

Name: Manolis Manioudis

Affiliation: University of Crete

Address: Korthiou 5, Patisia, Athens

Title: Adam Smith and the Scottish Enlightenment: Method, Theory and History

Abstract

The Scottish Historical School had produced a diversity of intellectual figures which had determined the progress of social sciences. Adam Smith is the most eminent reflection of its determination. His multifaceted work, in spite of being the locus classicus of classical political economy, has promoted a chemical symphysis between theory and history. Evidently, the epistemic framework of the Scottish Enlightenment determined the dimensions of the Smithian work. His philosophy of science, together with the empirical element of his methodology, rendered history as the *raison d'etre* of his work. More specifically, the acceptance and the extension of Newton's analytic-synthetic method, opened the door to history to become a congenial ingredient of his economic analysis. Substantially, Smith's work produced a special conjunction between method, epistemology, theory and history which determines the history of economic thought.

Keywords: Adam Smith, Newton, Scottish Enlightenment

1. The Scottish Historical School

The Scottish historical school had been a product of the period of the Scottish Enlightenment, a period which has been associated with a general transformation in the disciplines of social sciences. As Skinner (1967: 32) points out, “Of all periods of Scottish history, the eighteenth century is surely one of the most striking”. Evidently, the eighteenth century is associated with the emergence of profound economic and political changes, and with a general explosion of intellectual ideas. One of its intellectual products, the Scottish Historical School, despite its very recent recognition as such, is the most astonishing crystallization of this outburst (Holloway 1963: 157). The Scottish Historical School is the creation of specific historical fermentations and in certain important ways had shaped the content of the classical school of political economy (Skinner 1990: 158). *Exempli gratia*, the necessity for economic growth, the demand for coordination within an economy with specialised production, the questions concerning income distribution and the role of government, were the key questions occupying economic discourse in eighteenth century Britain. Such pressing economic conditions set the scene for the inflorescence of an intense intellectual climate, with the parallel attempt to systematise these transitive conditions. In the forefront David Hume’s (1932: 225) rejuvenation is indicative of such an intense literary process: “Really it is admirable, how many men of genius this country produces at present!”¹ According to Dow *et al* (1997: 391) this intellectual environment associated with the Scottish Enlightenment, constituted both a direct reaction against clerical dogmatism and a straight disposition to acquire knowledge by

¹ The representatives of the Scottish Historical School had been intellectuals of high encyclopedic calibre and had constituted the first scientific community of social scientists. As Sir Walter Scott notes they comprised “a circle never closed against strangers of sense and information, and which has perhaps at no period been equaled, considering the depth and variety of talent which it embraced and concentrated” (cited in Skinner 1967: 32). Macfie (1955: 87) observes that “In spirit, aim, and conduct they were citizens of the world, and they behaved as such”.

reason. The Scottish Historical School had more or less a direct influence upon a variety of scientific disciplines, including political economy, philosophy, ethics, law etc, while it's more crucial impact is crystallised on the science of history.

2. The Role of History in the Scottish Enlightenment

Naturally, there emerged among the Scottish scholars a need to understand and interpret the nature of the social and economic processes prevalent at that time. One of the main features of this quest, that of multi-disciplinarity, was a product of the need to understand the historical evolution of these phenomena (Montes 2003: 732). Hence, history's importance in this revolution of ideas. This is why Skinner (1975: 256) calls the period of the mid-eighteenth century as the 'Age of History'. It is remarkable that no other age had a similar intensive historical literature and criticism as the eighteenth century when, in Thompson's words (1942: 94), "everyone read and talked history".

The 'Age of History' (or the 'Age of Reason' in more modern terms) had followed the 'Age of Erudition' of the seventeenth century, which changed the general intellectual climate of the Middle Ages and set the scene for the emergence of a critical vein in historical writing. In the seventeenth century many discrete (but interrelated) events prepared the ground for a decisive drift in historical scholarship. Firstly, this century provided a large amount of historical material since the dissolution of the monasteries in England- under King Henry VIII- which was accompanied with the pillage of monastic libraries, "had thrown upon the market vast quantities of manuscripts and other documents which often could be bought for a song" (Lambert and Schofield 2004: 3). Secondly, disciplines auxiliary to history had emerged. The seventeenth century gave systematic and scientific form to chronology,

paleography, bibliography, archeology and numismatics (p. 7-9).² Thirdly, a factor that contributed to the stronger diffusion of scientific knowledge was the publishing opportunities that were varied. However, the most important factor which contributed to scientific advancement was that sciences in general -and historical scholarship in particular- having been freed from the close embrace of politics, attained the necessary space to develop independently. Naturally therefore, this transitive period introduced a new era in historical scholarship, which was of cooperative nature, while at the same time inducted a general critical spirit to it. The most representative figure of this trend was Jean Mabillon who introduced positive criticism and proved “the honesty of sources as well as the falsity of some” (Thompson 1942: 19).³ Mabillon had developed rules and innovative criteria of judging sources by comparing a great number of documents of the same time, place, and country. It is indicative that Lord Acton (1907: 460), in his celebrated *Historical Essays and Studies* observes that Mabillon

belongs to the family of pioneers, and [...] is one of the best known names in the line of discoverers from Valla [...] to Morgan [...] and although disciplined and repressed by the strict reform of Saint Maur, he rose above all his brethren to be, as an historian, eminently solid and trustworthy, as a critic the first in the world

² The discipline of numismatics is related to the study (or act) of collecting coins, paper money, and medals. The first germs of this discipline are chronicled at England in 1829. The discipline had borrowed its name from French *numismatiques*, itself a derivation from Late Latin *numismatis*, genitive of *numisma*, a variant of *nomisma* (νόμισμα) which means coin. For more information, see: Glyn Davies (1996), *Chronology of Money 1900-1919*, University of Wales Press, Cardiff

³ Dom Jean Mabillon (1632-1707) was a French Benedictine monk and scholar, considered the founder of both paleography and diplomatics. His *locus classicus* was *De re Diplomatica*, a pioneer work in historical criticism was dedicated to Colbert, the liberal politician of French Democracy (Sellin 1927: 581).

