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Libertas ex Machina? Human Freedom, the Invisible Hand, and the Mechanistic Worldview in Adam Smith's Philosophy of Science

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Abstract

As with many philosophers of the modern period, Smith's thought was highly influenced by the advent of modern, Newtonian physics as well as by the so-called mechanistic worldview. However, the adoption of this theoretical paradigm leads to an aporia, *i. e.*, to a fundamental problem, within practical philosophy: if the whole universe and all its phenomena are but reduceable to simple mechanical movements of the mechanisms of an all-encompassing "great machine of the world" – and therefore perfectly determined – how could human freedom be possible? How can there by freedom within the machine? The article at hand discusses the adoption of the mechanistic worldview in Smith's writings and possible Smithian solutions to the aporia. Based on a mainly epistemological interpretation of Smith's invisible hand metaphor, it is argued, as an attempt at providing a new Smithian solution to the aporia, that Smith did not fully adopt the mechanistic worldview; instead – as in Kantian philosophy –, freedom would ought to be understood as a necessary practical-philosophical assumption underlying human action.

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1. Introduction – The Aporia of Freedom

Adam Smith is often praised as being the founder of modern economics as a field of scientific investigation (*cf.*, *e. g.*, Tinbergen 1992, 146). Overall, Smith's approach to economics consisted in attempting to reduce, by means of a more or less mathematically driven analysis of available data – arguably in a way comparable to how even current economists operate (Klein 1992, 15) –, the many complex economic phenomena known to his time to some simple basic principles, thus also providing an understandable explanation of such phenomena. In this sense, Smith's *An Inquiry into the Nature and Causes of the Wealth of Nations* (WN) was arguably the first comprehensive work to systematically employ the mechanistic methodology of modern natural sciences, as borrowed particularly from Newtonian physics, to the realm of economics (*cf.* Thompson 1965; Worland 1976). At the same time, Smith is also usually considered as being one of the main thinkers in the tradition of philosophical liberalism (*cf.*,

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e. g., Ronge 2021, 22), to which the concept of human freedom is evidently central. This combination of a mechanistic methodology with liberal philosophy is particularly interesting because it bears a fundamental philosophical problem at its core: if the universe is built analogously to a machine, *i. e.*, in a way such that all observable phenomena can be traced back to simple mechanical interactions among its parts, how can human freedom be possible? This problem, which henceforth and in a loose reference to Böckerstette shall be called the aporia of freedom, has occupied many philosophers, especially since the popularisation of the mechanistic worldview in the early modern period (*cf.* Dijksterhuis 1956; Maier 1938).[1] Cropsey describes how this problem appears within Smith's thought as follows:

> Smith's system should be regarded in its relation to a great structure of modern reflection on man's moral condition. That reflection had been brought on by the apprehension that a perfectly mechanized nature, of which humanity forms an integral part, will be graspable by man's mind exactly in proportion to the rule of regularity, predictability, or necessity in that nature. But the more necessary and knowable the natural world is, the less free are the human ingredients of it, and the more painful the predicament of modern men, who see their science and freedom as so grounded that each is a mortal threat to the other (1979, 169).

However, probably due to the mainly metaphysical character of this question, which clearly went beyond the scope of Smith's (published) writings, it is difficult to determine exactly how Smith dealt with the issue, or even if he would have recognised the aporia as a real problem at all (*cf. ibid.*, 175). Notwithstanding this, it is important to notice that the aporia, beyond being of mere philosophical or theoretical interest, has direct implications to more practical dimensions of Smith's work, as failing to understand the limits of the mechanistic worldview within Smith's philosophy might lead to fundamental misunderstandings concerning his economic theory. For instance, Worland claims that Smith's liberal or even (in his – one might add: rather problematic – interpretation) *laissez-faire* policy suggestions seem to be clearly incompatible with the results of his own analyses: if, *e. g.*, Smith's studies show that investments in agriculture are more productive than investments in other sectors (WN II.v.12), then why should the state assume a *laissez-faire* stance instead of directly intervening in order to promote more investments in agriculture (Worland 1976, 256)? Clarifying how Smith deals with the aporia of freedom – and particularly how and to which extent he adhered to the mechanistic worldview – is thus crucial for understanding the justification of Smith's own liberal stance within his economic theory.

The article at hand seeks to contribute to this endeavour and is structured as follows: Section 2 further elaborates on the notion of the mechanistic worldview and discusses the role of this methodological approach within Smith's works. It shall be argued that Smith's famous invisible hand metaphor is particularly important for understanding the reach and the limits of his adoption of the mechanistic worldview. Thus, section 3 shall discuss this metaphor and its three explicit usages in Smith's works in more de-

[1] Böckerstette (1982) discusses three aporias of freedom and their development since early modernity: 1. the discovery of the creative subjectivity and its destruction within a mechanistic worldview, 2. the destruction of political emancipation – arguably the political goal of the enlightenment – within systems of enlightened absolutism, 3. the political developments leading to the destruction of freedom in the name of freedom itself during Robespierre's Reign of Terror. Böckerstette argues that Kant's transcendental philosophy bears the solution to these aporias.

tail. Finally, based on these analyses, section 4 discusses a Smithian solution to the aporia of freedom proposed by Cropsey (1979) and attempts to provide an alternative Smithian solution. Finally, section 5 concludes by briefly discussing how the interpretation proposed here brings Smith's thought closer to Kantian philosophy.

