ideas with Keynes's notion and typology of money in Chapter I of his *Treatise on Money*, nor with Orléan's ideas. Further, I will not attempt to intervene in the interesting discussion between Ingham and Lawson. I only hope that my presentation of Aristotle's thoughts might help advance our knowledge of the nature of money and perhaps also contribute to the cited discussion without taking part in it.

[3]See also Catan (2002). There is also the case of the use of the old Italian money, the 'lira', replaced by the Euro, by the mafia for illicit transactions (https://www.bloomberg.com/news/articles/2019-06-15/italy-s-mafia-uses-the-old-lira-as-its-own-parallel-currency).

In sum, we must look elsewhere to discern the essence of money. As Stein has noted, 'the essence of a reality isn't to be inferred from its development' ([1922] 2000: 238)[4].

Notwithstanding, different positions on the origin of money grant different temporal or ontological priorities to the functions of money, thus putting on the table some essential features of it[5]. They either prioritize money as a medium of exchange, or money as a unit of measure (fixed by an authority), roughly corresponding to the respective theory: spontaneous or designed[6]. The second position is also related to the conception of money as a credit or a promise to pay (e.g. Fitzpatrick, 2014; Ingham, 2004).

In fact, money as an exchange instrument requires a measuring device. As Zelmanovitz puts it, 'money for us is a 'unit of account,' a 'standard of value,' *because* it is the preferred medium of exchange' (2016: 24). According to Menger (1892), this is so because money is the more saleable commodity, but the fact that money is a unit of account and a standard of value facilitates exchanges. Tony Lawson (2016: 967ff.) underscores money as a form of value. For Keynes (and Ingham, 2018) instead, 'money of account, namely that in which debts and prices and general purchasing power are *expressed*, is the *primary* concept of a theory of money' (2013: 3, cursives in the original) – a view opposing Zelmanovitz. It seems that these functions are correlative. Which comes first, the egg or the chicken?

Regardless of the evolution of money, there are some passages of Aristotle that shed light on the meaning and nature of it. In this paper, I will attentively consider these passages of Aristotle's work. The first section will present Aristotle's thought on money. The second section will analyze money as a unit of measurement, and the third section will deal with its conventional nature. In the fourth section, I will draw on two theories of signs to explain the nature of money as a sign. Finally, I will provide a conclusion.

1. Aristotle on money

The first short passage of Aristotle's works that I will quote refers both to the nature of money and to its origin. He affirms in his *Nicomachean Ethics* (*NE*):

> *Oion d'hypallagma tes chreias to nomisma gegone kata syntheken* (*NE* V, 5 1133a 29-30)[7].

The passage has been translated in different ways: 'But money has become by convention a sort of representative of demand' (Ross); 'money is the exchangeable representative of demand' (Liddell and Scott, 1900: 830). 'But demand has come to be conventionally represented by money' (Rackham). 'And currency has become a sort of pledge of need, by convention' (Irwin). A French translation reads, 'La monnaie est devenue, en vertu d'une convention, pour ainsi dire, un moyen d'échange pour ce qui nous fait défaut' (Jean Voilquin, Garnier, p. 219)[8]. Schumpeter translates it

[4]See also Mäki (2009: 3, nt. 3). I have benefited very much from reading this piece on the ontology of money, especially because it draws a clear distinction between money as universal and the specific instantiations of it or 'currencies'.

[5]Mäki (2009: 3) considers these functions as the essence of money. I prefer to say that they are essential characteristics of money, what Aristotle calls 'eternal accidents' (*Metaphysics* V, 30 1025a 30–33) and the scholastics *proprios*.

[6]Aristotle claims that both functions are interrelated. Oresme (1956: 4–5) asserts: 'money does not directly relieve the necessities of life, but is an instrument artificially invented for the easier exchange of natural riches'. Hume ([1752] 1970: 32) affirms: 'Money is not, properly speaking, one of the subjects of commerce; but only the instrument which men have agreed upon to facilitate the exchange of one commodity for another'.

[7]*Hypallage* means an exchange and *hypallasso* is the verb 'to exchange'. *Hypallagma* is 'that which is exchanged' (Liddell and Scott: 830). *Chreia* is a request of necessity, a need (Liddell and Scott, 1900: 893). *Nomisma* means 'money'. *Kata syntheken* means 'by convention'.

