

OLIVI TO HUTCHESON: TRACING AN EARLY TRADITION IN VALUE THEORY

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I. INTRODUCTION

Most general histories of economic analysis will devote a few pages to the Middle Ages. Until recently, however, the contributions of medieval authors were seen as strictly preliminary efforts, without notable influence on further theoretical developments. There are several reasons for this view. Medieval treatment of economic subjects (or with what now would be called economic subjects) was thought of as being entirely normative. Drawing on the social teaching of the Church, it was concerned with formulating norms of ethics in the market-place, condemning fraud and duress, monopoly and (above all) usury. Modern economics, on the other hand, was concerned with analyzing, explaining, and predicting economic activity and phenomena. Recent research has convinced historians that this distinction is largely illusory. For one thing, sustainable norms of business ethics must be founded on an understanding of how the economy actually works. Some of the medieval masters whose treatises shaped economic doctrine, particularly the Franciscan friars, possessed a keen knowledge of the business world of their times. For another thing, economics, like all social science, still retains a normative element. In the case of the theory of value, that very word is warrant enough; there is no more value-loaded word. The subject of the present study is a tradition of value theory that extends over a period of almost half a millennium. Starting with the Provençal Franciscan friar Peter Olivi (c. 1248-1298), it will take us through Italy to Spain, Germany, and Belgium, and eventually to Scotland, where the tradition will reach Adam Smith through the works of two of his predecessors on the chair of Moral Philosophy at the University of Glasgow, Gershom Carmichael (1672-1729) and Francis Hutcheson (1694-1746).

II. THE ORIGINS

In one of his collections of Lenten sermons, the Latin *Quadragesimale de Evangelio aeterno*, the great Franciscan preacher Bernardino of Siena (1380-1444) deals at

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length with economic subjects. Sermon 35 contains Bernardino's price doctrine. The work is to a large extent a compilation of patristic and medieval scholastic sources, and the author faithfully acknowledges his debt to most of these authorities, quoting them by name. On economic subjects, however, his most frequent source is Peter Olivi, who remains anonymous, presumably because he was still under a cloud due to a (largely unfounded) suspicion of heresy. The economic material in Bernardino's sermons was printed in the fifteenth century as a separate treatise on contracts and usury, still without naming this main source. It was only with the critical edition of Bernardino's *Opera* in 1956 that it was brought to light in the notes. Later on, two critical editions of Olivi's treatise on buying and selling were published, by Amleto Spicciani in 1977 and by Giacomo Todeschini in 1980. The identification of the author came as a surprise to scholars, not least to those who had believed to recognize a "spirit of capitalism" in the Tuscan saint. That idea must have seemed grossly inappropriate when attributed to a thirteenth-century friar who insisted on the strictest observation of the Rule of poverty laid down by St. Francis when founding his Order. Three factors must be taken into consideration when the value of goods in exchange is determined, Olivi states,

first, by considering whether an object, by virtue of its real merits and properties, is more suitable and efficacious for our purposes (*est nostris utilitatibus virtuosior et efficacior*); and thus a loaf of the best wheat bread is valued more highly for our use than one of barley, and a strong horse more highly for transport or warfare than an ass or a nag. Second, by considering whether the thing, on account of its scarcity and the difficulty of producing it (*ex sue invencionis raritate et difficultate*) is more necessary for us, in that the lack of it enhances our demand (or need: *indigentia*) and reduces our opportunity to have it and use it. Thus the same grain is valued more highly at a time of dearth and famine or penury than at a time of general abundance. Thus also the four elements, water, earth, air and fire, have with us a lower price because of their abundance than gold and balsam, although the former are more necessary and useful for our life. Third, such things are estimated according to our will's greater or less pleasure (*beneplacitum*) in possessing them. To use a thing, in this sense, is to take or hold possession of it in the faculty of the will, and therefore its value is partly judged by the pleasure of the will, or the greater or less satisfaction in the use of this or that thing and in having it at one's disposal, according to which one horse pleases one man more than another man.¹

One of the extant manuscripts of Peter Olivi's treatise is now held by the Municipal Library in Bernardino's native city of Siena. Marginal notes in Bernardino's hand prove that this is the manuscript (or one of them) on which he drew for his own teaching in his *Quadragesimale*. In the left-hand margin of the page on which the lines quoted above occur, there are three single-word notes stating the three price determinants suggested by Olivi, that is, *virtuositas*, *raritas*, and *complacibilitas*.² Bernardino takes these catchwords into the text of the corresponding sermon and

¹Olivi, *De emptione. et venditione*, Question 1, ed. Spicciani, p. 255; ed. Todeschini, pp. 52–53. On Peter Olivi's thought in general (he was a prolific author), see Langholm, 1992, pp. 345–373.

