

**FREEDOM AND SUBMISSION:  
INDIVIDUALS AND THE INVISIBLE HAND**

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The building housing the Chicago Board of Trade, the world's most important futures market, is topped by a faceless cast-aluminum statue of Ceres, the Roman goddess of agriculture. The statue is said to have been left faceless by the building constructors in the 1930's because nobody would be able to see the statue's face from street level anyway. However, the faceless statue suggests a deeper feature of markets, namely their anonymity. Underneath the apparent confusion and turmoil of the frantic transactions taking place in the big commodity trading pits of the Board, a smooth, well-regulated albeit cryptic market process is supposed to be occurring. The individuals who make up the market do not control this process, although they must endure its impersonal forces. At the same time, individual agents are liberated from personal responsibility toward any larger social goals, and are free to pursue narrow self-interest as they carry out their daily transactions.

More than 200 years ago, a new vision of society was born: a vision in which individuals were not controlled by divine or other central authority, but rather functioned as independent, yet predictably interacting, parts of a system. This was the time of the genesis of economic thought, a process in which Adam Smith played a crucial role. He is best known, of course, for introducing the

notion of the invisible hand as a device capable of producing an unintended but socially desirable outcome out of the uncoordinated actions of individuals.

The invisible hand has been described by Arrow and Hahn (1971) as the most important single contribution of economic thought to the understanding of social processes.<sup>1</sup> The idea of the invisible hand has also been linked to the accomplishments of a free society by Hayek, and plays a key role in the theories of Rawls and Nozick. General equilibrium theory, for all its twentieth-century complexity, is nothing more than the mathematical elaboration of Smith's eighteenth-century metaphor.

This paper examines and compares the logical structure of the invisible hand metaphor as it appears in Smith's two most important works, the *Theory of Moral Sentiments* and the *Wealth of Nations*. We will argue that Smith developed the idea of an invisible hand process coordinating individual decisions in his earlier work, *Moral Sentiments*, in describing morality, conscience, and the sources of society's ethical judgments. Thus the invisible hand as a social structure is separable from the market mechanism in which it is embedded in *Wealth of Nations*. Moreover, the invisible hand of *Moral Sentiments* does not imply that individuals are reduced to narrow, self-centered profit-maximizers with a limited understanding of society – that is, individuals need not be “degraded” by the operation of the invisible hand.

This is an important point because markets have been frequently linked to freedom of choice. Recently, however, an opposite view has been advanced by

Rothschild (1994) on the position of individuals in the invisible hand process. According to this view, Smith did not have a lot of respect for the notion of the invisible hand, and the agents involved in those processes were described as puny, debased individuals. In this chapter we show this is not accurate for two reasons. First, Smith strives to build a theory of two different kinds of invisible hand processes in his *Theory of Moral Sentiments* and *Wealth of Nations*. Thus, the invisible hand per se may be of greater importance and broader validity than the problematical theory of the market to which it has been attached.

Second, in the invisible hand process in *Theory of Moral Sentiments*, individuals are depicted as very complex entities, capable of analyzing intricate social situations, and are therefore free to choose from a vast array of possible social conducts. However, when theory has attempted to present a mathematical representation of this process, the models that have been used have not been able to incorporate this freedom in their archetypes of individual agents. And when a degree of freedom is introduced, making these agents "cunning individuals," the model is unable to show that the invisible hand process leads to a desirable outcome.

There is a long literature of debate about Adam Smith's writings. The old "Adam Smith problem," originally identified by German authors, claimed that there was a blatant contradiction between Smith's two most important works, since sympathy was the pillar of society in the *Theory of Moral Sentiments*, while self-interest was the center in the *Wealth of Nations*.<sup>2</sup> This view was

considered a pseudo-problem by many, and dismissed long ago as a product of a superficial reading of Smith's works (Viner 1966, Raphael and Macfie 1982, Wilson 1976, Sen 1983). However, the problem has been reformulated in at least two relatively recent works, Rothschild (1994) and Minowitz (1993).

The resilience of the Adam Smith problem derives from its relevance to the analysis of relations between ethics and economics. This paper examines the commonalities and discontinuities between *Moral Sentiments* and *Wealth of Nations* in relation to the invisible hand process, highlighting the surprising extent to which Smith developed the logic of the invisible hand in *Moral Sentiments*, prior to his analysis of markets in *Wealth of Nations*. The first section centers on Smith's conception of society as a system of hidden interdependencies in which individual members play a modest part, a conception that is common to both *Moral Sentiments* and *Wealth of Nations*. We will show that this did *not* necessarily imply condescension or contempt for the individual components of the system in Smith's *Moral Sentiments* (see Rothschild 1994). The second section identifies the underlying relations of the social system in *Moral Sentiments* as a network of interlocking jurisdictions, governed by the "impartial spectator" of individual conscience, which leads to an unintended outcome. In contrast, in *Wealth of Nations* the role of the impartial spectator is replaced by the system of market prices and exchange. Third, we focus on similarities between the system in *Moral Sentiments* and the theory of the market in *Wealth of Nations*, showing how the latter is the continuation of a research program advanced in the former. In the fourth section we summarize results and examine some of the problems raised by contemporary stability theory and market theory. Our concluding remarks

focus on the issue of freedom and submission in the status of individual agents in invisible hand processes.

## **I. SOCIETY AS A MECHANISM**

The image of the invisible hand is explicitly mentioned three times by Smith, once each in his *History of Astronomy*, in *Moral Sentiments* and in *Wealth of Nations*. Only in the latter two does it have its modern meaning, referring to a process of uncoordinated individual actions leading to an unintended, desirable social outcome. However, too much attention has been paid to the few places where Smith literally used the words, "invisible hand," and not enough to the underlying logic of his work that supports the image. In this section, we will argue that in his *Moral Sentiments*, Smith held a conception of society where individuals are part of a machine-like system – but this did not necessarily imply for him a view of devalued individuals.