[8]The Aristotelian scholar Carlo Natali wrote to me (21 April 2020): 'You quote many translations of Aristotle's *Nicomachean Ethics*; among the quotes I think Irwin's is the best, and Voilquin's is the less reliable. There is a problem about the translation of *chreia,* a Greek term that corresponds both to 'need' and to 'use'. Ross's translation as 'demand' is too modern. I think 'need' is a good translation in 1133a29–30'. Meikle (1995: 18) also thinks that it is more appropriate to translate *chreia* as need than as demand. Demand is a noun imbued of anachronic economic connotations.

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as 'money is a means of exchange [used] according to convention' (1954: 60). My translation is, 'Money (*to nomisma*) has become (*gegone*) by convention (*kata syntheken*) like that which is exchanged (*Oion d'hypallagma*) for needs [or wants]'[9] (*tes chreias*).

Aristotle states that exchange depends on equality. He offers the following example:

> Let A be a house, B ten minae, C a bed. A is half of B, is the house is worth five minae or equal to them; the bed, C, is a tenth of B; it is plain, then, how many beds are equal to a house, viz. five. That exchange took place thus before there was money is plain; for it makes no difference whether it is five beds that exchange for a house, or the money value of five beds (1133b 24–29).

Consequently, for money to allow exchange, it needs to have the value of the thing exchanged. This value has been assigned by convention. The following passage in the *Nicomachean Ethics* explains that money can be this medium of exchange and that it additionally measures all things:

> This is why all things that are exchanged must be somehow comparable. It is for this end that money has been introduced (*eleluthen*), and it becomes in a sense an intermediate (*meson*); for it measures all things (*NE* 1133a 17-21)[10].

But he also goes deeper,

> All goods must therefore be measured by some one thing, as we said before. Now this unit is in truth demand (*he chreia*), which holds all things together (*NE* 1133a 25-27)[11].

However, needs or wants are qualitative properties that require a quantitative measure to allow exchange. Hence, he makes the assertion previously quoted: 'Money has become by convention like that which is exchanged for needs [or wants]'. We conventionally assign a quantitative value to an instrument (money) and use an amount of it that is equal to the qualitative characteristic of the thing – its necessity – to acquire it ('the money value of five beds').

In Aristotle's time, money was commodity money. He explains:

> At first their value was simply determined by their [metals] size and weight; but finally a stamp was imposed on the metal which, serving as a definite indication of the quantity, would save men the trouble of determining the value on each occasion (*Politics* I, 9 1257a 38–41).

However, money value, Aristotle recognizes, is not intrinsic but conditional on its capacity to acquire the things needed: 'for if those who use a currency give it up in favour of another, that currency is worthless, and useless for any of the necessary purposes of life' (*Politics* I, 9, 1257b 11). The value of money lies in its capacity to acquire what we need. Money is thus a sign of the value conferred by this capacity – its purchasing power, a value that equates the quality – need – and permits to fix a price in order to finally satisfy the need[12]. This sign is not 'inert', as is usually the case with signs; rather, it has a 'performative' ability or potential that will materialize when used[13]. Uskali

[9]One reviewer suggests that the term 'want' could be more adequate than 'need'. I agree.

[10]Ross's translation. Natali considers that *eleluthen* means 'discovered' or 'invented' rather than 'introduced'. This nuance is interesting because it suggests a convention about something that was already existent.

[11]Ross's translation. Irwin translates *chreia* as need.

[12]Ingham asserts that he understands money as 'the power of abstract value that is *signified* by the *signifiers* that we call money' (2018: 847). Lawson understands purchasing power as 'money's power or potential to be used throughout a relevant economy to make purchases' (2018: 851).

[13]This performative character of the sign makes me think of the Christian 'sacraments' – baptism, etc.– defined as '*efficacious* signs of grace' (*Catechism of the Catholic Church*, n. 1131, my emphasis, https://www.vatican.va/archive/ccc_css/archive/catechism/p2s1c1a2.htm). The efficacious character of the sacrament is actualized when it is received.