It must be noticed that despite its French origins, the spiritual fermentations of the ‘Age of Erudition’ had been diffused in Europe and mainly in its northern part, that of Belgium, Netherlands and Protestant England.⁴ The Glorious Revolution of 1688, by being “something besides a political change of vast significance and importance” changed the intellectual atmosphere of Britain as well (Thompson 1942: 42). In England, the most representative figure of the ‘Age of Erudition’ is Thomas Madox who’s *History and Antiquities of the Exchequer* (1711) comprised the historical *locus classicus* of this age and became a classic for the study of English medieval history.⁵ Madox’s famous *Prefatory Epistle*, beyond being a comprehensive survey of sources, is an introductory dissertation on the nature and methods of historical criticism.

The eighteenth century witnessed the professionalisation of this deep interest in the historical past. It is indicative that in 1724 King George I founded for every university a professorship of modern history and modern languages (Lambert and Schofield 2004: 8). Thompson (1942: 94) notices that during the eighteenth century, history was thought as “an arsenal of facts with which to bombard the *ancien regime* and bring about the desired reforms”. It was unavoidable that social sciences like social theory and political economy which had emerged during this era were deeply influenced by the prevailed attitude towards history. History afforded invaluable information with regards to the principles of human nature which was the subject-matter of Moral Philosophy, the mother discipline of both social theory and political economy.

⁴ The milestone of such diffusion in Great Britain was the publication of *The Annales of the Kingdom of Ireland by four Masters* (1612). The annals are mainly compilation of earlier archives but there is some original work in it. The chief compiler of this monumental work was Mícheál Ó Cléirigh (c. 1590 – 1643) and was assisted by Cú Choigríche Ó Cléirigh, Fearfeasa Ó Maol Chonaire and Peregrine Ó Duibhgeannain (Cunningham 2010).

⁵ Thomas Madox (1666-1727) was a legal antiquary and historian, known for his publication and discussion of medieval records. His major work was the *History and Antiquities of the Exchequer of the Kings of England* (1711) (Harrison 2008: 147).

Especially in Scotland this attitude was ultimately receptive. The Scottish university system was highly productive in the eighteenth century and prepared students who attained eminence in sciences (Morrell 1971: 159).⁶ History had been an inherent element in the Scottish general university education, being an issue of central importance in the scientific discussion. As Dow (1987: 341) observes “it was customary for the professors of physics and mathematics for example, to teach the elements of their subjects, as being the most important part, and to do so by laying out the historical development of ideas”. In the same spirit, Hopfl (1978: 32) notes that in any academic dissertation in Scotland we anticipate a purely academic and disinterested love for reconstructing and making sense of the past experience. There was therefore, as Taylor (1956: 162) rightly observes, an intellectual impulse in Scottish academic life, which kindled a zealous spirit of enthusiasm for the inquiry into historical past in the Scottish universities.

However, despite some radical shifts in historiography, the late eighteenth century has been identified with narration and description as the writings of the Scottish Historical School testify. Smith, the leader of Scottish Historicism, seems to have considered narration of primary importance. He noticed in particular that

The facts which are most commonly narrated and will be most adapted to the state of generality of men will be those that are interesting and important. Now these must be the actions of men. The most interesting and important of these

⁶ The Scottish university system enjoyed a high reputation. Smith, in a letter to William Cullen, notices that the Scottish universities were among the best at the time of writing. In Smith’s own words: “In the present state the Scotch Universities, I do most sincerely look upon them as, in spite of all their faults, without exception the best seminaries of learning that are to be found anywhere in Europe” (Correspondence, Letter 143: 173-174). Especially, the University of Edinburgh, as the informative study of Morrell (1971: 58) shows us, “achieved a notable preeminence in science which gained for it the reputation of being the best university for science in Europe and in the English speaking world”. It is noticeable that according to Thomas Jefferson the University of Edinburgh possessed “a set of truly great men, Professors of the several branches of knowledge, as have ever appeared in any Age or Country” (p. 159).

are such as have contributed to great revolutions and changes in State and Governments (LRBL, lect. xvii: 90)

Moreover, Lord Kames (cited in Skinner 1967: 37) observes that “Singular events, which by the prevalence of chance or fortune excite wonder, are much relished by the vulgar. But readers of solid judgment find more entertainment in studying the constitution of a state, its government, its laws, the manners of its people”. Therefore, the Scottish Historical School was not an anti-narrative one, since a synthesis of narration and historical criticism constituted the *raison d'être* of school's radical views upon history. *On the altera pars*, its history was totally different to the mainstream historiographical paradigm which had one-sidedly focused on narration and description.

Generally, history's importance is elevated in the writings of the Scottish historical school as a distinctive theory of history (that of stages theory) established a linkage between economic and social organisation (Skinner 1965: 1-2). The historical factor was firmly embedded in the Scottish tradition of economic thought and comprised an epistemological element of central importance in the writings of its representatives (Campbell 1976: 183). The ‘art of history’ unified together many different figures and represented a newly established interest in the ‘natural history’ of civil society (Skinner 1967: 33).⁷ For the eighteenth century's thinkers, history was the great teacher of human experience. It is indicative that for Hume ([1777] 1985: 566) “history is not only a valuable part of knowledge, but opens the doors to many other parts, [...] affords materials to most of the sciences”, and “extends our

⁷ The Scottish historical school was ultra-pluralistic in its nature. For instance Lord Kames and John Millar were the most influential legal minds of their time, David Hume was a profound philosopher and historian, William Robertson was an exceptional historian, Francis Hutcheson was the father of modernity in history, Adam Ferguson was a great sociologist, Dugald Stewart was an eminent economist, and Adam Smith a profound moral philosopher and political economist.

experience to all past ages, and to the most distant nations”. *Ad addendum*, in his *Introduction to A Treatise of Human Nature* (1736) Hume asserts that “As the science of man is the only solid foundation for the other sciences, so the only foundation we can give to this science itself must be laid on experience and observation” (Hume [1736] 2007: 5). Hence, the main ontological premise of this school had been its belief that in studying any element of social phenomena (legal, political, social or economic) it is necessary to go through two distinct stages of thought: the consideration of antecedents and the study of present conditions. Smith and his contemporaries had accepted Aristotle’s famous dictum that we can only understand what presently exists by considering ‘the origins from which it springs’.⁸ Such a profound emphasis on the past experience is a decisive feature in their economic texts. Hume in particular, in his *Economic Writings*, attempts to incorporate the economic element into a broader science of human experience, at the centre of which stands history. At the same time, Smith develops a specific theory of history in order to understand the function of economic phenomena in his *Wealth of Nations*.