2. The Mechanistic Worldview in Smith's Writings

The mechanistic worldview is probably most well illustrated through the clockwork analogy. The main idea is that the universe is structured like a perfect mechanical clock or a similar kind of machinery. Just like every movement of a machine can be traced back to more basic interactions among its parts, every phenomenon in the universe would be the result of simple mechanical interactions of some fundamental elements occurring in accordance with basic laws of nature. An important consequence of this idea is that every phenomenon in the universe would be predictable in the sense that, assuming enough knowledge of the state of the respective particles and of the underlying laws of nature, one would in principle be able to determine both the previous developments which lead to said state and the future developments that shall originate from it. This leaves, as illustrated by the famous example of Laplace's Demon (Laplace 1814, 3–4), no place for uncertainty – everything is (mechanically) determined. This clockwork or machine analogy was widely employed by philosophers in the early modern period (*cf.* Dijksterhuis 1956; Maier 1938; for a concrete example, *cf.* Wolff 1720, 297 [*Deutsche Metaphysik* § 557]); As shall be discussed below, Smith also employs this analogy in several passages of his writings.

From a more technical point of view, mechanistic theories usually emerge from the combination of two main elements. The first is the adoption of a discrete ontology (*cf.* Hasenjaeger 1962, 31), by means of which every (complex) existing object can be divided into distinct – or rather discrete – parts. In most cases, this ontological requirement is achieved through the adoption of some sort of atomism, *i. e.*, an assumption concerning the existence of fundamental, indivisible particles of which every complex object is composed of. The second main element of mechanistic theories is the calculisation of the rules defining the interactions between these discrete parts. This means that the process and the results of these interactions can be effectively calculated or computed according to some given (usually mathematical) method. Beyond merely analysing Smith's employment of the machine analogy, it is useful for the purposes of the article at hand to also investigate how these more technical elements of mechanistic theories manifest themselves in Smith's work.

2.1 Smith's Usage of the Machine Analogy

Smith employed the machine analogy in several passages of his writings. For example, in his *History of Ancient Physics* (HAP), Smith associates the idea of considering the universe as a "complete machine, as a coherent system, governed by general laws, and directed to general ends […]" (HAP 9) with a positive development in philosophical and scientific thought. Similarly, in his *Lectures on Rhetoric and Belles Lettres* (LRBL), Smith labels the Newtonian (*i. e.*, the mechanistic) method as "undoubtedly

the most philosophical method" (LRBL ii.134). The *Theory of Moral Sentiments* (TMS) notoriously includes various usages of the machine analogy. For example, Smith speaks of the "great machine of the universe" and of its "secret wheels and springs" (TMS I.i.4.2). Besides these physical usages, the book also presents more sociological versions of the analogy: Smith speaks of the "political machine" and of how the movement of its "wheels" seems to be facilitated by the "perfection of police, the extension of trade and manufactures"; a few lines later he also speaks of the "machine of government" and of how its wheels should be made to move harmoniously, "without grating upon one another" (TMS IV.1.11).

Curiously, contrasting with the wide usage of the machine analogy in TMS, WN features the word machine (or machinery) exclusively in a literal sense, *e.g.*, to refer to how the invention of new machines is related to the division of labour (WN I.i.8–9). However, the machine analogy is also present in Smith's most famous work, although in a somewhat indirect manner and clearly to a lesser extent. Its traces can be found in Smith's employment of terminologies typical to natural sciences, in particular physics and astronomy, *e.g.*, when he speaks of prices "gravitating" towards a natural value (WN I.vii.15; *cf.* also Worland 1976, 252; for a criticism of the use of this metaphor by Smith, *cf.* Schliesser 2017, 299). Other appearances of the analogy in WN are hidden behind Smith's notion of system. For example, in Book V, he discusses how the methodological approach of connecting different observations by a few common principles (*i.e.*, the mechanistic approach) was first attempted at natural philosophy (physics), but later also in moral philosophy (WN V.i.f.24–25). A clear connection between Smith's notion of system, as the word is employed in various of his works, and the mechanistic methodology can be found in his *History of Astronomy* (HA). He writes:

> Systems in many respects resemble machines. A machine is a little system, created to perform, as well as to connect together, in reality, those different movements and effects which the artist has occasion for. A system is an imaginary machine invented to connect together in the fancy those different movements and effects which are already in reality performed (HA IV.19).

Beyond these and many other individual examples, Smith's (at least partial) adherence to the mechanistic worldview and its methodology clearly manifests itself when one considers the totality of his oeuvre. All his writings display an explicit historical, or rather philosophical-historical motivation (*cf.* Skinner 1975), in which the focus of investigation is set not only on methodological aspects of various scientific fields within the context of the history of ideas, but particularly on the basic principles directing these fields and its phenomena, as well as on its further developments. This is all the more manifest when considering the actual titles of his works. His philosophical essays on the history of, respectively, astronomy, ancient physics, and ancient logic[s] all share the prefix *The Principles which Lead and Direct Philosophical Enquires: Illustrated by* […] (in his *Essays on Philosophical Subjects*, EPS). The same philosophical-historical motivation is clearly present in the full title of his most famous work, *i.e.*, *An Inquiry into the Nature and Causes of the Wealth of Nations.* The same can be said of his essay *Concerning the First Formation of Languages, and the Different Genius of Original and Compounded Languages*, as well as of other planed (but never published, at least not in this form) writings he had "upon the anvil", namely a *Theory and History of Law and Government* and a *Philosophical History of*

all the Different Branches of Literature, of Philosophy, Poetry and Eloquence, as mentioned by Smith in a letter to Duc de La Rochefoucauld from the year 1785.

2.2 Discretisation and Calculisation in Smith's Work

While the considerations above should suffice to show that Smith did in fact adopt the mechanistic worldview and its methodology, determining the extension of this adoption within his philosophy of science also requires a more technical analysis concerning the role assigned to those two main methodological elements already mentioned above, *i. e.*, the adoption of a discrete ontology and the calculisation of the underlying theory.

At first glance, the discretisation element seems to be well fulfilled within Smith's theories. Concepts such as value or labour offer a quantifiable and divisible paradigm on the basis of which socio-economic phenomena might be analysed and explained. Notwithstanding, Smith does not deliver a proper investigation of how the mechanisms directing the interactions among these concepts operate. In other words, the atomistic (discretisation) element of his theory is not sufficiently developed. Based on this lack of focus on the "submicroscopic" dimension, Worland (1976) claims, after proposing an economic (Smithian) translation of Newton's definitions and laws of motion, that Smith failed to provide a proper atomistic explanation of the determination of factor prices. Due to this, according to Worland – and following a definition from Ernst Nagel –, Smith's theory would also fall short of fulfilling the requirements for a true mechanised theory (*cf. ibid.*, 253).