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Mäki (2009: 4) speaks about the causal powers or dispositional properties of money, which are its functions. As noted by Schumpeter (1954: 59), Aristotle remarkably enumerates the functions usually assigned to money.

(1) It is a *unit of measurement*: 'There must, then, be a unit, and that fixed by agreement [...] for it is this that makes all things commensurate, since all things are measured by money' (*NE* V, 5, 1133 b 19-23). In this sense, money is also a standard value.
(2) It is a *means of exchange*: 'all things that are exchanged must be somehow comparable. It is for this end that money has been introduced' (*NE* V, 5, 1133 a 19-21). 'The various necessaries of life are not easily carried about, and hence men agreed to employ in their dealings with each other something' (*Politics* I, 9, 1257 a 33–5). 'Money was intended to be used in exchange' (*Politics* I, 10, 1258 b 4).
(3) It is a *value reserve*: 'for the future exchange – that if we do not need a thing now we shall have it if ever we do need it – money is as it were our surety. Money is meant to be spent, but it can also be accumulated' (*NE* IV, 1, 1120 to 8-9). Thus, it becomes accumulated wealth, to the extent that it maintains its purchasing power. However, it should be underlined that this function of money – its storage – only makes sense in terms of a 'future exchange'.
(4) It has *purchasing power*: 'for it must be possible for us to get what we want by bringing the money' (*NE* V, 5, 1133 b 11-3).
(5) This feature also means that money is a *mean of payment*[14].

These properties and capacities are correlative, indispensable for money to be money, and mutually supportive[15]. In *Politics* I, 9, Aristotle implicitly applies his doctrine of the four causes to particular monies[16]: there is a material cause (in his time, as mentioned, money was a commodity; today, this material cause can be digital), a formal cause (the value assigned to it, based on its purchasing power), an efficient cause (the people who agree to do that), and a final cause (as a medium of exchange, 1257b 1). These four causes are necessary for money to exist.

There are more famous passages about money in Aristotle's *Politics*. In *Politics* I 9 1257a 6–14, he introduces his explanation of the meaning of chrematistics by providing an example of the use of a shoe 'for wearing or for exchange'; in the latter case, 'in return for money or for food', thus 'implicitly' considering a price or value of exchange of the shoe[17].

Money differs from the specific price. Money measures the need through the price and the exchange value, enabling the exchange. It provides a measure of the need, thus establishing an exchange value expressed by the price. Money is not 'operative'; without price, it is 'abstract': it is an open possibility or potentiality, 'a panoply of all possible futures', as Borges nicely expresses. Aristotle asserts:

> [t]his is why all goods must have a price set on them (*tetimestai*); for then there will always be exchange, and if so, association of man with man. Money, then, acting as a measure, makes goods commensurate and equates them; for neither would there have association if there were not

[14]Ingham (2018: 841–842) distinguishes between medium of exchange and means of payment, as Aristotle does.

[15]The priority of a form of value or of a unit of measure is the central point of discussion between Lawson (2016, 2018) and Ingham (2018). According to Aristotle, they are simultaneous, mutually demanding essential characteristics of money. Ingham (2018: 845) speaks of simultaneity, and Lawson (2016: 970) also considers the possibility of simultaneity. However, if I understand correctly, they differ about the ontological priority. In my view, Aristotle considers them as concomitant properties of the conventional sign of value conferred by its purchasing power.

[16]He distinguishes four real causes (efficient, formal, material, and final: *Metaphysics* I, 3–10; Physics II, 3) that provide different types of explanations: 'a doctrine of four becauses' (Ackrill, 1981: 36) that answer the following questions: who made this, why is this, this thing, and not other (the essence), out of which is this made, and for the sake of which is this made?

[17]Exchange value differs from price, because price is the expression of the former in monetary terms. Exchange value stems from the use value, given the availability of the object, and it is measured by the price determined through money. I say 'implicitly' to pay attention to the risk of anachronism when using these notions.

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> exchange, nor exchange if there were not equality, nor equality if there were not commensurability (*NE* V, 5 1133b 15-20)[18].

That is, on account of money, needs can be expressed in prices. In short, for Aristotle, money is a measurement instrument that enables to set the price of an object. The price represents the exchange value of the object, which subsequently expresses the need for the object sold or bought. In addition, price is still 'abstract', though less than money, until the thing or service is effectively bought.