²Siena BCom U.V.6, f. 295va.

proceeds to quote Olivi virtually verbatim.³ The first and second word can reasonably be translated “utility” and “scarcity.” The third word is unusual. Among the suggested translations are “Schätzbarkeit,”⁴ “*désirabilité*,”⁵ “the desire for the good or the degree of pleasure which one can derive from the good,”⁶ In the words of Barry Gordon, “the distinction between usefulness and ability to please points up objective and subjective aspects in the idea of utility.”⁷ Though these labels are troublesome as philosophical categories, Gordon’s balanced presentation is welcome in view of the more common focus on the latter term and the inclination by some scholars to read a “subjective value theory” into Olivi and his successors.⁸

To some extent the blame for this misinterpretation is due to Bernardino’s notes to Olivi. The traditional distinction between the subjective and the objective in medieval economics is not taken to signify different aspects of utility (that is, different qualities of demand factors, as Gordon suggests), but rather to signify “subjective” demand factors (utility and desirability) versus “objective” supply factors (labor and expenses). In Bernardino’s notes to Olivi supply is represented only by scarcity. In the text of both works *raritas* is coupled with *difficultas*. Scarcity indicates a state of affairs. Difficulty possesses a dynamic color by indicating the possibility of altering this state. It takes us into the universe of labor and cost of production. This aspect of Olivi’s value theory as received by Bernardino was suggested by Raymond de Roover: “San Bernardino states that the ‘difficulty’ of producing a good makes it scarcer and more valuable. Does he imply that the cost of production determines price by affecting the supply?”⁹

In the following chapter of Olivi’s treatise there is another lengthy sequence where the author explains how supply and demand both enter into the estimation of a just price. With a view to the common good, four circumstances are to be considered. Briefly summarized, they are as follows. First, a certain natural order of usefulness in goods (*quemdam naturalem ordinem utilitatum rerum*). Second, the common course of plenty or scarcity. The rarer a thing is and the more difficult to obtain (*rarius et difficilius adire*), the more highly we estimate it. When there is a common abundance of gold or wheat, these goods are not as highly estimated as in times of great common scarcity. The same is true in case of plenty or scarcity of doctors, advocates, soldiers, or ditchers. Third, labor, risk, and industry in connection with obtaining goods or services. Other things being equal, that which requires a higher degree of industry is more highly remunerated than common labor. Thus, in a building project those who quarry and cut the stones, albeit putting in more bodily effort, earn less than the architect who guides and instructs the laborers with his expertise (*pericia*). Fourth (developing the latter point), the status and dignity of professionals. Higher office is better paid because its proper performance requires more skill and industry and

³*Quadragesimale*, Sermon 35, 1, 1: p. 191.

⁴Salin, 1967, p. 37.

⁵Lapidus, 1986, p. 42.

⁶Chafuen, 1986, p. 98.

⁷Gordon, 1975, p. 222.

⁸Thus Todeschini, 1987, p. 87. According to Joel Kaye, 1998, p. 148, *complacibilitas* “expresses well Olivi’s sense that the relation between commodity and subject was a factor in itself.”

⁹De Roover, 1955, p. 165.

mental solicitude and because such skill is acquired through lengthy and lasting study and because those fit for it are few and scarce and are therefore valued more highly.

In this second sequence Olivi, closely copied by Bernardino,¹⁰ does not only mention supply conditions along with demand conditions. What is more, he relates the scarcity and payment of labor and industry, along with other expenses, that is, factors of production, to the scarcity and just pricing of products. The fact that he limits these observations to the case of professional services, which are factor or product depending on how they are viewed, makes his result appear obvious, but it points forward to an important generalization. I cannot think of any thirteenth-century author who comes as close as Peter Olivi to suggesting an integral theory of value – or, in medieval terms, an integral doctrine of the just price.