With respect to calculisation, one can argue emphatically that Smith's theories do involve reducing the various complex socio-economic phenomena he seeks to analyse to a few fundamental principles or "forces." Indeed, it is often observed that Smith's two main works, *i. e.*, TMS and WN, consist in investigations concerning the roles of two of the most fundamental principles of human action, respectively sympathy (or rather empathy, as one would call it today) and self-interest. A further, more general example of a basic principle in Smith's thought is his simplification principle of systems and machines, which is postulated in HA IV.19 and is supposed to guide the development of human science: the first systems (and machines) designed are unnecessarily complex; further scientific and technical developments always lead to their simplification (e. g., the reduction of guiding principles or mechanical parts).

However, while the intention of tracing back more complex phenomena to basic principles does indicate a strong mechanistic motivation in Smith's thought, his theories still lack the necessary degree of mathematisation one would expect from a properly mechanised system. Hence, one cannot speak of proper calculisation within Smith's works. In fact, some of Smith's critics argue that his conclusions are not inferred from his principles by means of proper logical inference, but are instead grounded through the use of rhetorical or even merely casuistic arguments (for a detailed analysis of Smith's use of rhetorical arguments and alleged logical errors within his exposition concerning the division of labour, *cf.*, *e. g.*, Peaucelle 2012; *cf.* also Worland 1976, 255 – 6).

In conclusion, while a mechanistic motivation is clearly present in Smith's thought, the underlying methodological elements of discretisation and calculisation are not sufficiently developed within his theories. In other words, while Smith does seem to set up the program of reducing society and the economy to a machine, the complex mechanisms governing this machine remain mostly a mystery.

This lack of a more detailed discussion concerning the "submicroscopic" socio-economic mechanisms directing human life could be considered as a major shortcoming – or rather as a methodological inconsistency – within Smith's theories. In fact, this seems to be the main theme of the criticisms made, *e. g.*, by Peaucelle (2012) and Worland (1976). From a historical point of view, this criticism is partially supported by the fact that many of the contributions of Smith's classical and neoclassical successors consisted in attempts of providing more or less mechanised explanations of these hidden mechanisms in the "submicroscopic" dimension; as examples, Worland names the theories of consumer behaviour and the theory of the firm (*ibid.*, 253–4). Notwithstanding, this criticism is only adequate under the assumption that Smith did indeed intend to develop a (fully) mechanised theory of society and economics, *i. e.*, one which would also include a mechanised explanation at the "submicroscopic" level. Here, it shall be argued that this is in fact not the case. But to clarify this matter, it is necessary to first consider Smith's own assertions concerning the scientific explanation (or explainability) of such "submicroscopic," hidden mechanisms. In particular, this leads to an analysis of Smith's famous invisible hand metaphor.

3. The Invisible Hand Metaphor in Smith's Writings

Smith's invisible hand metaphor is often understood as a way of illustrating the fact that markets, as uncoordinated systems in which every participant is driven basically only by their own self-interest, are nonetheless able to promote the greater good, *i. e.*, a situation which is better (or even the best) for all actors involved (*cf.*, *e. g.*, Herzog 2021; Wendt 2021, 235); an idea which was, at least to some extent, already present in Bernard Mandeville's *Fable of the Bees: or, Private Vices, Publick Benefits*, which was published in 1714, over half a century before Smith's WN. Such a characterisation of the invisible hand, while not entirely incorrect, is an oversimplification of the metaphor, resulting from focusing only on its usage in WN – and within the context of economics. Analysing the other two passages in which the metaphor is directly employed reveals that the invisible hand has a much deeper, epistemological dimension within Smith's thought. The metaphor is explicitly used in three passages of Smith's writings, namely in HA, TMS, and WN. These usages shall be further discussed below.

3.1 The Invisible Hand (of Jupiter) in HA

The probably oldest usage of the invisible hand metaphor in Smith's writings occurs in HA (III.2). While the essay was only posthumously published, it – and especially the part in which the metaphor is used – was likely written before 1758, *i. e.*, before TMS was written; in a letter to Hume (dated 16th April 1773), Smith even refers to his as-

tronomy essay as "juvenile work," which suggests that it was written even before his professorship in Glasgow, *i. e.*, before 1951 (*cf.* Macfie 1971, 597–8).

In HA, as the name suggests, Smith sets up to investigate the historical development of the astronomical systems from Greek antiquity up to Newton, as well as, to some extent, the philosophical-epistemological paradigms respectively associated with them. In this sense, the program pursued by the essay shares a certain similarity with works such as those of Maier (1917) and Dijksterhuis (1956). However, the exposition of the history of astronomy proper is only contained within section IV of the text. In fact, the essay actually begins with a discussion of the effects that the sentiments of wonder, surprise and admiration have with respect to human imagination. According to Smith, these sentiments, which are respectively caused by contact with the new or singular (wonder); with the unexpected (surprise); and with the great or beautiful (admiration), have an influence "of far wider extent than we should be apt upon a careless view to imagine" (HA Intro.7); they promote disturbances in human imagination and thus induce philosophical or scientific activity, whose goal would be to clear these disturbances and thus sooth human imagination (*cf.* also Samuels 2007). In sections I and II, Smith briefly analyses respectively the sentiments of surprise and wonder; admiration, in its turn, does not receive a similar, more detailed treatment. Section III then proceeds to discuss the origins of philosophy, and while surprise (and the unexpected) does seem to play an important role, Smith clearly attributes much more importance to wonder (*i. e.*, to the new or singular):

> Wonder, therefore, and not any expectation of advantage from its discoveries, is the first principle which prompts mankind to the study of Philosophy, of that science which pretends to lay open the concealed connections that unite the various appearances of nature […] (HA III.3).