Besides, money plays a role in social cohesion, as, by facilitating exchanges, it is an instrument to distribute *polis* members' needs: money facilitates exchange in society and makes society possible: it is a condition for its existence. In this sense, it 'accompanies' exchange that emerges as a natural process. Aristotle holds that exchange '*arxamen kata physin*', 'arises by nature' (*Politics* I 9 1257a 15, my translation): 'and is due to some men having more, and other less, than suffices for their needs' (1257a 15–16). That is, money must be understood in the context of the whole Aristotelian social system. This is the reason why Aristotle deals with the topic of money in the first book of his *Politics*.

This Aristotelian causal analysis refers to different specific money or currencies. However, Aristotle does not only refer to specific money but, primarily, to the very concept of it, which is instantiated in specific monies or currencies. Money is a sign of the value conferred by the mentioned powers or functions that finally act through specific instantiations of it. I think that Mäki's formulation expresses Aristotle's thought very well:

> Using the language of universals and particulars, we may characterize their relationships by saying that the money universal – moneyhood or moneyness – manifests itself in particular items of money and in generic currencies. We may also say that these relationships are characterized by multiple realizability: money has multiple realizations in specific currencies and particular items of money. The money universal is one, its realizations are many (2009: 8).

He adds: 'In the case of the money universal, existence and exercise are linked in that existence requires exercise: money's powers need to be exercised in order for them to exist […] moneyhood only exists as instantiated in particular currencies and money items rather than independently of them' (2009: 11). The correctness of this statement depends on the meaning of 'exists'.

At this point, it may prove interesting to recall the classical doctrine of universals. Universals are (exist) in the singular objects as their essence (*universal in essendo*), in the concepts expressing this essence (*universal in repraesentando*), and in the words meaning the plurality of things that share the same 'universal' characteristic (*universal in significando*). However, the most 'real' universal is embodied in a specific thing: this animal, this house. The universal 'law', or 'rule' is instantiated in specific laws and rules. The universal 'temperance' is instantiated in this temperate person or action. The same applies to money: its real condition is a determinate currency, and even more, a determinate quantity of money: a specific paid price, payment, or investment, etc. As Ann Davis notes, 'money is only 'real' when traded for other commodities, including material objects as well as financial assets' (2017: 169).

The universal sign, money as moneyness, exists instantiated in particular currencies, which have powers that are exercised in specific, real dealings. That is, we can consider money in three ways: universal money, specific currencies, and specific monetary dealings that actualize their potentiality. The Aristotelian categories of potentiality (*dynamis*) and act (*energeia*) can also be applied here: universal money and particular currencies are signs that have a purchasing power or potentiality (capacity) that is actualized in specific transactions. In the case of exchange, the exercise implies exchange value and price, which represents the value of a need (or want).

In the next sections, I will deal with money as a unit of account, its conventional character, and money as a sign.

[18]Ross's translation. For Natali, at 1133b15, 'have a price set on them' is too modern, *tetimestai* means in general 'to be appreciated, estimated'.

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2. Money as a unit of measurement

For several authors, money is an abstract reality (see, e.g. Aglietta, 2001; Fitzpatrick, 2014: 209ff.). In effect, 'money', as I have maintained in this paper in accordance with Mäki, is a universal abstract term. Instead, currencies and prices are specific.

Once again, I will offer three quotes by Aristotle (already mentioned):

> This is why all things that are exchanged must be somehow comparable. It is for this end that money has been introduced, and it becomes in a sense an intermediate (*meson*); for it measures all things (*NE* V, 5, 1133a 17-21).
>
> Money, then, acting as a measure, makes goods commensurate and equates them (*NE* V, 5, 1133b 16-17).
>
> There must, then, be a unit, and that fixed by agreement [...] for it is this that makes all things commensurate, since all things are measured by money (*NE* V, 5, 1133 b 19-23).

That is, for Aristotle, money is a conventional unit of measurement. For Peirce, it is also a means for measuring value (cf. 1931–1958: 1.122 and 2.780). Searle notes that 'all you need to have money is a system of recorded numerical values whereby each person (or corporation, organization, etc.) has assigned to him or her a numerical figure which tells at any given point the amount of money they have, and they can then use this money to buy things' (2006: 64). This definition applies to instantiated conventional money.