III. MEDIEVAL DEVELOPMENTS

Next but one to Olivi's treatise on the shelves of the Siena library is a manuscript volume containing, among other things, a treatise on economic contracts by Gerald Odonis (c. 1290-1349). Odonis, a Franciscan master and later Minister General of the Order, took a firm stand on the poverty issue against that of Olivi.¹¹ Although Odonis's treatise on contracts dealt with economic relations in secular society, he would be even less inclined than Bernardino of Siena a century later to proclaim his debt to Peter Olivi, which is however evident throughout the slim work. It was none other than Bernardino who attributed the anonymous treatise to Gerald Odonis in a note at the top of the opening page. Echoing Olivi, Odonis lists the three value determinants, *virtuositas*, *beneplacitum*, and *inventionis raritas et difficultas*.¹² In a later chapter of the treatise, he applies the principle of scarcity to professional services. When there is a lack of advocates or doctors, they can contract for their work more dearly. The examples are those of Peter Olivi, but the allusion to economic power inherent in the word 'can' (*possunt*) is due to Gerald Odonis and it is copied by Bernardino.¹³ Odonis also composed a commentary on the *Nicomachean Ethics*. It saw a certain diffusion and is extant in two incunabula editions. There is a late tradition from Odonis on the *Ethics* through these editions, but Olivi's characteristic list of value determinants was not transmitted through this channel.¹⁴

Fourteenth-century works drawing on Olivi may still come to light, but present knowledge indicates that his ideas on value lay dormant for more than a century. Before the modern critical edition of Bernardino of Siena's *Opera* appeared, and even afterwards, accolade due to him, or more properly to Peter Olivi, was conferred upon a late contemporary of Bernardino, namely, the Dominican friar Antonino Pierozzi

¹⁰Olivi, Question 2, Siena BCom U.V.6, f. 296va-b; Bernardino, Sermon 35, 2, 2-3, pp. 197–198.

¹¹On the works and ideas of Gerald Odonis, with some references to his life, see Langholm, 1992, pp. 508–535.

¹²Odonis, *Tractatus de contractibus*, Question 3, Siena Bcom U.V.8, f. 80r.

¹³Odonis, Question 5, f. 82v; Bernardino, Sermon 35, 2, 2, p. 198.

¹⁴Olivi's value determinants reappear in Ferdinando Galiani in the form of *utilità*, *rarietà*, and *fatica*. (*Della moneta*, I,2, pp. 39–41). In an early work (Langholm, 1979, p. 156) I pointed out this relationship. That, however, is a different story, for Galiani's work appeared in 1751 and thus postdates Carmichael's notes on Pufendorf.

(1389-1459), who was appointed prior of San Marco in Florence in 1439 and served as archbishop of his native city from 1445. Antonino of Florence composed a huge *Summa theologica* (often styled *Summa moralis*). It was available to all modern scholars in a four-volume edition printed in 1740. Olivi's value theory is paraphrased by Antonino. Bernardino's three glosses to Olivi (*virtuositas*, *raritas*, and *complacibilitas*) are incorporated in the text, and so is the explanation of the middle term. A commodity is worth more *ex suae inventionis raritate et difficultate*.¹⁵ Some prominent twentieth-century historians expressed their high regard of Antonino's contribution:

Evidently motivated by the wish to divest the relevant concept of undesirable 'objective' meanings, [Antonino] employed the un-classical but excellent term *complacibilitas* – the exact equivalent of Professor Irving Fisher's 'desiredness,' which also is used to express the fact that a thing is actually being desired and nothing else (Schumpeter, 1954, p. 98).

[Antonino of Florence] argued that, given the 'objective' utility of a good, its value was mainly determined by its scarcity (*raritas*) and its costs (*difficultas*). As an additional element in determining exchange values, he mentioned *complacibilitas*, the individual's estimate" (Pribram, 1983, p. 24).