These structural oddities and imbalances in the text are probably due to the fact that the manuscript was still fairly incomplete. It is conceivable that Smith's plan was to first deliver a more thorough discussion the roles of wonder, surprise and admiration as the principles which lead and direct philosophical enquiries – one could say, to develop a *Theory of Scientific Sentiments* – which would then, following a common argumentative structure within Smith's style, be illustrated by several examples, *i. e.*, by the history of astronomy, of ancient physics, and of ancient logic[s] and metaphysics. It is also likely that Smith was still not sure about the actual importance of each of these sentiments with respect to scientific or philosophical activity.

This is the context in which Smith's first usage of the invisible hand metaphor occurs. When confronted with the new, the singular or the unexpected, *i. e.*, moved by the sentiment of wonder (and arguably also by the sentiment of surprise), humans are led into philosophical activity, *i. e.*, to investigate the nature and causes of such peculiar phenomena, and since humans are themselves able to act in order to alter the natural, normal, or expected course of things, it would be only natural that humans would be first inclined to believe that those peculiar phenomena, *i. e.*, the new, the singular, and the unexpected, are also the work of similarly intelligent, but much more powerful beings, *i. e.*, gods, acting on their own will. Smith writes:

> Hence the origin of Polytheism, and of that vulgar superstition which ascribes all the irregular events of nature to the favour or displeasure of intelligent, though invisible beings, to gods, daemons, witches, genii, fairies. For it may be observed, that in all Polytheistic religions,

> among savages, as well as in the early ages of Heathen antiquity, it is the irregular events of nature only that are ascribed to the agency and power of their gods. Fire burns, and water refreshes; heavy bodies descend, and lighter substances fly upwards, by the necessity of their own nature; nor was the invisible hand of Jupiter ever apprehended to be employed in those matters. But thunder and lightning, storms and sunshine, those more irregular events, were ascribed to his favour, or his anger. Man, the only designing power with which they were acquainted, never acts but either to stop, or to alter the course, which natural events would take, if left to themselves. Those other intelligent beings, whom they imagined, but knew not, were naturally supposed to act in the same manner; not to employ themselves in supporting the ordinary course of things, which went on of its own accord, but to stop, to thwart, and to disturb it. And thus, in the first ages of the world, the lowest and most pusillanimous superstition supplied the place of philosophy (HA III.2).

This usage of the metaphor has some interesting particularities. First, the invisible hand is here not any invisible hand, but the invisible hand of Jupiter, *i.e.*, to be more precise, of supernatural beings or gods. Second, it also entails a certain deceptive dimension: it is not a true scientific explanation of the respective phenomena, but in fact "the lowest and most pusillanimous superstition," which occupies the place of actual philosophy "in the first stages of the world" until scientific development is able to deliver a proper explanation, thus introducing "order into this chaos of jarring and discordant appearances, to allay this tumult of imagination, and to restore it […] to that tone of tranquillity and composure, which is both most agreeable in itself, and most suitable to its nature" (HA II.12). Finally, as Smith clearly puts it, the invisible hand only refers to "those more irregular events," such as "thunder and lightning, storms and sunshine." This is likely due to the fact that the invisible hand constitutes, from an epistemological perspective, a provisory, mythological or superstitious explanation for phenomena to which no better explanation (ideally a scientific one) is available. The invisible hand does not need to be employed to explain common phenomena, because there is already, at least at this first, more primitive stage, a suitable explanation for them; namely, as Smith puts it, they occur "by the necessity of their own nature."

3.2 The Invisible Hand in TMS and WN

Rather than with the development of Science and Philosophy, Smith is concerned, in TMS, with a practical-philosophical issue, namely with human action (and moral judgment); and, among other aspects, with what motivates humans to care for the well-being of others, *i.e.*, with what Smith calls *sympathy*, *i.e.*, the "fellow-feeling with any passion whatever" (TMS I.i.1.3) of others. The invisible hand metaphor appears in the following passage:

> The produce of the soil maintains at all times nearly that number of inhabitants which it is capable of maintaining. The rich only select from the heap what is most precious and agreeable. They consume little more than the poor, and in spite of their natural selfishness and rapacity, though they mean only their own conveniency, though the sole end which they propose from the labours of all the thousands whom they employ, be the gratification of their own vain and insatiable desires, they divide with the poor the produce of all their improvements. They are led by an invisible hand to make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions among all its

> inhabitants, and thus without intending it, without knowing it, advance the interest of the society, and afford means to the multiplication of the species (TMS IV.1.10).

Some have interpreted this usage of the metaphor as referring to a kind of "trickle-down" element in Smith's understanding of economic growth, *i. e.*, basically the idea that, through (excessive) consumption, the luxurious lifestyle of the rich would end up also benefiting the poor (Horn 2023, 15, 20). However, as noticed by Herzog, this trickle-down effect has at most a marginal role within Smith's theory. Instead, Smith would actually focus on a model based on the growth of productive capital and of jobs, which Herzog labels as "working one's way up" (*cf.* Herzog 2016). As will be shown below, a more careful analysis of the context in which the invisible hand metaphor is employed in TMS further weakens the "trickle-down" interpretation, while also corroborating Herzog's "working one's way up" model.

A strong practical-philosophical background is also present in Smith's most famous usage of the invisible hand metaphor, in the following passage of WN, albeit here the focus is set explicitly on self-interest:

> [E]very individual necessarily labours to render the annual revenue of the society as great as he can. He generally, indeed, neither intends to promote the public interest, nor knows how much he is promoting it. By preferring the support of domestic to that of foreign industry, he intends only his own security; and by directing that industry in such a manner as its produce may be of the greatest value, he intends only his own gain, and he is in this, as in many other cases, led by an invisible hand to promote an end which was no part of his intention. Nor is it always the worse for the society that it was no part of it. By pursuing his own interest he frequently promotes that of the society more effectually than when he really intends to promote it (WN IV.ii.9).