The idea of society as a mechanical system is not only present but, in fact, dominates the *Theory of Moral Sentiments*. This mechanistic vision may come from the influence on Smith of Stoic ethics, which went along with a view of nature as a cosmic harmony (Raphael and Macfie 1982); see, for example, in *Theory of Moral Sentiments* (TMS) VI.ii.3.4-5, 236, the reference to "the immense machine of the universe". The "all-wise Architect and Conductor" is portrayed as responsible for the system (TMS, VII.ii.1.37, p. 289):

As all, even the smallest of the co-existent parts of the universe, are exactly fitted to one another, and all contribute to compose one immense and connected system; so all, even apparently the most insignificant of the successive events which follow one another, make parts, and necessary parts,

of that great chain of causes and effects which had no beginning, and which will have no end; and which, as they all necessarily result from the original arrangement and contrivance of the whole; so they are all essentially necessary, not only to its prosperity, but to its continuance and preservation.

This view is less like a Biblical Creator of the Universe than a deistic God, who rules over a system without genesis, and without anger and punishment (Minowitz 1993). Smith's terminology almost implies a secular view of this supreme entity, who is variously described as creator (Author, Architect) but more frequently as a bureaucratic authority (Superintendent, Conductor, Administrator). This role of *fonctionnaire* really inaugurates a more functional view of the force behind the "immense machine of the universe". And this is consistent with a view of society as a mechanism (TMS, VII.iii.1.2,316):

*Human society, when we contemplate it in a certain abstract and philosophical light, appears like a great, an immense machine, whose regular and harmonious movements produce a thousand agreeable effects. As in other beautiful and noble machine that was the production of human art, whatever tended to render its movements more smooth and easy, would derive a beauty from this effect, and, on the contrary, whatever tended to obstruct them would displease upon that account: so virtue, which is, as it were, the fine polish to the wheels of society, necessarily pleases; while vice, like the vile rust, which makes them jar and grate upon one another, is as necessarily offensive. (Our emphasis).*

Viewing society as a system was part of Smith's heritage from what Meek (1967) described as the Scottish school of sociology, with John Millar, Adam Ferguson and William Robertson as some of its most distinguished members. According to Meek, these authors inaugurate the view of society as a sort of immense machine-like system which would, like all machines, function in an orderly and absolutely predictable manner.<sup>3</sup> Because the conception of society as a system presupposes a certain rationality, Smith must have seen that it provided access to more powerful insights and analytical instruments than, say, a simple taxonomy or classification of seemingly isolated elements.

The individual components of the social machinery have only a faint notion of the complex interconnections that make up the system. They are the precursors of agents in modern microeconomics with their individual (production and consumption) possibility sets (TMS, VII.ii.1.44, 292):

By Nature the events which immediately affect that little department in which we ourselves have some little management and direction (...) are the events which interest us the most, and which chiefly excite our desires and aversions, our hopes and fears, our joys and sorrows.

However, these individuals are capable of sacrificing their interests for the benefit of the system's welfare. The wise man\* recognizes in the perfection of the immense machine of the universe that the ultimate goal of the Superintendent is "to produce the greatest possible quantity of happiness" (TMS, VI.ii.3.5, 236). This is why he can readily sacrifice the interests of his own little department for the sake of the general interest. The idea is developed in Smith's admiring description of Stoic philosophy (TMS, VII.ii.1.20, 276):

A wise man never complains of the destiny of Providence, nor thinks the universe in confusion when he is out of order. He does not look upon "himself" as a whole, separated and detached from every other part of nature, to be taken care of by itself and for itself. (...) He enters, if I may say so, into the sentiments of that divine Being, and considers himself as an atom, a particle, of an immense and infinite system, which must and ought to be disposed of, *according to the conveniency of the whole*. (Our emphasis).

Submission to the necessary precepts of the system is not a sign of futile conduct on the part of devalued individuals. Rather, it is the sign on the part of an individual that he/she has acquired wisdom and accomplished self-command, which is described by Smith as the virtue from which all others "seem to derive their principal lustre" (TMS, VI.iii.11, 241).

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\*Smith's language assumed that the typical individual was male. It seemed simpler to us, in a detailed discussion of his texts, to follow his wording when referring to his concepts, rather than repeatedly correcting it to gender-neutral terminology. Our apologies: we are well aware that half of the individuals in society are not "men."

The wise man has acquired a modest and unassuming attitude *vis-à-vis* the intricate system of which he is only a modest part.<sup>4</sup> On the contrary, the proud and vain man is constantly dissatisfied. This idea is a structural element of Smith's *Moral Sentiments*, underlying a conception of society as a system ruled by laws that only a few (if any) can grasp. The critical reference comes once again, from the chapter "Of Universal Benevolence":

The wise and virtuous man (...) [i]f he is deeply impressed with the habitual and thorough conviction that this benevolent and all-wise Being can admit into the system of his government, no partial evil which is not necessary for the universal good, he must consider all the misfortunes which may befall himself, his friends, his society, or his country, as necessary for the prosperity of the universe, and therefore as what he ought, not only to submit to with resignation, but as what he himself, *if he had known all the connections and dependencies of things*, ought sincerely and devoutly to have wished for. (TMS, 235-6) (Our emphasis).

The key item here is that the wise individual in question normally does not know the connections and dependencies of the social system, and thus is incapable of deciphering the operation of the invisible hand.

Indeed, in his last writing,<sup>5</sup> Smith introduced and criticized the image of a reformer who attempts to comprehend and control the system as a whole (TMS, VI.ii.2.16, 233-34):

The man of system, on the contrary, is apt to be very wise in his own conceit; and is often so enamoured with the supposed beauty his own ideal plan of government, that he cannot suffer the smallest deviation from any part of it. (...) He seems to imagine that he can arrange the different members of a great society with as much ease as the hand arranges the different pieces upon the chess-board. (...)

Some general, *and even systematical*, idea of the perfection of policy and law, may no doubt be necessary for directing the views of the statesman. But to insist upon establishing, and upon establishing all at once, and in spite of all opposition, every thing which that idea may seem to require, must often be the highest degree of arrogance.