Conclusively, the history of the Scottish Enlightenment is *in toto* different to the orthodox or ‘vulgar’ history of the eighteenth century which was basically concerned with particulars rather than universals (Skinner 1967: 46). More specifically, the representatives of the Scottish Historical School had accepted the necessity of narration but had rejected the orthodox view that the study of history necessitates a great “concentration of facts and singular events” (Skinner 1965: 3). Naturally therefore they had promoted a theoretically informed history consisting of analytic generalisations and abstractions.

⁸ Aristotle notes in his *Politics* (Book I, 1252a) that “If you consider the state-or anything else for that matter- in relation to the origins from which it springs, you will arrive at the clearest understanding of its nature”.

3. The Newtonian legacy and ‘Scottish’ Newtonianism

Essentially therefore, such a view of history is influenced by general fermentations prevalent in natural sciences. At the same time, the seventeenth century bequeathed upon both natural and moral sciences Newton’s revolutionary methodology and epistemology. Newton’s work, being the foundation stone of the ‘Age of Reason’ was highly respected by Scottish intellectuals and shaped the general academic climate of the age (Montes 2003: 724; 2008: 569).⁹ The chief element of this influence is Newton’s analytic-synthetic method. Newton’s own methodological stance is summarised in his most explicit reference upon method, that of ‘Query 31’ in his *Opticks*. This lemma is worth of citing *in verbatim*:

The Investigation of difficult Things by the Method of Analysis, ought ever to precede the Method of Composition. This Analysis consists in making *Experiments and Observations*, and in drawing *general Conclusions* from them by Induction, and admitting of no Objections against the Conclusions, but such as are taken from Experiments, or other *certain Truths*. For Hypotheses are not to be regarded in experimental Philosophy. And although the arguing from Experiments and Observations by Induction be no Demonstration of general Conclusions; yet it is the best way of arguing which the Nature of Things admits of, and may be looked upon as so much the

⁹ Montes (2008: 564) informs us that “There is evidence that Scottish universities were not only prominently Newtonian, but also instrumental in establishing Newtonianism in Britain”. Furthermore it is indicative that James Gregory and his nephew David Gregory, both Newtonians in spirit “were instrumental in forming generations of eximious mathematicians that helped to spread Newton’s early reception” (p. 564). Colin Maclaurin was, according to Wood (2003: 102), “the most capable and energetic exponent of Newtonianism working in Scotland, if not in Britain, during the first half of the eighteenth century. He helps not only to consolidate the Newtonian hold of Scottish academe, but also to create public science in the Scottish Enlightenment”. Adam Smith had been highly benefited from Maclaurin’s sophisticated interpretation of Newton (Montes 2003: 723). His late-biographer notes that “Maclaurin was the outstanding exponent of Newtonian science in his time, and his sequence of course must have been approximated at Glasgow [...] It must be emphasized, of course, that Maclaurin went far beyond his Glasgow colleagues in his comprehension of Newton” (Ross 1995: 56).

stronger, by how much the Induction is more general. And if no Exception occur from Phaenomena, the Conclusion may be pronounced generally. But if at any time afterwards any Exception shall occur from Experiments, it may then begin to be pronounced with such Exceptions as occur. By this way of Analysis we may proceed from Compounds to Ingredients, and from Motions to the Forces producing them; and in general, from Effects to their Causes, and from particular Causes to more general ones, till the Argument end in the most general. This is the Method of Analysis: And the Synthesis consists in assuming the causes discover'd and establish'd as Principles and by them explaining the Phaenomena proceeding from them, and proving the Explanations (Newton [1704] 1730: 404-405).

Newton's analytic-synthetic method had a more profound impact in Britain -and mainly in its Scottish part- than that of Descartes, who had dismissed the side of analysis.¹⁰ Descartes, by superseding the indispensable role of analysis and by believing that all values (natural, moral, and historical) are quantitative, of fixed estimation and of invariable operation, promoted a highly abstract and generalised view of historical processes.

However, history is a deeply genetic process of change and transformation and is never a succession of fixed (or predefined) patterns. Therefore Newton's analytic-synthetic method, being of a higher interpretative depth, was more apposite. Its ontological content is crystallised in Hume's words who reminds us that social scientists proceed from particular instances to general principles and they "still push on their enquires to principles more general, and rest no satisfied till they arrive at

¹⁰ Redman (1993: 221) believes that "Scottish universities accepted very early Newton's achievements as superior to the rival Cartesian philosophy". Essentially, Newtonian physics was taught at Scottish universities during Smith's lifetime and its influence upon him seems to be self-evident.

those original principles, by which, in every science, all human curiosity must be bounded” (Fiori 2012: 415). *In vivo*, Newton’s method attained its apogee in Adam Smith. Smith had been adequately educated in Newtonian science (Cohen 1994: 66). It was Newton’s methodological influence through his analytic-synthetic method and his acknowledgment that scientific progress is an open-ended process which had contributed to the development of Scottish moral philosophy (Montes 2008: 566).¹¹ Wightman (1975: 60) suggests that Newton’s theoretical system had been already quite influential in Great Britain “half a century before Adam Smith could have made his judgment and, *a fortiori*, before he showed himself to have a pretty good idea of its nature”. Therefore, there is recorded a mutual interaction which had been *in fine* extremely fruitful. Not only were Scottish scholars early advocates of Newtonianism but more importantly, the Scottish Enlightenment, through the Scottish Historical School, provided a special intellectual framework for assimilating and applying diversified approaches to Newton’s revolutionary ideas. For instance David Hume, one of its major exponents, comments that Newton was by far the greatest and rarest genius that ever arose in human philosophy (Ross 1995: 101). In Hume’s own *verba*:

