

METAL, MONEY, AND THE PRINCE : JOHN BURIDAN AND NICHOLAS ORESME AFTER THOMAS AQUINAS

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Introduction

The monetary theories that stem from the works of the medieval theologians¹ share common roots. For Thomas Aquinas, during the second half of the thirteenth century, as well as for John Buridan, and later, for Nicholas Oresme in the fourteenth century, they appear as the result of careful commentaries upon Aristotle's *Politics* and - to a lesser degree - *Ethics*². Not until the publication of Oresme's *Treatise on Money*, in the mid-fourteenth century³, was the subject noteworthy enough to constitute the matter of a single essay which was not explicitly structured by a reflection on Aristotle's works. This could suggest that the medieval fragments of monetary thought

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¹ The standard references on medieval monetary thought are dated from the decades which followed W. Roscher's paper [1862] read at the *Académie des Sciences Morales et Politiques* in Paris. They include the publishing of Nicholas Oresme's *Traictie de la Première Invention des Monnoies* by L. Wolowski in 1864, L. Wolowski's own contribution [1864], E. Bridrey's book [1906], and A.E. Monroe [1923] (parts I and II). More recent general accounts include B. Gordon [1975], O. Langholm [1983], C. Dupuy [1988] and [1989], and E. Lévy [1990]. Several contributions focused again on Nicholas Oresme, whose work became better known among economists after C. Johnson's [1956] reconstitution of the Latin version of the *Treatise*, and A.D. Menut's [1970] edition of Oresme's translation of the *Politics*. J. Wolff [1973], R. Arena [1987], and L. Gillard [1988] - which includes an extensive bibliography - illustrate this revival interest.

² See Thomas Aquinas, *In Octo Libros Politicorum* (I, 7-8); *In Decem Libros Ethicorum ad Nichomachum* (V, 9); John Buridan, *Quaestiones in Octo Libros Politicorum Aristotelis* (I, q. 11 and III, q. 21); *Quaestiones in Decem Libros Ethicorum Aristotelis ad Nichomachum* (V, q. 16-17); Nicole Oresme, *Traduction et Glose de la Politique d'Aristote* (I, 10-11), *Traduction et Glose de l'Ethique à Nicomaque d'Aristote* (V, 11).

³ Concerning the date of Oresme's *Treatise*, see L. Gillard [1988], pp. 3-6.

were roughly based on the same arguments as those elaborated some seventeen hundred years earlier, and consequently, that those fragments were nothing but narrow variations around the same undifferentiated output⁴. Unfortunately - at least, for the plainness of the discussion - such an interpretation is bound to fail: the Aristotelian tradition paved the way for two divergent representations of money. The first one stresses the role of the Prince, whose authority alone guarantees the value of specie. Conversely, according to the second representation, money remains linked to the metal which gave birth to it, so that its value, as distinguished from its legal price, cannot be submitted to direct control.

Thomas Aquinas on the one hand, John Buridan and Nicholas Oresme on the other hand, respectively illustrate these two representations - a « conventional » and a « metalist » theory of money (section 1). About three generations separate Thomas Aquinas from John Buridan, and Oresme probably followed Buridan's lectures at the *Collège de Navarre* in Paris⁵. Although mainly historical, the gap between Thomas Aquinas and Nicholas Oresme - Langholm's 1983 essay is largely devoted to filling this gap - is also analytical.. A seemingly easy way to grasp the distinction between them would be to underline their sharp philosophical and political opposition.

In the first case, this distinction lies in the oft-quoted opposition between Thomas' philosophical realism and Buridan's and Oresme's involvement in fourteenth-century nominalism⁶. The difficulty here is to give a proper account of this paradox according to which a realist scholar - Thomas Aquinas - became nominalist for monetary matters, while nominalist authors - like John Buridan and Nicholas Oresme -

⁴ Applied to Oresme, this position was synthetically expressed by O. Langholm: « Oresme's main frame of reference is very obviously Aristotelian. His conception of the function of money is that of the *Ethics* and *Politics*. His account of its required properties elaborates on the Philosopher's catalogues. His insistence that money is a servant to the community rather than something subject to the royal pleasure, which underpins its entire argument, would follow from Aristotle's political theory. The tyrant who debases the coinage is the tyrant of Aristotle's *Politics*, who put his own private interests above the common good » (O. Langholm [1983], pp.16-17; see also [1992], p. 505).

⁵ The question of the respective compositive order of Buridan's and Oresme's works is not clear-cut. Traditional -and conflicting - interpretations come from Bridrey [1906] and Kaulla [1904]. The former argued that Buridan borrowed all interesting material from Oresme, whilst the latter uncompromisingly viewed Buridan as Oresme's teacher. O. Langholm ([1983], pp. 18-20; 99-107) gave a thorough account of this debate, enlightened by more recent textual evidence based on manuscript sources. He supports the idea that, although Buridan dealt with money in his commentaries on the *Ethics* and in the first version of his commentaries on the *Politics* before the publication of Oresme's *Treatise*, he seems to be aware of Oresme's contribution in the last version of question 11 on book I of the *Politics*.

⁶ See, for example, C. Dupuy [1988], pp. 249 *sqq.* The standard reference on *philosophical* realism and nominalism during the thirteenth and fourteenth centuries remains E. Gilson [1944], chap. 8 and 9. For a concise account, related to economic matters, see A. Lapidus [1993].

advocated a realist theory of money. Naturally, this paradox is chiefly an artefact. Firstly, Buridan's and Oresme's nominalism stood aloof from their predecessors'. Buridan, for instance, understood science as concerning concepts of first intention which point out not only a particular individual (*pro subjecto*), but also an individual in his general form (*pro forma*). And, as a Rector of the University of Paris, Buridan gave his approbation to the 1340 condemnation of the Ockhamist theses⁷. But, even if Buridan and Oresme were closer to the Ockhamist tradition, it must be kept in mind that, except through the words in use, philosophical realism and nominalism have no evident relationship with monetary realism and nominalism.

In the second case, the distinction then becomes the monetary translation of the contrast between the Prince who holds the power he uses for monetary matters from God, and this other Prince whose private interest fades away into the interest of the community. But even a cursory examination suggests that this reading is inadequate. Although political theory indeed differs from Thomas Aquinas to John Buridan, and even more, Nicholas Oresme, their respective monetary conceptions cannot be thought of as mere consequences of the figure of the Prince that they depicted. The question raised by their political representations is to make them consistent with monetary theories elaborated separately; that is, to find a place, in this mutual embedding, for monetary policy. In this respect, Buridan and Oresme supplied a composite picture in which the Prince is an essential character (section 2). Acting as the efficient cause of money, he is expected to achieve the adjustments required by the real changes affecting money. But the question of the debasements of money gave rise to different lines of answers. While Buridan concluded with an identification of the Prince and the common good, Oresme drew a Prince whose power is partly controlled through adequate institutions and incentives, partly limited by the consequences of his policy choices (section 3).

1. The foundations of money

Beginning with E. Bridrey's work [1906], there seems to be a well-established tradition, chiefly among French scholars⁸, which contrasts two interpretations of money in Aristotelian writers of the Middle-Ages. In Bridrey's words, these would be

⁷ A qualified discussion of Buridan's philosophical position can be found in R. Paqué's [1985] comment on the « status of nominalists ».

⁸ See, for instance, the introduction of P. Harsin [1928].

respectively a « sign theory of money » and a « commodity theory of money ». It should be superfluous to point out that this difference would be irrelevant if its design were to stress the opposition between 1) a theory of money which prevents it from being stored for commercial purposes, and 2) a theory coherent with the necessity of financing capital accumulation⁹. However retrospective, Bridrey's position is not so misleading, insofar as it suggests that Aristotle's analysis did not resolve the question of the link between the metal and the money itself. B. Gordon's more recent opposition between « non-metalism » and « metalism » - respectively originating in Plato's *Laws* and in Aristotle's *Ethics*, on the one hand, and in Aristotle's *Politics*, on the other hand - might be understood as an attempt to explore this link¹⁰. It gave rise to a sharp mercantilist-like distinction between a « non-metalist » use of money in domestic trade, and a « metalist » use in foreign trade (see B. Gordon [1975], p. 48). Such an interpretation surely deserves more extensive discussion. But, even if we agree with this interpretation, it neither elucidates the reasoning through which they extended the few elements gathered in the *Ethics* and in the *Politics*, nor explains why they were extended in such different directions. In this respect, the distinction between what we called a « conventional » and a « metalist » theory of money aims at answering such questions.

1.1. Money as a convention: Thomas Aquinas

Thomas Aquinas' work illustrates the intellectual effort needed to separate money from the material which nonetheless composed it¹¹. At first sight, natural wealth rose out of a barter situation in order to become a means of exchange and of measure: « Specie is made of a thing ordered by nature » (*In Octo Libros Politicorum*, I, 7). But after due consideration, money is seen to lose its naturalness: as the highest form of exchange, it is an outcome of human reason, henceforth separated from nature.

⁹ See O. Langholm [1983], chap. 3.

¹⁰ B. Gordon [1961], [1975]. Gordon's 1961 paper was devoted to a criticism of Schumpeter's, and - before him - Monroe's view, according to which Aristotle was the actual forerunner of a « metalist theory of money » (see, for instance, J.A. Schumpeter [1954], p. 63). B. Gordon convincingly argued that, although Aristotle explained in the *Politics* that in order to be generally accepted, money should be composed of some valuable metal, this concerned historical conditions of acceptance, rather than the nature of money. So that one must wait until the time of Buridan and Oresme - to whom Schumpeter refused any originality on economic matters - to witness the birth of a genuine metalist theory of money. B. Gordon hence seems to have been more cautious in his 1975 book. But, on second thoughts, Gordon did not actually change his mind on Aristotle himself: he merely acknowledged that his work opened the path to rival interpretations of money by Aristotle's medieval commentators.