In this passage, taken from his final revision of *Moral Sentiments* in 1790, Smith is reacting to the French Revolution (Raphael and Macfie 1982:18-9); in

no way is this a contradiction of his notion that society behaves like a system. More specifically, what Smith says in this passage is that the reformer cannot measure up to the complexity of the task. Why does Smith criticize the "man of system"? Because his "ideal plan of government" cannot even attempt to approximate what the natural system or order (the "invisible hand") can do.<sup>6</sup>

In several passages of *Moral Sentiments* the idea of individual submission to a system carries a ring of degraded resignation in face of an unstoppable destiny.<sup>7</sup> However, before jumping to this conclusion we must identify and analyze the nature of the system that characterizes *Moral Sentiments*. This will be the focus of the next section.

## II. THE SYSTEM OF INTERLOCKING JURISDICTIONS

Society is conceived as an intricately interconnected system in the *Theory of Moral Sentiments*, through a set of relations binding the individual components of the system together. The system is not simply traced via metaphors but is explicitly described in Part II "Of Merit and Demerit." Here Smith introduces the notion of the *impartial spectator*, an inner voice of conscience, which will become the basic foundation for the construction of the system (TMS, II.ii.2.2,83):

Though it may be true (..) that every individual, in his own breast, naturally prefers himself to all mankind, yet he dares not look mankind in the face, and avow that he acts according to this principle. (...) When he views himself in the light in which he is conscious that others will view him, he sees that to them he is but one of the multitude in no respect better than any other in it. If he would act so as that the *impartial spectator* may enter into the principles of his conduct, which is what of all things he has the greatest desire to do, he must, upon this, as upon all other occasions, humble the arrogance of his self-love, and bring it down to something which other men can go along with. (Our emphasis).

Smith pursues the development of the impartial spectator as the key element of the system in Part III of *Moral Sentiments*. In contrast with the previous

parts, here Smith concentrates on the origin and foundation of our judgments concerning our own conduct, instead of that of others. Smith tells us that (TMS, III.i.2, 110) "[w]e endeavour to examine our own conduct as we imagine any other fair and impartial spectator would examine it." The impartial spectator thus plays a key role in how we relate to the conduct of other individuals, and in how we can approve or disprove our own. The impartial spectator permits society to flourish on the basis of a proper comparison between individual interests (TMS, III.iii.1, 134):

But though the approbation of his own conscience can scarce, upon some extraordinary occasions, content the weakness of man; though the testimony of the supposed *impartial spectator*, of the great inmate of the breast, cannot always alone support him; yet the influence and authority of this principle is, upon all occasions, very great; and it is only by consulting this judge within, that we can ever see what relates to ourselves in its proper shape and dimensions; or that we can ever make any *proper comparison between our own interests and those of other people*. (Our emphasis).

It is the impartial spectator that allows Smith to introduce some measure of objectivity in a world of otherwise self-contained individuals; and it helps structure a system of related individuals which rests on a secular principle.<sup>8</sup>

The central place of the impartial spectator rests on its relation with the notion of sympathy. Smith defined sympathy as something more general than benevolence (TMS, I.i.1.3, 10) and related to the sense of propriety. In turn, the sense of propriety depends crucially on the impartial spectator. In criticizing theories according to which "virtue consists in propriety" Smith states (TMS, VII.ii.1.49, 294):

None of those systems give (...) any precise or distinct measure by which this fitness or propriety of affection can be ascertained or judged of. That precise and distinct measure can be found nowhere but in the sympathetic feelings of the impartial and well-informed spectator.

But the impartial spectator may have been something more than just part of Smith's theory of conscience. It may have been part of an attempt to approach

the question of interpersonal comparability, and even to solve the problem of impartiality of moral value judgments (Hausman and McPherson 1993:692-3). Smith is in this sense the forerunner of the "imaginative empathy" used by Harsanyi (1988) in the analysis of interpersonal utility comparisons, a controversial step which Harsanyi describes as unavoidable in the field of ethics.<sup>9</sup> Although the procedure of imaginative empathy poses insoluble problems in modelling, the important point here is that it involves in *Moral Sentiments* a network of interdependent relations and a system.

The notion of the impartial spectator is closely related to the idea of *jurisdiction* introduced in *Moral Sentiments*. Each man has been rendered the immediate judge of mankind, but he has been so rendered only in the first instance and an appeal can go to a much higher tribunal, the tribunal of individual conscience, "to that of the supposed impartial and well-informed spectator, to that of the man within the breast, the great judge and arbiter of their conduct". The key description of jurisdictions is as follows (TMS, III.2.32, 130):

The jurisdictions of those two tribunals are founded upon principles which, though in some respects resembling and akin, are, however, in reality different and distinct. The jurisdiction of the man without, is founded altogether in the desire of actual praise, and in the aversion to actual blame. The jurisdiction of the man within, is founded altogether in the desire of worthiness, and in the aversion to blame-worthiness (...).

The jurisdictions overlap and act reciprocally as mirrors reflecting each other's images. If all men are judges, then no one is superior to others. In society men act as mirrors of each other (TMS, III.1.3, 110), and in isolation the impartial spectator acts as "the only looking-glass by which we can (...) with the eyes of other people, scrutinize the propriety of our own conduct"(TMS, III.1.5, 112). Every man is a small component of the whole, but he is made up in this complex manner. Although he may appear as a small element, this internal structure does not allow us to see him as an insignificant part of the system, and certainly not as a debased individual. In fact, as Minowitz (1993:214) says,

"Smith wants to complete the liberation of the conscience from 'ecclesiastical powers' by subordinating it to nature [via the impartial spectator] rather than to the sovereign".

The social system of *Moral Sentiments* can be described as a network of *interlocking jurisdictions* in such a way that "[e]very faculty in one man is the measure by which he judges of the like faculty in another" (TMS, I.i.3.10, 19). Through the impartial spectator and the network of interlocking jurisdictions, the system of Smith's ethics seems to move through self-enforcing rules or laws described in a tone worthy of the Old Testament (TMS, II.ii.2.3, 84):

The violator of the more sacred laws of justice can never reflect on the sentiments which mankind must entertain with regard to him, without feeling all the agonies of shame, and horror, and consternation. (...) By sympathizing with the hatred and abhorrence which other men must entertain for him, he becomes in some measure the object of his own hatred and abhorrence. (...) The thought of this perpetually haunts him, and fills him with terror and amazement. He dares no longer look society in the face (...). Every thing seems hostile, and he would be glad to fly to some inhospitable desert, where he might never more behold the face of a human creature (...). But solitude is still more dreadful than society. His own thoughts can present him with nothing but what is black, unfortunate, and disastrous, the melancholy forebodings of incomprehensible misery and ruin.