While Newton seemed to draw off the veil from some of the mysteries of nature, he showed at the same time the imperfections of the mechanical philosophy, and thereby restored her ultimate secrets to that obscurity, in which they ever did and ever will remain (History of England, Chapter LXXI: 480)

¹¹ Wood (2003: 107) recognises that “the Newtonian corpus shaped the pursuit of the human sciences in the Scottish Enlightenment to a far greater extent than is often recognised”, and according to Fiori (2012: 414) Newtonianism was largely influenced by the intellectual debates of the Scottish Enlightenment.

Essentially therefore, Montes (2003; 2008) is right in his belief that the adoption (and adaption) of Newton's ideas was *in toto* different in Scotland in comparison to other countries of Europe and especially in its francophone part. Newtonianism, as part of an intellectual revolution, cannot be separated from other fundamental and momentous debates like the critique of contractual theories, especially the Hobbesian one and Montesquieu's historical teachings (Fiori 2012: 414).¹² Montesquieu's work, in particular, was highly influential in Scotland. In spite of being Cartesian in its ontology it does not downgrade the importance of analysis. Montesquieu himself, in his *Esprit of Laws*, notes that the human world is far from being so well governed as the physical one and that it does not conform to exact laws as the physical world does (Fiori 2012: 417). Such view is clearly related to the wider 'problem of historical change', as Skinner & Wilson (1975: 7) call it.¹³ Montesquieu's frequent references to historical events and facts show his profound interest in the historical past. His institutionalist and comparative method was highly influential during the Scottish Enlightenment and had shaped the general framework of its epistemic enunciations.¹⁴ Therefore, the interaction of Newton's method with other contemporary strands of philosophical thought produced a 'Scottish' interpretation of Newtonianism which was more 'empirical' in its nature and more historical in its methodology.

4. Adam Smith: a typical representative of Scottish Historicism

¹² Hobbes in his *Leviathan* observes that it was *bad reasoning* that have plunged the European *body politick* into chaos during the seventeenth century and notes that the only effective cure for this disorder was the effectual enactme nt of a social contract, similar and rigorous to Euclid's geometry (Hampton 1986: 2-3).

¹³ According to Smith's late-biographer, "The primary insight of the French author to which Smith and his friends responded was that of the dynamism of law responding to human needs *in varying and historically changing social and economic environments*" (Ross 1995: 121, added italics).

¹⁴ Montesquieu's study of laws and institutions illustrates his ontological belief that laws and institutions "must be judged not by abstract principles but by their suitability to the circumstances of the time" (Gooch 1913: 9-10).

Adam Smith should be considered as a product of these parallel fermentations and as a typical child of his own times. He is a true Scot of the eighteenth century as Macfie (1955: 86) calls him. It is indicative that Heilbroner (1973: 261) insists that Smith “albeit a major shaping intellectual force” was inevitably “a product of his time, sharing with it the limitations that seem to our age so patent and so crippling”. This is why Clarke (1926: 349) warns us to view Smith in the context of the medieval conditions prevalent in the eighteenth century’s Nationalism and Mercantilism, and in relation to railroads, holding companies and giant power. Indeed, Smith, as a member of a multiyared intellectual group, had been a mighty intellectual figure.¹⁵ It is not surprising then that Smith wrote about metaphysics, natural history, ethics, political economy, astronomy, rhetoric, jurisprudence and biology and had a perfect command of Greek and Latin languages (Montes 2003: 732; Skinner 1975: 172).¹⁶ His caliber had impelled Schumpeter (cited in Wightman 1975: 45) to write that “it is hardly credible that *The Wealth of Nations* and the *Essays of Astronomy*, so utterly diverse in subject matter could be the products of the same mind”. *Ad addendum*, for Skinner and Wilson (1975: 1):

Smith’s knowledge is particularly striking in a period where the division of labour has enhanced the difficulty of mastering a wide range of subjects. We know, for example, that Smith had an extensive knowledge of contemporary work in the natural sciences and the arts

¹⁵ Clarke (1926: 359) notes that Smith’s “personal bent led him to amass a great array of facts, so that he has been called the best informed man since Aristotle”.

¹⁶ His interest on biology is striking. Skinner (1975: 172) observes that “It may be recalled that Smith purchased the *Encyclopedie* for Glasgow University Library and that he personally owned the works of D’ Alembert, Diderot, Buffon, and Maupertius”, and “The type of work done in biology by such writers was particularly important, linked as it has been to the entrance of ‘historicism’ into the European outlook in the late 1740s and 1750s”.

Smith, as a child of the Scottish Enlightenment, thought of history as a crucial ingredient of his *magna* effort to construct a general system of social science. He produces a theory of history which had been the epistemic motif of his reasoning. His theory of history has an array of influences. *Ab initio*, it is influenced by a specific philosophy of science, as is defined in his *Essays on Astronomy*, secondly it is inspired by the analytic-synthetic method, which although Newtonian in spirit, was at variance to Newton's method and, lastly it is animated by a specific theory of historiography which is elaborated in his *History of Historians* and is presented in his *Lectures Rhetoric and Belles Lettres*. These influences constitute the epistemic backbone of his theory of history.

5. Smith's philosophy of science

Although Smith had not developed an unambiguously defined philosophy of science, he had unfolded its spirit in his great *Essays on Astronomy* (1795) in which he elaborates his views concerning the process of scientific progress.¹⁷ It must be noted that Smith reached his main methodological and epistemic principles early on in his career without fundamentally modifying them afterwards (Viner 1968: 323).