We use numbers to measure things. Aristotle developed a related theory of mathematics and numbers. This theory has been recently readapted by the School of Sidney and other mathematicians who think that mathematical objects are 'fictional entities grounded on physical objects' (Mendel, 2004: 2): universals *in significando* and *repraesentando*, grounded on universals *in essendo*, instantiated in specific objects. Franklin, in his chapter on 'Aristotelian Realism' in the *Philosophy of Mathematics* volume of the *Handbook of the Philosophy of Science* (Elsevier), maintains that mathematics studies the quantitative and structural aspects of things, as ratios, patterns, or relations. 'They are scientists who study patterns or forms that arise in nature' (2008: 103). The idea of mathematics as a language can be included in this conception within a theory of signs. In this theory, mathematical symbols are 'instrumental' and 'conventional' signs of mathematical concepts which are 'formal' and 'natural' signs of real structures or properties[19].

Franklin (2008: 101–102) asserts,

> Aristotelian realism unifies mathematics and the other natural sciences. It explains in a straightforward way how babies come to mathematical knowledge through perceiving regularities, how mathematical universals like ratios, symmetries and continuities can be real and perceivable properties of physical and other objects, how new applied mathematical sciences like operations research and chaos theory have expanded the range of what mathematics studies, and how experimental evidence in mathematics leads to new knowledge.

For Aristotle, Jonathan Lear explains, mathematics is true, 'because it accurately describes the structural properties and relations which actual physical objects do have' (1982: 191). This position parallels a realist view of measurement which considers that the latter is based on quantitative attributes of reality (see, e.g. Michel, 2005). A number – for example, 1, I, one, un, uno/a... – is a conventional sign of a concept – the concept of one *per se* – that is a formal and natural sign of a quantitative aspect of reality, the unity. One meter is a conventional measure of a specific length that is a quantitative aspect of a material element. To say that a table is one meter and 50 centimeters long is to say that the number 1.5 is a relation between the length of the table and the standard meter. This measure can be almost exact.

Let us analyze the case of money. 'One dollar', the nominal 'face value' of instantiated money or currency, is a conventional sign that measures its potential valuableness or purchasing power, a

[19]I will develop the meaning of instrumental, conventional, formal, and natural signs in the fourth section.

power that is exercised in specific economic dealings. In the case of exchange, this is expressed by price: a quantity that represents the economic (exchange) value of a needed item. Price is the measure of the exchange value of objects (cf. Smith [1776] 1981: 46)[20]. Price as determined by money is a conventional and instrumental quantitative sign of the economic value of the thing bought or sold, which is a natural and formal sign of the need for it.

3. A conventional sign

Aristotle upholds that money is a representation *kata syntheken*, that is, 'by convention'. Aristotle uses the same expression – *kata syntheken* – in reference to language: 'a name is a spoken sound significant by convention – *kata syntheken*' (*On Interpretation* 16a 30–1; see also *Poetics* 1457a 10). Language is not by nature (*On Interpretation* 16a31). *Syntheke* (Liddell and Scott, 1900: 766) means 'a conventional agreement' and *kata syntheken*, 'conventionally'. However, this convention emerges naturally. Dictionaries and language academies follow later. Dictionaries are continuously modified, and new words are constantly being added when evidence show them in frequent use. Besides, language is a means of expressing ideas, of communication; languages are specific instantiations of language and they are conventional. However, language only exists in languages. Consequently, convention is necessary for language to actually exist.

In a parallel manner, Aristotle adds about money: 'it exists not by nature' (*NE*, 1133 a 31). The existence of money depends on its instantiation, which is conventional. Money is a sign that needs to be instantiated and exercised in order to become effective: just like the decimal system or the vocabulary of a language – arbitrary signs that human beings can create using their rationality to express a reality. In the case of money, a numerical sign represents an asset, something that the owner possesses. Polanyi notes the similarity between money and language. He affirms: 'Anthropologically, money should be defined as a semantic system, broadly similar to language, writing, or weights and measures'. He describes the functions of money as 'uses', and he states that ''money uses' represent the 'purpose' of money as a semantic system' (1977: 97). Thus, money as a sign, as asserted, supervenes on these uses and capacities.