¹¹ For a general account of Thomas Aquinas' monetary thought, see B. Gordon [1975], pp. 159-171 and C. Dupuy [1988], pp. 187-202.

Thomas Aquinas made this point quite clear while commenting on the *Ethics* and on the *Politics*. In the first text, emphasis was laid on the implications of money as a unit of measure: « it is convenient that there be a single thing which could measure everything, and this thing does not measure according to its nature, but because men decided for it to be » (*In Decem Libros Ethicorum*, V, 9). And in the commentaries on the *Politics*, the emphasis was on the role of money as a means of exchange, so that Thomas Aquinas concluded that « exchange by way of money was invented by reason, not by nature » (*In Octo Libros Politicorum*, I, 7). As is well known, these elements were to play a crucial part in the constitution of the Thomistic thesis against usury. Thomas' argument is of special interest for the light it sheds on his understanding of money.

Among the two functions of money, the idea of a means of exchange clearly refers to Aristotle's teaching according to which, as a « material cause » of exchanges, money cannot be transformed into its own end, through an interest loan, without conflicting with its nature¹². When presenting this argument in a commentary on the *Politics*, Thomas Aquinas developed the idea that each end is infinite, while the means depending on this end are finite. He mentioned the example, drawn from Aristotle, of the physician, for whom his patient's health is submitted to an infinite desire, whereas the medicines he will prescribe are finite. Hence, transferring the desire of this end constituted by natural wealth towards the means to obtain them - money - submits it to an infinite desire, which is a threat to exchange¹³. Insofar, as exchange is not considered as a secondary institution but as a necessity for the existence of social life¹⁴, usurious loans are also a threat to society. Although this analysis, fairly faithful to Aristotle's teaching, was shared by most Schoolmen - John Duns Scotus, for instance - it already helps us understand that the question of money and usury in medieval thought does not depend on an insufficient specification of the functions of money. In particular, we could not argue that a more penetrating view concerning the functions money fulfils would have allowed thirteenth century theologians to admit that some interest could be paid on a loan *by reason of this loan itself*. The existence of such a function of money

¹² See *Summa Theologica*, II^a-II^{ae}, q. 78, a. 1, resp. The discussion is framed in terms of the distinction between « principal use » and « secondary use » of goods. A secondary use of money always remains available. In such a case - the *mutuum ad pompam* - somebody might borrow money to make an ostentation of a supposed personal wealth. This would allow interest to be paid. Nevertheless, the principal use of money « is to be consumed, that is spent in exchanges ».

¹³ *In Octo Libros Politicorum*, I, 8.

¹⁴ See *Ethics*, V, 5.

would have added an analytical justification of interest, but at a great expense, for it would have prevented money from also being a means of exchange ¹⁵.

The Aristotelian conception of causality then happens to be a prerequisite to the understanding of the Thomistic theory of money. But, if this conception of causality remains at the core of the analysis of the second function of money - unit of account - Thomas' conclusions depart from Aristotle's. In the *Ethics* (V, 5), the philosopher explained that « the money itself suffers depreciations, for it has not always the same purchasing power ». In this respect, money is treated exactly like any other commodity. It is precisely this point which Thomas Aquinas challenged, without ever stressing his opposition to Aristotle. The reason is that, as a « formal cause » of exchange, each alteration of money would not be an alteration of its value - as Aristotle seemed to claim - but of the standard of measure of any value, thus bearing inequity. The argument is introduced through the comment on Peter Lombard's *Liber Sententiarum*: « the use of money does not draw the measure of its utility from this money itself, but from the things which are measured in money, according to the different persons who exchange money and goods. So that to receive more money for a lower quantity does not seem anything else than to differentiate the measure between what is given and what is received; and this obviously bears inequity » (*In Quattuor Libros Sententiarum*, III, dist. 37, a. 1, q. 16).

This discrepancy between Aristotle's and Thomas Aquinas' positions must not be underestimated ¹⁶. On the one hand, the emphasis on the unit of account function of money was to exercise a growing influence - among jurists, for instance, such as Panormitan, for whom this function constituted the main objection to usury: as a measure, money is necessarily sterile. But also, as we will see, among theologians far removed from Thomism, as Buridan and Oresme were. On the other hand, this emphasis

¹⁵ This also helps us understand the seemingly complicated device, in which the money loan itself, the *mutuum*, forbids any interest to be paid by reason of this loan, whilst extrinsic titles, such as *poena conventionalis* or *damnum emergens* make it possible, according to most scholastic doctors, to receive an income linked to the loan (on the interpretation of extrinsic titles in the context of the theory of usury, see Lapidus [1987] and [1991]).

¹⁶ J.T. Noonan ([1957], p. 52) emphasized the divergence between Thomas Aquinas' and Aristotle's arguments. An opposite view was apparently defended by O. Langholm ([1992], p. 240). But Langholm's interpretation of Noonan's position seems to present this latter as assuming the purchasing power of money to be constant. I did not find such an assertion in Noonan's analysis, who only said that, as a measure, money is different from the commodities it measures. On the contrary, Langholm considers that Thomas Aquinas solely argued that the consumptibility of money implies that, « [i]f money is exchanged for itself, equivalence means paying back what was borrowed ». As a result, though both Noonan and Langholm acknowledge that according to Thomas Aquinas, money is, in some way, invariable, this consequence rests on different grounds.

played an essential part in Thomas Aquinas' understanding of money as a *valor impositus*, that is, in the constitution of a conventional theory of money. Although it is not clear that the idea that money, as a means of exchange, definitely departs from natural wealth, it seems obvious that, as a measure, it depends not on the nature of things but on the will of men - in this case on the will of the Prince, whose virtue meets the end of the political community: money, Thomas Aquinas explained, « will be of price nil if the King or the community decides that it is worthless » (*In Octo Libros Politicorum*, I, 7). Such is the meaning of this etymological explanation, repeated in each medieval commentary on Aristotle, according to which « specie is called *numisma*, which comes from *nomos*, the law, because specie is not measured by nature, but by law. It is our power to transform it or to make it useless » (*In Decem Libros Ethicorum ad Nichomachum*, V, 9).

1.2. The metalist theory of money: John Buridan and Nicholas Oresme

Concerning Buridan and Oresme, we must acknowledge that their starting point was not so different from Thomas'. For instance, they seem to have shared this quite common idea that money makes up for barter failures.

In question 17 devoted to book V of the *Ethics*, Buridan studied the necessity for money, and showed that it is an appropriate answer to the geographical scattering of sellers and buyers, to the non-simultaneity of needs, to the gap between possessions and needs, and to the indivisibility of some goods¹⁷. Although the analysis was explicitly based not on the discussion of the *Ethics*, but on a reflection on the destiny of Adam's posterity after the Fall, a similar position can be found in Oresme's *Treatise on Money*¹⁸. The consistency with Thomas Aquinas' views still extends through this typical exercise in Aristotelian metaphysics which consists, for Buridan, in drawing out the four causes of money: « The material cause is what money is made of [...]. The final cause is that man, with money, can have these things which are necessary for life. The

¹⁷ *In Decem Libros Ethicorum*, V, q. 17, a. 1, proofs 1, 2, 3, and 4.

¹⁸ « When the Almighty was dividing out the people, when He was separating the sons of Adam, He fixed boundaries of the nations. Next, men multiplied on earth, and possessions were divided out as suitable. Now, the result of this is that one had more of one thing than he needed: another had little or none; and for another thing, it was the opposite, so that someone had perhaps a great number of sheep and no bread, as opposed to the peasant. And even, one place abounded in one thing, and lacked another. So, men began to trade without money, one man gave another a sheep for some wheat, another his labour for bread or wool, and so on. [...] However, there arose many difficulties in the exchange and the transport of things. Men were so clever that they invented the use of money, as the instrument of exchange of natural wealth which, by themselves, naturally supply human needs » (*Treatise*, chap. 1).

formal cause is the figure of money, and the sign of the weight of money of such value. The efficient cause is the Prince, who has the government of the city, or the community of the citizens » (*In Octo Libros Politicorum*, I, q. 11, a. 1, note 1). Again as in Thomas Aquinas, money is set in the distinction between natural and artificial wealth. This is true for Buridan, who distinguished wealth « *per se* », constituted by natural wealth, and wealth « *per accidens* », represented by money (*Ibid.*, note 3, doubt 2, note 2), as well as for Oresme who imagined someone starving to death although he owned a great quantity of money, to explain that money is artificial wealth used in the exchange of natural wealth (*Treatise*, chap. 1).

From this point on, the connection between Thomas Aquinas' views, on the one hand, and both Buridan's and Oresme's views, on the other hand stops. For Thomas Aquinas, when such a commodity becomes money, it is as a result of the will of men, which definitely breaks the link between this money and gold or silver as commodities. Conversely, in the writings of Buridan and Oresme, if the institution of money requires the figure of the Prince, such a requirement does not mean that the metal of which the money is made henceforth plays no part.

In spite of the demonstrative guise of the statement - mainly in Buridan's work - this could be nothing more than a *petitio principii*. But a more careful examination shows that the opposition between these two conceptions of money rests on sounder foundations. The argument deals with the same elements as those that Thomas used: firstly, the understanding of money as a measure of values; and, secondly, the conditions that allow the emergence of money from a stock of metals which could be, like natural wealth, allocated to different uses.