According to Smith, the cause of any scientific progress is the sense of surprise which the scientist feels when an observed object does not fall into his recognised theoretical pattern (HA, Section II, § 9: 42). For Smith, the feel of surprise is always followed by that of wonder. *Wonder* is defined as "the stop which is thereby given to the career of imagination, the difficulty which it finds in passing along such disjointed objects, and the feeling of something like a gap or interval betwixt them" (HA, Section II, § 9: 42-43). Therefore, wonder involves a disutility or a sense of

¹⁷ From Schliesser (2005: 698) we are informed that Smith had valued the *Essays on Astronomy* throughout his life, whereas O' Brien (1976: 135) regards the latter as a deeply impressive essay.

discomfort, since it raises doubt as to the analytical adequacy of the recognised theoretical pattern (Skinner 1972: 309; Lindgren 1969: 899). The inadequacy of the theoretical pattern to locate the event in its premises is followed by a revision of the accepted outlook and “To the extent that this effort is successful, confidence that our outlook will enable us to face the future with calm and tranquility is reestablished and wonder is diminished, if not eliminated” (p. 900). Therefore, theory (or science) is modified as a response to the emergence of wonder; and if wonder is persisting, the transformation of the recognised pattern is established and imagination attains its final end.

Smith’s ‘history of science’ is that of ‘revolutions of philosophy’ as it shows the dynamics of scientific problem-solving in which hypotheses or theories evolve in a fairly regular sequence. Moreover, it crystallises that when the recognised pattern is subject to a process of modification, irregularities conflict with the accounts and predictions of the paradigm and are increasingly identified (Kim 2012: 805). Therefore, the emergence, development, and decay of theoretical systems have, according to Smith, an open-ended, typified sequence since “a system is constructed with the aid of the imagination to provide coherence to the appearances. As time passes, irregularities are discovered, and successive, gradual modifications are introduced into the system or new phenomena are discovered that lead to conflicting accounts or dissatisfaction. This makes it likely that the system will be replaced by a new system, and so the process starts anew” (Schliesser 2005: 704).¹⁸ Essentially therefore, wonder is the first principle which prompts man to science. For Smith,

¹⁸ Smith is one of the first authors to see regular and successive revolutions in the history of astronomy and, perhaps, sciences and other forms of inquiry more broadly (Schliesser 2005: 704).

science's originations are rooted in the psychological desire to escape the sense of disutility which is associated with the sentiment of wonder.¹⁹

To sum up, there are three discrete sentiments that determine every epistemological process: surprise, wonder, and admiration. For Smith, *Surprise* is the violent and sharp change that is produced upon the mind, when an emotion of any kind is brought suddenly upon it (HA, Section I, § 5: 35); *Wonder* is the uncertainty and anxious curiosity excited by its singular appearance, and by its dissimilitude with all objects he had hitherto observed (HA, Section II, § 4: 40)²⁰; while *admiration* is attained through the discovery of these real chains which Nature makes use to bind together her differential operations (HA, Section IV, § 76: 105). According to Montes (2003: 734) "Curiosity, intellectual dissatisfaction, and the scientific success that will soothe the mind, represent these three states of the mind". Therefore, these states constitute, according to Smith, the ontological *raison d' être* of any of his epistemological attempts. The *modus vivendi* behind an analytical attempt is the psychological need to soothe the imagination by eliminating surprise and wonder, caused by incoherent and disjointed events (Megill 1975: 85). Wonder, therefore, and not any expectation of advantage from its discoveries, is the first principle which prompts mankind to the study of philosophy and the original sense of pleasure that is derived from it prompts men make scientific to inquiries (HA, Section III, § 3: 51). *Ipsa facto*, the basic purpose of any scientific explanation is to escape the disutility of wonder which vanishes altogether upon the clear discovery of a connecting chain of events, or of a theory in modern terms (Skinner 1972: 309).

¹⁹ Wightman (1975: 56) believes that the notion of wonder is the most important epistemic contribution of Smith's philosophy of science.

²⁰ Smith evinces the role of wonder in scientific inquiries by comparing scientists with musicians who "have trained their minds to see as altogether separated any events which fall short of the most perfect connection" (Megill 1975: 82).

Accordingly, Smith identifies scientific progress with a certain mental attitude since the mind is attempting to place the appearance of nature into categories with which it is already familiar, and to lessen discomfort from the unexpected and it tries to reduce the possibility of this discomfort by maintaining familiar categories into which it can readily place most of the appearances coming before it (Myers 1975: 282). Smith (HA, Section II, § 8: 42) points out that the human mind:

endeavours to find out something which may fill up the gap, which like a bridge may so far at least unite those seemingly disjoined objects, as to render the passage of the thought between them smooth, and natural, and easy

Therefore, the mind searches for a thread to bridge the gap and unite the disparate appearances before it. The purpose of such unification is to facilitate the movement of thought across this gap. Substantially therefore, *wonder* is something that moves the mind in the direction to explain an anomaly (a disjoined object or event) which is not exemplified by the previous theoretical system.²¹ Indeed, Smith believes that the explanation that is offered by theory can only satisfy the mind if it is coherent, capable of transforming several observed appearances into a systematical reasoning, and stated in terms of ‘familiar’ or plausible principles (Skinner 1998: 13). Therefore, as Endres (1991: 84) observes, “Smith’s methodology emphasises a human need to overcome discomfort rendered by discordant observed appearances, with *coherent explanation*” while “the latter is designed to satisfy a psychological need to remove

²¹ Smith in his *Theory of Moral Sentiments* and *Wealth of Nations* avoided the use of the word ‘system’ and replaced it with that of theory which seems to have been nothing more than a ‘good’ system. As Megill (1975: 85) rightly observes, “Significantly, in both *The Theory of Sentiments* and the *Wealth of Nations* Smith uses the word *system* when referring to the inadequate moral and economic theories of his predecessors”. For instance, in the Book IV of his *locus classicus* he proceeded in the examination of “two such systems, ‘the mercantile system’, better known as mercantilism, and the ‘agricultural systems’, of which the most recent example was Physiocracy” (p. 91).

disutility and is successful only if it is founded on plausible and ‘familiar’ connecting principles” (p. 84).