Although Nature did not impose upon human beings the enforceability of justice's mandates by the "terrors of merited punishment," it did implant "in the human breast that consciousness of ill-desert, those terrors of merited punishment which attend upon its violators, as the great safe-guards of the association of mankind," without which "an assembly of men" would be like a "den of lions"(TMS, II.ii.86).

The notion of unintended outcomes from social interactions appears in a discussion of conscience and the sense of duty. Smith's striking language on the subject (TMS, III.3.5, 137) seems to foreshadow the famous invisible hand passage of the *Wealth of Nations*:

It is not the soft power of humanity, it is not that feeble spark of benevolence which Nature has lighted up in the human heart, that is thus capable of counteracting the strongest impulses of self-love. It is a stronger power, a more forcible motive, which exerts itself upon such occasions. It is reason, principle, conscience, the inhabitant of the breast, the man within, the great judge and arbiter of our conduct. It is he who (...) calls to us, with a voice capable of astonishing the most presumptuous of our passions, that we are but one of the multitude, in no respect better than any other in it; and that when we prefer ourselves so shamefully and so blindly to others, we become the proper objects of resentment, abhorrence, and execration. (...)

It is not the love of our neighbour, it is not the love of mankind, which upon many occasions prompts us to the practice of those divine virtues.<sup>10</sup>

As in the *Wealth of Nations*, the society analyzed in *Moral Sentiments* is not exclusively cemented together through feelings of friendship or the spark of benevolence. It is because the impartial spectator maintains everyone in order that the assembly of men does not fall apart. But Smith hints at two possible principles which allow the impartial spectator to do what it does. First, the impartial spectator shows the propriety of generosity and the deformity of injustice; it reveals the propriety of resigning the greatest interests of our own, for the yet greater interests of others. Second, it is not the love of our neighbor which prompts us to practice these virtues, but fear of the judgment and punishment that may be imposed by the impartial spectator which makes individuals "dare not, as self-love might suggest to us, prefer the interest of the one to that of the many" (TMS, III.6, 138). It is not for love of mankind that society is cemented together and can continue to exist. The social system described in *Moral Sentiments* as a *system of interlocking jurisdictions* shares with the one studied in *Wealth of Nations* a rationality driven by an unseen force or mechanism.

The whole purpose of the system is to attain justice, which is "the main pillar that upholds the whole edifice. If it is removed, the great, the immense fabric of human society (...) must in a moment crumble into atoms". But Smith is even more specific in his analysis of the sources of justice: in the section "On

the Nature of Self-deceit" Smith states that the entire process based on the network of interlocking jurisdictions leads to the formation of the "general rules of morality" (TMS, III.4.8,159). The relevant paragraph concludes that only when the general rules of morality have been formed and are universally acknowledged and established by "the concurring sentiments of mankind" can they be cited as the foundation of what is just and unjust. This has misled many eminent authors, continues Smith, to build a system where the original judgments of mankind with regard to right and wrong are derived from the application of a preexisting general rule. The importance of the invisible hand in Smith's moral theory is clear at this point: *these authors are wrong, the rules are the outcome of a process which no one foresees and is beneficial to all*. Therefore, in the *Theory of Moral Sentiments* moral rules are the object of what Nozick (1974, 1994) has called an invisible hand explanation.

The impartial spectator, the cornerstone of the social system in *Moral Sentiments*, has not been adequately studied.<sup>11</sup> The conventional view is that the appearance of the invisible hand in *Moral Sentiments* is limited to the famous passage in Part IV where the rich, moved by a desire to gratify their "own vain and insatiable desires" are led, without their knowing it, to "advance the interest of society". But in the main body of Smith's book every individual member of society is led to curb his excessive self-love, not by "love of neighbor or mankind", but by regard for the impartial spectator. Each individual may avoid the harsh judgment of the impartial spectator either by love of justice, or by fear of the astonishing voice of the "inmate of the breast". The result is the same: actions seeking to avoid a negative judgment bring about justice, which keeps the fabric of society together. The desirable final outcome is not intentionally sought by each individual, partly because they only have a limited understanding of the system's connections.

How is the system kept together in the *Wealth of Nations*? A common answer is that it is "self-love" that cements the system in Smith's economic theory, in

contrast to the ethical system developed in his earlier work. But this interpretation is incomplete. For one thing, the network of interlocking jurisdictions bonding the system together in *Moral Sentiments* is already based "not on love of humanity", but in something resembling self-love, so this would not be enough to distinguish *Moral Sentiments* from *Wealth of Nations*. The key element distinguishing these two works is that in the latter Smith examines society from the vantage point of a *price system*.<sup>12</sup> The critical difference is that the interlocking jurisdictions of *Moral Sentiments* are substituted by a matrix of relative prices. The impartial spectator is absent because the nature of the price system ensures enforceability of economic laws.

### III. ANTICIPATING THE THEORY OF THE MERCHANT SOCIETY

The "connections and dependencies of things" which form the system in the *Theory of Moral Sentiments* are not for everyone to grasp or understand:

The administration of the great system of the universe, however, (...) 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* (...). [T]hat he is occupied in contemplating the more sublime, can never be an excuse for his neglecting the more humble department... (TMS, 237). (Our emphasis).