The first question was raised by Buridan while commenting on the *Ethics*. The purpose here was clearly to contradict the Thomistic reading of Aristotle: « Some people [like Thomas Aquinas; A.L.] say that the Prince imposes the quantity of value of the money, and that, according to the imposed value, it measures the exchanges: this is why Aristotle said that money is not by nature, but by name, and it is up to us to make it useless » (*In Decem Libros Ethicorum*, V, q. 17, a. 2). Conversely, Buridan's interpretation is that in some circumstances, the Prince can indeed impose the name of the money - call it, for instance, « *denier* » or « *obole* » - but he cannot, unless he commits an injustice, impose its value. The reason put forward is of special interest. If money is a measure of value, whereas this latter was already established as being measured by human needs, this could only be because the material of which the money is made up is itself an object of human needs. Briefly summarised, money is no longer

an *immediate* but an *intermediary* measure of values ¹⁹. Hence, it is the necessity for money to fulfil a function of measure of values that requires the indissolubility of the link between this money and the metal of which it consists.

The second question arises in Oresme's writings, and again, though their conclusions differ, its starting point is akin to Thomas Aquinas'. Exactly as the latter, Nicholas Oresme, reading the *Politics*, recalled the Aristotelian difference between the « principal use » and the « secondary use » of a good - consumption and exchange respectively ²⁰. Now, the particularity of money is the interchange between the contents of both these uses of the metal of which it is constituted. In the Thomistic approach, the institution of money precisely led to this inversion of contents between principal and secondary uses. From then on, there was a definite break between a commodity used to make a display of one's fortune, on the one hand, and a monetary sign fulfilling a function of intermediary of exchanges, and of unit of account, on the other hand ²¹. But such a break does not exist in Oresme's perspective, merely because he explicitly considered their respective contributions to the determination of the demand for money.

In this connection, shifting from the point of view of the money already instituted to the point of view of the metal this money is made of leads us to acknowledge that it cannot be reduced to a single - principal - use excluding exchange. In other words, when such natural wealth comes to be used as money, it is not the result of an arbitrary decision, either of the Prince or of the exchangers: this natural wealth becomes a means of exchange and a unit of measure because it already has some specific quality required for money. For example, when Oresme discussed the genealogy of monetary transactions, he recalled the fact that « when men first began to trade, or to compare wealth through the use of money, there was not yet any stamp or image on money; but a certain amount of silver or copper was given for a drink or food » (*Treatise*, chap. 4). It is easy to conclude that money holds its principal use from

¹⁹ Nevertheless, this human need which measures gold or silver is only the need of the rich, who « lack it for their superfluities in sumptuousness or in outward goods » (*In Decem Libros Ethicorum*, V, q. 17, a. 2). This is in accordance with Buridan's interpretation of the way human needs affect the price of a commodity: the need in account is only the need of those who are able to afford to buy this commodity (*Ibid.*, q. 16, answer to doubt 1). Whereas Buridan's distinction between « immediate » and « intermediary » measure of exchange is already an echo of the Thomistic idea of a « double measure » (need - *indigentia* - and money), a similar position can also be found in Oresme's gloss on the *Ethics*, when he again opposed « need » and « money » as « natural » and « artificial » measures (*Traduction et Glose de l'Ethique d'Aristote*, V, chap. 11). Nonetheless, Oresme's discussion was much more succinct than his predecessor's.

²⁰ *Traduction et Glose de la Politique d'Aristote*, I, 10.

²¹ About Thomas Aquinas' position, see above note p. 5.

the generalization of what was nothing but a secondary use of the metals which constitute it. That this generalization should be feasible is then convenient: in order to be used for monetary purposes, precious metals must be in large enough quantity to guarantee that the satisfaction of the principal use of these metals will leave a surplus available. Interestingly, Nicholas Oresme did not argue that the demand for money and the demand for metal as such are substitutes. The mechanism underlying the examples presented in the *Treatise* leads one to regard the quantity of money available for the community as the output of a sequential process: this quantity clearly comes from the surplus of precious metals, once its share necessary for non-monetary uses has been withdrawn. This is what is suggested in chapter 2 of the *Treatise*, for instance: « there must be enough of such material. That is why, if there is not enough gold, money is also made of silver; but if one does not have these two metals or not in sufficient quantity, it is necessary to make an alloy or a simple money in another pure metal: thus it was formerly made of copper. [...] [A] large quantity of these metals must not be allowed to be put to other use, to the extent that there is not enough left for money ».

This understanding of the relation of metal to money brings about a significant improvement, when compared to Thomas Aquinas' perspective. His analysis of money stopped before actually studying other effects of its value than those that concern distributive justice. Conversely, for Oresme, if a variation of the value of money does have distributive effects, it is because this variation is related either to the stock of metals or to the share available for monetary ends. Hence, the question of the value of money becomes noteworthy. Of course, this looks like a quantitativist approach to money²². But there is nothing more: it only looks like it, and Oresme's position is far more complex.

A first reservation comes from the fact that the value of money is not determined by its quantity, but by the value of the commodity of which it is made. For example, when in chapter 10 of the *Treatise* Oresme discussed the question of the relative values of gold and silver money, he clearly deduced these from the values of gold and silver as metals: « [...] there must be an habitual and fixed relation in value and price between gold money and silver money. For as gold is by its nature more precious, rarer than silver, and more difficult to find or to hold, this gold, for an equal weight, must be worth

²² See the classical interpretation by W. Roscher [1862], resumed by E. Bridrey [1906], and for a criticism of this interpretation, L. Gillard [1988]. J. Wolff ([1973], p. 80; see also R. Arena [1987]) acknowledged that Oresme had an approximative intuition of a quantity theory of money, but wondered why he did not expand on this idea. The following developments are an attempt to answer this question.

more than silver in a fixed ratio »²³. A similar observation could be made when reading in chapter 3 the discussion of the case in which « sometimes in a country, there is not enough silver, in proportion to natural wealth; and [the] small amount of silver [...] which should be given in justice for a pound of bread or the like, would be less easily handled, because of its extreme smallness »: the way the problem itself was stated shows that this money, given « in justice » for a pound of bread, only owed its value to the just price of silver, as a metal, in a country in which it did not abound²⁴.

Moreover - and this is the second reservation - although a variation in the quantity of metal can indeed generate a nominal adjustment, other kinds of adjustments were explicitly imagined by Nicholas Oresme. His analysis dealt as much with the *value* as with the *structure* of money²⁵. This structure (gold, silver or copper money; pure money or alloy), as already noted, depends on the amounts of the different metals and on the surplus that can be used for money, but also on the value of the exchanged goods and on the size of the transactions - trade on « a large and big scale » or on « a smaller one » (*Treatise*, chap. 3). In this respect, Oresme opposed gold money « more fitted for larger exchanges » (*habilis ad mercaturas majores*) to silver money « for the purchase of smaller goods » (*pro emptione mercimoniorum minorum*). So that, in the best of cases, a variation concerning any of these determinants gives rise to a structural adjustment of the money circulating in the community, or even the emergence of a new type of money - this is, according to Oresme, « the origin of black money, which is suitable for small purchases » (*Ibid.*), in countries where the available quantity of silver is insufficient²⁶.

²³ This formulation seems puzzling. One would be tempted to recognize here one of the first formulations of the idea that the price of a commodity - here, gold or silver - is determined by its rarity (see E. Bridrey [1906], p. 193). But personally, I should hesitate to take the plunge. For when Oresme mentioned the rarity of gold or silver, he considered this as an element of their nature, on the same plane as preciousness. This would then seem to be connected with the question of commutative justice, in which the relative values of goods are given to the exchangers. Another argument was interestingly put forward by L. Gillard [1988]: in support of the idea that Oresme never established any link between price and rarity, he noticed that the word in use in chapter 2 of most manuscripts of the *Treatise* was « *cara* » (expensive, or noble) and not « *rara* » (rare).

²⁴ Other cases of nominal responses could be found in Buridan's works. See, for instance, *In Octo Libros Politicorum*, I, q. 11, a. 2, note 2.

²⁵ L. Gillard [1988] considered as Oresme's only original analytical contribution, his distinction between two types of adjustment, when one faces a shortage of gold or of silver money.

²⁶ « And thus very conveniently, where silver does not abound, there are three materials [instead of two; A. L.] for money, the first being gold, the second silver, and the third black alloy » (*Treatise*, chap. 3). This idea is further developed in chapter 13, in which Oresme clearly mentioned a symmetrical case, concerning a material available in an « excessive quantity », so that it should « cease from being moneyed ».

But what if this structural adjustment or this emergence were to be lacking? Oresme's answer only appears indirectly: quoting Cassiodorus, he sides with this king of Italy who « ordered for the gold and silver to be removed from sepulchres of the dead where, according to people's custom, they had been buried, then he asked them to be made into money for the public use, saying it was a sort of sin to leave useless in burial grounds, what can be of use for the living » (*Ibid.*, chap. 2). Why was it such a sin to leave gold in sepulchres? Because the available stock of metal was not large enough to generate a sufficient surplus which could be converted into money, and because no other material could fulfil this function. In this circumstance, the price of money, as determined by the price of the metal, was too low to authorize the current volume of trade to be performed. Only this could justify such an exceptional measure, which infringed on the most relentless interdicts. Analytically, this means that when all the nominal and structural adjustments are made, a variation in the quantity of money could only give birth to real effects, affecting the level of the transactions.