According to this meaning of instantiated money, it could thus follow that money is a social creation, whose nature is independent of its origin. It is probably essential that fiat money be created by the state, but this is not essential for money itself. In conclusion, an essential characteristic of money is to be a conventional device, regardless of its spontaneous or designed origin. As Ann Davis holds, the functions of money 'are assigned by convention and often [though not necessarily, I add] enforced by government' (2017: 23)[21]. Colander affirms in a clear way, 'the state is not necessarily involved with the essence of money […] Money is a creature of society, not of the state' (2019: 64). There is abundant literature arguing that money is a social institution. I agree on this, as far as a generally shared convention, regardless of its origin and 'legal' status, is considered a social institution[22]. The specific instantiated money or currency is a social institution in this ample sense.

[20]Though, as already mentioned, money can be used as the store of value or for other goals, the 'phylogenetic' aim of it is ultimately to be used in exchanges: money is essentially aimed at facilitating exchange, as Aristotle posits; this, as argued is the final cause of money according to Aristotle.

[21]As Smit *et al.* (2011: 16) note, commodity and fiat money are backed by the same thing, human preferences.

[22]I believe it is not necessary to either adopt or reject any of the different views in which social institutions are conceived or the way in which money is considered. Searle has repeatedly argued that money is a social institution (1995, 1998: 126–128, 2005). However, my definition of institution differs from Searle's. For him, we need a constitutive rule to have an institution. See also Davis (2017). For discussions on Searle's position, among others, see Smith and Searle (2003), Mäki (2009), Smit *et al.* (2011), Papadopoulos (2015), and Guala (2016a, 2016b). About the different notions of social institution see Miller (2019). Zelizer (1994) considers money as embedded in social systems. I think that Hodgson's concept of institution is wider than Searle's and compatible with the notion of money supported here. He states: 'systems of language, money, law, weights and measures, traffic conventions, table manners, and all organizations are institutions' (2015: 501; see also 2006).

Money is important for its measuring ability – much like a ruler or a meter stick – functioning as a conventional measure allowing comparisons. Its stability is important – Aristotle points out that, even though money can change in value, it is quite stable (*NE*, 1133 b, 14-5) – because stability allows for relative measurements, setting prices, and making exchanges. With money, exchange values can be expressed in monetary terms. The conventional character of money makes trust – in addition to an adequate monetary policy – a fundamental factor for its stability. As Simmel asserts, 'money transactions would collapse without trust' (2004: 179).

What do money and prices represent? They stand for the value of need – *chreia* – which brings about exchanges. The fact that something is more necessary or scarcer than something else is reflected in the fact that more money is required to obtain it. That is, as already noted, money conventionally expresses a quality quantitatively through prices. Simmel stresses this fact affirming: 'one of the major tendencies of life – the reduction of quality to quantity – achieves its highest and uniquely perfect representation in money' (2004: 280).

4. Money as sign

Coming back to language, it is instantiated in a specific system of signs: a conventionally organized set of *significant sounds* (cf. Aristotle, *On Interpretation* 16a 30-1). Contemporary linguistics and semiotics thus consider it. In this section, I will argue that these theories apply to money as a sign offering an updated theoretical framework to Aristotle's views on it.

However, to start this analysis, I will use a conception of sign as presented by an old scholar, John Poinsot, in his theory of signs, a notion that I have often found useful. Poinsot (1589–1644) was a Portuguese thinker who wrote *Tractatus de signis* (*Treatise on Signs* [1631–35] 1985). He was a foremost representative of the so-called Conimbricenses (from Coimbra, Portugal), a school of 17th-century logicians that came up with a highly elaborated theory of signs. It should be noted that a very rich semiotic theory was developed in medieval times (see Meier-Oeser, 2003). For Poinsot, a sign is 'that which represents something other than itself to a cognitive power' ([1631–35] 1985, p. 25) and he classifies signs accordingly ([1631–35] 1985, p. 27):