At first glance, there seem to be substantial differences between the invisible hand's usage in these two practical-philosophical works, and the earlier, theoretical employment of the metaphor in HA, which was already discussed above. One could even argue that the invisible hand's function is "exactly reversed" (*cf.*, *e. g.*, Macfie 1971, 595): while the invisible hand of Jupiter was a disruptive element stopping, thwarting or disturbing the natural course of things, the later invisible hand would intervene to preserve and promote the actual goals and purposes of nature (with respect to humanity), *i. e.*, the advancement of society and the greater good, when these purposes are threatened by individual humans acting only on behalf of their own selfish interests. Furthermore, the later invisible hand is not reserved only for the most irregular events. Instead, it seems to be present, as Smith clearly states it, in "many […] cases," in particular whenever humans act in a way that ends up promoting society's interests, although they were, in fact, only pursuing their own selfish goals. In this sense, the invisible hand does not seem to be a negative, deceptive element, "the lowest and most pusillanimous superstition" (HA III.2); instead, in the later works, the invisible hand seems to be a positive force leading to the greater good. Macfie proposes the following explanation for this change in the metaphor's usage:

> Throughout his works, Smith employed and enjoyed pithy, forceful phrases. When in the Moral Sentiments (and also possibly in the lectures between 1751 and 1758) he wished to express *his own* view as to the relation between divine guidance, the system of nature, and human behavior, he remembered 'the invisible hand of Jupiter'. But he inevitably reversed its relation to the natural order. Instead of acting capriciously, it becomes the 'all-wise Architect and Con-

> ductor', the 'author of nature', who governs and animates 'the whole machine of the world', and so could act only to preserve and support it (*ibid.*, 598).

According to this wide-spread, explicitly theological view, the first, negative, theoretical-epistemological invisible hand of Jupiter, used as an explanation for unusual phenomena, would be later replaced by the positive, practical invisible hand of the almighty (Christian) God, used as an explanation for common phenomena (*cf.* Oslington 2011; Oslington 2012; *cf.* also Horn 2023, 20–2). Hence, while the first invisible hand would point to irregularities or arbitrariness or even randomness in the world, the later invisible hand would be a kind of manifestation of the great machine of the universe, an act of divine intervention or providence leading to the machine working precisely as originally intended by the all-wise "author of nature."

Here, an alternative interpretation shall be proposed. In fact, a more detailed analysis reveals that the invisible hand, as the metaphor is employed in the later works, is considerably closer to the invisible hand of Jupiter, *i. e.*, to the usage of the metaphor in HA, than the first impression might suggest. First, it should be noticed that the later usages of the metaphor – as it was already the case in HA – has primarily an epistemological, rather than a practical function. The invisible hand is not the actual force driving human action – in contrast to what Macfie and many others claim (*cf.*, *e. g.*, Oslington 2012), it is not really about divine guidance – but a way of providing a kind of (provisory) explanation for the unexpected fact (leading to the sentiment of surprise) that people acting in their own self-interest, in the pursuit of power and greatness – the actual force driving their actions – would nonetheless promote the greater good. In other words, what Smith is trying to say by using the metaphor is that, for the observer of his time, *i. e.*, before the development of economics as a proper science – which is precisely Smith's goal – economic phenomena would appear as wonderful and mysterious as lightning strikes, earthquakes etc. This is why economic phenomena will likewise inspire those sentiments that induce philosophical or scientific activity. As it will be shown, especially in TMS, the invisible hand can also be associated with those sentiments mentioned at the introduction of HA, in particular with the sentiment of admiration, which, as already noticed above, was somewhat ignored by Smith in HA.

However, it is first necessary to notice that Smith's understanding of admiration seems to have slightly changed – or rather, was further refined – in TMS. In HA, admiration is merely described as the sentiment associated with, or incited by, beauty or greatness: "We admire the beauty of a plain or the greatness of a mountain […]" (HA Intro.4). In TMS, Smith seems to call the sentiment incited (among other things) by beauty or greatness approbation. Admiration, in its turn, is, in TMS, approbation "heightened by wonder and surprise." He writes:

> When the sentiments of our companion coincide with our own in things of this kind, which are obvious and easy, and in which, perhaps, we never found a single person who differed from us, though we, no doubt, must approve of them, yet he seems to deserve no praise or admiration on account of them. But when they not only coincide with our own, but lead and direct our own; when in forming them he appears to have attended to many things which we had overlooked, and to have adjusted them to all the various circumstances of their objects; we not only approve of them, but wonder and are surprised at their uncommon and unexpected acuteness and comprehensiveness, and he appears to deserve a very high degree of admiration

> and applause. For approbation heightened by wonder and surprise, constitutes the sentiment which is properly called admiration, and of which applause is the natural expression (TMS I.i.4.3).

Here, a conceptual disclaimer is necessary. Since TMS is primarily concerned with moral judgment, one could reasonably ask whether it makes sense to speak of approbation with respect not only to human behaviour or to the moral judgements of others, but also concerning objects, as it is the case with the sentiment of admiration in HA – "We admire the beauty of a plain or the greatness of a mountain" (HA Intro.4). One could thus argue that it would be improper to connect the sentiment of admiration, as discussed in HA (a juvenile work) with the later sentiments of approbation and admiration, as these concepts are developed in TMS.[2] Indeed, already from a purely linguistic perspective, it seems odd to speak of approbation or disapprobation of objects as, *e. g.*, in the sentence "I approve this mountain." Smith seems to address this very issue in TMS. He writes:

> […] it seems impossible that the approbation of virtue should be a sentiment of the same kind with that by which we *approve* [my italics] of a convenient and well-contrived building; or that we should have no other reason for praising a man than that for which we commend a chest of drawers (TMS IV.2.4).

