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**The Centrality of Materiality:**

**Economics and Technology from Xenophon and Onwards**

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**The Centrality of Materiality:  
Economics and Technology from Xenophon and Onwards**

by

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The everyday notion of what is meant by “the economy” is that it consists of a mixture of objects, actions and relationships. It consists of objects such as cars, houses, machines and so on.<sup>1</sup> The economy also depends on what people do and how they behave. If they save, work hard and invest well, their economy will improve; and if they do nothing, overspend and waste their resources, it will go downhill. Also relationships matter: you may inherit, have to pay tax and want to share your money with your family.

The everyday notion of the economy reminds us that we are “living in a material world”, to cite Trevor Pinch (Pinch forthcoming). But even if this is obvious to people in general, it is also clear that mainstream economics has more or less eliminated the material part of the economy from its analyses and prefers to exclusively focus on the mental and non-material part of economic life. As one example among many, one can cite the famous work by Gary Becker entitled *The Economic Approach to Human Behavior*, in which it is argued that what characterizes economics as a discipline is not that it analyses something concrete but the way that it goes about the analysis. “The combined assumptions of maximizing behaviour, market equilibrium, and stable preferences, used relentlessly and unflinchingly, form the heart of the economic approach as I see it” (Becker 1976:5). In referring to the old-fashioned definition of economics as a science concerned with wealth, Becker writes: “the definition of economics in terms of material goods is the narrowest and the least satisfactory” (Becker 1976:4).

Sociologists working on economic topics take essentially the same stance as the economists when it comes to material objects, even if they prefer the abstract character of *homo sociologicus* to the abstract character of *homo economicus*. Where economists argue that you have to separate out and concentrate on economic behaviour, sociologists protest and state that you must not cut off economic behaviour from the rest of society; economic behaviour is always influenced by and embedded in social relations (e.g. Smelser and Swedberg 2005). In brief, just as the economists, the sociologists avoid dealing with material objects, even if they ignore them in a different way. What matters to sociologists are social relations, not objects and materiality.

The one small part of sociology that has *not* ignored material objects is the new sociology of science and technology. In works by scholars such as Bruno Latour, Michel

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<sup>1</sup> For helpful comments I thank Patrik Aspers.

Callon, Trevor Pinch and others we find an important and high-spirited attempt to challenge the old tendency to eliminate objects from the sociological analysis. Various new concepts and approaches have been suggested as part of this project, such as the idea that one can overcome the conventional subject-object distinction by casting reality in terms of “collectives” of interacting subjects and objects. This last suggestion comes from Bruno Latour, who also prefers to use the term “actant” for objects, to indicate that these are neither dead objects nor traditional actors but something in between (e.g. Latour 1993, 1999). Trevor Pinch has also suggested that institutions have a material dimension. “‘Total institutions’ like prisons, hospitals and asylums”, he writes in an important addition to institutional theory, “are dependant upon material arrangements and technical devices” (Pinch forthcoming:12).

Scholars who are active in Science and Technology Studies have also since a few years begun to pay attention to the economy, as exemplified by the work of Karin Knorr Cetina, Donald MacKenzie, Alex Preda and a few others. It has, for example, been suggested that the economists have their own epistemic culture and that this has influenced contemporary perceptions of what constitutes “the economy” (e.g. Callon 1998, Breslau and Yonay 1999). That machines such as computers and tickers play a role in the world of finance has also been explored in several studies (e.g. Knorr Cetina and Preda 2005, Stark and Beunza 2004).

In this article I want to continue along these lines but address a different topic: the notion of the economy as it figures in economic analysis and how it needs to be reconstructed and improved from a material and a sociological perspective. I shall argue that economic analysis – especially in mainstream economics but also in economic sociology – would do well to view the economy in terms of materiality and say good-bye to the object-less world of *homo economicus* and *homo sociologicus*. The way that I will go about this task is by re-examining earlier ways of looking at the economy, starting with Aristotle and Xenophon in Antiquity, and then continue over Adam Smith and Karl Marx to the situation today. By proceeding in this way, one can follow in broad lines how economics has become increasingly spiritualized over the centuries, a bit like religion itself. I shall also pay special attention to the role of technology in the analysis of the economy; and I will in particular try to show the difficulty that economics has had with technology, once its material links were cut off.

### Antiquity: The Economy as a Material Household

The attempts to theorize the economy during Antiquity are centered around the notion of the household, as opposed to the market, for the simple reason that very few activities passed through the market at this point in time. Nonetheless, some market activities did exist; and in order to establish a consistent terminology in this paper I want to introduce Max Weber's terminology of household (*Haushalt*) and profit-making (*Erwerben*) at this stage (Weber 1978:86-100). All economies, according to Weber, can from a theoretical viewpoint be organized either as a household or as a profit-making enterprise. Households are essentially geared towards *the needs* of its members, while profit-making enterprises attempt to exploit opportunities of gain in order to *make a profit*. While increasing *consumption* and *wealth* is the goal of households, *seizing opportunities* and increasing *capital* is the goal of profit-making enterprises. Historical examples of households include the individual household of a family, the medieval manor and the socialist state; and of profit-making enterprises, the commenda, the modern firm and the capitalist economy. In reality there is typically a mixture of elements from households and profit-making enterprises (see Fig. 1).

/Fig. 1 about here<sup>2</sup>

The two most important texts on the economy from Antiquity were written by Aristotle (384-322 B.C.) and Xenophon (c.430-c.356 B.C.).<sup>3</sup> Aristotle's analysis of the economy is concentrated to Book I in *Politics*, while Xenophon's text is a full work in its own right, called *Oeconomicus*. As opposed to the works of such people as Adam Smith, John Stuart Mill and Alfred Marshall, these two texts are rarely read today and have a low status in the history of economics. Aristotle is typically only remembered for his attack on money-making and Xenophon for having written a pedestrian treatise on agriculture.

This view of Aristotle and Xenophon misses most of what they actually say on the economy, as I shall try to show. If one closely follow the argument in their writings instead of trying to cast these two thinkers as predecessors to modern economics, a very different picture emerges. From the perspective of materiality à la Pinch and Latour, for example, Aristotle and Xenophon become very interesting since they both explicitly introduce objects of various kinds into their analyses. Especially Xenophon was concerned with agriculture: the nature of the soil, how to sow, harvest and so on. Some of the existing

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<sup>2</sup> For Fig. 1, see the end of the paper.

<sup>3</sup> Other writers on the economy include Protagoras, Antisthenes and the real authors of *Oeconomica*, which is conventionally ascribed to Aristotle (see e.g. Pomeroy 1994:7-8, Aristotle 1935). For an introduction to Greek economic thought, see e.g. Trever 1916.

technology in ancient Greece is also part of the analysis that one can find in Aristotle and Xenophon, as is a deep concern with the human body, including sexuality. The family is of central importance as well, both the relationship between husband and wife and between parents and children. The knowledge of how to prepare food and various ways of keeping the house in order were also considered crucial to a good economy. Trade and commerce, in contrast, were held in less high regard.

That the opening chapter of *Politics* is devoted to the economy has to do with the fact that Aristotle viewed economic life as part of the life of the polis. To cite Polanyi in “Aristotle Discovers the Economy”, the economy was “embedded” in the rest of society (Polanyi 1971:81). The goal of the polis was autarchy or self-sufficiency, something that ruled out extensive commercial contacts with merchants outside the polis. While Xenophon does not say much on the issue of the role of the polis in the economy, it would seem that he agrees with Aristotle on this point. Both had as their ideal a polis that was self-sufficient and in which the citizens were good warriors as well as prosperous in their peacetime activities.

Aristotle’s analysis of economic life is centered around praise for what he terms the art of household management (*oeconomic*), on the one hand, and a sharp condemnation of what he terms the art of acquisition (*chrematistic*), on the other.<sup>4</sup> While the former is natural, he says, the latter is unnatural. The reason for this is that the resources of the household come from “plants and animals”, while the latter is “made at the expense of man” (Aristotle 1946:28). Aristotle’s famous distinction between use value and exchange value has also its origin in his argument about what is natural and unnatural in the economy:

All articles of property have two possible uses. Both of these uses belong to the article as such, but they do not belong to it in the same manner, or to the same extent. The one use is proper and peculiar to the article concerned; the other is not. We may take a shoe

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<sup>4</sup> According to M.I. Finley, “the word ‘economics’, Greek in origin, is compounded from *oikos*, a household, and the semantically complex root, *nem-*, here in its sense of ‘regulate, administer, organize’” (Finley 1973:17). There is no single word in English that can adequately capture *oikos*, according to Pomeroy who also notes that the *oikos* constituted the foundation of the Greek economy (Pomeroy 1994:41).