In this operation, which leads us from the recognition of the link between money and its material support, towards the intuition of its possible real effects, the attempts to grasp the theoretical content of « black money » (i.e. copper money, since copper coins turn black in use) appear to have played a crucial part. As S.T. Lowry [1994] points out, this question of « black money » is far from being only anecdotal. It is important both from an analytical, and from an historical point of view. S.T. Lowry links them up by recalling Buridan's outstanding statement of the six « qualities » of money, which seems to have influenced most subsequent writers (see, for example, A.E. Monroe [1923], p. 24). Introduced in a discussion on the *Ethics*, these qualities are presented as follows: « One [quality] is that it be of small quantity, for then subtraction cannot be made from it without easy detection. The second is that it be impressed with the stamp of some prince, for otherwise anybody might fabricate and falsify money, by which equality in exchange would be done away with. The third is that it be of fixed weight, for otherwise a fixed price cannot be put on commodities by means of it. The fourth is that it endure well without corruption, for otherwise future demand [*indigentia*] cannot be provided for by means of it. The fifth is that it be of a precious material so that a high value can be laid up in a small space and be easily carried to distant place. The sixth is that it be divisible into smaller units, especially on account of the poor, who frequently need a variety of things at minimal prices »²⁷. Whereas some or all the five first

²⁷ (*In Decem Libros Ethicorum*, V, q. 17, a. 1, proof 4. O. Langholm's [1983], p. 80 translation). For the sixth quality of money, the Latin text reads: « *Sexta, quod sit ad parva divisibile, specialiter propter pauperes, qui saepe multiplicibus rebus indigent minimi pretii* ».

qualities of money seem to have been shared by several theologians, even prior to Buridan (O. Langholm [1983], chap. 7), the sixth appears more specific²⁸. Although Buridan does not use explicitly the expression « black money », this last quality clearly refers to that kind of specie, composed of materials inferior to gold or silver, needed by the poor for « petty trade ». And it is from this particular juncture, between a social category, a type of trade, and a type of goods that the idea of a structural adjustment from money to trade might have emerged: i) the desirable quantity of « black money » is determined by the needs of the poor, and it seems not to allow any nominal adjustment through the prices of goods, since these needs are far from being fully satisfied; ii) silver money - and, of course, gold money - could not make up for a shortage of « black money », since it would be inadequate to petty trade; iii) on the contrary, lack of silver money could be compensated by « black money », even if this latter does not satisfy the necessities of large scale trade as well as noble money would. It is thus manifest that, whereas Buridan's comments on Aristotle contained the seeds of the principle of a structural adjustment, this latter idea did not blossom before Oresme's contribution.

To sum up, though in the writings of John Buridan and Nicholas Oresme we do find the foundations of a metalist theory of money, these cannot be easily reduced to a quantitativist - and still less to a dichotomic - perspective. The *Treatise on Money*, into which are gathered the main pieces of the debate, seems to advocate a different approach, which subordinates the volume and the structure of money to the structure and level of trade.

2. The monetary functions of the Prince

What then is the exact place of the Prince? The question is not so innocent, for it is not obvious that he has any. If one is interested in the search for a monetary policy, the metalist theory of money intuitively suggests that there is very little room for it. But on second thoughts, an inquiry into the economic function of the Prince will help reconsider this intuition.

²⁸ Nonetheless, S.T. Lowry [1994] mentions a possible Muslim origin.

2.1. The common good, and the Prince as an efficient cause of money

For Buridan as for Oresme, the Prince is the agent of the realisation of the « common good ». Far more complex than it may appear, in Buridan's writings this idea opened the path to a brief but precise analysis of the basis of the power of the Prince ²⁹. These are the result of a crossing of two distinctions ³⁰: firstly, between a « private good » and a « common good », this latter being understood as the set of the private effects of a public action, or as the externalities associated with a private good; secondly, between the « absolute good [*bonum simpliciter*], which is the good of the soul, and the secondary good, which is the good of the body » (*In Octo Libros Politicorum*, I, q. 11, a. 2, note 9).

One may conclude from Buridan's comments that these different goods are lexicographically ordered, an absolute good always being preferred to a secondary good, and, after this first choice was made, a common good being preferred to a private one. Hence, the absolute common good came first, followed by the absolute private good, then by the secondary common good, and lastly by the secondary private good. Of course, this order reflects a moral scale of values, independent of any individual preference. The Prince is expected to share this scale of values and to contribute to its implementation. As the members of the community usually manage their private goods, it then behoves the Prince to take care of the common - absolute and secondary - good. This task is difficult, because it bears two kinds of potential conflicts: not only with the highest forms of any absolute private good, but also with the Prince's own private good. It is then also restricting, for it necessitates much more virtue for the Prince than for all those who are under his authority, in the sense that his private good must be kept behind all other superior goods. And whenever this mission is betrayed by the one whose duty it is to pursue it, the fault is serious enough to release his subjects from the obedience they owe to their Prince - at least, when he is elected - or even to oblige them to depose him ³¹.

The monetary power of the Prince hence settles into this understanding of his function. Money is a typical instance of an institution which participates in the common

²⁹ It is worth noting that this discussion is clearly linked with the study of money, for it arises in question 11 of Buridan's commentary on book I of the *Politics*, which was especially dedicated to « the debasement of money ».

³⁰ The second distinction, at least, apparently referred to Aristotle's study of the different kinds of goods in the *Rhetoric* (I, chap. 5)

³¹ *In Octo Libros Politicorum*, I, q. 11, a. 2, doubt, note 3.

good: the state of trade calls for a determined quantity and structure of money, but although some spontaneous mechanisms could allow this, this is only up to a certain point, and there is no guarantee that a shortage in gold or silver would not affect the level of trade. So that it behoves the Prince to withdraw metals from private uses and convert them into money, or even to change the value of money ³², in order to improve the common good. In other words, the management of money comes down, at first, to preventing it from having real effects ³³.

But the role of the Prince is still more fundamental, for he is admittedly the « efficient cause » of money. The significance of this efficient cause can be approached through this example from the commentaries on *Politics*, in which Nicholas Oresme described an odd evolution which ends with a monetary economy governed by a Prince. This evolution did not start with the barter economy we would today imagine, but with a state of trade in which the secondary use of gold as a metal allowed this gold to be used as a means of exchange. The difficulty, which was to justify the action of the Prince, lay in the fact that such « money » posed a permanent uncertainty, widely acknowledged by medieval commentators of the *Politics* as by Aristotle himself ³⁴, concerning the value it represented: « People had too much trouble in weighing money, and all could not easily recognize whether it was made of a genuine material. Consequently, the Prince had his mark stamped on it, as his figure or any sign which attests to the genuineness of the material and of the weight » ³⁵. For if at this time the

³² Buridan mentioned the case in which there would be « too high an increase of the material, which means that this material is too common and too cheap [*nimis vilis*] » (*In Octo Libros Politicorum*, I, q. 11, a. 2, note 2). It must be noted that the nominal response concerning the value of money is not automatic, but results in a - licit - decision of the Prince. Concerning, now, Oresme, L. Gillard [1988] reached about the same conclusion, but through a slightly different approach. Studying the exceptions to the rule forbidding any debasement of money, he concluded that, for Oresme, the management of money by the Prince was a consequence of the variations of the natural wealth circulating in the economy.

³³ See the already quoted example of gold removed from sepulchres of the dead, discussed by Oresme (*supra*, p. 12).

³⁴ See, for example, Thomas Aquinas' commentaries on the *Politics* (I, 7). A.E. Monroe ([1923], p. 23) nonetheless mentions Oresme's originality when the latter explains coinage not only by « the trouble of weighing but also [by] the difficulty of recognizing the quality of the metals ».

³⁵ *Traduction et Glose de la Politique d'Aristote* (I, chap. 11). A similar, more detailed, analysis occupies chapter 4 of the *Treatise*. But an interesting difference is that in this last text - written before the commentaries on the *Politics* - Oresme did not stress the role of the Prince, but insisted on « the wise men of that time [who] sagaciously thought that coins should be made of a fixed material and of definite weight, and that a figure should be stamped on it, in order to show officially to all the quality of the material and the fair weight of the coins, and to make it possible to know the value of money ». There does not seem to be a definite discrepancy between the *Gloss on the Politics* and the *Treatise*. On the contrary, this helps understand the role of reason in the institution of money by the Prince, this last acting only as an « agent » of the community (see *infra*, § 3.3).

money was for each individual a necessity of reason, it could not come into the world without the intervention of a public authority. This needs further explanation, for it determines what we previously accepted without discussion - the transformation of a metal into money.

Before the intervention of the Prince, gold was *used as* money, but it *was not* money: it possessed all the causes of money, but its efficient cause was limited to the individual who supplied it, and who guaranteed its material as well as its weight. So that it was only through its secondary use that gold could facilitate exchanges. Later on, when certifying the money, the Prince suppresses the uncertainty on the conditions both of its material cause (the genuineness of the material), and of its formal cause (the weight, leading to a value). It is precisely this certainty, which concerns a material and a measure, which makes it possible to interchange the principal and the secondary use, that is, to transform gold into money.

This is another way to grasp the contribution of the Prince to the common good: he not only manages, in some extreme cases, the quantity and structure of the money, but he also allows money to exist as such. This is the reason why most debasements of money seem to have been so sternly rebuked by Buridan and Oresme.

2.2. The question of the debasements of money

Both Buridan and Oresme supplied a classification and an analysis of the various kinds of debasements. Buridan dedicated the whole article 2 of question 11 on Book I of Aristotle's *Politics* to this issue - which makes it clear that Oresme was not the first scholar to offer a systematic account of the problem. He distinguished between debasements concerning the material, the weight, the figure, the appellation and the use, and added some remarks on the debasements of the value of money³⁶. Later, Oresme tackled the question in the *Treatise on Money*, in which he made no significant changes to Buridan's classification³⁷, adding only the debasements concerning the « money ratio » - *i.e.* the ratio of values between gold and silver money - and, of course, treating this more extensively.