> [I]nsofar as signs are ordered to a [knowing] power, they are divided into formal and instrumental signs; but insofar as signs are ordered to something signified, they are divided according to the cause of that ordering into natural and stipulative [or conventional] and customary. A formal sign is the formal awareness which represents of itself, not by means of another. An instrumental sign is one that represents something other than itself from a pre-existing cognition of itself as an object, as the footprint of an ox represents an ox. And this definition is usually given for signs generally. A natural sign is one that represents from the nature of a thing, independently of any stipulation and custom whatever, and so it represents the same for all, as smoke signifies a fire burning. A stipulated sign is one that represents something owing to an imposition by the will of a community, like the linguistic expression 'man.' A customary sign is one that represents from use alone without any public imposition, as napkins upon the table signify a meal.

The following table clarifies this classification:

In respect to the thing signified	In respect to the knowing power
Natural: smoke, concept of fire, value	Formal: the concept, value
Conventional: 'fire', nominal face value, price	Instrumental: nominal face value, price

Based on Poinsot's conception, words (as 'fire') are considered instrumental and customary or conventional signs, while concepts (like the notion of fire) are formal and natural signs of the apprehended reality. Poinsot's formal sign directly points to a real reference. Aristotle mentions both kinds of

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signs – natural and conventional– in *On Interpretation* (16a 4-7). According to this typology, price is a conventional and instrumental sign of the exchange value of the thing needed to be determined by money. The exchange value is a natural and formal sign of the need of it when the transaction is effectively done. Maki's money universal is also a natural and formal sign, instantiated in currencies whose nominal face values are instrumental and conventional signs of their values on account of their purchasing power, and realized by prices that are conventional and instrumental signs of the exchange value, a natural sign of the need.

I will now turn to one more contemporary author, considered as the founder of modern semiotics, Peirce (1839–1914), who complement Poinsot's theory. Apart from his interest in economic affairs and economic science (see Wible, 2008 and Swedberg, 2011 on this), Peirce developed a theory of sign that is also applicable to money. He states:

> A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The sign stands for something, its object. It stands for that *object*, not in all respects, but in reference to a sort of idea, which I have sometimes called the ground of the *representamen* (CP 2.228, my cursives).

Namely, there are three elements: the *representamen* (the sign, as the word, or a quantity of money, or price), the *interpretant* (the sign in the interpreter's or cognoscent's mind: my concept or idea of the quantity of money or price), and the real *object* (the thing signified by the word and the concept; the need for the thing). That is, the sign or *representamen* is a means between the object and the *interpretant*. It also provides a plus, something else, in relation to the object. Peirce affirms:

> To stand for, that is, to be in such a relation to another that for certain purposes it is treated by some mind as if it were that other. Thus a spokesman, deputy, attorney, agent, vicar, diagram, symptom, counter, description, concept, premise, testimony, all represent *something else*, in their several ways, to minds who consider them in that way (CP 2.273, my cursive).

There is 'something else', an interpretation of the object, resulting from the sign. Coming back to Poinsot's classification, the relation between the sign (*representamen*) and the *object* is conventional and instrumental, the relation between the *representant* and the *object* is natural and formal, and the relation between the sign and the *representant* is in part natural and in part conventional[23].

Additionally, Peirce distinguishes three types of signs:

> One very important triad is this: it has been found that there are three kinds of signs which are all indispensable in all reasoning; the first is the diagrammatic sign or icon, which exhibits a similarity or analogy to the subject of discourse; the second is the index, which like a pronoun demonstrative or relative, forces the attention to the particular object intended without describing it; the third [or symbol] is the general name or description which signifies its object by means of an association of ideas or habitual connection between the name and the character signified (CP 1.369).

Language and money belong to the third class of signs: there is no similarity nor a physical connection, but only a convention. He explains: 'The objects of the understanding, considered as representations, are symbols, that is, signs which are at least potentially general' (CP: 1.559).