Even the virtuous and wise will have difficulties trying to understand the complexity of the system. At most, they will submit to whatever calamity befalls them *as if* they had full comprehension of the necessity of these calamities arising from the interconnectedness of things. But when the wise and virtuous perceive the connections and dependencies, they may also realize the end result is the greatest possible amount of happiness. The question is not whether individuals understand the process, but whether they are led to a desirable outcome.<sup>13</sup>

What about other men – those who are not wise and virtuous – in different types of societies? There is a passage on this subject in *Moral Sentiments* which builds a bridge with Smith's later work (TMS, II.ii.3.2, 85-6):

(...) though among the different members of the society there should be no mutual love and affection, the society, though less happy and agreeable, will not necessarily be dissolved. *Society may subsist among different men, as among different merchants*, from a sense of its utility, without any mutual love or affection; and though no man in it should owe any obligation, or be bound in gratitude to any other, it may still be upheld by a mercenary exchange of good offices according to an agreed valuation. (Our emphasis).

In these societies, “exchange according to an agreed valuation” plays the role that the impartial spectator and the interlocking jurisdictions have in *Moral Sentiments*. It also raises the key problem tackled by Smith in the *Wealth of Nations* through his value theory, namely the question of the dynamics of the price system. This is the introduction of the research program which Smith developed after 1776: when the division of labor has been established, every person must exchange the surplus which is of no use to its producer (WN, 22): “Every man thus lives by exchanging, or becomes in some measure a merchant, and the society itself grows to be what is properly a commercial society”.

The rules by which *this* society is regulated must still be unraveled, and this is the objective of the *Wealth of Nations*. Why should the laws and rules (of exchange and valuation) regulating the system be identified and analyzed? Can't we be, like the wise and virtuous, satisfied with the system, knowing that the great Superintendent of the universe manages the system and takes every part of it to a state of universal prosperity where the greatest possible happiness is produced? Smith was clearly intrigued by this different society in which no sense of wisdom is present, and benevolence and the impartial spectator are absent. Surely he must have seen that the invisible hand process was much more interesting in the case where the impartial spectator is

entirely absent: in a society of monks, in a monastery, there is no need for an invisible hand explanation of social harmony.

As he wrote his *Moral Sentiments*, Smith may have already been looking for the rules and laws that determine the dynamics of the "connections and dependencies of things," and he mentions some of the indirect mechanisms that lead to final unintended outcomes which are desirable from the economic standpoint. The relevant passage is molded in language that is familiar to the reader of *Wealth of Nations* (TMS, IV.1.11, 185):

When a patriot exerts himself for the improvement of any part of the public police, his conduct does not always arise from pure sympathy with the happiness of those who are to reap the benefit of it. It is not commonly from a fellow-feeling with carriers and waggoners that a public-spirited man encourages the mending of high roads. When the legislature establishes premiums and other encouragements to advance the linen or woollen manufactures, its conduct seldom proceeds from pure sympathy with the wearer of cheap or fine cloth, and much less from that with the manufacturer or merchant. [T]rade and manufactures (...) make part of the great system of government, and the wheels of the political machine seem to move with more harmony and ease by means of them.

Thus, the manufacturer and the merchant, attracted by premiums and other rewards, end up working towards a more harmonious system, most probably without knowing it.<sup>14</sup> But these references to indirect or unintended consequences were not enough for Smith's inquisitive inclinations. They merely defined a new problem area for a future research program which would animate his *Wealth of Nations*. It is true that Smith was preoccupied with practical problems in political economy and was concerned with the key policy question lurking behind all of this: how can we get rid of obstacles that impede the *natural* process of the economy from following its course? If the virtuous man could understand and recognize the connections and dependencies of things, he would clearly see that every partial evil is necessary for the universal good. He would then submit not only with resignation, but in fact, would wish that the outcome be realized as soon as possible.<sup>15</sup>

Naturally, the reciprocal of this proposition is that if the outcome is undesirable (for example, if it is poverty for the many, or downright exploitation for some) we must be ready to combat it.<sup>16</sup> So proving the desirability of the final outcome is a very important chapter of the research program. Smith could not advance much in this direction because of the limitations of the price theory in his *Wealth of Nations*. His theory of cost-based “natural prices,” and market prices that fluctuate around them, did not allow him to make a rigorous argument that market outcomes would be desirable; rather, this crucial point remained a casual, metaphorical assertion in his work. Still, Smith asserted that the desirable outcome is implied in the harmonious state of affairs produced by the invisible hand and described in terms of the “progressive” state of society.

At this point, another “Adam Smith problem” makes its appearance, in the discovery that there is a conflict of interests between the three orders of society (proprietors, workers and capitalists), which is briefly explained at the end of Book I of *Wealth of Nations*. The invisible hand process may lead to prosperity in a progressive society, but this coexists with a situation where the interests of one order of society (“those who live by profit”) do not coincide with the interests of society as a whole (WN, 250): “the interest of the dealers (...) in any particular branch of trade or manufactures, is always in some respect different from, and even opposite to, that of the public”.

The conflict arises from Smith's particular concept of prices (as the sum of cost components) and the role of capital accumulation and competition. The resolution of this conflict of interests is not explicitly described by Smith. In Ricardo, the invisible hand process will be upheld, while at the same time a fundamental conflict over distribution will be introduced. How can we think of an invisible hand process, leading to a desirable social outcome, in the context of such a fundamental social conflict? How can we reconcile social harmony stemming from the invisible hand process (based on the compatible plans of individual agents) with social conflict in the 'sphere of distribution' (based on

the inverse relation between the rate of profits and wages)? This is carried to the extreme in Marx's account of the invisible hand, where the unintended outcome is associated with class exploitation.<sup>17</sup>

In *Wealth of Nations* Smith examines (through the spectacles of value and price theory) how social harmony can still be upheld "by a mercenary exchange of good offices according to an agreed valuation". Smith now takes the extreme hypothesis required by his theory: individuals do not engage in reciprocal assistance out of "fellow-feelings," but are rather moved by self-love. And with the impartial spectator completely absent, the critical role of the market in achieving social harmony (i.e., the compatibility of individual plans) becomes the central object of analysis. But to perform the trick of harmonization in the midst of a community of self-interested individuals, without the intervention of the "inmate of the breast" and in a decentralized framework is the new challenge. This is the true nature of the assumption of self-love: it is the strong hypothesis under which it is pertinent to analyze the performance of the allocative functions of the market's invisible hand. The idea that the invisible hand would work in the presence of wise and virtuous men is not relevant; these agents would either perceive the nature of the laws that are involved, wisely submitting to their command, or they would draw up a special compact to guarantee social coherence. The only case where it is important to prove the invisible hand is able to perform its task is precisely the case of proud, vain, and unwise men.<sup>18</sup>

#### **IV. SHREWD INDIVIDUALS AND WITLESS AGENTS**

When we shift our attention to modern general equilibrium theory, or even to newer theoretical developments such as multi-agent models, we find that the question of freedom and submission under the invisible hand is closely related to some of the crucial assumptions in contemporary price theories. In the modern modeling context, are agents allowed to do more than wait for the

equilibrium price vector to be announced? In Smith's terms, are the individuals subject to the invisible hand allowed to be other than wise, virtuous, and passive?