As to the word *chrematistic*, there exist divergent opinions about how it should be translated. The most common translation is “the art of money-making” or “acquisition”, but Ernest Barker notes, for example, that there are several meanings to the word (Aristotle 1946:22, 27). According to Karl Polanyi, “the art of money-making” represents a serious mistranslation of *chrematistic* and should be replaced by “providing the necessities of life” or simply “supply” (Polanyi 1971:111-15). My own understanding of this issue is that Barker and Polanyi overlook the fact that Aristotle makes a distinction between the theory and the practise of the art of acquisition, and that he has difficulty in separating acquisition and management in practise (e.g. Aristotle 1946:29).

as an example. It can both be used for wearing and for exchange. Both of these uses are uses of the shoe as such. (Aristotle 1946:23)

The art of acquisition, the reader is told, comes from the act of exchange, and its goal is to create money. What is further characteristic of this type of economic activity is that it is infinite in nature; you can never get enough money. What drives economic behavior of this type is “anxiety about livelihood, rather than about well-being”, and this anxiety cannot be satisfied (Aristotle 1946:26). The desire to make money also has a tendency to overtake areas of human life that have nothing to do with the economy. One’s concern with courage, for example, should be directed at warfare, and not at making money; one’s concern with medical knowledge should be used to create health; and so on. “But those of whom we are speaking turn all such capacities into forms of art of acquisition, as though to make money were the one aim and everything else must contribute to that aim” (Aristotle 1946:27).

As examples of the reprehensible art of acquisition Aristotle mentions retail trade and usury. By retail trade he especially has long-distance trade in mind, and more generally any kind of activity where something is exchanged for something else just in order to make money. Usury, according to Aristotle, is “hated most and with most reason” since it makes money through money itself (Aristotle 1946:29). “Of all modes of acquisition, usury is the most unnatural” (*ibid.*). Another common way of making an unethical profit is through “the creation of a monopoly” (Aristotle 1946:30). As an example of this Aristotle mentions Thales of Meletus, who through his knowledge of meteorology figured out that there would soon be a strong demand for olive presses and immediately started to secure as many of these as he could. Aristotle ends his presentation of the art of acquisition in *Politics* by stating that it would be “in poor taste” to discuss it in detail (*ibid.*).

Every form of exchange, however, is not unnatural; and it can therefore also be part of the art of the household. One example of this is barter or exchange without money ; another when money is involved, but is not the goal of the transaction. Exchange is not found inside the household, so the approved forms of exchange typically take place between households in the same village or between the villages that make up a polis.

The art of the household, as opposed to the art of acquisition, is primarily concerned with the direct use of resources and not with exchange. It has to do with the use of what has been produced; and its importance derives from the fact that “it is impossible to live without means of subsistence” (Aristotle 1946:19). Reproduction is also essential and this takes place within the household. Ultimately, according to Aristotle, “true wealth” has more to do with “human beings than with inanimate property” (Aristotle 1946:21, 33). True wealth

means a concern with the full and moral development of the citizens of the polis or with “the good conditions of human beings”, in Aristotle’s terminology (Aristotle 1946:34). “The art of household management is a moral art, aiming at the moral goodness of the members of the household” (Ernest Barker in Aristotle 1946:33).

At the core of the art of the household are three relationships of authority: between the free man and his slaves, between the free man and his wife, and between parents and children. The art of command is crucial to the operations of the household and differs in each of these three cases. While authority over slaves means command over non-free subjects, this is not the case with command over one’s children or wife. Slaves also lack the capacity of deliberation, while women have this faculty to some extent.

The slave is a natural part of the free man’s household; “a complete household consists of slaves and freemen” (Aristotle 1946:8). Slaves constitute animate objects, just as oxen and various tame animals. Aristotle states that “just as some are by nature free, so others are by nature slaves and for these latter the condition of slavery is both beneficial and just” (Aristotle 1946:14).

Males are similarly suited to have authority over females; and it is only under the authority of the husband that a wife can realize the type of good life that is suited to her. As opposed to Xenophon, Aristotle has little to say on what women contribute to the household, and he is primarily concerned with their role in reproduction. As to sexual ethics, Aristotle was well aware of the sexual availability of slaves in the Greek household but nonetheless proclaimed adultery to be “a matter of disgrace” (Aristotle 1946:328).

It is clear from *Politics* that Aristotle’s main concern with the husband-wife relationship in the household has to do with reproduction. While the woman should be around 18 years of age at the time when she gets married, the man should be around 37 (Aristotle 1946:324-31). In order to have healthy children the man must not overdo athletic exercises. The pregnant woman should eat properly and get some exercise. After around 50, men should not father children. They can continue to have intercourse, but “for reasons of health, or some other cause” (Aristotle 1946:327-28).

Deformed children must according to *Politics* be killed. If there is a need in the polis to keep the population down, newborn children must not be killed, instead miscarriages should be induced. Aristotle’s account of the household also includes brief instructions for how to raise children. Young children should, for example, be given milk but not wine. They should learn to endure the cold, but not associate too much with the slaves and so on.

If we now leave Aristotle and proceed to Xenophon, it should first of all be noted that *Oeconomicus* is cast in the form of a Socratic dialogue. The knowledge about the economy that one can find in Xenophon's work is, in other words, generated through the questions of Socrates and we may see his work as an account of Socrates' view of the economy. Most of the volume deals with the household, while only a few lines are devoted to the market and the art of acquisition. As opposed to *Politics*, *Oeconomicus* provides a wealth of details, both when it comes to the running a household and attending to its land. Of great importance to Xenophon's account, is the division of labor between men and women; one must also has to mention his fascination with leadership and its role in directing the work of others. The ethical dimension of economic life is finally much more complex and fully developed in *Oeconomicus* than in *Politics*. Since Socrates lived before Aristotle, one may well argue that it was Socrates, and not Aristotle, who discovered the economy. As I shall try to show, Socrates' view of the economy is also more interesting than that of Aristotle.

The first part of *Oeconomicus* takes the form of a dialogue between Socrates and a wealthy young Athenian called Critobulus. Socrates argues that economics is an art, just as medicine or carpentry, and as such it can be taught. What Socrates has in mind is not so much theoretical economics, but practical knowledge of the type that is useful in economic life. To Socrates, economics is both a noble and a necessary type of knowledge. The economy, we read in *Oeconomicus*, is as important as war and also a useful complement to warfare. The art of war and the art of economics constitute "the noblest and most necessary pursuits" (Xenophon 1923:399).

The heart of the economy consists of agriculture, and Socrates sings the praise of husbandry:

The land also stimulates armed protection of the country on the part of the husbandmen, by nourishing her crops in the open for the strongest to take. And what art produces better runners, throwers and jumpers than husbandry? What art rewards the labourer more generously? What art welcomes her follower more gladly, inviting him to come and take whatever he wants? What art entertains strangers more generously?...What other art yields more seemly first-fruits for the gods, or gives occasion for more crowded festivals? What art is dearer to servants, or pleasanter to a wife, or more delightful to children, or more agreeable to friends? To me indeed it seems strange, if any free man has come by a possession pleasanter than this, or found out an occupation pleasanter than this or more useful for winning a livelihood? (Xenophon 1923:400)

In economic affairs you aim at producing a surplus or a balance, and this comes about when what goes out is less than what comes in. Women are typically in charge of what goes out and men of what comes in. “If both do their part well, the estate is increased”; and the art of economic teaches how to accomplish precisely this (Xenophon 1923:389). What often prevents a positive balance from developing are such things as laziness, gluttony, lechery and the like – the “unseen rulers” of many men that destroy their wealth (Xenophon 1923:371).

Wealth, Socrates makes Critobulus realize, does not consist of objects, but of the way in which objects are used. The category of objects is used in a very broad sense by Socrates. One can, for example, increase one’s wealth through the use of one’s friends as well as through the use of one’s enemies. Socrates also argues that although Critobulus owns a hundred times more than Socrates, he is nonetheless not as rich. The reason for this is that many of Critobulus’ resources are tied up to various obligations; and also that his overall balance is low. Socrates adds that if Critobulus would ever need money, his friends would not help him. If Socrates, on the other hand, was in trouble, he could easily get assistance from his friends.