The importance of the question of the debasements of money comes from the fact that they represented a foremost instrument for monetary policy. Behind each kind

³⁶ Buridan also considered as a special case of debasements the exchange of money, to which he devoted an entire article (*In Octo Libros Politicorum*, I, q. 11, a. 3).

³⁷ For Oresme, debasements might concern the figure (*Treatise*, chap. 9), the ratio (chap. 10), the appellation (chap. 11), the weight (chap. 12) and the material (chap. 13).

of debasement, one can find a particular use of this instrument, and the judgement upon it depends on its effect on the common good. In this regard, the admitted reading according to which Buridan, and especially Oresme, rigorously forbade the *principle* of the debasement of money, has to be qualified.

It will probably seem a bit provocative to assert that neither Buridan nor Oresme condemned debasement of money as a principle. But the provocation is not so harmful: when a debasement was condemned, it was never *per se*, but according to whether it harmed the common good; and if this condemnation appears as a *rule*, principally in Oresme's *Treatise*, it is a consequence not of the nature of the debasement, but of an assessment of the effects induced by several debasements and, still more, of the possible discrepancy between the Prince's private good and the common good. Let us consider these points in more depth.

The explanation and the justification of money for Buridan and Oresme lay in its subordination to the common good - for the final cause of money concerns every person in the community. Thus, if money already exists, a debasement decided by the Prince, compromising its material or formal cause, would contradict the part assigned to the efficient cause - which was, through the guarantee of the Prince, to suppress some kind of uncertainty in monetary exchanges - threatening the existence of this money itself. The prejudice to the common good is then evident, and the debasement of money must unambiguously be condemned. On the other hand, the threat against money does not come solely from the intervention of the Prince. In such an alternative, a change concerning the figure, the ratio, the appellation, the weight, or the material might restore the appropriate quantity, structure and value of money, and thus suppress the uncertainty or the prejudice linked with its weight and material. Here, a debasement of money would be perfectly licit.

2.3. Buridan's solution: a redefinition of the Prince

The structure of Buridan's article 2 of question 11 makes this quite obvious. The notes 2 and 3 respectively concern the most important debasements - those which affect the material and weight of the money. Buridan introduced two types of debasements of material, and one type of debasement of weight. Each case was divided into two subcases, within which the approach was always the same. In the first, he dealt with a debasement « according to the will of the Prince alone, without the good of the community being improved » (*In Octo Libros Politicorum*, I, q. 11, a. 2, note 2), or

« without utility for the community » (*Ibid.*, note 2 and note 3)³⁸, and condemned it. But in the second subcase, he mentioned those situations in which a debasement is licit: as a consequence of « too high an increase in the material, that is when the material is too common and its price too low » (*Ibid.*, note 2), or « in the interest of public affairs; that is in order to tax the merchants » (*Ibid.*), or also « if the material remains the same, whilst the weight is reduced at the same time as the price [is reduced] » (*Ibid.*, note 3).

Of course, no simple conclusion can be drawn from this analysis. Buridan's formulation attests to this persisting ambiguity: if « for the common good, the debasement of money is licit » (*Ibid.*, conclusion 3), it cannot be allowed « for the private good, either of the Prince or of somebody else » (*Ibid.*, conclusion 2). But particular emphasis was laid on the fact that « the debasement of money may licitly be carried out only by the one [the Prince] who has the power to ordinate money »³⁹. And it is clearly this right to make debasements of money which is troublesome, because it might contradict the duty of the Prince to achieve these debasements alone which would improve the common good. The way Buridan resolved this difficulty is interesting. We have already pointed to the great conscientiousness with which he established that for the virtuous Prince, the common good ought to prevail over his private good. In this connection, he argued that, as the debasements of money are licit only according to this common good, the right to make debasements only belongs to the virtuous Prince⁴⁰. And what if the Prince is not virtuous? Buridan's answer was strictly political, and aimed at promoting the subjects' control over the Prince. Moreover, he concluded that this Prince who prefers his own private good « is only called a Prince, and he is not a Prince » (*Ibid.*, a. 2, doubt, answer). The consistency of Buridan's position then clearly appears: as a principle, the debasement does not raise any objection as long as it is a right exercised by this newly defined Prince⁴¹.

Consistent as it was, this position, however, happened to be very flimsy. Buridan showed himself quite uncomfortable when dealing with the King or the Emperor, « whose power is unlimited, who does not recognise any law » (*In Octo Libros Politicorum*, I, q. 11, a. 2, doubt, note 2). He prudently avoided discussing the case of these Princes who escape the control of their subjects. And this was not only a political

³⁸ See also *Ibid.*, conclusion 3.

³⁹ *Ibid.*, note 8. See also conclusion 1: « the one who constitutes it [the money] is the one who debases it ».

⁴⁰ *In Octo Libros Politicorum*, I, q. 11, a. 2, doubt, conclusions 2 and 3.

⁴¹ Buridan's position was clearly recalled by O. Langholm [1983], p.11.

failure of his construction: it was, as well, a theoretical failure. Whenever an elected Prince is vicious, he must be deposed. But what if the King is vicious? If again an elected Prince is vicious, he cannot truly be called a Prince. But which word shall we use to designate a vicious King?

3. The Prince as a calculator

Facing the King, we have no more power, and no more words. The great merit of Nicholas Oresme was to give us back this power and these words. This means that Oresme's contribution must not be evaluated as a singular construction, only related to his political involvements, and suddenly coming into the world in the mid-fourteenth century: the *Treatise on Money* firstly appears as an attempt to give proper answers to questions previously raised by Buridan.

However, the structure of the *Treatise* is very different from that of Buridan's article 2 of question 11. Buridan focused on a balanced appreciation of the incidence on the common good of various debasements of money, and he never doubted that the Prince had the right to mutate it. Oresme did, and this right of debasement appears as a leading question in his work. The *Treatise* seems to be organised around an attempt to give it a proper answer.

3.1. The property of money

Two arguments, not always clearly distinguished, lead to acknowledgement that money is a property of the community. Firstly, money - as already stated - derives its existence from the interest of each member of the community; secondly, it becomes, on the occasion of each transaction and for each seller, a property which is substituted for the property of natural wealth: « if someone gives his bread, or the labour of his own body in exchange for money, this money belongs to him when he receives it, as much as his bread or the labour of his body he was free to use as he wanted, supposing he was not a serf » (*Treatise*, chap. 6).

Hence, when Oresme concluded that it was the Prince's responsibility to make money, it was surely not, as the feudal tradition taught, because he had any title to the ownership of money. On the contrary, this conclusion was only reached as a convenient solution for the community: « it was ordained formerly, and that in order to prevent fraud, that nobody may make money, [...] but on the contrary that the money [...] should be made by a public person, or by several persons deputed by the community to that

duty [...]. And since the Prince is a more public person, and of a higher authority, it is convenient that, for the community, he should have money made » (*Ibid.*, chap. 5). This could explain why, according to Oresme, minting money gives rise to seignorage⁴²; but - unlike Buridan - it does not open the path to a right to mutate money. In Oresme's view, the latter only belongs to the community as an immediate consequence of its property right, and as protection against the Prince himself⁴³.

3.2. The effects of a debasement of money

It is worth noting that the property right argument, though sufficient to explain that the right of debasement is attributed to the community, does not stand alone. As a supplementary argument, the protection against the Prince brings to light the effects of the debasements. These effects could be understood either independently of the author of the debasement, or in relation with him.

The first case opens the path to a general assessment of debasements, disregarding the specific consequences, possibly induced by a Prince in search of his private good. In comparison with Buridan's position, the set of circumstances which allow a debasement of money is, for Oresme, much narrower. The reader of the *Treatise* has to wait until chapter 10 to find an obvious statement of a permitted debasement. These few pages, dedicated to the « debasement of the ratio » - the relative prices of the different types of money in a multimetalist system - provide the occasion to examine a debasement which improves the common good: the ratio between the values of gold and silver money must be set in accordance with the « natural relation in value of gold to silver ». This is nothing but a simple extension to the coexistence of gold and silver money of the principle formerly established according to which the price of money has to follow the price of the metal of which it is composed⁴⁴. Oresme never admitted that in other circumstances, a debasement of money could generate positive effects on the common good. The reason is that each time a debasement is suggested, its negative consequences would overcompensate for its positive effects which, most of the time,

⁴² *Treatise*, chap. 7.

⁴³ « [...] it appears from chapters one ["Why money was invented"] and six ["To whom does the money belong"] that money belongs to the community itself. And that is why, and in order to prevent the Prince from inventing by guile a reason [...] for mutating the money ratio, the community alone has the right to decide if, and when, how, and to what extent, this ratio is to be changed » (*Ibid.*, chap. 10). Oresme went back to this theme on several occasions inside the *Treatise*. See, for example, chap. 13, 14 and 22.

⁴⁴ Again, it is as a consequence of a real change concerning the metals of which the money is made that a « debasement of the material » for an alloy can be authorized (see *Treatise*, chap. 13).

could be achieved by means of other policies. One of the interests of this argument is that it reveals that, for Nicholas Oresme, the assessment of a policy is a direct consequence of a calculation of its possibly antagonistic effects on the common good. Taking this analytical position seriously leads us to wonder why a real change concerning metals was the only circumstance in which the balance of the effects of a debasement on the common good was positive.

The answer put forward in the *Treatise* is at first that the community does not suffer any negative effect when a debasement follows a real change: under the guarantee of the Prince the money becomes exactly what people expected it to be. The balance is then necessarily positive. On the contrary, any debasement submitted to other ends generates negative effects. If we go on disregarding the impact of the Prince's pursuit of his own private good, we could identify, with Oresme, four kinds of negative effects: a real income effect, a quantity of money effect, then an external trade and an internal trade effect.