This passage occurs within a discussion of ideas by Hume, developed in his *Treatise of Human Nature* and in his *Enquiry Concerning the Principles of Morals*, according to whom all approbation is to be traced back to the perception of beauty resulting from the appearance of utility (TMS IV.2.3; *cf.* also in particular Humes *Enquiry concerning the Principles of Morals*, section V). Unlike Hume, Smith believes that approbation, especially with respect to human actions, might have sources other than the beauty resulting from the appearance of utility. However, this does not mean that approbation and admiration (or at least very closely related or analogous sentiments) cannot emerge from this beauty and, in particular, also with respect to objects. In the passage quoted above, Smith does speak of approving "of a convenient and well-contrived building." Furthermore, Smith speaks of admiration not only with respect to human actions (*e. g*., with respect to Cato's suicide, *cf.* TMS I.iii.1.14) but also with respect to poems or pictures (*cf.* TMS.I.i.2.2; TMS.VII.ii.1.11).

To conclude this disclaimer, for the purposes of the following considerations, it suffices to notice that Smith did allow for the approbation and admiration not only of human actions and moral judgements, but, like in HA, also of objects.

In fact, this discussion concerning approbation and admiration (of both human action and of objects), their roles and their origins, is precisely the context of the usage of the invisible hand in TMS. The metaphor appears in part IV ("On the Effect of Utility upon the Sentiment of Approbation"), chapter I ("Of the beauty which the appearance of Utility bestows upon all the productions of art, and of the extensive influence of this species of beauty"). Smith begins this chapter by observing that the idea that utility, or "the fitness of any system or machine to produce the end for which it was intended" is one of the "principal sources of beauty," has been pointed out by many scholars – as he puts it, by "every body, who has considered with any attention what constitutes the

[2] I am thankful to Karen Horn for pointing this issue to me.

nature of beauty" (TMS.IV.1.1). However, Smith claims that this beauty originates not from the pursued end itself or from its actual convenience, but from the mere adequacy of the means towards achieving the respective end: "the exact adjustment of the means for attaining any conveniency or pleasure, should frequently be more regarded, than that very conveniency or pleasure […]" (TMS IV.1.3). This natural inclination towards well-fitted machines is what Smith will later call the "love of system" (TMS IV.1.11).

Smith illustrates this inclination by giving the example of how a poor man's son who sees much more convenience in the conditions of the rich is driven to strive for such conditions, to pursue wealth and greatness, which he might never reach and for which he ends up sacrificing "a real tranquillity that is at all times in his power" (TMS IV.1.8). During the final days of his life, he then finally realises that "wealth and greatness are mere trinkets of frivolous utility, no more adapted for procuring easy of body or tranquility of mind than the tweezers-cases of the lover of toys; and like them too, more troublesome to the person who carries them about with him than all the advantages they can afford him are commodious" (TMS IV.1.8). Smith also writes:

> [p]ower and riches appear then to be, what they are, enormous and operose machines contrived to produce a few trifling conveniencies to the body, consisting of springs the most nice and delicate, which must be kept in order with the most anxious attention, and which in spite of all our care are ready every moment to burst into pieces, and to crush in their ruins their unfortunate possessor (TMS.IV.1.8).

Hence, according to Smith, the love of system fades off when humans find themselves in miserable situations, *e. g.*, under the weariness of old age or "in times of sickness or low spirits." This happens because, under such circumstances, our imagination "seems to be confined and cooped up with our own persons" (TMS IV.1.9), we are led to "observe with attention [our] own situation, and to consider what it is that is really wanting to [our] happiness" (TMS IV.1.8). However, in better times, the love of system comes into play again: our imagination "expands itself to every thing around us," and we are "charmed with the beauty of that accommodation which reigns in the palaces and oeconomy of the great; and admire how every thing is adapted to promote their ease, to prevent their wants, to gratify their wishes, and to amuse and entertain their most frivolous desires" (TMS IV.1.9). Smith writes:

> If we consider the real satisfaction which all these things are capable of affording, by itself and separated from the beauty of that arrangement which is fitted to promote it, it will always appear in the highest degree contemptible and trifling. But we rarely view it in this abstract and philosophical light. We naturally confound it in our imagination with the order, the regular and harmonious movement of the system, the machine or oeconomy by means of which it is produced. The pleasures of wealth and greatness, when considered in this complex view, strike the imagination as something grand and beautiful and noble, of which the attainment is well worth all the toil and anxiety which we are so apt to bestow upon it (TMS IV.1.9).

Smith then moves to argue that the love of system, despite its deceptive dimension, is in fact a good thing, for it "keeps in continual motion the industry of mankind" (TMS IV.1.10). It is what first prompted humans to "cultivate the ground, to build houses, to found cities and commonwealths, and to invent and improve all sciences and arts, which ennoble and embellish human life" (TMS IV.1.10; *cf.* also WN V.i.f.24–25). The invisible hand metaphor appears precisely in this paragraph. Smith employs it to argue that the love of system and the pursuit of power, riches and great-

ness associated with it often promote the greater good: "The same principle the same love of system, the same regard to the beauty of order, of art and contrivance, frequently serves to recommend those institutions which tend to promote the public welfare" (TMS IV.1.10).