Pride and vanity may coexist in cunning and shrewd individuals. Therefore, the individuals involved in Smith's account of the invisible hand (under the extreme self-love assumption, without the impartial spectator) need not submit wisely and passively to the workings of the process. In fact, one would expect that if they are smart enough to be aware of disequilibrium opportunities, they will try to engage in arbitraging operations which will translate into greater gains. Rothschild is right: agents in new approaches to dynamic processes may be "more Smithian" and closer to "the complicated merchants of Smith's theory" than the well-behaved agents of traditional general equilibrium models. But so far (given the limitations of general equilibrium theory discussed in this volume), we do not have a theory in which socially desirable situations arise as the unintended outcome of individual actions of agents who are self-aggrandizing *and* astute. This section comments on some of the problems encountered in contemporary economic theory in its attempt to provide a comprehensive invisible hand theory.

In fact, what is often referred to as the "theory of the invisible hand" does not constitute a rigorous interpretation of market processes. Its problems are not limited to the status of the individual agents involved in the invisible hand, but rather cover the entire price formation process. The theory of stability formulated between 1950-1970, and known as *tâtonnement* price formation, shows it is possible to build theories about dynamic processes leading to optimal unintended outcomes. But the results of this theory are unsatisfactory. As is well known, this contribution to stability theory has relied on the quite *visible* hand of the Walrasian auctioneer as an authority lurking behind the adjustment process, centralizing information and adjusting everyone else's prices.<sup>19</sup>

Moreover, the theory of general equilibrium has constructed a model in which the individual agents present very negative characteristics. As Rothschild's interesting essay puts it, "the *tâtonnement* of general competitive equilibrium is a (blind) groping in the dark". Agents cannot see the Walrasian auctioneer aggregating data and adjusting prices according to the sign of excess demands. But in addition, agents in *tâtonnement* models are also autistic because they do not have any communication with other individual agents of the system, amnesic as they cannot recall past price vectors, naive as they believe every price vector is an equilibrium price vector, and shortsighted as they are prevented from anticipating future price movements. They are also passive agents because they cannot carry out transactions outside of the equilibrium, and wait for the auctioneer's signal before they proceed to realize their exchanges. And finally, they are myopic as they cannot anticipate the future movement of prices. As a result, individuals in these models are indeed devalued, partly as a consequence of concentrating sight and memory in the incarnation of the invisible hand: the auctioneer must be able to aggregate information, calculate excess demands and adjust prices in order to reach a competitive equilibrium; in short, human capabilities denied to the agents are granted to the auctioneer alone.

The crucial point here is that in spite of all of these restrictive assumptions (which are needed to reach a Pareto-optimal equilibrium), stability theory has not yielded good results. When some of the restrictive assumptions in these general equilibrium models are relaxed, as in the Hahn-Negishi *non-tâtonnement* process allowing trade to take place in disequilibrium situations, the central figure of the auctioneer is still needed to play the critical price-adjustment function. The fictitious auctioneer is not only a restrictive assumption, but one which contradicts the object of an invisible hand theory, the possibility of price formation in decentralized market processes. In a sense, this continues to be the single most important unsolved problem in stability

theory, both in the context of *tâtonnement* and *non-tâtonnement* models. In the more advanced models, for example Fisher (1983), with trading opportunities perceived by individual agents and without an anonymous price adjustment process, additional restrictive assumptions are required. The worst part is that the outcome may not be a competitive equilibrium; this poses a deep problem. If the outcome of the invisible hand process is not desirable, we may have to engage in actions to guide the process towards a different outcome. The stakes are extremely high and yet, as of today, we still lack a satisfactory theory of invisible hand processes replicating market dynamics and yielding desirable outcomes.

We are still far from having a convincing model of the truly relevant invisible hand process: a case in which the interaction between self-aggrandizing individuals who are also aware of disequilibrium opportunities and engage in strategic behavior leads to a socially desirable outcome. Agents involved in Bayesian learning processes, aware of the fact that they may get close to influencing final outcomes and even modifying the rules of games, may be a perfect example. But the lack of an explicit, economically meaningful dynamic price adjustment process in these models still leaves them far from constituting a satisfactory theory of the market.

The invisible hand remains popular, in academic as well as political life: "[Nozick's] proposition that 'Invisible hand explanations of phenomena (...) yield greater understanding than do explanations of them as brought on by design as the object of people's intentions' has made progressive headway and now enjoys widespread support" (Williamson 1994). It is intriguing to see how this enthusiasm and widespread support can coexist with such negative results of the theory of market processes.<sup>20</sup> Stability analysis is widely recognized as unsatisfactory and the theory of  $N$ -person non-cooperative games has still to deliver definitive results, so the solid foundation for the faith in the outcomes

of processes where "groping individuals move towards more efficient institutions" is nowhere to be seen.

The bottom line is that we still lack a good theory of dynamic invisible hand processes leading to a socially desirable outcome, however the model is specified. At the heart of this problem lies the status of the individual agents involved in the process. The impartial spectator allowed Smith to define a social system (interlocking jurisdictions) and an invisible hand explanation for social harmony and the emergence of moral norms. But Smith must have remained unsatisfied with this partial result. After all, introducing the figure of the impartial spectator in each individual is almost equivalent to assuming away the problem of social harmony. Dropping the assumption of the impartial spectator and working with the extreme hypothesis of unbridled self-love was needed in the attempt to perfect the invisible hand explanation of social harmony through the performance of the market. Some experiments in contemporary theory are continuing the search for increased realism and allowing individuals to perceive favorable opportunities outside of equilibrium positions. This is analogous to endowing them with the ability to perceive part of the "connections and dependencies of things" (TMS, 235-6), but without the countervailing weight of the impartial spectator's "astonishing voice". Building a model along these lines which leads to a socially desirable outcome has not been an easy task.