Socrates states at one point in his dialogue with Critobulus that since he himself has never been rich, he lacks important knowledge in this matter. And when you lack knowledge, he says, you go to those who have it. It is important to “watch people” and to carry out “investigations” (Xenophon 1923:385, 389). While Aristotle seems happy to argue from principles, Socrates is more open to fresh experiences and to learn from others when it comes to economic matters.

The rest of *Oeconomicus* contains a dialogue between Socrates and Ischomachus, one of the wealthiest citizens in Athens; and it is this dialogue that constitutes the heart of the work. Socrates is first told how Ischomachus has educated and instructed his wife about her tasks in the house and how these are related to his own tasks, which are located outside the house. The goal of the relationship between husband and wife, Ischomachus says, is to create “a perfect partnership in mutual service” (Xenophon 1923:419). Ischomachus informs his wife that she was chosen by him and her parents in the hope that she would become “the best partner of [his] home and children” (Xenophon 1923:419).

If the husband or the wife fails in their duties, Ischomachus explains, the household will be like a “leaky jar” (Xenophon 1923:427). The long-time goal of the household is described as follows: “that their possessions shall be in the best conditions possible, and that as much as possible shall be added to them by fair and honourable means”

(Xenophon 1923:419). Children are important and they will provide for the parents when these are old.

Ischomachus explains in great detail which duties belong to the husband and which belong to the wife. Most of what the husband does takes place on the outside, such as sowing, ploughing, harvesting and so on. The husband is in charge of production as well as the defence of the estate. The wife is responsible for what takes place on the inside, and this includes tasks such as to store what has been produced, take care of the children and be in charge of food and clothing. According to *Oeconomicus*, the minds and the bodies of men and women fit their respective tasks. Men are stronger and more courageous than women, who are weaker and more fearful. Both, however, have the same capacity for memory, attention, self-control and authority.

Another important task of women inside the house is to train and oversee the domestic servants. The emphasis on the importance of the wife's duties has led a contemporary commentator on *Oeconomicus* to note that,

Xenophon... is the first Greek author to give full recognition to the use-value of women's work, and to understand that domestic labour has economic value even if it lacks exchange-value. This idea was radical in the formal literature of classical Greece, and has yet to gain acceptance in modern times. (Pomeroy 1994:59; cf. 36, 87 ff.)

Ischomachus also emphasizes the importance of *order* in the household. It is absolutely crucial, he says, that everything is in its place so that one can find it easily and that it is not wasted. A household, just as an army, must be in order:

How good it is to keep one's stock of utensils in order, and how easy to find a suitable place in a house to put each set in, I have already said. And what a beautiful sight is afforded by boots of all sorts and conditions ranged in rows! How beautiful it is to see cloaks of all sorts and conditions kept separate, or blankets, or brazen vessels, or table furniture! Yes, no serious man will smile when I claim that there is beauty in the order even of pots and pans set out in neat array, however much it may move the laughter of a wit. There is nothing, in short, that does not gain in beauty when set out in order.

(Xenophon 1923:437)

Order also means that the right object is placed in the right room. The most valuable blankets and utensils, for example, belong in the store-room, and the corn in the dry covered rooms. Wine should be placed in the cool room, and art and vessels that need light in the well lit rooms. If the house has been built right the decorated living rooms are cool in the summer and warm in the winter,. The rooms in which male and female slaves sleep should be

separated by “a bolted door”, so that they cannot breed without permission (Xenophon 1923:441).

The successful art of household management also includes the emotional and sexual relationship of husband and wife. As Michel Foucault has argued, *Oeconomicus* and similar texts exemplify a trend in Greek ethics towards what he calls “care of the self”, according to which husband and wife have a moral (but unequal) obligation to one another (Foucault 1985, 1986). If the wife carries out her duties properly, according to this ethic, the husband should repay this with respect, including sexual respect when she grows old and becomes physically less attractive. The husband should also consider that while a slave does not have intercourse of free will, a wife may do so if he acts well. As the Athenians of his time, Ischomachus was also against the idea that the wife should use makeup. Husband and wife know each other’s bodies in great physical detail, so it would be false to present an exterior that does not answer to reality. Ischomachus also suggests that the wife will keep her figure beautiful by performing her household duties.

Socrates is very curious in *Oeconomicus* to find out how Ischomachus has been able to become so successful in economic affairs, and he asks him many questions on this theme. Ischomachus answers by first describing how he keeps himself in good physical form in order to manage his household as well his military duties. He also explains in much detail how an agricultural estate should be run: how and when to plant, how and when to sow and so on. An important part of managing an agricultural estate, he emphasizes, has to do with training some of the slaves to oversee the other slaves. This should be done, according to Ischomachus, by developing virtue and loyalty through rewards. Bailiffs may also get part of the gain. “The power to win willing obedience” is of great importance to Ischomachus, who calls the gift of leadership “divine” (Xenophon 1923:525).

While Socrates was unwilling to accept Critobulus’ claim that he was richer and had more wealth than Socrates, it is different with Ischomachus. When the latter is asked “do you really want to be rich and have much, along with much trouble”, Socrates receives an answer that he had not expected:

Yes, I do indeed. For I would fain honour the gods without counting the cost, Socrates, help friends in need, and look to it that the city lacks no adornment that my means can supply. (Xenophon 1923:455)

It is clear that Socrates not only respects Ischomachus’ answer, but also wants to know all the details about the way in which Ischomachus has been able to gather his wealth. Ischomachus resumes:

I will tell you what principles I try my best to follow consistently in life. For I seem to realise that, while the gods have made it impossible for men to prosper without knowing and attending to the things they ought to do, to some of the wise and careful they grant prosperity, and to some deny it; and therefore I begin by worshipping the gods, and try to conduct myself in such a way that I may have health and strength in answer to my prayers, the respect of my fellow-citizens, the affection of my friends, safety with honour in war, and wealth increased by honest means. (Xenophon 1923:455)

The only point at which Socrates takes Ischomachus to task and challenges his ideas about the successful art of household management, is when Ischomachus explains how his father has taught him how to buy and sell landed properties. One way to create wealth, Ischomachus explains to Socrates, is to locate good landed properties which are mismanaged, develop them, then sell them - and start the whole process over again. Socrates rejects Ischomachus's argument on this point. While he approved of Ischomachus' way of managing his estates, Socrates does not accept the idea of trading estates for profit.

By way of concluding the section in this paper on the economic analysis in Antiquity, it can be said that the material dimension of economic life was well understood. The body (including sexuality), physical objects and the earth itself were all included in the art of the household. This is particularly the case with the analysis of Socrates, as portrayed in *Oeconomicus* by Xenophon. The famous analysis of the economy that can be found in *Politics* by Aristotle is, in contrast, much more concerned with abstract conceptualisations, not only of agriculture and the domestic economy but also of the market. Neither Socrates nor Aristotle pay much attention to technology, though it is clear that some of the phenomena that they describe – such as tools, houses, the production of clothes, and so on – all require a distinct technology to come into being (see Fig. 2).

/Fig. 2 about here/<sup>5</sup>

### Political Economy and Materiality (Adam Smith and Karl Marx)

The two works by Adam Smith and Karl Marx that will be discussed in this section of the paper – *The Wealth of Nations* (1776) and *Capital* (1867) – were produced more than 2000 years after *Politics* by Aristotle and *Oeconomicus* by Xenophon. These works were also published during a particularly dramatic and dynamic period in England's economic history, namely the century during which the Industrial Revolution (1760-1830) took place

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<sup>5</sup> For Fig. 2, see the end of the paper.

and England became the world's first truly capitalist nation. *The Wealth of Nations* appeared at the beginning of this period and *Capital* towards its end, but both have in common that they try to conceptualize the new economic reality in which their authors were living.