Concerning the sign interpretation (the *interpretant*), third type signs are influenced by personal and social elements. Although words have a socially recognized meaning, they can also resonate differently to different people in different situations or contexts. Similarly, a price has different

[23]On the relation between Peirce and Poinsot, see Beuchot and Deeley (1995).

interpretations according to an individual's specific situation (*interpretant*). As Marshall holds, referring to prices, 'the same price measures different satisfactions even to persons of equal incomes' ([1890–1920] 1962: 15). Besides, he affirms, 'the significance of a given price is greater for the poor than the rich' ([1890–1920] 1962: 16). In like manner, though basing his reflections on a different tradition (Paul Ricoeur), Ebeling (1990: 187) maintains with reference to prices:

> By themselves, prices are nothing more than quantitative ratios – magnitudes of things. They become more than this when viewed from within the setting in which they arise, and they arise from the actions of men. The intentionalities of men as reflected in prices are what require interpretation, and not the prices themselves.

This supposes the existence of a commonly shared world that enables individuals to understand themselves. The role of entrepreneurial alertness in entrepreneurial discovery that leads to a tendency toward equilibrium in the market process has been highlighted by Kirzner (e.g. 2000). Individual interpretations in specific situations must also be borne in mind. Elder-Vass notes:

> The value of a thing is not an objective quality, but rather the price that it ought to exchange at, and this is a subjective quantity in the sense that different individuals may take different views on it, but also a socially constructed quantity in the sense that in doing so they draw on socially or intersubjectively shared lay theories of value. […] Many factors contribute to the determination of prices, but no price is viable unless it can be justified by the social actors involved. There is, in other words, no price without value (2019: 1497).

Fitzpatrick similarly affirms: 'economic value is a subjective matter which then becomes an intersubjective matter through the process of exchange' (2014: 12 and see 49). In sum, we have a *representamen*, money and prices – money measuring exchange value – and a *representant* – our idea of price – that refers to the object valued because needed. In addition, adopting Peirce's theory of signs allows for considering that the symbolic character of money does not automatically imply its neutrality, as Ingham (2004: 60) complains.

In sum, these theories of signs can be applied to money. There are natural and instrumental sign relations: exchange value is a natural sign of the need while price is an instrumental sign of exchange value. Nominal face values are instrumental signs of their values on account of their purchasing power. Peirce's *representamen* can be considered as the nominal face value and the price, the *interpretant* as my concept or idea of the amount of money or the price, and the real *object*, the exchange value and the need for the thing.

5. Conclusion

Aristotle's passages on money shed light on its nature. Building on Aristotle's ideas, I have distinguished three levels of consideration of money: (1) universal money or *moneyness* – a conventional sign of its value or potential purchasing power; (2) money as instantiated in particular currencies with nominal face values (money of account) that measure this potential purchasing value, and (3) currency in exercise that actualizes money/currency potentialities through specific prices, signs of exchange values and needs/wants. The fact that the nominal face value of money means *potential* purchasing value shows that this value can actually change when exercised[24]. Universal money and currencies are performative signs, in the sense that they have a potentiality or purchasing power.

At the Introduction of this article, referring to the priority of money of account or of money as a form of value (and a medium of exchange), I asked, 'which comes first, the egg or the chicken?'

[24]Keynes states, 'money of account is the *description* or *title* and the money is the *thing* which answers to the description […] if the thing can change, whilst the description remains the same, then the distinction can be highly significant' (2013: 3).

Then, in section 1, I quoted this passage by Aristotle: ‘Money has become by convention *like that* which is exchanged for needs [or wants]’ (italics added). From this and subsequent quotations from Aristotle recognizing all the correlative functions of money, I concluded that money is a sign of a potential purchasing value that is actualized in specific transactions. In other words, as noted by Keynes, the money of account takes the priority. However, money as a sign is present at the first and second levels, while its purchasing power – only potential at the previous levels – actually materializes at the third level. The question is, what comes first: the sign (universal money and its specific instantiations in currencies) or the signified (the exercise of the purchasing power)? It is tempting to go with the signified, but money is a performative sign with a real potentiality. For Aristotle, it seems that the priority depends on the level of consideration. Yet, an ontological question remains, what comes first, potentiality or action?

I have also mentioned that, for Aristotle, the properties and capacities of money are self-sustaining and indispensable for money to be money: a conventional unit of measure ultimately aimed at exchange or other payments with sustainable purchasing power. Today, when money is mostly digital and new forms of e-money have been created, the previous analysis can help determine whether or not they are monies. However, this is not the aim of this paper.

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