The first one is that most frequently observed by Oresme's commentators. Stating that the purchasing power of nominal incomes is modified by a debasement of money ⁴⁵, it is a purely mechanical effect, linked with the general acceptance of money as a unit of account. Although Oresme never discussed this point, it is clear that the real income effect always operates, even in the case when a debasement follows a real change in the value of the metal. Rather than an inadequacy of the exposition, this seems to be a consequence of the fact that such a debasement would correct real incomes, so that they regain their former levels. In this respect, the restitution of the previous structure of the distribution contributes to the common good - whilst the same real income effect, through other debasements, would diminish it. Obviously, this is a supplementary reason to argue that a debasement in reaction to a real change in the material of money has only positive effects.

The three other effects are analysed in chapter 20 of the *Treatise*, as « disadvantages for the whole community ». A withdrawal of the material for money (and even a falsification of money), a decrease in commodities imports as well as in the volume of internal trade were presented as the responses to a debasement which moves

⁴⁵ This is introduced in chapter 8 of the *Treatise*: « [...] the currency and the price of money in the kingdom must be so to speak a law and a fixed ordinance. This is indicated by the fact that pensions and some yearly incomes are reckoned according to the price of money, that is to say according to a fixed number of pounds or shillings »; the same idea is mentioned again in the discussion of the debasement of the appellation (chap. 11), and while presenting some distributive consequences of a debasement (chap. 21).

the value of money away from the value of the metal. These responses first occur because such a debasement gives rise to reallocations of activities, directing them towards other countries - where the same amount of commodities could be exchanged for a greater amount of gold - or by substituting for them arbitrages between money: « [...] because of such changes and depreciations, gold and silver decrease in the kingdom; because if no supervision prevents it, they are taken abroad, where they are more valuable. *For men try to take their money where they think it to be worth much more.* So there follows a decrease in the material used for money into the kingdom. [...]. Again, because of these debasements, good quality commodities or natural wealth would cease to be brought from a foreign kingdom into the one where money is so changed, *since merchants, in preference to other places, choose to go to those places where they receive certain and good money* » (*Ibid.*, chap. 20; my italics, A.L.). That surely must be acknowledged as one of the first explicit formulations of an allocation mechanism that in Oresme's view is moved by the private interest of the traders. Its distributive consequences make this part of the community richer, which then « increases its own wealth through contemptible gain »⁴⁶ at the expense of the active part of the community⁴⁷. But these debasements also bring uncertainty to the material and to the weight that the Prince, as an efficient cause of money, was precisely supposed to cancel⁴⁸. Facing this last - and major - prejudice, harmful to the whole community, any advantage joined to it appears negligible: while a debasement answering a real change serves the common good since it confirms money in its functions, all other debasements, for the same reason, deserve it.

Now, paying some consideration to the action of the Prince as the author of the debasements does not substantially alter these conclusions. However, this allowed Oresme to supplement the analysis with a thorough study of the behaviour of the Prince, and gave him original insights into the regulation and control process of the debasements of money.

⁴⁶ According to Oresme, « such are money changers, money traders, or dealers in base coinage » (*Ibid.*, chap. 21).

⁴⁷ « Some parts of the community are at work on tasks honourable or useful to the whole State, such as increasing and managing natural wealth in order to satisfy the needs of the community; such are churchmen, judges, merchants, craftsmen and the like » (*Ibid.*). It is noticeable that this order of occupations reflects Oresme's scale of values - the churchman is the first, while the craftsman is the last - and that the Prince is missing in this enumeration.

⁴⁸ Cf. also, in Oresme's comments on the *Ethics*: « one should not change the value and the price of money, except in very rare cases for the public good. For it [money] is the measure of things which are exchanged, and every measure should be certain and durable » (*Traduction et Glose de l'Ethique*, V, 10).

Again unlike Buridan, Oresme did not require the Prince to be redefined in order to escape an analytical difficulty. Assuming that the Prince could be interested in his private good is equivalent to considering him a merchant, trying to increase his gain: « the main and final cause why the Prince wants to give himself the power of debasing money, is to gain or benefit from it: for it would otherwise be pointless for him to make so many and such great changes for nothing » (*Ibid.*, chap. 15). On such grounds, it is easy to see that a Prince who was not exclusively turned towards his subjects' common good would decrease this by looking after his own private ends. Oresme summarised his position by imagining a kind of trade-off between the community and the Prince: « the more the Prince gains from it [the debasement of money], the more the community suffers from it » (*Ibid.*). In other words, the sovereign would add specific distributive effects to the general effects of a debasement. The most obvious effect is that each debasement allows him to collect a new seignorage, at the expense of the community⁴⁹. But other and more complex effects are also taken into account, which depend on the foremost position of the Prince, and on his informational advantage: Oresme paid special attention to speculative behaviour, which would benefit either the Prince⁵⁰ or a class of initiates⁵¹.

Oresme's appraisal of a Prince who imposes an illegitimate debasement and earns profit from his informational advantage was very harsh and gave rise to an interesting parallel with usury. In both cases, the use of money could not constitute a fair argument, justifying the payment of a specific income, because for the Prince as for the lender, this would mean selling the use of something which does not belong to them. But Oresme argued that while the gain generated by a debasement is already unjust for the harm that it inflicts on the community, it is still more blameworthy than the usurious gain: in this last case, the existence of an interest loan at least involved an agreement between parties⁵²; but conversely, those who benefited from a debasement could never

⁴⁹ See *Treatise*, chap. 7 and 9.

⁵⁰ The Prince who changes the ratio of value between gold and silver money « could unduly draw to himself his subjects' money, as if he bought money at a low price, for silver, and after having raised its price, he sold his gold or gold money, or did the same with silver » (*Treatise*, chap. 10). The same analysis appears on the occasion of the study of the debasements of the material (chap. 13), and when the injustice of the gain of a debasement is discussed (chap. 15).

⁵¹ « [...] when the Prince does not inform the people of the date and the nature of the future debasement of money he intends to make, some as a precautionary measure or through friends secretly foresee it, and then buy goods with weak money, and then sell them in exchange for strong money, and quickly get rich, and unduly draw a gain, against the legitimate course of natural trade » (*Ibid.*, chap. 21).

⁵² On the significance of the agreement between parties within the doctrine of usury, see Lapidus [1991], p. 25.

argue that such an agreement was given by the other members of the community. It is not only at the expense of his subjects that a Prince achieves a debasement, but also without their knowing it ⁵³.

Now comes the question of regulation and control that Buridan's identification between the « Prince » and the « good Prince » made it possible to avoid. The necessity of a control simply arises from the uncertainty concerning the Prince's virtue - that is, his exclusive interest in the common good.

3.3. Regulation, incentives and control: the limits to the power of the Prince

Several chapters of the *Treatise* were directly devoted to the analysis of the Prince's power ⁵⁴. Oresme clearly refused to engage in Buridan's subtle distinctions between the different categories of princes, and did not pay especial attention to the case of the King or of the Emperor as being separate from any of the other princes. Although he gave a detailed presentation of the Prince's duties, aiming at showing what he ought to be, he never concluded this could grant him any superiority in the community: « while being greater and more powerful than any of his subjects, he is yet inferior in strength and means than the whole community, and so stands in the middle » (*Ibid.*, chap. 25). Concerning a right of debasement which belongs, without contest, to the community, this implies that the Prince has neither better knowledge nor more virtuous understanding than the community has of the conditions under which it must be achieved. So, the first and obviously better way to spare the community the negative effects of a debasement carried out by the Prince, is to put it into their hands. Since, of course, this would allow the identity of ownership with control of money, it would also avoid any agency problem ⁵⁵.

⁵³ Oresme's words are worth quoting in full: « In fact, the usurer has lent his money to someone who takes it voluntarily, and then can enjoy it or use it to provide for his own needs, and what he repays in excess of the principal has been determined by voluntary contract between the parties, but, by an undue change in the money, the Prince plainly receives the money of his subjects against their will » (*Treatise*, chap. 17).

⁵⁴ See chap. 19, 23, 24, 25, and 26 of the *Treatise*.

⁵⁵ However, the community is not able to make use of its money with complete freedom. In spite of its ownership, the right of debasement cannot be used unless it improves the common good. It must be recalled that the acknowledged scholastic understanding of the right of property always considered it as limited by the interests of the community. Applied to the question of the debasements of money, this led Oresme to assess that « neither the community nor anyone can justly misuse his own property or use it unlawfully, as the community would do if it mutated money so » (*Ibid.*, chap. 22).

Obvious as it is, this solution has the disadvantage of introducing a break between the exercise of the right of debasement and the efficient cause of money. So, the general case, studied by Oresme, is one in which the Prince has the authority to make debasements. What then is the foundation of this authority over debasements? After having carefully ruled out any supposed absolute necessity, but also the Pope or the Emperor⁵⁶, Oresme answered that it could never come from an alienation of the right of debasement from the community to the Prince, this right being considered as « nearly [...] natural »⁵⁷. The foundation of the Prince's authority is thus a mandate, given by the community: « if it [the community] entrusts the Prince with this task [the debasement of money], within a reasonable limit, [...] the Prince would not undertake it as main author, but as the executor of a public ordinance » (*Ibid.*, chap. 24).

Nicholas Oresme then faced what would nowadays be a classical agency problem, where the community appears as the « principal » and the Prince as the « agent ». Both could have different objectives - in such a case, when the Prince « seeks his own good more than the common good of his subjects », he is called a « tyrant » (*Ibid.*, chap. 25)⁵⁸ - and both have different information.