It is clear that one can find much less of a concern with materiality in the works of Adam Smith and Karl Marx than in the Greek classics. The turn towards non-materiality that is characteristic of modern university economics had now begun, even if it should be noted that Adam Smith as well as Karl Marx tried to anchor their analysis in the human body and also to incorporate material objects and technology into their analyses. To account for the forces that create complex intellectual works such as *The Wealth of Nations* and *Capital* is notoriously difficult, but it does seem possible to at least single out some of the main factors that were involved. The development in England during 1770-1870, from an economy centered around the household and use value to an economy centered around exchange value and the market, would presumably operate *against* an emphasis on materiality. The reason for this is made clear by Adam Smith as well as by Marx: use value is concrete while exchange value, which constitutes the key mechanism in the market, is abstract (Smith 2000:31, Marx 1976:125-26). The fact that both Adam Smith and Karl Marx saw economics in a very practical way – as a guide for the statesman (Smith) and as a tool for the proletariat (Marx) – became in contrast be a force *for* materiality.

*The Wealth of Nations* is often read these days as an homage to the liberal market economy. The metaphor of the market operating as an invisible hand is typically cited as well as the fact that the butcher, the brewer and the baker all do their work because of individual interest and not because they want to serve the public interest. It is the mechanism of competition that makes the meat of the butcher, the beer of the brewer, and the bread of the baker to be of good quality and nothing else. Adam Smith's scepticism against government intervention is also singled out from today's perspective, as his argument for free trade.

It may, however, also be argued that the vision of Adam Smith as a modern liberal economist represents, at least to some extent, a wishful and ideological reconstruction of what you can find in *The Wealth of Nations* and that many other interpretations of his work are possible as well (e.g. Tribe 1999). In this paper I especially want to raise the question if it is not possible to make a materialistic interpretation of *The Wealth of Nations*, or at least confront this work with the idea of materiality in order to view it from a new and different perspective. As part of such an enterprise one would, for example, have to investigate the role that physical objects – including the human body and the earth – play in the analysis in *The Wealth of Nations*. It may also be interesting to look at the role of some other themes in this

work that are related to materiality and which were discussed in Antiquity, such as the concept of physical wealth, women's work in the home, agriculture and the notion of the household.

While it is clear that the concept of wealth is central to the work of Adam Smith since it appears in its title, it also seems clear that he has some difficulty in using it, and that these difficulties have consequences for the role of materiality in his analysis. On the one hand, as Max Weber reminds us of, the concept of wealth belongs to the vocabulary of householding (*Haushalt*), as opposed to that of profit-making (*Erwerben*), where the equivalent term is capital. *The Wealth of Nations* does, for example, contain an effort to spell out in physical detail exactly what wealth consists of. But Adam Smith is primarily trying to understand and conceptualise the new reality of markets and how prices are set in these, and this pushes him in a different and much more abstract direction than the one associated with the traditional concept of wealth.

In the spirit of householding Adam Smith refers often to the fact that the aim of the economy is to produce what he calls “the necessities and conveniences of life”. We find, for example, this expression already in the opening sentence of *The Wealth of Nations* (Smith 2000:xxii). At one point Adam Smith also spells out in detail what he means by it. There is first of all different types of food, such as grain, turnips, carrots, cabbages, potatoes, onions and apples (Smith 2000:89). There is also material for clothes, such as linen and woollen cloth, as well as (unspecified) furniture and tools. Finally, what is today considered a necessity, he notes, may not always have been seen as such; and the same is true when you compare two countries (Smith 2000:938-39). In England, for example, everybody has to have a linen shirt, while this was not the case in ancient Greece and Rome. Similarly each and every person in England has to have leather shoes, while this is not true in France.

At another point in *The Wealth of Nations* an attempt is made, again in the spirit of householding, to establish “the stock” of a country (Smith 2000:302 ff.). According to Adam Smith, the stock of a country falls into two categories: what is available for immediate consumption and “capital”. The former consists of the necessary conveniences just mentioned plus houses and other places in which to live. The latter consists of two types of capital: fixed and circulating capital. Fixed capital means machines and buildings to be used for business, while circulating capital covers raw material, items that have been produced but not yet sold, and whatever else is in stock.

Everything related to householding, in brief, tends to be concrete and easily specified. What relates to profit-making in the Weberian sense, pulls, however, in the other

direction. At one point in *The Wealth of Nations* it says for example that “wealth is the power of purchasing” (Smith 2000:34). Power of purchase, of course, is only of interest if there is something to buy or that what is being produced passes through the market. To this should be added that while labor is what creates wealth, according to Adam Smith, there is productive as well as unproductive labor. Productive labor, we are told, results in a commodity, which is not the case with unproductive labor, as exemplified by what servants, soldiers and lawyers do. The effect of using labor as a unit of measure means two things, both of which detract from materiality: a homogenisation of different types of labor, and that certain types of labor are eliminated from the concept of wealth, namely those that do not result in commodities.

The consequences for economic analysis of equating wealth with commodities that go on the market are very important, especially when it comes to the household. All that is done inside the home is now eliminated from the analysis, including such activities as ordering things, cleaning the house, making food, budgeting and caring for the children. While women’s work played a key role in Xenophon’s analysis of the aristocratic and slave-owning economy, it has totally disappeared from the democratic economy of Adam Smith. When women’s work is mentioned at all, it is only in connection with manufacturing, that is, with paid work or market work. *The Wealth of Nations* is more than a thousand pages long and the space devoted to the economic role of women takes up something like half a page. If one adds what Adam Smith says about the economic role of the home and the family, including children, the half page becomes a few lines longer.

What is said in *The Wealth of Nations* about agriculture is also of interest in this context since this is the type of economic activity that is the closest connected to the ancient concept of householding, besides what happens inside the house. According to *The Wealth of Nations*, there exist “two different systems of political economy”: “the system of agriculture” and “the system of commerce” or “the modern system” (Smith 2000:455). Only the latter can bring about true growth in wealth. While *Oeconomicus* by Xenophon contains detailed instructions for how to plant, harvest and so on, in *The Wealth of Nations* one only finds the repeated cliché that “soil and climate” are of much importance (e.g. Smith 2000:7, 109). As one would expect, Adam Smith also rejects the physiocrats’ argument that agriculture is the only source of wealth.

While it is often said that *The Wealth of Nations* contains a confrontation between two very different economic systems – the modern market economy and the retrograde mercantilist system - Adam Smith confronts in reality what he terms the system of commerce with different types of householding. One of these types of householding, we read

in *The Wealth of Nations*, can be found in Antiquity, a period when agriculture was “honoured” while commerce and foreign trade were discouraged (Smith 2000:741 ff.). Adam Smith also mentions that according to the Greeks, engaging in manufacturing and crafts would make the male body less suitable for warfare. The system of slave labor, he also says, was unproductive. Slaves, for example, were discouraged from working hard and never took any initiatives since this was punished.

Also feudalism, as Adam Smith saw it, was based primarily on agriculture and the logic of householding in a way that prevented wealth from growing. As long as the feudal estates did not engage in commerce, everything that was produced had to be consumed on the spot, something that resulted in “servile dependency” among the local population (Smith 2000:440). Once commerce came into the picture, on the other hand, the feudal lords could sell their surplus, with the result that their subjects grew less dependent on their masters and eventually became free and secure in their own property.

In mercantilism – a version of “the modern system” that Adam Smith criticized with great energy – the nation was cast as a household and the state as the main administrator of this household (e.g. Smith 2000:273). The key idea was that the nation should increase its wealth, understood as its holdings of precious metals. A series of measures to increase these holdings were typically introduced and policed by the state. Imports of whatever could be produced at home should be discouraged, while domestic manufacturers and exports from these should be encouraged. Colonies were useful, according to the same logic of householding, since one could extract raw materials from these and also use them as markets for manufactured goods.