Thus, it becomes clear that the usage of the invisible hand metaphor in TMS (and in WN) is, from a methodological point of view, not substantially different from its first appearance in HA. In both cases, it is employed as a provisory explanation for unexpected (surprise) or singular (wonder) phenomena, be it a natural phenomenon like storms or meteors, or socio-economic phenomena such as the promotion of public welfare. Just as the invisible hand of Jupiter is later replaced by proper scientific or philosophical explanations, the invisible hand guiding human action towards the greater good – a metaphor used, like in HA, to emphasize the unexpectedness or singularity of the promotion of public welfare through selfish action – is to be replaced by a proper philosophical explanation – as odd as it may sound, as soon as a better explanation is available, the invisible hand disappears. This better explanation is exactly what Smith had been discussing in the respective chapter: what guides human action towards the promotion of public welfare is not divine intervention, but, *e. g.*, self-interest or sympathy, which are often coupled with the love of system, *i. e.*, humans' inclination to strive for that which appears convenient and well-fitted, irrespective of the actual value of the ends thereby reached. These, according to Smith, are, in fact, illusory; it is rather humans' ambition towards riches, power and greatness.[3]

Thus, Smith's invisible hand metaphor is consistently used, throughout his oeuvre, with a mainly epistemological motivation: it is a way of emphasizing the fact that a set of phenomena is singular or unexpected, thus provoking wonder or surprise and leading to philosophical or scientific investigations. Hence, the invisible hand is not so much a real explanation, but rather a kind of place-holder for an actual explanation. From this perspective, it is quite unfortunate that Smith's name is more often than not associated with the idea that the market would actually be driven by an invisible hand, a misconception that is likely to be traced back to the rather unfortunate, somewhat decontextualised usage of the metaphor in WN.

One can now return to the question raised in the introduction, *i. e.*, to the aporia of freedom. To find an answer to it, one must inquire whether the actual explanation provided by Smith that replaces the invisible hand with respect to human action, *i. e.*, the love of system, is a purely mechanistic one.

[3] It should be noticed that the love of system, *i. e.*, the admiration of the beauty resulting from systematic arrangements, plays a crucial role within Smith's thought. As discussed above, it is one of the core ideas of HA and also plays an important role in TMS. It is also discussed in WN (*cf.*, *e. g.*, WN.V.i.f.25). Following the *zeitgeist* of the period, Smith himself was strongly concerned with developing a systematic, almost mechanistic theory of economics. Dugald Stewart notices, *e. g.:* "it may be doubted with respect to Mr. Smith's Inquiry if there exists any book beyond the circle of the mathematical and physical sciences, which is at once so agreeable in its arrangement to the rules of a sound logic, and so accessible to the examination of ordinary readers" (1829, 62).

4. Solving the Aporia of Freedom within Smith's Thought

An interesting Smithian answer to the aporia of freedom was proposed by Cropsey (1979). For Cropsey, "Smith's thought is an impressive effort to solve, within the limits of mechanical nature alone, the problem of morality" (*ibid.*, 175). His proposed Smithian solution involves fully embracing the mechanistic worldview and completely integrating the human condition in the comprehensive mechanism of nature. Human freedom would therefore only be possible as freedom within the machine.

Cropsey's solution is based on the more traditional, theological interpretation of the invisible hand which was criticised above in section 3. He writes:

> The way Smith finds for achieving these ends is the discovery of nature in its expanded amplitude. Nature is to begin with the inescapable cause of human actions. It then proves to be also the power that prescribes the remote ends of those actions and in addition causes those ends to materialize in fact, according to an intention that must be said to belong to it (nature) and not to the human actors (*ibid.*, 172).

The invisible hand is thus seen as a manifestation of the will of nature, or rather, of its "author," *i. e.*, God, which would be the driving force guiding human action in accordance with the great machine of the world.

This interpretation bears two main problems. First, it leads to a rather problematic conception of freedom. Since humans are part of the "great machine," their actions would necessarily be bound to an external will, *i. e.*, that of nature or of God. In fact, as Cropsey himself notices, in his interpretation of Smith, humans are the subject of a "benevolent despotism" of nature (*ibid.*).[4] Second, this view seems to completely ignore the epistemological dimension of the invisible hand metaphor discussed above in section 3. As Cropsey argues, this benevolent despotism of nature, "when added to the world, makes it intelligible and, incidentally, good. This comes close to suggesting that natural philosophy can resemble high mythologizing" (*ibid.*). However, by implying that the world's intelligibility requires the idea of an almighty will governing over its mechanisms, *i. e.*, by bringing natural philosophy close to mythologizing, Cropsey seems to ignore the point that Smith made in HA that such mythological explanations are the "lowest and most pusillanimous superstition," which can only serve as a provisory way of soothing human imagination once it has been disturbed by the sentiments of wonder and surprise until a proper explanation is available. An actual scientific or philosophical explanation should require no mythologizing and thus no invisible hand.

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[4] Of course, Cropsey is aware that his interpretation of Smith's solution to the aporia does not allow for human freedom *from* nature's mechanisms: there is no freedom from the machine, only freedom within the machine. According to him, this would be justified, within Smith's theory, by the fact that this integration of humanity within nature is beneficial; nature is despotic, but in a benevolent way: "Articulating man entirely within nature, yet declining to see a question of man's freedom *vis-à-vis* nature, Smith has adopted an ancient simplicity: man's integration in the order of nature is beneficial rather than threatening to humanity and is concordant with man's sociality and virtue. Smith's project for liberal commercial society is part of his wider project for accommodating man's sociality and morality to the environment of mechanistic nature, although the traditional setting for that conception of man in nature is the older and teleological vision of nature" (*ibid.*, 176).

Hence, it seems necessary to search for an alternative Smithian solution to the aporia. Here, it shall be argued that Smith's adoption of the mechanistic worldview, while central to his philosophical thought, was not absolute.

As discussed above in section 3, the principle directing human action in the passages in which the invisible hand metaphor is used in TMS and in WN is the love of system, *i. e.*, the natural inclination humans have towards structures, machines etc. that are well-fitted towards achieving a certain goal, irrespective of the actual value of this goal. This leads us to strive for riches, power, and greatness, even though these things are, from a more careful consideration, not really that valuable. Since well-fitted systems have a particular, for humans quite appealing kind of beauty, one could argue that the sentiment directing us in our pursuit of these things is approbation. Just as the sentiments of wonder and surprise lead us to engage in philosophical and scientific activity, the love of system, grounded by the sentiment of approbation, would lead us to pursue riches and greatness. However, since we are driven to pursue these goals even when they have no real value with respect to our happiness, one could argue that approbation alone would not be enough. A stronger sentiment, namely that of admiration, would instead be the force directing our actions. In fact, as Smith puts it, we are "charmed with the beauty of that accommodation which reigns in the palaces and oeconomy of the great; we *admire* how everything is adapted to promote their ease, to prevent their wants, to gratify their wishes" (TMS IV.1.9, my italics). Indeed, one could argue that we strive for riches and greatness not only due to their beauty arising from their apparent utility, but also due to their singularity, to their uniqueness, to the fact that we are not that well enough acquainted with them so as to know that they are, in reality, not as valuable as they seem to be. Thus, our approbation of their utility is combined with wonder and surprise, resulting in admiration.