## **V. CONCLUDING REMARKS**

Stephen Jay Gould (1994) has reminded us that Darwin's theory of evolution and Adam Smith's theory of the invisible hand are structurally similar. In his description of the invisible hand in economic theory, "the inefficient are weeded out and the best balance each other to form an equilibrium to everyone's benefit". Biology is already in debt to economic theory through Malthus' influence on Darwin, and economists are correspondingly beginning

to browse in biological analysis and borrow ideas to illuminate the structure of social systems.<sup>21</sup> Consider, for example, Gould's discussion of the geological evidence of the fossil record (Gould 1990). He chooses the example of the decimation of the Burgess Shale fauna to affirm that it may be "a grand scale lottery, meaning it would not happen the same way again if you replayed the tape and decimated it a second time in different ways". Thus, *the future does not control the present*; the accidental and contingent are the dominant themes behind evolution.<sup>22</sup> Whatever happens makes sense after the fact; it is not random and chaotic, but it is utterly unpredictable in advance.

And now consider the implications for economic theory. Are certain outcomes of invisible hand processes predictable? Stability theory in path dependent processes says no: as in evolutionary processes, there are numerous possible trajectories in the dynamics of state variables. If we rewind the tape and play it again, the outcome will be different every time.

If agents are modelled as active individuals they may become more realistic replicas of real-life agents, and the models may become more relevant to modern economic reality. However, so far, models incorporating these features do not necessarily lead to socially desirable outcomes. The predicament can therefore be stated as follows: to obtain more realistic and relevant models of individual agents, contemporary models lose the crucial property of having the invisible hand reliably lead to a socially desirable outcome.

In Smith's view, freedom of the individuals coexists with their submission to the forces of the system. But a conclusion regarding the status of individuals will depend critically on several things. It will depend on the relative position of each individual agent (or class of agents) within the system's non-trivial laws. It will also depend on their relative position in the final outcome (for example, whether or not it is socially desirable). In fact, it may also depend on whether the invisible hand process being considered is an economic process or not, and

on whether the individual agents are introduced with due consideration to their *agency* dimension (Sen 1987) or the degree of positive and negative liberty accorded to them.

As economic theory moves into the world of evolutionary models and self-organization environments, it is important to remember the unfinished business in the theory of the invisible hand. One crucial element here is that belonging to a system, in itself, does not necessarily transform individuals into degraded beings. Smith's description of the social system in *Moral Sentiments* clearly shows there are alternative ways of thinking about the relation between individuals and social systems which do not imply degrading the individual.

In terms of invisible hand processes that are economically meaningful, the problem has to be viewed from a different perspective.

In the end, we may never get close to the dream of a general theory of the market (i.e., countless uncoordinated individuals acting in interdependent markets to reach an outcome sought by none but blissful to all). As agents are allowed to be aware of disequilibrium opportunities, and to play with terms of trade in their quest for advantages, the outcome is influenced by their actions. Of course, awareness of disequilibrium opportunities and possibility of engaging in arbitrage operations for individual gains may be closer to economic reality. But models incorporating these features involve a hysteresis or path-dependency effect. And although path-dependent processes may shed more light on real life economic processes, contemporary models reveal that the final outcome is not necessarily a Walrasian equilibrium. Finally, self-organization models may reveal how power relations (strategic behavior and bargaining power) influence the final outcome of economic structures. But the profile of possible aggregate results seems to open the door for a seemingly unSmithian conclusion: the need for more (and better), not less, public intervention.

The resolution of the “Adam Smith problem” is that his two major works present models of society with different content – but with the same underlying structure. The invisible hand coordinates individual actions to produce an unintended, desirable social result, in the realm of morality in *Theory of Moral Sentiments*, and in the competitive marketplace in *Wealth of Nations*. While provocative and insightful, neither version of the theory quite stands on its own as a description of society: the model in *Moral Sentiments* relies on remarkably strong assumptions about the power and universality of individual conscience, while the model from *Wealth of Nations* – as more than 200 years of subsequent research has shown – cannot prove the optimality of market outcomes without adding unrealistic or arbitrarily restrictive assumptions.

The faceless statue of Ceres, goddess of agriculture, is not an adequate symbol for the Chicago Board of Trade, nor for the global market system of which it is a focal point. Agents intervening in the market are shrewd and cunning, not passive and anonymous calculators lacking a vision of the future. In this sense, the forces of market exchange should be symbolized by a statue with a face. Let's hope that, as in the *Theory of Moral Sentiments*, that figure may one day be Minerva, the goddess of wisdom.

## **ENDNOTES**

<sup>1</sup> With the term "invisible hand" we follow conventional usage, describing a process in which the actions of many individuals produce an unintended outcome. This implies that agents can be seen as connected in a system whose dynamics lead to the unintended result. Because individuals do not perceive the laws regulating the system's dynamics, it is said that the process is invisible to them. Not all invisible hand processes are economic or market processes.

<sup>2</sup> Smith's *Theory of Moral Sentiments* was first published in 1759 and was revised several times. The sixth and last revision was carried out in 1790, fourteen years after publication of his *Wealth of Nations*. The sixth edition incorporated important additions (particularly the inclusion of section VI) but no major changes in fundamental theses. In what follows all references to *Moral Sentiments* are from the Raphael-Macfie edition reprinted in 1982.

<sup>3</sup> According to Smith (TMS, I.i.4.2, 19) the "immense machine of the universe" is continually exhibiting the most diverse appearances, even in the conduct of a third person.

<sup>4</sup> The wise and virtuous man never forgets "for one moment the judgement which the impartial spectator would pass upon his sentiments and conduct. He has never dared to suffer the man within the breast to be absent one moment from his attention."(TMS, III.3.26, p. 147).