Adam Smith stresses over and over again that it makes no sense from the perspective of profit-making to have a mercantilist policy. A country is much better off, for example, if it buys from abroad what it can only produce at a higher price at home. Money is not the same as wealth, but a measure of wealth. It is also at this point of his argument that Adam Smith gets to introduce what he himself sees as the main force that creates wealth, namely labor under the condition of an advanced division of labor. Being the practical man that he was, Adam Smith becomes quite materialistic when he sings the praise of the division of labor. A few pages into *The Wealth of Nations*, he uses the democratic example of the woollen coat of a worker to show how important the division of labor is:

The woollen coat, for example, which covers the day-labourer, as coarse and rough as it may appear, is the produce of the joint labour of a great multitude of workmen. The shepherd, the sorter of the wool, the wool-comber or carder, the dyer, the scribbler, the

spinner, the weaver, the fuller, the dresser, with many others, must all join their different arts in order to complete even this homely production. How many merchants and carriers, besides, must have been employed in transporting the materials from some of those workmen to others who often live in a very distant part of the country! How much commerce and navigation in particular, how many ship-builders, sailors, sail-makers, rope-makers, must have been employed in order to bring together the different drugs made use of by the dyer, which often come from the remotest corners of the world! (Smith 2000:12)

In discussing the link between wealth and the division of labor, we also come to the topic of Adam Smith and technology. Sometimes when he discusses what makes the division of labor so important Adam Smith points to its relationship to technology (“machines”), while at other times technology seems to be more of an independent factor (e.g. Smith 2000:7, 279). Regardless of this, technology according to Adam Smith is what allows a person to produce more than he or she otherwise could. That this, however, is not always positive, is also clear from Adam Smith’s famous remarks about the pin-making business. Workers in this type of factory soon get in bad physical shape, he says, and become, thanks to the division of labor, “as stupid and ignorant as it is possible for a human creature to become” (Smith 2000:4-5, 840).

In discussing Adam Smith and technology it is often mentioned that there is no awareness whatsoever in *The Wealth of Nations* that England was undergoing the Industrial Revolution at the time when this work was written (e.g. Koebner 1959). This is true, and also that references in this work are more to manufactures than to factories. But even if Adam Smith did not understand the importance that modern machinery, such as the Spinning Jenny and the steam engine, would have for the English economy, he nonetheless had a good material sense for technology. This comes out, for example, in the following quote, in which Adam Smith discusses division of labor and technology:

What a variety of labour too is necessary in order to produce the tools of the meanest of ...workmen! To say nothing of such complicated machines as the ship of the sailor, the mill of the fuller, or even the loom of the weaver, let us consider only what a variety of labour is requisite in order to form that very simple machine, the shears with which the shepherd clips the wool. The miner, the builder of the furnace for smelting the ore, the feller of the timber, the burner of the charcoal to be made use of in the smelting-house, the brick-maker, the brick-layer, the workmen who attend the furnace, the mill-wright,

the forger, the smith, must all of them join their different arts to produce them. (Smith 2000:12)

How machines, raw material and labor all meld into each other and concretise into a product also comes out very nicely in some passages in *The Wealth of Nations*, such as the following that discusses the production of textile products:

A piece of fine cloth, for example, which weighs only eighty pounds, contains in it, the price, not only of eighty pounds weight of wool, but sometimes of several thousand weight of corn, the maintenance of the different working people, and of their immediate employers. (Smith 2000:437)

When one moves from the analysis in *The Wealth of Nations* to that of *Capital*, a somewhat different picture of the economy as well as technology emerges. This is natural since Adam Smith, in the terminology of Marx, was addressing issues relating to the manufacturing period (c.1550 - c.1775), while Marx was concerned with the period of large-scale industry. And while Adam Smith battled the semi-capitalist, semi-feudal economic system that he called mercantilism, Marx had a different target. From the very first lines of *Capital*, it is clear that Marx lived in a world where the market had taken over from the household:

The wealth of societies in which the capitalist mode of production prevails appears as an ‘immense collection of commodities’; the individual commodity appears as its elementary form. Our investigation therefore starts with the analysis of the commodity. (Marx 1974:125)

Everything in capitalism, according to Marx, is drawn into the need for ever more profit: “Accumulate! Accumulate!” (Marx 1974:742). This emphasis on accumulation shifts the focus of the analysis away from materiality in the analysis since what constitutes exchange value, for Marx as well as for Adam Smith, is “abstract human labor” (e.g. Marx 1974:142). Prices are based on labor, something that only becomes possible if all types of labor are seen as fundamentally alike in some respect.

While all of this is true, Marx’s analysis nonetheless avoids the worst dangers of being too abstract and non-materialistic. One reason for this is that Marx sees production as much more important than the market, something which has to do with the role that he assigns to surplus value in his analysis. What capitalists fight about is not profit generated in the market through the act of exchange, say by buying cheaply and selling expensively, but surplus value generated through production on the factory floor. To look only at the prices of commodities and compare these to one another, Marx says, is to mystify what goes on in the

economy. Prices express relations between people and not between objects (“fetishism of commodities”; Marx 1974:164-.65).

That Marx’s analysis of capitalism pulls in a materialist direction has also another explanation, namely that Marx had been a materialist in his philosophy since early on. As a young and radical Hegelian, it was precisely the abstract and non-materialistic quality of Hegel’s thought that he rebelled against. The well-known expression that *der Mensch ist was er isst* (“you are what you eat”) had been coined by fellow-Hegelian Ludwig Feuerbach. And in Marx’s attempt to go beyond Feuerbach’s type of materialism in his so-called “Theses on Feuerbach”, we find an argument for a “new materialism” (Marx 1978:145). The new materialism, as opposed to “the old materialism”, understands for example that there are material reasons why people think in non-material or religious terms.

Attention to the physical world, including the human body, is also characteristic of all of Marx’s writings. In *Capital*, the human body is discussed in primarily two contexts. There is first of all a need in capitalism to reproduce the body of the worker, and secondly, the body of the worker is severely abused in this type of economic system. The need to reproduce the body of the worker comes from the fact that labor is the only commodity that can produce surplus value, and to pay for this commodity means to pay for its physical reproduction. Or, as it says in *Capital*:

If the owner of labour-power works today, tomorrow he must again be able to repeat the same process in the same conditions as regards health and strength. His means of subsistence must therefore be sufficient to maintain him in his normal state as a working individual. His natural needs, such as food, clothing, fuel and housing vary according to the climatic and other physical peculiarities of his country. (Marx 1974:275)

Marx’s concern with the body of the workers can also be illustrated by his attempt to assess how many calories a worker needs per day, as measured in the terminology of the time: “nutrive elements” consisting of “carbon” and “nitrogen” (Marx 1974:808 ff.). He notes in addition that since workers eventually will die, the price of labor (=the price for the reproduction of a worker) must also include the cost of his children. “The labour-power withdrawn from the market by wear and tear, and by death, must be continually replaced by, at the very least, an equal amount of fresh labour-power” (*ibid.*).

In their eagerness to make a profit, Marx argues, the capitalists typically exploit the workers and hurt them physically and psychologically:

In its blind and measureless drive, its insatiable appetite for surplus labour, capital oversteps not only the moral but even the merely physical limits of the working day. It

usurps the time for growth, development and healthy maintenance of the body. It steals the time required for the consumption of fresh air and sunlight. It haggles over the meal-times, where possible incorporating them into the production process, so that food is added to the worker as a mere means of production, as coal is supplied to the boiler, and grease and oil to the machinery. It reduces the sound sleep needed for the restoration, renewal and refreshment of the vital forces to the exact amount of torpor essential to the revival of an absolutely exhausted organism. (Marx 1974:375-76)

Despite his sensitivity to the material dimension of labor, Marx - just as Adam Smith - eliminated everything that happens in the home from his analysis of the economy, including the domestic work of women. The importance of this type of work at the time of Marx has been well established in historical scholarship (e.g. Tilly and Scott 1978; cf. Folbre 1991 for a discussion of the absence of domestic work from the economic thought in the 1800s). Women (and children) are mentioned in *Capital* only when they enter the labor market, something which they did when large-scale industry was introduced in England. This development lowered the demand for skilled male workers and also meant that women and children now became desirable as a labor force. The great sufferings that especially children had to endure in various industries is graphically described in *Capital* with the help of the famous factory reports. In the lace-making industry, for example, children have to work so hard that they become “restless as birds”, and in the match-making factories the conditions of the children were so bad that “Dante would have found the worst horrors of his *Inferno* surpassed” (Marx 1974:356, 597).

One can also find a significant attempt in *Capital* to introduce science and technology into the analysis of the economy. Technology is conceptualised as the practical application of science (e.g. Marx 1974:775, 929). Science and technology, the reader is told, also set man apart from animals since human beings can think about the different ways in which they interact with nature *before* they do so; they also use instruments that they have constructed, when doing so. While human beings have made instruments throughout history, in order to accomplish various tasks, the role of these instruments changes dramatically with capitalism. From now on, human beings have to adjust to their instruments rather than the other way around; man becomes, as Marx puts it, a “living appendage to the machine” (Marx 1974:548). The workers also need little skill to run the machines that are now being used; they become de-skilled.