Murray Rothbard, who studied the history of economics from an Austrian point of view, saw it differently and deplored the fact that Antonino, who marked the high point of the tradition from Olivi, also marked its end point: "Tragically, the subjective theory of utility, developed by Pierre de Jean Olivi in the thirteenth century, rediscovered by San Bernardino two centuries later and spread far and wide by his disciple Sant'Antonino, died with the worldly Florentine saint. . . . It was left to the Austrian School of the late nineteenth century to independently replicate and go beyond the subjective theory of value of Olivi, and it was left to the 1950s for this line of scholastic thought to be rediscovered."¹⁶ It is true that Olivi's ideas were not pursued as they might have been in Italy, given their availability in the works of Bernardino and Antonino. Some sixteenth-century Dominican *summas* copied the three value determinants that appeared in Bernardino's notes to Olivi, but these are works of minor influence.¹⁷

IV. THE SCHOOL OF SALAMANCA AND NATURAL LAW PHILOSOPHY

When economic thought in the scholastic tradition petered out in Renaissance Italy, it found a fresh start in Counter-Reformation Spain. What has come to be called, somewhat imprecisely, "The School of Salamanca" (other universities in Spain and elsewhere were involved) adopted Antonino of Florence's approach to value. The main transmitters of the terminological tradition from Olivi were two late German

¹⁵Antonino, *Summa*, II, 1, 16, §3: col.255.

¹⁶Rothbard, 1995, p. 88.

¹⁷On the late Italian penitential literature, see Langholm, 2003, pp. 103–230.

scholastics, Gabriel Biel (c. 1425-1495) and Conrad of Summenhart (c. 1458-1502). Biel wrote a commentary on the *Sentences* of Peter Lombard with an exhaustive discussion of economic subjects. As value determinants he lists *utilitas*, *raritas*, and *complacentia*, but rewrites Olivi's key phrase, referring to *indigentia* and *difficultas acquirendi* rather than *inventionis difficultas*.¹⁸ Summenhart, who was Biel's successor on the chair of Theology at the University of Tübingen, in an influential treatise on contracts has *utilitas*, *raritas*, and *complacibilitas*.¹⁹ Some of the Salamanca scholastics would also have firsthand knowledge of Antonino's *Summa*. When the characteristic Olivian terms were used, however, they would not appear in isolation but in combination with words and phrases drawn from other scholastic traditions.

This feature is well illustrated in the case of Juan de Medina (1490-1547), professor at the College of St. Ildefonsus at Alcalá. His best known work, frequently cited by later members of the School, is a treatise on contracts and restitution, with chapters on economic exchange and usury. In estimating the just price of commodities, Juan de Medina teaches, three sets of factors should be considered, namely, those relating to sellers, buyers, and the goods in question. Regarding sellers, attention should be paid to labor and expenses, care, industry, and risk. On the part of buyers, the relevant factors are their number and their need of the goods (*indigentia*), as well as *complacibilitas* and *utilitas*. Factors pertaining to the goods are their *raritas*, their abundance, *commoditas*, improvement, or deterioration.²⁰ Much later, Pedro de Aragon (1545-1592), an Augustinian friar who became professor of Theology at the University of his native city of Salamanca, copied this analysis in his commentary on Thomas Aquinas's *Summa theologiae*.²¹ Among those who transmitted pieces of Olivi's value theory through Antonino of Florence was the Jesuit Luis de Molina (1535-1600), one of the main figures of the School of Salamanca, who taught at Cuenca and elsewhere. He wrote:

When a new product is brought to a certain region, the just price is to be determined by prudent judgment taking account of the quality, the utility, and the plenty or scarcity of the good, attention also being paid to expenses and risks and difficulties involved in its production. Furthermore, the novelty of a thing tends to make it more precious. On the basis of these and other occasional expenses, the just price of the good is established, either by Government officials or by the buyers and sellers themselves. Nor shall any price be held to be unjust because a great profit is gained on it, if it is held to be precious because of its rarity or newness or because there are many buyers, nor can any other rule be given on this subject.²²

The first modern scholar to publish an in-depth analysis of the economic thought of the late Spanish scholastics was Bernard Dempsey. Of Molina he states that "his theory of economic value allows weight to all the principal objective and subjective factors of cost and utility and that price formation on the subjective-objective market

¹⁸Biel, 1977, Vol. I, pp. 197-199.