More specifically Smith believes that a well defined theory²² has to be comprehensive and coherent²³, familiar and simple,²⁴ but also aesthetically beautiful and proper²⁵, in order to appeal to the imagination by demonstrating the connecting principles of nature. In this way, although Smith did not speak about (or search for) the absolute truth, he gave criteria –or a set of *desiderata* (i.e. simplicity, distinctness, comprehensibility, lack of reasonable competitors) - by which the doctrine can be considered as an ‘established’ system (Schliesser 2005: 708).

Smith holds the belief that a theoretical system of such qualities has to function as a machine, having a certain and well-defined end.²⁶ His declaration is indicative:

²² Skinner (1972 ff. 5: 312) notes that “There is an interesting parallel between Thomas Kuhn’s analysis of the *Structure of Scientific Revolutions* (1962) and Smith’s analysis”, and a resemblance between Smith’s and Kuhn’s views of scientific change (Skinner 1974: 180). He (1998: 14) also notes that for Smith “the normal pattern of events would follow a certain sequence: first, the development of a system, second its gradual modification as new observation had to be taken account of, and third, the rejection of the system when the degree of theoretical complexity eventually rendered it unacceptable to the human mind. The anticipation of Kuhn is, if not obvious, provocative”.

²³ Coherence is related to the extent to which the background knowledge of the theoretical system is plausible (Kim 2012: 807). For Smith, coherence is the most important standard of theory’s evaluation since the judgment of hypotheses is related to such background knowledge.

²⁴ Smith believes that simplicity is an important feature of a well-defined theory. For instance, in his *Essays on Astronomy* he claims that the system of concentric spheres (HA, Section IV, § 7: 57-58) and that of Ptolemy (HA, Section IV, § 25: 69-70) were overpassed due to their lack of simplicity. In similar vein, as Lindgren (1969 ff. 9: 902) rightly observes, “It was only when Newton suggested that gravity (which was clearly familiar) produces the motions which describe the courses of the heavenly bodies at the velocities and distances suggested by Kepler, that a satisfactory alternative to ancient superstition was at last developed”.

²⁵ Lindgren (1969: 905) concludes that “an adequate outlook must not only meet the standards of comprehensiveness, coherence, and familiarity, but also that of beauty”. Smith, in many different places in his work spoke of the ‘love of analogy’ (Smith 1980: 231). In his polemic against both Ptolemaic and Copernican systems he notes that, based on both explanatory and predictive powers, both systems have been equally favoured with regards to the capacity of complying with the same observations. However with respect to aesthetics the latter provided more coherence and simplicity (HA, Section IV, § 32: 74-75).

²⁶ Smith’s most interesting epistemological project was to systematise ‘the natural order of things’ in economic and moral processes. This project is illustrated by his attempt to discern the *end* of each procedure. As he put it, “In every part of the universe we observe means adjusted with the nicest artifice to the ends which they are intended to produce; and, in the mechanism of a plant, or animal

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, Section IV, § 19: 66)²⁷

Essentially, the end of a well-defined theoretical system is to discover those great connecting principles that bind together all these discordant phenomena and to typify schemas that exemplify these events. Smith uses Newton's system which, by introducing one great 'connecting principle' (that of gravity) was much simpler than that of Kepler, Descartes, and Galileo.²⁸ He notes that "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" (TMS, Book VII, Section III, c. I, § 2: 316). On the *altera pars*, new and singular events excite wonder in people's imagination and produce discomfort and tumult in the imagination (TMS Part II, Section, III, § 39: 154).

Hence, a theory is based ontologically on some vigorous and indisputable principles and gives us pleasure inasmuch as there is a propensity, natural to all men, "to account for all appearances from as few principles as possible" (TMS, Part VII,

body, admire how everything is contrived for advancing the two great purposes of nature, the support of the individual, and the propagation of the species. But in these, and in all such objects, we still distinguish the efficient from the final causes of their several motions and organisations" (TMS, Book II, Section ii c. iii: 147).

²⁷ Smith defines the 'imaginary machine' by indexing Copernicus' epistemic achievement who was able to "connect together celestial appearances, in a more simple as well as a more accurate manner, than that of Ptolemy" (HA, Section IV, § 27: 71).

²⁸ Smith's belief that (theoretical) systems are becoming more and more simple seems to owe its springs in Condillac's work *Traite des systemes* (1749), where he maintains that the theoretical systems concerning astronomical systems is progressively becoming "more and more simple" (Megill 1975: 83).

Section II, c. ii, § 14: 299). Theory, in Smith's account, is identified with a 'connected order' that adjoins parts which seem to have some (natural) relation to one another (WN, Book V, c. i, § 9: 199). Therefore, a theory is an effort to introduce order and harmony into observed appearances by using some principles that connect phenomena into a chain-like fashion (Redman 1993: 216). Essentially, Smith's theory of history is seated on such an epistemic understanding of science by giving order to seemingly disparate events.

6. References

Acton, J.E.D. (1907), *Historical Essays and Studies*, Macmillan and Co, London

Bittermann, H. (1940), "Adam Smith's Empiricism and the Law of Nature", *Journal of Political Economy*, 48 (5): 703-734

Brewer, A. (2008), "Adam Smith's stages theory of history", Discussion Paper No. 08/601, University of Bristol, Department of Economics: 1-24

Accessed:http://www.efm.bris.ac.uk/economics/working_papers/pdffiles/dp08601.pdf

Campbell, R.H. (1976), "Scottish Economic History", *Scottish Journal of Political Economy*, 23 (2): 183-192

Clarke, J.M. (1926), "Adam Smith and the Currents of History", *The University Journal of Business*, 4 (4): 348-369

Coats, A.W. (1975), "Adam Smith and the Mercantile System" in A. Skinner & T. Wilson (ed.), *Essays on Adam Smith*, Clarendon Press, Oxford: 218-236