From this point of view, the diffusion of the ideas developed in the *Treatise* already represents a first level of control, because it informs the community of the limited cases in which the debasement of money is legitimate and, at the same time, it informs the Prince that the community is aware of this. Consequently, the various justifications dismantled by Oresme throughout the *Treatise* could no longer be voiced by the Prince. If he keeps seeking his private good, the Prince is then condemned to appeal to the few actual reasons for a debasement, in order to hide his objective from his subjects' eyes⁵⁹.

Of course, he might fail to mislead his subjects; after all, the *Treatise* contains the elements required for a fair assessment of the monetary policy, and the community, or its « most eminent part », cannot remain mistaken for too long. On the other hand,

⁵⁶ The arguments in favor of a right of debasement belonging to the Prince, and Oresme's answers, are respectively stated in chapters 23 and 24 of the *Treatise*.

⁵⁷ « [...] *res quae spectat alicui quasi de jure naturali* » (*Ibid.*, chap. 24). Oresme added that « just as the community cannot authorize the Prince to have the power to abuse any of the citizen's wives because he would like to do so, it cannot give him such a privilege over money ».

⁵⁸ As Langholm ([1983], p. 17) observed, the concept of « tyrant », in Oresme's *Treatise*, clearly comes from Aristotle's *Politics*.

⁵⁹ For instance, at the end of the chapter where he established that a real change concerning gold and silver money constitutes a basis for a debasement, Oresme discussed the possibility that the Prince invents « by guile a reason stated in this chapter for mutating the money ratio » (*Ibid.*, chap. 10).

one cannot completely dismiss the possibility that the Prince could succeed in his enterprise. In both cases, other levels of control had to be explored.

In this respect, it is useful to recall that Buridan's article 2 of question 11 and Oresme's *Treatise* belong to quite different literary genres. Whereas Buridan's work is a good illustration of the Scholastic tradition, Oresme's *Treatise* would now be acknowledged as an essay, chiefly aiming at persuading its readers. This could appear as a negligible difference. To me that is not so. For the *Treatise* is a rhetorical text. And this must be taken literally: when Aristotle's *Rhetorics* was translated into Latin, in the mid-thirteenth century, it was not considered as a work about eloquence, but as an appendix to moral and political philosophy⁶⁰. This was linked with an original feature of Aristotle's book, namely the part played by the *inventio* - as distinct from the *elocutio* and from the *dispositio*. As is well known, the *inventio* creates an opportunity to assess the weight of a reasoning, when there is no evidence that it is absolutely true⁶¹. Taking the *Treatise* as an essay in persuasion therefore does not lead to underestimating its theoretical content. On the contrary, it allows a perception of its most eminent reader - the Prince - as a listener of the rhetors. As such, he can now be viewed as committed to the various goals that the Aristotelian rhetor tries to reach⁶², now able to reassess, in the light of the *Treatise*, the consequences of the decision to mutate the money. He is able to weigh and compare the opposite consequences of his action on his private good. In other words, he is a calculator.

Oresme's great skill was then to emphasize the fact that, if the Prince persists in his intention of carrying out a debasement, he shows himself to be a bad calculator or, at least, a badly informed calculator, because he remains under the influence of those rhetors - his advisors - whose private interest is opposed to the community's as well as his own interest⁶³: the Prince's private interest, which impelled him to alter the money, should prevent him from persisting in his intention. Hence, it is not a plea for the

⁶⁰ Giles of Roma wrote a book devoted to *The Differences Between Rhetorics, Ethics, and Politics*. On this question, see J. Murphy [1974].

⁶¹ Such a preoccupation was recurrent in Oresme's work. The *Quodlibeta*, for instance, are permeated with a permanent quest for sounder explanations, when nature as well as divination is concerned (see S. Caroti [1990]). So that the fight against astrology and superstitions supplies another example of a rhetorical text: S. Lefèvre [1990] rightly pointed out some similarities between the *Livre de Divinacions* and the *Traictie des Monnoies*.

⁶² See the *Rhetorics*, I, chap. 5.

⁶³ Oresme strongly denounced « the duplicity of flatterers, who have always urged princes to be tyrants [...]. For these flatterers [...] cunningly deceive the naïve ears of the Princes who judge others by their own nature, and the kings' minds are corrupted by their suggestions » (*Treatise*, chap. 25; see also chap. 26).

common good which is supposed to convince the Prince. When he acts like a merchant, it is only an argument for merchants which could persuade him. In various ways, Oresme undertook to show that the primary positive effects of a debasement on the private good of the Prince indirectly arouse negative - and dominant - effects, thus contradicting his actual interest.

As several commentators rightly underlined, those negative effects come at first sight from moral and political sanctions⁶⁴. Facing the Prince who is insufficiently informed of all the consequences of his decision, Nicholas Oresme recalled that debasements in material or in weight, when « some coins are inscribed with the name of God, or some saint, and with the sign of the cross », would be at least a sin of « lie and perjury »⁶⁵, and at most a transgression of the biblical commandment which forbids taking « the name of the Lord thy God in vain » (*Treatise*, chap. 13)⁶⁶. Later on, he put the blame on the Prince, emphasizing his responsibility for growing uncertainty about the value of money, manifestly expecting that he would be more sensitive to the ruin of his reputation than he was to the transgression of God's precepts⁶⁷. However, although these religious and moral sanctions should not be underestimated in the context of the Middle-Ages, their efficiency was limited to cases where the gain for the Prince from the debasement, is lower than the prejudice he incurs. Political sanctions then appear to be much more conclusive, for they threaten not only marginally the level of the Prince's private good, but the simple existence of his government, for himself and for the whole royal line.

It seems clear that Oresme hesitated to state the nature of these political sanctions precisely, and the way they occur. In chapter 19, for instance, when he discussed the « disadvantages for the Prince because of the debasements of money », he focused on moral and religious feedback. In fact, he only aimed at demonstrating that a tyrant cannot last long⁶⁸, adding up the reasons why in a country where people are not

⁶⁴ See, for example, J. Wolff [1973], pp. 82-83.

⁶⁵ A similar position is adopted in the Gloss on the *Politics*, I, 10.

⁶⁶ Such religious interdicts are much more efficient than we could imagine, for they directly concern such policies as those of the king of France, John the Good, who tried to conceal his numerous debasements from his subjects (the *livre tournois* had its value changed seventy-one times from 1351 to 1360). L. Wolowski ([1864], p. 3, n. 3) quotes Michelet's *Histoire de France* on this subject.

⁶⁷ *Treatise*, chap. 19. In the same way, Oresme also noticed that the Prince, as bound as everyone, by this Lord's other commandment to honour his parents, would « devalue the honour of his ancestors, when he does away with their good money, and has it destroyed together with their image ».

⁶⁸ Oresme used the picture of the human body, as an organicist representation of society, and argued that an excessive concentration of power in the head (the government) could only be made at the expense of the members, so that the whole body would not survive; see *ibid.*, chap. 25.

accustomed to being submitted to serfdom such a government could never succeed in imposing itself⁶⁹. But he never made explicit how this government would collapse. Some incidental remarks alone, attest that Oresme had in mind a transfer of power from one family to another, or a foreign conquest⁷⁰. In a certain way, he was not as daring as Buridan was, since he never suggested that the people should depose the Prince who betrays the common good. But, as a counterpart, his understanding of the Prince was more extensive, for his conclusions covered all kinds of governments, including the King and the Emperor. Was Oresme then simply a prudent man, restricting his pen in order not to clash head-on with his royal readers? Probably not: his biography attests that he was able, when necessary, to contradict even the Pope's views⁷¹. But he seems to have been aware that, while religious and moral sanctions were short term answers, a political sanction resulting in the fall of a government, though more conclusive, was also much more uncertain, and presumably a matter for a long term solution, so that its relative weight in the Prince's calculation might be too low.

This could explain the importance Oresme attached to economic incentives. These are of two types. The first deals directly with the Prince's income - the seignorage - as a result of the minting of money. The difference between the value of the money and the value of the metal was accurately identified as the sum of the cost of minting and of seignorage, both being chargeable to the community, as the owner of money⁷². Against the idea that the earnings of the Prince should be fixed first, Oresme took the side of a fixed difference between the respective value of the money and of the metal: « this fixed portion of money should be large enough to cover more than the cost of minting money at all times. And if money can be made at a lower cost, it is quite fair that the remainder [*residuum*] should go to the distributor or ordainer, that is to the Prince or the master of money, and so constitute a sort of pension » (*Treatise*, chap. 7)⁷³. Whenever the community adopts this rule of distribution, it makes up for its lack of information about the technical and economic conditions of the production of money, for it ensures a convergence of the Prince's private good with the common

⁶⁹ *Ibid.*, chap. 26.

⁷⁰ « [S]ince if the power of tyrants is great, it is yet violent to the free hearts of subjects, and weak against foreigners » (*Ibid.*, chap. 26).

⁷¹ In 1363, Oresme delivered a violent sermon in Avignon, in order to persuade Pope Urban V not to go back to Rome

⁷² See *Treatise*, chap. 7.

⁷³ Oresme nevertheless added that this portion must be moderate, for « if such a portion or pension was excessive, it would be to the expense and prejudice of the whole community » (*Ibid.*).

good: the « master of money » is interested in doing his utmost in order to diminish the cost of minting as greatly as possible. On the other hand, the justification of this payment, which benefits the Prince, rests not on his right of property - the money remains a property of the community - but on the service provided to the community: the figure stamped on each coin certifies the weight and composition of the money. For the Prince's subjects, it is then the price to be paid in order to obtain information, the lack of which would compromise their transactions, and the private acquisition of which would be costly, because it would oblige them to weigh and assay their means of payment.