¹⁹Summenhart, *De contractibus*, III, 56, p. 264.

²⁰Medina, *De restitutione et contractibus* Q.31, p. 196.

²¹Pedro of Aragon, Q.77, Lyon 1596, p. 438.

²²Molina, *La teoria del Justo Precio*, Disputa CCCKLIII, 9, pp. 173-4.

analysis was well understood but had not yet been fully fused into a system.”²³ Margery Grice-Hutchinson lists and quotes the works of other members of the School of Salamanca. Prominent among them was the Jesuit Juan de Lugo (1583-1660), who was summoned to Rome where he taught for twenty years and was created a cardinal. On *utilitas, raritas, and difficultates in afferendo*, he follows Molina.²⁴ Authors influenced by the School include the Belgian Jesuit Leonard Lessius (1554-1623), and the natural law philosophers of the seventeenth century.²⁵ Lessius taught at the University of Louvain and published an influential treatise *De iustitia et iure*. Quoting Medina and Molina, he states that things are the more highly estimated the more they are demanded and the more scarce they are and difficult to produce.²⁶ The major figure among the natural jurists is Samuel Pufendorf (1632-1694). The work of main interest for the present study is his treatise *De Officio Hominis et Civis*. On the subject of value he argues as follows:

There are various reasons why the value of one and the same thing is increased or diminished, and one thing even preferred to another, though the latter may seem to have an equal or greater use in human life. For in this matter the necessity of the thing, or its exalted usefulness, are so far from always holding the first place, that we rather see men hold in lowest esteem the things with which human life cannot dispense. And this because nature, not without the singular providence of God, pours forth a bountiful supply of them. Hence an increase of value tends to be produced especially by scarcity (*raritas*); and this is made much of when things are brought from distant parts. Hence love of display and luxury have placed enormous prices on many things with which human life could very comfortably dispense, for instance pearls and jewels. But for articles in everyday use prices are raised especially when their scarcity is combined with necessity or want (*necessitas seu indigentia*). In the case of artificial commodities, scarcity apart, the price is chiefly raised by the fineness and elegance of the workmanship which they display, sometimes too by the fame of the artificer, also the difficulty of the work, the scarcity of workmen, and so forth (*operis difficultas, artificum & operariorum raritas, & similia*).²⁷

V. THE SCOTTISH ENLIGHTENMENT

Gershom Carmichael was the first professor of Moral Philosophy at the University of Glasgow and taught there from 1694 to his death in 1729. As a textbook he used Pufendorf's *De Officio*, on which he composed a commentary in the form of a set of annotations. The first edition of Carmichael's commentary, published in Glasgow in 1718, is extremely rare. A second edition, published at Edinburgh in 1724 and reproduced posthumously at Leiden in 1769, is available in most major British libraries and is therefore the version normally referred to by scholars. A key statement of the main value determining factors, appearing in a note to Pufendorf's

²³Dempsey, 1948, p. 154.

²⁴Lugo, *De iustitia et iure*, II, 26, 4, p. 314.

²⁵Grice-Hutchinson, 1978, 111-113.

²⁶Lessius, II, 21, 4, p. 277.

²⁷Samuel Pufendorf, *De Officio*, I, 14, §4.

chapter on value, is translated as follows by Moore and Silverthorne, original Latin phrases inserted from Nerio Naldi. “In general it can be said that the value of things rests on two grounds, scarcity and difficulty of acquisition (*acquirendi difficultas*). And scarcity is estimated on the basis of two factors, the number of competitors for an object or service and its suitability to contribute to the use or pleasure (*usus aut voluptas*) of human life.”²⁸

In this brief quotation the expression *acquirendi difficultas* proves that Carmichael here ties in with the tradition from Gabriel Biel. The words *usus* and *voluptas* recall Biel’s *utilitas* and *complacentia*. I must admit failure to identify an intermediate author linking Biel to Carmichael. The most likely explanation is that Carmichael knew and used Biel directly. The latter’s commentary on the *Sentences* was an immensely influential book that saw at least twelve editions from 1495 to 1574.²⁹ Two of these editions, Basle 1512 and Brescia 1574, are listed in the 1691 catalogue of Glasgow University Library, which makes it entirely possible that Carmichael accessed these volumes. The Latin word twice translated “scarcity” by Moore and Silverstone is not *raritas* as in Pufendorf but *indigentia*. To the latter occurrence of these words in the rare first edition of Carmichael there is a note, most unusual in a Latin text, stating that the common English word for *indigentia* is “demand.” That word had been used by British authors before Carmichael.³⁰ He was the one to introduce it in the Olivi tradition, which eventually reached Adam Smith. It was transmitted through the works of Francis Hutcheson, Carmichael’s successor on the chair of Moral Philosophy at Glasgow and Smith’s teacher.