The main reason for this situation is not so much technology or science per se, according to Marx, but capitalism and the fact that the workers have nothing to do with the

decision of what is to be produced. The person who does the conceptualisation is the capitalist, and the reason for his interest in science and technology and to decide on what is being produced, primarily has to do with the profit motive. The way to beat your competitors is by being able to lower the price, and this can be accomplished through the introduction of new machines. “The battle of competition is fought by the cheapening of commodities” (Marx 1974:777). This is why science has to be “pressed...into the service of capital” (Marx 1974:482). And the introduction of science and technology into a type of economic system that has ever more profit as its goal, means that the technology – and people working with this technology - will always be in a process of change:

Modern industry never views or treats the existing form of a production process as the definitive one. Its technical basis is therefore revolutionary, whereas all earlier modes of production were essentially conservative. By means of machinery, chemical processes and other methods, it is continually transforming not only the technical basis of production but also the functions of the worker and the social combinations of the labour process. At the same time, it thereby also revolutionizes the division of labour within society, and incessantly throws masses of capital and of workers from one branch of production to another. (Marx 1974:617)

In summarizing the result of the section in this paper on materiality and political economy, it is clear that compared to Xenophon and Aristotle, much of the materiality of early economic analysis has disappeared. This is especially the case with women’s work in the household, the task of bringing up children, and the sexual relationship between husband and wife. Some of Adam Smith’s sense for materiality in *The Wealth of Nations* may also be due to his use of graphic examples as a rhetorical strategy. And in a similar way, Marx may have chosen some of his examples of the material horrors of 19<sup>th</sup> century England because of his desire to inspire the reader to revolutionary action.

While the actors in the works of Adam Smith and Karl Marx live in a material world, this materiality is little theorized and often taken for granted. While this may be seen as a weakness from the perspective of the new materiality of Science and Technology Studies, it is nonetheless easy to feel some nostalgia for the high days of political economy. Why this is the case will become obvious in the next section of this paper which is devoted to the life- and objectless universe of the key actor in modern economic science: *homo economicus*.

### The Immateriality of Homo Economicus

In presenting the art of household management I have looked at ancient Greece, and in presenting political economy, 19th century England. In now turning to *homo economicus*, the main focus will shift to the United States in the 20th century. This change of scenery to the United States also reflects the fact that mainstream economics has developed the most forcefully in this country since the early 20th century, just as political economy came to its classical expression in England in the preceding century. What is of particular concern in this section of the paper, I shall emphasize, is to investigate how the theory of *homo economicus* will fare when confronted with the idea of materiality. It is well known, for example, that you can criticize *homo economicus* from the perspective of psychology, by showing the cognitive limits of the human mind (Herbert Simon). There is also the perspective of sociology, according to which economic actors are not isolated from one another as in the theory of *homo economicus*, but embedded in social structures (Mark Granovetter). The main question I want to address here, in contrast, is the following: what can the perspective of materiality add to the critique of *homo economicus*?

To answer this question I shall analyse what according to Kenneth Arrow is the pioneer formulation of *homo economicus*, namely the section devoted to this topic in *Risk, Uncertainty and Profit* by Frank Knight (Arrow 1987:203; Knight 1979:76-81). Knight's book was published in New York in 1921 and is based on his dissertation from 1916 at Cornell University (Knight 1916). According to Knight and Arrow, the discussion of the theory of *homo economicus* in *Risk, Uncertainty and Profit* only makes explicit what is already present in "a large part of the economic literature" (Knight 1971:81). John Stuart Mill is usually seen as having presented the first formulation of *homo economicus* in the mid-19th century, so one can perhaps say that Knight in his dissertation covers ideas that had developed in mainstream economics over something like half a century (e.g. Persky 1995).

Knight prefaces his presentation of the nine central assumptions of *homo economicus* with a statement which can also be found in John Stuart Mill and several other economists, namely that these assumptions are made exclusively for methodological reasons. They are so-called "heroic abstractions" and they refer to an "imaginary society", but they also make it possible to solve certain problems (Knight 1971:76). More problematic is Knight's statement that even though his assumptions are ideal types, they are also "idealizations or perfections which hold good more or less in reality" (Knight 1971:79). This formulation points to an ambivalence in the analysis, which has remained characteristic of mainstream economic theory: it claims to refer to reality – but also not to do so.

The nine assumptions that Knight discusses in *Risk, Uncertainty and Profit* are as follows (Knight 1971:76-81). Economic actors are “normal human beings” of the type you find in “a modern Western nation” (# 1). They act “with ‘complete rationality’”, something which means that they know what they want, how to get what they want, and also what consequences their acts will have (# 2). Economic actors decide themselves what they want, and no constraints on their actions exist in this regard (# 3). Nothing can stop the economic actors from carrying out their economic plans, be it physical obstacles or anything else (# 4). Perfect competition means, among other things, “perfect...intercommunication” and that all goods can be divided indefinitely (# 5). Economic actors have no social relations with other economic actors, except in the act of exchange (# 6). Economic actors only acquire goods through the market and production (# 7). Division of labor presupposes a diversification of wants and as well as specialization of the productive capacity of the individual; resources are unevenly distributed in the world and there is a limit to human mobility (# 8). Finally, conditions have to be static, something which means that economic actors can now understand everything about their conduct that they do not already understand (# 9).<sup>6</sup>

In commenting on these key assumptions that form the heart of modern economic theory, Knight refers to “the law of choice” as well as to marginal utility theory. The goal of economic analysis is primarily to figure out prices with the help of the notion of equilibrium. While the expression “rational choice” was invented and became popular first after World War II, it is clear that Knight argues for an early version of this approach.

In modern rational choice theory the emphasis in the analysis has moved from the interaction of the economic actors with their environment to what happens in the mind of

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<sup>6</sup> The reader may compare Knight’s version of *homo economicus* with one that is less famous, but also more concisely formulated. Its author is Max Weber, and it was intended for a textbook in economics that was never written:

Abstract economic theory

- a. *ignores*, treats as if *not present* all those motives which have an influence on real men which are specifically *non-economic*, i.e. all those motives not arising from the satisfaction of material needs;
- b. *imputes* as actually present in men particular qualities which are either *not present* or incompletely, namely
  - complete insight into the given *situation* – perfect economic knowledge;
  - exclusive selection of the *most appropriate means* for a given end – absolute ‘economic rationality’;
  - exclusive devotion of one’s own powers to the attainment of economic goods – tireless economic endeavor.

It therefore argues on the basis of *unrealistic* men, analogous to a mathematical ideal. (Weber 1990:30; trans. Keith Tribe)

the actor, according to assumptions made by the analyst. The term “choice” is used in a very special sense in this context – more as determination according to certain rules than as the everyday notion of choice which conveys some degree of uncertainty and deliberation in making a decision. The approach of rational choice, in other words, is not realistic and not materialistic.

This characterization of rational choice analysis holds to a large extent good also for Knight’s version of *homo economicus*, something that becomes clear if we look at the way that he conceptualises the body, technology, the environment and objects more generally. As to the human body of his economic actors, Knight only makes a few cryptic remarks. People, he says, have “inherited and acquired dispositions”; they also have “wants” (e.g. Knight 1971:76, 79). No references beyond this are made to emotions and sexuality, whether the actors are male or female, old or young, have legs and arms, and so on. Since communication between the actors is assumed to be perfect, language is also eliminated from the analysis. The human body, in brief, is largely absent from Knight’s analysis.

Knight has even less to say about technology than about the body in his attempt to present the main assumptions of economic analysis. At one point he notes that “material implements of production may be used provided they are either superabundant, and consequently free goods, or else are absolutely joined to their owners (not subject to lease or sale)” (Knight 1971:80). Knight also refers to the assumption that material implements have to be stable (cf. # 9). Technology, in brief, is assumed to be present but not to change.

Also the environment leads at best a ghostlike existence in Knight’s account of *homo economicus*. The only explicit reference to the environment comes in his discussion of assumption # 8, where Knight speaks of “the space distribution of the different resources of the earth and the limitations on human mobility” (Knight 1971:79). The reason for mentioning these two factors is probably related to the state of foreign trade theory at the time when Knight wrote his book.