If this analysis is correct, if admiration is the actual directing principle behind the love of system and the invisible hand, then human action cannot be, at least form the perspective of the acting subjects, mechanically determined. In HA, Smith writes:

> These sentiments [*i. e.*, wonder, surprise and admiration, or rather approbation], like all others when inspired by one and the same object, mutually support and enliven one another: an object with which we are quite familiar, and which we see every day, produces, though both great and beautiful, but a small effect upon us; because our admiration is not supported either by Wonder or by Surprise: and if we have heard a very accurate description of a monster, our Wonder will be the less when we see it; because our previous knowledge of it will in a great measure prevent our Surprise (HA Intro.6).

As soon as one understands its working mechanisms, a machine – in the stricter sense of the mechanistic worldview – is equivalent to having perfect and absolute knowledge about something. Hence, as beautiful and perfect the system or machine may be, it leaves no place for wonder or surprise: all its movements, causes and effects are determined and (at least potentially) known. Human imagination is, in this regard, completely soothed. But since the love of system does have a significant effect upon us, humans must, as agents, always assume some degree of unexpectedness or singularity with respect to the object they admire and therefore strive for. But this is only possible outside the mechanistic paradigm. In particular, humans themselves must assume that they are independent from the mechanical fatalism of the great machine of

the world, *i. e.*, they must assume, as actors, that they are free. For otherwise they would know that all their efforts in achieving anything would be completely meaningless: there would be nothing to admire or to strive for and no happiness to be pursued.

5. Concluding Remarks: Smith and Kant

By postulating freedom as a practical-philosophical assumption underlying human action, the Smithian solution to the aporia of freedom proposed here brings Smith closer to Kantian philosophy. Even if one does assume that the universe is in fact (*i. e.*, from a theoretical-philosophical or rather epistemological perspective) a great machine, humans always act (from a practical-philosophical perspective) under the assumption of their freedom. This would imply that Smith adopted a rather methodological version of the mechanistic worldview, which would relativise its validity with respect to human action, *i. e.*, within practical philosophy.

In fact, while Smith did not develop an elaborate dualist philosophy akin to Kant's, one can find several passages in his writings in which the mechanistic worldview seems to be relativised. For example, Smith clearly relativises his simplification principle, which was already mentioned above in section 2.2 and according to which simplifications make machines (and systems) more perfect, with respect to languages.[5] He writes:

> But this simplification of languages, though it arises, perhaps, from similar causes, has by no means similar effects with the correspondent simplification of machines. The simplification of machines renders them more and more perfect, but this simplification of the rudiments of languages renders them more and more imperfect, and less proper for many of the purposes of language (Languages 41).
>
> The simpler the machine the better, but the simpler the language the less it will have variety and harmony of sound and the less it will be capable of various arrangement: and lastly it will be more prolix (LRBL i. v.34).

Furthermore, in the 12th lecture of LRBL, Smith distinguishes between two methods of argumentation aiming at proving propositions, the "Didacktick" and the "Rhetoricall". While the "Didacktick" method, in particular the Newtonian, mechanistic method, is "undoubtedly the most philosophical" (LRBL.ii.134), the "Rhetoricall" method seems to be the more adequate method when persuasion is the primary goal to be pursued, *e. g.*, in politics or even in arts, which strongly connects this non-mechanistic

[5] While considering a different issue also based on language, namely while analysing the role of speech and communication in the connection between self-interest and exchange within Smith's thought, Samuel Fleischacker comes to a similar conclusion that likewise puts Smith closer to Kant: According to Fleischacker's interpretation, Smith connects humans' capability of conducting exchange to their capacity for speech, and, in particular, of persuasion (which is to be understood in a positive sense, *e. g.*, in the sense of "convincing"). Fleischacker claims that speech, in this sense, presupposes freedom: "we must […] presuppose free will to make sense of our ability to speak – to speak intelligibly, at least, to hold ourselves accountable to norms of communication, and be held accountable to norms by others […] Simply in speaking with people rather than trying to coerce them – at least if our speech is aimed at persuading them, not cajoling, manipulating or threatening them – we express our freedom and respect theirs" (2023, 73–4).

method to the idea of beauty and, a fortiori, to the sentiments of approbation and admiration and thus, as argued above, also to human action.

Finally, according to Smith, comprehensive knowledge about the "great system of the universe," including with respect to the idea of universal happiness of all rational beings, is beyond the limits of human understanding – incidentally, another point in which Smith and Kant are very similar. Smith writes:

> The administration of the great system of the universe, however, the care of the universal happiness of all rational and sensible beings, is the business of God and not of man. To man is allotted a much humbler department, but one much more suitable to the weakness of his powers, and to the narrowness of his comprehension; the care of his own happiness, of that of his family, his friends, his country: that he is occupied in contemplating the more sublime, can never be an excuse for his neglecting the more humble department […] The most sublime speculation of the contemplative philosopher can scarce compensate the neglect of the smallest active duty (TMS VI.ii.3.6).

If humans are to care for their own happiness and that of their friends, family and country, they must assume, when they act, that the consequences of their actions, their pursuit of happiness, is led not by destiny or by some almighty invisible hand of providence, but by their own hand – which is not only very much visible and tangible, but, above all, free.

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