<sup>5</sup> Section VI was introduced in the last revision of *Moral Sentiments* in 1790.

<sup>6</sup> This is nothing but a development of the last passages of *Moral Sentiments* where Smith states that "[e]very system of positive law may be regarded as a more or less imperfect attempt towards a system of natural jurisprudence, or towards an enumeration of the particular rules of justice" (VII.iv.34; 340). And: "In no country do the decisions of positive law coincide exactly, in every case, with the rules which the natural sense of justice would dictate. Systems of positive law (...) can never be regarded as accurate systems of the rules of natural justice." (TMS, VII.iv.37, 341). Work along these lines was promised by Smith at the end of *Moral Sentiments* but could not be accomplished. Smith's position here has an echo in modern general equilibrium theory, where the outcome of market forces cannot be improved by anyone.

<sup>7</sup> See for example this description of Stoic philosophy (TMS, VII.ii.1.38, 289): "Whoever does not cordially embrace whatever befalls him, whoever is sorry that it has befallen him, whoever wishes that it had not befallen him, wishes, so far as in him lies, to stop the motion of the universe, to break that great chain of succession, by the progress of which that system can alone be continued and preserved, and, for some little conveniency of his own, to disorder and discompose the whole machine of the world."

<sup>8</sup> The passage is followed by a reference to a hypothetical devastating earthquake of the system which pervades Smith's work.

<sup>9</sup> Harsanyi (1988) traces this unavoidability to formal reasons surrounding the definition of individual social-welfare functions, a procedure which faces the intractable problem of accessing a common utility unit. Of course, Smith's individuals are far from Harsanyi's agents who try to base their social-welfare functions on conversion ratios between the various agents' utility units. The sentiment of approbation and propriety in Smith is not determined in this fashion because welfare is not identified with utility. Smith's impartial spectator is also presented by Wilson (1976) as a special case of interdependent utility functions.

<sup>10</sup> Compare with the well-known passage in chapter II of *Wealth of Nations* (p. 14): "We address ourselves, not to their humanity, but to their self-love, and never talk to them of our own necessities but of their advantages". Hirschman (1977) has shown how the conception of human beings as a unit where interests curb passions was not uncommon before Smith's time and there is a clear echo of this idea in many of the passages describing the "impartial spectator".

<sup>11</sup> This is ironical because, as Raphael and Macfie point out, the frequency of passages referring to Smith's conception of the universe as a system "leads one to think that commentators have laid too much stress on the 'invisible hand'" (Id.;7).

<sup>12</sup> This point requires clarification. In a first approximation it could be said that the social system in *Wealth of Nations* is structured as a set of branches (or "employments" in Smith's terminology) of

economic activity. Although the branch is Smith's unit of analysis in many important sections of *Wealth of Nations*, the notion of interdependent branches as the foundation of the economic system had to wait until Ricardo's *Essay on Profits* and later his *Principles*. This view introduced new difficulties in the theory of the invisible hand process as we comment below (see note 15).

<sup>13</sup> The importance of this question was well understood by none other than Walras (1969) himself in his debate with the followers of Proudhon. If the outcome of the invisible hand process is not desirable, we might even have to think about stopping it or counteracting its thrust.

<sup>14</sup> Smith criticizes policies aimed at this in other parts of *Moral Sentiments* as hindrances to the free operation of the natural system. The passage quoted here belongs to Part IV which is largely devoted to describe and criticize Hume's theory of propriety and utility.

<sup>15</sup> And like Demetrius' citizen he would say: "I have only one complaint to make to you, immortal gods, that you did not make your will known to me before; for I should then have come the sooner to the state in which I now am after summons". Reported by Seneca and quoted in (TMS, IV.2.1.20, 276).

<sup>16</sup> The "desirability" of the outcome in general equilibrium theory is defined in terms of a Pareto optimality criterion. Sen (1987) addresses a lucid criticism to general equilibrium theory on this point.

<sup>17</sup> Of course, the interest of this question may be restricted to classical and Marxian political economy because, in contrast with neoclassical (general equilibrium) theory, distribution is not determined simultaneously with prices. The state of price theory, in the context of the classical theory of gravitation of market prices, or in a Marxist context, is far from providing a satisfactory explanation of an invisible hand process.

<sup>18</sup> Smith did not think that this was the best way to live in society, but the assumption is crucial for market theory. Smith's belligerent debate with Hobbesian thought helps explain this: even in the context of a society full of selfish and egotistical individuals, the social device called the market arranges things in such a manner that individuals do not cut each other's throats. The market will make individual plans compatible with each other, achieving social harmony. So there is no need for Leviathan; and in fact, we can say that Smith identifies economic relations as the one dimension of social life where passions do not have to be curbed by the power of the State or any other central authority in order to attain social harmony. On the contrary, in economic relations self-love can remain unbridled because it will lead to social harmony by the grace of the market.

<sup>19</sup> Additional restrictive assumptions are required to ensure stability in this model. Either of the following is sufficient: all goods are gross substitutes, or the weak axiom of revealed preferences at the market level must be introduced. The first is, of course, extremely restrictive, and the second does not have any economic sense.

<sup>20</sup> Nozick (1994) himself seems unaware of these difficulties in stability theory and continues to believe that "equilibria within markets" are the product of invisible-hand processes.

<sup>21</sup> An early inspiration here is Nelson and Winter (1982), in their borrowing of conceptual tools from biology to build their evolutionary model of economic change.

<sup>22</sup> This is Darwin's argument, and evidence suggests he got it from Smith (Gould (1990:22): the publication of Darwin's notebooks show that his reading of Dugald Stuart's work on the life of Adam Smith provided a key input into the theory of natural selection. Our analysis shows that Smith had a different view of the typical invisible hand process, namely, one in which the final outcome is indeed preordained, although the individuals involved do not perceive this. However, if there is one lesson to be observed from contemporary developments in market theory, it is that as soon as multiple equilibria, disequilibrium opportunities and arbitraging are introduced, it is not possible to think that the present is preordained by some future state of events.