Finally, also material objects are strangely missing from Knight’s analysis, despite occasional references to “goods”. To some extent this may be related to the disappearance of the term use-value from the vocabulary of modern economics and the related attempt to replace it with a more subjective terminology, such as “utility” and “preferences”. What also makes objects disappear from the analysis is Knight’s steady focus on the market, something which means that even though he is aware of the importance of production, whatever happens when goods come into being, ultimately is less important than how they are priced – something which takes place in the market. A related example of Knight’s attitude to

objects is his statement that “we also must assume complete absence of physical obstacles” when it comes to the actor making a decision, and that we have to assume “perfect mobility” and “no cost involved in movements or changes” (Knight 1971:77). When Marx famously said that “all that is solid melts into air”, he was thinking of the corrosive impact of bourgeois conditions on feudal values, but his statement can also be applied to the transition from political economy to modern economic theory when it comes to materiality (Marx 1978:476).

In an attempt to cast some more light on modern economics at the time when it produced the theory of *homo economicus*, I will now proceed to a type of economics that was very strong at Cornell University, where Knight presented his dissertation. This is *home economics*, which constitutes a kind of economics that is usually not mentioned in histories of economic thought but which is of much interest in this context since it is the mirror image of the theory of *homo economicus*. Where one is abstract and non-materialistic, the other is concrete and materialistic. And while the theory of *homo economicus* has usually been taken seriously and discussed at great length, home economics has typically been ridiculed and ignored. When male students at Cornell and other universities were gently steered in the direction of economics, the female students were just as gently steered in the direction of home economics.

The origin of home economics is usually set to the early 1800s, with Catherine Beecher’s *Treatise on Domestic Economy* (1842) as an important landmark. The focus in this type of economics was primarily on the home and skills such as cooking, cleaning and sewing. A few decades later efforts were made to turn home economics into a university subject, something that succeeded in the United States but in no other country, as far as I know. The reason for home economics being successful in the United States probably has to do with the fact that this country had a relatively young and flexible university system. Not all the universities, however, accepted the new subject. While the prestigious private universities for women, for example, rejected it, many land-grant universities accepted it. Universities such as Cornell and Wisconsin, where home economics prospered, also had close ties to the government and were more open to political reforms.

In 1909 the American Home Economics Association was created and a decision made to settle on the term “home economics”, as opposed to “household arts”, “domestic science”, “oecology” and similar terms (e.g. Stage and Vincenti 1997). Home economics received considerable support from the federal government, especially through the Smith-Lever Act of 1914 which allotted funds to improve U.S. agriculture. After a shaky and difficult beginning, the home economics movement reached its peak in the 1910s and 1920s.

Decline began to set in after World War II, and home economics died a slow death a few decades later. It is often noted that an important reason for its disappearance was that home economics was out of touch with the times by the 1960s and the 1970s, in the sense that gender roles were now quite different from what they had been around 1900. Women had in particular begun to move into the labor market, something that made many of the basic assumptions and concerns of home economics seem less relevant. Home economics was also severely criticized during the 1960s and 1970s by major figures in the feminist movement.

The development at Cornell, where home economics was a great success, can be used to round off the story of home economics (e.g. Rose 1969, Berlage 1998). In 1907 a Department of Home Economics was created at Cornell that was part of the College of Agriculture, and a successful degree program for female students instituted. The Department was popular even if its faculty members were ridiculed and called “cooks” by their male colleagues. In 1925 the Department of Home Economics became its own College with a number of departments, such as the Department of Food and Nutrition, the Department of Economics of the Household and Household Management, the Department of Family Life, the Department of Textiles and Clothing, the Department of Household Art, the Department of Hotel Administration, and the Department of Institution Management. The next few decades were very successful and more than a hundred doctorates in home economics awarded. By the 1960s, however, times were different, and in 1969 the College of Home Economics was reorganized and its name changed to the College of Human Ecology.

Home economics has primarily been studied from the perspectives of gender and profession, and it is clear that quite a bit can be said by proceeding in this way. Home economics failed, for example, as a profession, and this had much to do with gender relations at the time. But home economics can also be seen as a part of the history of economics and as part of a tradition that goes all the way back to the idea of the science of household management in ancient Greece (*oeconomic*). It can also be argued that it is precisely from this perspective that home economics makes the most sense: as a return of a part of the science of economics that had been rejected and ignored at least since the days of Adam Smith. That home economics also fits nicely into the history of economics as a science about people and their materiality is similarly clear.

The type of home economics that existed in the 1800s can be described as practical knowledge about various tasks in and around the home, especially skills in cooking and sewing. Around the turn of the 20th century, when women in the United States were for the first time being admitted into the university, an attempt was made to set home economics

on a scientific footing and thereby make it stronger as well as legitimate. This was especially the case with the topics of food and cleaning. Chemistry was used to bolster the former, and the science of sanitation the latter. The results were impressive: advancement towards a scientific understanding of nutrition as well as a considerably better understanding of some issues related to hygiene and public health. In their work on public health and sanitation the home economists sometimes took the model of the household and extended it to the level of the community, going well beyond a concern with the individual home.

The 1920s and 1930s added the family as a central topic, including the development of children and parental education. An effort was now made, for example, to show that boys and girls were not inherently different and made for different tasks in society. The interest among home economists for technology was also intensified during the course of the 20th century, both at the level of the home and at the level of the community. The introduction of science and technology into the kitchen constituted one important agenda, and the bringing of electricity to the countryside and the family farm another. In all of these efforts, the practitioners of home economics displayed an interest for the practical and material aspects of people's everyday life that is unique in economics.

When one looks at the role that the theories of *homo economicus* and home economics played in university education in the early 1900s, one realizes that the young male students were trained in an abstract, impractical and very prestigious type of knowledge, while the young female students were trained in a concrete, practical and often ridiculed type of knowledge. The end of the story adds a further surrealistic twist: home economics with its interest for the household was by the 1960s seen as outmoded and made to disappear, while mainstream economics, as a sign of its continued vitality, now took on the study of the household. "The new household economics", as it became called, developed precisely around this time, and it extended abstraction, impracticality and non-materiality to the last stronghold of what had once been called *oeconomic*.

### Discussion

The idea that materiality should be central to social science analysis needs to be worked out in somewhat different ways for the different aspects of human life. While there no doubt exists a material dimension to, say, literature and religion, materiality constitutes the very core of the economy. The economy cannot be analysed apart from materiality since it is materiality that economics is primarily all about. Or to phrase it more precisely: economic life constitutes a very special type of materiality, and this is the reason why you need a

“substantive” and not a “formalistic” type of economic theory, to speak with Karl Polanyi. This is also the reason why I have confronted different types of economic theory with materiality in this paper. The result of doing so, is that at least two types of analysis, which are usually seen as old-fashioned and totally passé, turned out to be much more relevant than one would have thought: ancient Greek economics and home economics. The works of Adam Smith, Karl Marx and the theory of *homo economicus* also revealed some new sides when they were looked at from the perspective of materiality.

In trying to work out the problems that emerge when materiality is taken into account, sociology represents a possible resource. A first point that needs to be made a propos sociology in this context, however, is that many parts of modern sociology as well as classical sociology have more or less eliminated materiality from the analyses. *Homo economicus* has a close relative in *homo sociologicus* in this respect (e.g. Dahrendorf 1968). Material objects, the human body and the geographical environment play, for example, a very minor role or no role at all in conventional network theory, social construction theory and relational sociology. The same can be said of Simmel’s notion of sociology as the study of social forms or of Durkheim’s idea that it is primarily society that shapes all our perceptions of the world (“collective representations”).<sup>7</sup>

As noted in the introduction to this paper, the ideas of Bruno Latour and some of the people in Science and Technology Studies represent original and fruitful attempts to work out these problems. Such notions as “actant”, “collective” and the idea that networks involve not only human actors but also objects are examples of this. Marx and Weber should also be included in the tradition of thinkers who have tried to work out the problems of materiality, as I see it. While Marx may seem to stand for an old-fashioned type of materiality (“materialism”), and today’s science and technology people for a new materiality, some of the problems that the latter address are perhaps not so different from the ones that Marx thought about.