Cohen, B. (1994), "Newton and the Social Sciences, with Special Reference to Economics, or, the Case of the Missing Paradigm" in P. Mirowski (ed.) *Natural Images in Economic Thought*, Cambridge University Press, Cambridge: 55-90

Cremaschi, S. (1989), "Adam Smith: Skeptical Newtonianism, Disenchanted Republicanism, and the Birth of Social Science", in M. Dascal & O. Gruengard (eds.) *Knowledge and Politics: Case Studies on the Relationship between Epistemology and Political Philosophy*, Boulder, Co, New York: 83-110

Cunningham, B. (2010), *The Annals of the Four Masters: Irish History, Kingship and Society in the Early Seventeenth Century*, Dublin

Diamond, A. (1986), "The impact of Smith's philosophy of science on his Economics", *The American Economist*, 30 (1): 60-65

Dow, S. (1987), "The Scottish Political Economy Tradition", *Scottish Journal of Political Economy*, 34 (4): 335-348

Dow, A., Dow, S. & Hutton A. (1997), "The Scottish Political Economy Tradition and Modern Economics", *Scottish Journal of Political Economy*, 44 (4): 368-383

Endres, A.M. (1991), "Adam Smith's Rhetoric on Economics: An Illustration using 'Smithian' compositional rules", *Scottish Journal of Political Economy*, 38 (1): 76-95

Ferguson, A. ([1767] 1782), *An Essay on the history of civil society*, 5th edition, Printed for T. Cadell, W. Creech, and J. Bell, London

Fiori, S. (2001), "Visible and invisible order. The theoretical duality of Smith's political economy", *European Journal of the History of Economic Thought*, 8 (4): 429-448

Fiori, S. (2012), "Adam Smith on Method: Newtonianism, History, Institutions, and the 'Invisible Hand'", *Journal of the History of Economic Thought*, 34 (3): 411-435

Freudenthal, G. (1981), "Adam Smith's analytic-synthetic method and 'The system of Natural Liberty'", *History of European Ideas*, 2 (2): 135-154

Groenewegen, P. (1982), "History and Political Economy: Smith, Marx, and Marshall", *Australian Economic Papers*, 21 (38): 1-17

Gray, A. (1948), *Adam Smith*, George Philip for the Historical Association, London

Lambert, P. & Schoefield P. (2004), *Making History: An introduction to history and practices of a discipline*, Rutledge, London and New York

Hampton, J. (1986), *Hobbes and the Social Contract Tradition*, Cambridge University Press, Cambridge

Harrison, C. (2008), "Thomas Madox and the Origins of the English Diplomatic Scholarship", *Journal of the Society of Archivists*, 29 (2): 147-169

Hatherington, N. (1983), "Isaac Newton's Influence on Adam Smith's Natural Laws in Economics", *Journal of the History of Ideas*, 44 (3): 497-505

Heilbroner, R.L. (1973), "The Paradox of Progress: Decline and Decay in the Wealth of Nations", *Journal of the History of Ideas*, 34 (2): 243-262

Hollander, S. (1973), *Studies in Classical Political Economy/ The Economics of Adam Smith*, Toronto University Press, Toronto

Hollander, S. (1979), "The historical dimension of the Wealth of Nations" in G.R. Driscoll (1979), *Adam Smith and Modern Political Economy*, Iowa State University, Iowa: 71-84

- Holloway, S.W.F. (1963), "Sociology and History", *History*, 48 (163): 154-180
- Hopfl, H.M. (1978), "From Savage to Scotsman: Conjectural History in the Scottish Enlightenment", *Journal of British Studies*, 17 (2): 19-40
- Hume, D. ([1736] 2007), *A Treatise of Human Nature: a critical edition*, (ed. David Fate Norton & Mary I. Norton), The Clarendon Press, Oxford
- Hume, D. ([1748] 1975), *Enquires concerning Human Understanding and concerning the Principles of Morals*, (ed. P. Nidditch), The Clarendon Press, Oxford
- Hume, D. ([1777] 1985), *Essays and Treatises on Several Subjects*, vol. I-II, Liberty Fund, Indianapolis
- Hume (1822), *The History of England, From the invasion of Julius Caesar, to the Revolution in 1688*, Edward Parker, Philadelphia
- Hume, D. (1932), *The Letters of David Hume*, (ed.: J.Y.T. Greig), The Clarendon Press, Oxford
- Kim, K. (2009), "Adam Smith's theory of economic history and economic development", *European Journal History of Economic Thought*, 16 (1): 41-64
- Kim, K. (2012), "Adam Smith's 'History of Astronomy' and view of science", *Cambridge Journal of Economics*, 36: 799-820
- Kleer, R. (2000), "The Role of Teleology in Adam Smith's *Wealth of Nations*", *History of Economic Review*, 31 (1): 14-29
- Lawson, T. (1994), "The nature of post Keynesianism and its links to other traditions: a realist perspective", *Journal of Post Keynesian Economics*, 16 (1): 503-538

- Lindgren, R. (1969), "Adam Smith's Theory of Inquiry", *Journal of Political Economy*, 77 (6): 897-915
- Macfie, A.L. (1955), "The Scottish Tradition in Economic Thought", *Scottish Journal of Political Economy*, 2 (1): 81-103
- Megill, A. (1975), "Theory and Experience in Adam Smith", *Journal of the History of Ideas*, 36 (1): 79-94
- Millar, J. ([1787] 1804), *An Historical View of the English Government*, Liberty Fund, Indianapolis
- Mitchell, W. (1967), *Types of Economic Theory: From mercantilism to institutionalism*, A.M. Kelley, London
- Morrell, J.B. (1971), "The University of Edinburgh in the Late Eighteenth Century: Its Scientific Eminence and Academic Structure", *Isis*, 62 (2): 158-171
- Montes, L. (2003), "Smith and Newton: some methodological issues concerning general equilibrium theory", *Cambridge Journal of Economics*, 27: 723-747
- Montes, L. (2008), "Newton's real influence on Adam Smith and its context", *Cambridge Journal of Economics*, 32: 555-576
- Myers, M.L. (1975), "Adam Smith as Critic of Ideas", *Journal of the History of Ideas*, 36 (2): 281-296
- Newton, I. ([1704] 1730), *Opticks: or a Treatise of the Reflections, Refractions, Inflections and Colors of Light*, William Innys, London