The previous rule of distribution is, of course, an incentive for the efficient minting of money. However, it offers no protection against debasement. On the contrary, the Prince is interested in multiplying such operations, in order to increase his income, not only by lowering the cost of minting, but also by cumulating the seignorages associated with each debasement. This gives primary importance to the second type of economic incentives with which the Prince is faced. Interestingly, it is not an institutional device, set up by the community to control the Prince's policy, but what could be called an *economic regulation process*, generated by the merchants' search for their private good, in answer to the Prince's search for his.

In chapter 20 of the *Treatise*, Oresme summed up the disadvantages for the community of the debasements of money. Among them, some have a direct - and negative - influence on the Prince's private good. On the one hand, Oresme remarked that bad money, « counterfeit money », is brought into the kingdom⁷⁴, hence compromising the Prince's gain. On the other hand, the difference between the value of the metals of which the money is composed and its legal price would cause a movement of gold and silver from the kingdom, « for men try to take their money where they think it is worth much more »; the resulting shortage would then concern not only the community, but also the Prince himself. Hence, both processes make the Prince a casualty, among others, of the reallocation of precious metals generated by the debasement of money.

⁷⁴ After Macleod [1896], p. 38, this has led some commentators to consider Oresme a forerunner of Gresham. For a short discussion and references on this question, see Gillard [1988], pp. 23-24.

Oresme's portrayal of the Prince embodies all of the manipulative freedom associated with the metalist approach to money. Where Buridan only succeeded in describing the main aspects of a monetary policy in accordance with the common good, Oresme gave an account of a Prince whose objectives might remain close to the merchants'. Monetary policy was then, by its very nature, deeply transformed: the search for the common good requires a roundabout way; it is not virtue that impels the Prince to seek the common good, but only his recognition that the public good also serves his private good. And although this process is visible, at least for readers of medieval monetary contributions, its hand is no less efficient.

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References

- Arena Richard, *Réflexions sur la Théorie Monétaire de Nicole Oresme*, in *Actes du Colloque Oresme*, Paris/Beltrame, Belles Lettres/Uno piu Uno, 1987
- Aristotle, *Politics*, Harmondsworth, Penguin, 1981.
- Aristotle, *Ethics*, London/New York, J.M. Dent/E.P. Dutton, 1934.
- Aristotle, *On Rhetoric*, New York, Oxford University Press, 1991.
- Bridrey E., *La Théorie de la Monnaie au XIV^{ème} siècle : Nicole Oresme*, Paris, Giard et Brière, 1906 (reprint Genova, Slatkine, 1978).
- Buridan John, *Quaestiones in Decem Libros Ethicorum Aristotelis ad Nichomachum*, Oxford, H. Cripps, 1637 (Latin original and French translation of questions 16 and 17 on book V in E. Lévy [1991]; a French translation of the same questions, from the Parisian edition of 1513, is published in C. Dupuy (ed.) [1989]).
- Buridan John, *Quaestiones in Octo Libros Politicorum Aristotelis*, Oxford, G. Turner, 1640 (Latin original and French translation of questions 11 on book I and 21 on book III in E. Lévy [1991]; a French translation of the same questions, from the Parisian edition of 1513, is published in C. Dupuy (ed.) [1989]).
- Caroti Stefano, Elements pour une Reconstruction de la Philosophie de la Nature dans les *Quodlibeta* de Nicole Oresme, in J. Quillet (ed.) [1990].
- Dupuy Claude, *La Monnaie Médiévale (XI^{ème}-XIV^{ème} siècles) - Une Lecture des Faits et de la Pensée*, Ph. D. Dissertation, University of Lyon 2, 1988.
- Dupuy Claude, « Avant-Propos » and « Introductions », in C. Dupuy (ed.) [1989].
- Dupuy Claude (ed.), *Traité des Monnaies et Autres Ecrits Monétaires du XIV^{ème} Siècle*, Lyon, La Manufacture, 1989.

- Fau Jacqueline (ed.), *Nicolas Oresme [1355], Traité Monétaire - Treatise on Money*, Paris, Cujas, 1990.
- Gillard Lucien, Nicole Oresme, Economiste, *Revue Historique*, vol.279(1), 1990.
- Gilson Etienne, *History of Christian Philosophy in the Middle Ages [1944]*, London, Sheed and Ward, 1955.
- Gordon Barry, Aristotle, Schumpeter, and the Metalist Tradition, *Quarterly Journal of Economics*, 75, 1961.
- Gordon Barry, *Economic Analysis Before Adam Smith*, London, Macmillan, 1975.
- Harsin Paul, *Les Doctrines Monétaires et Financières en France du XVI^{ème} au XVIII^{ème} Siècle*, Paris, Alcan, 1928.
- Johnson Charles, *The « De Moneta » of Nicholas Oresme*, London, Nelson, 1956.
- Langholm Odd, *Wealth and Money in the Aristotelian Tradition*, Bergen/Oslo/Stavanger/Tromsø, Universitetsforlaget, 1983.
- Langholm Odd, *Economics in the Medieval Schools*, Leiden/New York/Köln, E.J. Brill, 1992.
- Lapidus André, La Propriété de la Monnaie : Doctrine de l'Usure et Théorie de l'Intérêt, *Revue Economique*, 38(6), Nov. 1987.
- Lapidus André, Information and Risk in the Medieval Doctrine of Usury During the Thirteenth Century, in W. Barber (ed.), *Perspectives in the History of Economic Thought*, vol.5, London, Edward Elgar Publ., 1991.
- Lapidus André, Introduction à la Pensée Economique Médiévale, in *Nouvelle Histoire de la Pensée Economique*, Paris, La Découverte, 1993.
- Lefèvre Sylvie, Une « Rude Manière de Parler »: l'Enjeu Rhétorique du *Livre de Divinacions* de Nicole Oresme, in J. Quillet (ed.) [1990].
- Lévy Edouard, *Le Statut de la Monnaie chez Jean Buridan et Nicole Oresme*, D.E.A. dissertation, University of Paris I, 1991.
- Lowry S. Todd, The Search for a Populist Medieval Monetary Theory, presented at the *International Medieval Conference*, Leeds (UK), 1994.
- Macleod Henry D., *History of Economics*, New York, G.P. Putnam's, 1896.
- Menut Albert D., *Maître Nicole Oresme : Le Livre de Ethique d'Aristote*, New-York, Stechert, 1940.
- Menut Albert D., *Maître Nicole Oresme : Le Livre des Politiques d'Aristote*, *Transactions of the American Philosophical Society*, 60(6), 1970.
- Monroe Arthur E., *Monetary Theory before Adam Smith*, Cambridge (Mass.), Harvard University Press, 1923; reprint: New York, A. M. Kelley, 1966.
- Murphy James J., *Rhetoric in the Middle-Ages*, Berkeley, University of California Press, 1974.
- Noonan John T. Jr, *The Scholastic Analysis of Usury*, Cambridge (Mass.), Harvard University Press, 1957.

- Oresme Nicholas, *Treatise on Money*, in J. Fau [1990] (trilingual edition: Latin-French-English; the quotations from the *Treatise*, in this paper, use freely the translation of this edition). Fau's edition, as well as a French translation - *Traité des Monnaies* - in C. Dupuy (ed.) [1989] are based on a Latin version constituted from five Latin manuscripts, published in C. Johnson [1956]. The original French version, by Oresme, was published as *Traictie de la Première Invention des Monnoies*, by L Wolowski (ed.) [1864].
- Oresme Nicholas, *Traduction et Glose de la Politique d'Aristote* in C. Dupuy (ed.) [1989] (chap. 10 and 11 of book I, from the edition of A. D. Menut [1970]).
- Oresme Nicholas, *Traduction et Glose de l'Ethique à Nicomaque d'Aristote* in C. Dupuy (ed.) [1989] (chap. 11 of book V, from the edition of A. D. Menut [1940]).
- Paqué Ruprecht, *Le Statut Parisien des Nominalistes*, Paris, Presses Universitaires de France, 1985.
- Quillet Jacqueline (ed.), *Autour de Nicole Oresme*, Paris, Vrin, 1990.
- Roscher Wilhelm, Un Grand Economiste Français du XIV^{ème} Siècle, *Compte-Rendus de l'Académie des Sciences Morales et Politiques*, 1862; repr. in L. Wolowski (ed.) [1864].
- Schumpeter Joseph A., *History of Economic Analysis*, London, Allen and Unwin, 1954
- Thomas Aquinas, *Summa Theologica*, in *Opera Omnia*, vol.3.
- Thomas Aquinas, *In Quattuor Libros Sententiarum*, in *Opera Omnia*, vol.10.
- Thomas Aquinas, *In Decem Libros Ethicorum ad Nichomachum*, in *Opera Omnia*, vol.25.
- Thomas Aquinas, *In Octo Libros Politicorum*, in *Opera Omnia*, vol.26.
- Thomas Aquinas, *Opera Omnia*, Mare P., Frette S.E. (eds.), Paris, Vivès, 1871-1880.
- Wolff Jacques, Nicole Oresme: Monnaie et Pouvoir, in *Les Grandes Œuvres Economiques*, vol. 1, Paris, Cujas, 1973.
- Wolowski Louis (ed.), *Traictie de la Première Invention des Monnoies* de Nicole Oresme et *Traité de la Monnoie* de Copernic, Paris, Guillaumin, 1864 (reprint: Roma, Bizzarri, 1969).
- Wolowski Louis, Etude sur le *Traité de la Monnaie* de Nicole Oresme, in L. Wolowski (ed.) [1864].