While it is obvious enough why one may want to include Marx among the thinkers who have tried to come to terms with materiality, the choice of Weber may seem

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<sup>7</sup> Simmel’s concrete analysis, such as his essay on the sociology of the senses, are often more material in nature than his theoretical sociology (Simmel 1997). The concept of *homo duplex* points both to Durkheim’s awareness of and hostility to the human body; for a critique of his idea that society creates all mental categories, see e.g. Bergesen 2004. For contemporary discussions of the absence of the body in sociology as well as attempts to remedy this, see e.g. Turner 1996, Shilling 2003, and *Body & Society* (1994-). Latour puts it succinctly: “either you have a body...or you are dead” (Latour 2004a:205).

more counterintuitive. Did not Weber, for example, present his theoretical sociology as a study of social action – that is, as a study of behaviour invested with meaning? And Weber’s emphasis on *Sinn* represents no doubt a position that excludes materiality. This is all true, but it is also clear that in his concrete studies Weber does pay attention to material factors, such as the quality of soil in his agricultural studies and the role of the body in his sociology of religion. The apt expression that machines represent a form of “frozen spirit” we owe to Weber as well (“*geronnener Geist*”; Weber 1972:332).

One can also find a deliberate attempt in Weber’s theoretical sociology to work out the consequences of objects and materiality more generally. In the famous opening chapter of *Economy and Society* Weber states that objects and whatever lacks meaning may operate as “stimuli, results, favoring or hindering circumstances” in respect to social action (Weber 1978:7). Weber also notes that the problems of working out each of these four situations that involve a lack of meaning – from objects that operate as stimuli for social action to items that block social action – demand the use of a different approach than what is used in analyzing social action (Weber 1978:13). Weber, in brief, was aware of the problem of materiality for a *verstehende Soziologie* and opened the door to its solution.

A somewhat different set of problems emerge when we leave the issue of materiality and the economy in general, and turn to the problem of technology, economy and materiality. Some clues for how to proceed in this situation can be found in the growing literature of Science and Technology Studies which now and then touch on economic factors.<sup>8</sup> As examples of this one can take Michel Callon’s study of the attempt in France in the 1970s to develop an electrically driven automobile and Wiebe Bijker and Trevor Pinch’s study of the development of the modern bicycle (Callon 1997, Bijker and Pinch 1997). What stopped the attempt to build an electric automobile was not so much the technical difficulty involved as the realization that it would become far too expensive to produce this type of vehicle. Bijker and Pinch similarly note that the producers of the bicycle were among the actors who made demands that had to be met before there could be “closure” for what people thought that a bicycle should look like.

To turn a material analysis of technology into good economic sociology it may also be important to explicitly introduce the role of the profit motive, since this is central to capitalism. This, however, has to be done without killing the whole analysis by reducing the role of technology to something that the profit motive just “decides” or “demands”. To rely

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<sup>8</sup> The literature on the sociology of the body does not usually address economic topics. For two exceptions, see Featherstone 1982, Bahnisch 2000.

too heavily on the profit motive is also problematic on the ground that it is very different to determine what profit is in the first place, for reasons having to do with accounting (e.g. Hatherly, Leung and MacKenzie 2005).

Relying too heavily on standard arguments about “the market” in the analysis is similarly problematic and needs to be replaced by a presentation of concrete and specified mechanisms. As I see it, one may also want to introduce the concept of productivity in the analysis at this point. Economic systems are conventionally classified as either being market or command systems, capitalist or socialist, but they can also be compared in terms of productivity or the sets of mechanisms that drive - or block - productivity. Pursuing the problem of productivity, and what accounts for it, would mean studying productivity in material detail and taking a hard look at the measures for productivity that are currently being used (e.g. Block and Burns 1986).

To question what constitutes “the market” also means to question the idea of “the non-market”. It has often been noted in this paper, for example, that modern economic theory is about markets, while, say, *oeconomic* and home economics is about non-market activities (see Fig. 3). One direction that a new economic analysis may want to take would be to try to replace these old categories and distinctions with ones that explicitly take materiality and productivity into account (see Fig. 4). The task would then become to analyse *both* what constitutes the materiality of economic life *and* what drives the modern economy.

/Figs. 3 and 4 about here<sup>9</sup>

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<sup>9</sup> For Figs. 3 and 4, see the end of the paper.

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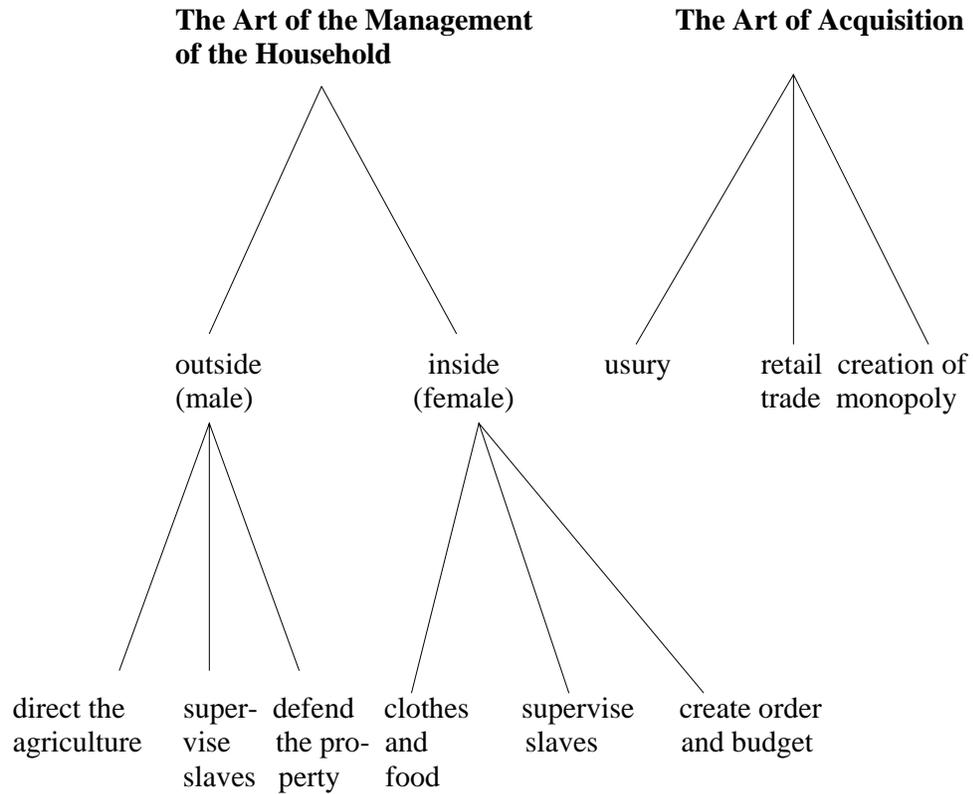
Fig. 1: Max Weber's Distinction between Householding and Profit-Making

	Householding	Profit-Making
Short-term Goal	consumption	seizing opportunities for profit
Long-term Goal	wealth	capital
Form of Calculation	budget	capital accounting
Institutional Expression	individual household, <i>oikos</i> in Antiquity, manorial economy socialist economic system	profit-making enterprise, capitalist economic system

*Comment:* According to Max Weber, economic actions and orders fall either into the category of householding (*Haushalt*), profit-making (*Erwerben*) or a mixture of both.

*Source:* Max Weber, *Economy and Society*, pp. 86-100.

Fig. 2. The Art of the Management of the Household versus the Art of Acquisition in Greek Thought



*Comment:* In Ancient Greece economic life was conceptualised as the art of householding and as the art of acquisition. Use value is associated with the former and exchange value with the latter. Since Xenophon is the foremost source for the art of householding, his work has been used to present *oeconomic*. Aristotle has similarly been used to portray *chrematistic* or the art of acquisition.

*Source:* Aristotle, *Politics*, pp. 1-38, 324-31; Xenophon, *Oeconomicus*.

Fig. 3: Market and Non-Market Activities

	Market Activities	Non-market Activities
Non-material Approach	mainstream economic theory	new household economics
Material Approach	?	<i>oeconomic</i> , home economics

*Comment:* Economic theories are conventionally divided up according to their relationship to market versus non-market activities.

Fig. 4. Productive and Non-Productive Activities

	Dynamic Productive Activities	Non-dynamic Productive Activities
Non-material Approach	theory of entrepreneurship	conventional equilibrium theory
Material Approach	?	<i>oeconomic</i> , home economics

*Comment:* While economic theories are conventionally divided up according to their relationship to market versus non-market activities, they may also be divided up according to whether they are productive or non-productive in relation to materiality.