O' Brien, D.P. (1976), "The Longevity of Adam Smith's vision: Paradigm, Research, Programme and falsifiability in the History of Economic Thought", *Scottish Journal of Political Economy*, 23 (2): 133-151

Pocock, J.G.A. (2006), "Adam Smith and History" in K. Hakonseen (ed.), *The Cambridge Companion of Adam Smith*, Cambridge University Press, Cambridge: 270-287

Raphael, D. (1985), *Adam Smith*, Oxford University Press, Oxford

Rashid, S. (1990), "Adam Smith and Historical Facts", University of Illinois, Urbana-Champaign, Department of Economics: 1-33

Accessed: <http://www.archive.org/details/wealthofnationsh1667rash>

Redman, D. (1993), "Adam Smith and Isaac Newton", *Scottish Journal of Political Economy*, 40 (2): 210-230

Robertson, W. (1856), *The History of Scotland during the Reigns of Queen Mary and of King James VI till his accession to the crown of England*, Derby & Jackson, New York

Schliesser, E. (2005), "Wonder in the face of scientific revolutions: Adam Smith on Newton's 'Proof' of Copernicanism", *British Journal for the History of Philosophy*, 13 (4): 697-732

Sellin, T. (1927), "Dom Jean Mabillon- A Prison Reformer of the Seventeenth Century", *Journal of Criminal Law and Criminology*, 4 (17): 581-602

Skinner, A. (1965), "Economics and History- The Scottish Enlightenment", *Scottish Journal of Political Economy*, 12 (1): 1-22

Skinner, A. (1967), "Natural History in the Age of Adam Smith", *Political Studies*, 15 (1): 32-48

Skinner, A. (1972), "Adam Smith: Philosophy and Science", *Scottish Journal of Political Economy*, 19 (3): 307-319

Skinner, A. (1975), "Adam Smith: an Economic Interpretation of History", in A. Skinner & T. Wilson (ed.), *Essays on Adam Smith*, Clarendon Press, Oxford: 154-178

Skinner, A. (1976), "Adam Smith: The Development of a System", *Scottish Journal of Political Economy*, 23 (2): 111-132

Skinner, A. (1979), "Adam Smith: An Aspect of Modern Economics?", *Scottish Journal of Political Economy*, 26 (2): 109-125

Skinner, A. (1990), "The Shaping of Political Economy in the Enlightenment", *Scottish Journal of Political Economy*, 37 (2): 145-165

Skinner, A. (1995), "Pufendorf, Hutcheson, and Adam Smith: Some Principles of Political Economy", *Scottish Journal of Political Economy*, 42 (2): 165-182

Skinner, A. (1996), *A System of Social Science: Papers Relating to Adam Smith*, Clarendon Press, Oxford

Skinner, A. (1998), "Adam Smith: The Philosopher and the Porter", Paper presented to the second conference of the *European Society for the History of Economic Thought* (ESHET): 1-31

Accessed: <http://dspace.gla.ac.uk:8080/bitstream/1905/588/1/9807.pdf>

Smith, A. ([1759] 1761), *The Theory of Moral Sentiments*, Printed for A. Millar in the Strand, London

Smith, A. ([1762-1763] 1978), *Lectures on Jurisprudence (A)*, (ed. R.L. Meek, D.D. Raphael & P.G. Stein) Oxford University Press, Oxford

Smith, A. ([1766] 1978), *Lectures on Jurisprudence (B)*, (ed. R.L. Meek, D.D. Raphael & P.G. Stein) Oxford University Press, Oxford

Smith, A. ([1776] 1976), *An Inquiry into the Nature and Causes of the Wealth of Nations*, (ed. R.H. Campbell & A.S. Skinner), Clarendon Press, Oxford

Smith, A. ([1795] 1980), *The Principles which lead and direct Philosophical Enquiries; Illustrated by the History of Astronomy*, in *Essays on Philosophical Subjects* (1980) (ed. W.P.D. Wightman & J.C. Bryce), Oxford University Press, Oxford

Smith, A. (1977), *The Correspondence of Adam Smith*, (ed. Ernest Campbell Mossner & Ian Simpson Ross), Clarendon Press, Oxford

Smith, A. (1985), *Lectures on Rhetoric and Belles Lettres*, (ed. J.C. Bryce), Liberty Fund, Indianapolis

Stewart, D. ([1793] 1829), "Account of the Life and Writings of Adam Smith, LL.D." in *The Works of Dugald Stewart*, vol. VII, Hilliard and Brown, Cambridge

Taylor, W.L. (1956), "Eighteenth Century Scottish Political Economy: The Impact on Adam Smith and his Work, of his Association with Francis Hutcheson and David Hume", *African Journal of Economics*, 24 (1): 261-276

Thompson, J.W. (1942), *A History of Historical Writing*, vol I-III, MacMillan Co, New York

Viner, J. (1968), "Adam Smith" in David L. Sills, *The International Encyclopedia of the Social Sciences*, Macmillan Company, New York

Wightman, W. P. D. (1975), "Adam Smith and the History of Ideas": 44-67 in A. Skinner & T. Wilson (ed.), *Essays on Adam Smith*, Clarendon Press, Oxford

Winch, D. (1992), "Adam Smith: Scottish Moral Philosopher or Political Economist", *The Historical Journal*, 35 (1): 91-113

Wood, P. (2003), *Science, Philosophy, and the Mind*, in R. Porter (ed.), *The Cambridge History of Science, Eighteenth Century Science*, Cambridge University Press, Cambridge: 800-824

Wuisman, J. (2005), "The Logic of Scientific Discovery", *Journal of Critical Realism*, 4 (2): 366-394