Hutcheson composed three works on moral philosophy, each with a chapter on economic value. His *Philosophiae Moralis Institutio Compendiaria* of 1745 was published in English as *A Short Introduction to Moral Philosophy* in 1747. *A System of Moral Philosophy* appeared posthumously in 1755. The analyses of value are much the same in the three works. *Acquirendi difficultas* and *indigentia* in the *Institutio* are rendered “difficulty of acquiring” and “demand” in the *Short Introduction*.³¹ A more extensive analysis of these subjects on the part of Hutcheson is found in his *System of Moral Philosophy*:

When some aptitude to human use is presupposed, we shall find that the prices of goods depend on these two jointly, the demand on account of some use or other which many desire, and the difficulty of acquiring, or cultivating for human use. . . . When there is no demand, there is no price, were the difficulty of acquiring never so great: and were there no difficulty or labour requisite to acquire, the most universal demand will cause no price; as we see in fresh water in these climates. Where the demand for two sorts of goods is equal, the prices are as the difficulty. Where the difficulty is equal, the prices are as the demand. . . . By difficulty of acquiring, we do not only mean great labour or toil, but all other circumstances which prevent a great plenty of the goods or performances demanded. Thus the price is increased by the rarity or scarcity of the materials in nature, or such accidents as prevent plentiful

²⁸Pufendorf, I, 14, §3; Moore and Silverthorne, 2002, p. 106; Naldi, 1993, 462.

²⁹Stegmüller, 1947, II, pp. 107–109.

³⁰See Bowley, 1963.

³¹Hutcheson, 1745, II, 12, p. 214; Hutcheson, 1747, II, 12, p. 209.

crops of certain fruits of the earth; and the great ingenuity and nice taste requisite in the artists to finish some work of art, as men of such genius are rare.³²

Adam Smith's famous statement that the real price of everything is "the toil and trouble of acquiring it" naturally invites an association with the *difficultas acquirendi* of his immediate Scottish precursors.³³ So does Ricardo's observation that "everything rises and falls in value in proportion to the facility or difficulty of producing it."³⁴ A doctrine built upon this pillar alone, with no support in market factors, soon came under attack by an author on the fringes of the classical school itself. Nassau Senior found the explanation of value as depending on demand much to be preferred to Smith's labor doctrine, whereby he "involved himself and his followers in inextricable confusion."³⁵ Some modern scholars have expressed similar views. Thus, in the words of Emil Kauder, Smith "made waste and rubbish out of the thinking of 2000 years."³⁶ The main point of the modern criticism of Smith, however, is not that he neglected demand as a value determining factor but rather that his value theory was one-sided, just as a theory based on demand alone would be one-sided. According to Robertson and Taylor, the picture would be different if Smith's *Lectures* were examined alongside his *Wealth*, for in a crucial statement in the former work, demand appears along with supply and scarcity, if not with labor or cost.³⁷ Smith would nevertheless have profited by listening more attentively to his teacher. In Hutcheson's treatment of value it is even possible, according to one assessment, to find an anticipation of "the well-balanced, dual, 'both-blades-of-the-scissors' analysis of Marshall."³⁸

VI. CONCLUSION

When Peter Olivi's treatise was rediscovered and subsequently published some thirty years ago, students of early economic thought soon realized that some ingrained notions about medieval contributions in that field of learning had to be reconsidered and revised. That is an ongoing process and this paper is a contribution to it. The supreme authority of Thomas Aquinas was challenged by Olivi. The reputations of Bernardino of Siena and Antonino of Florence suffered badly by the discovery of the largely compilatory nature of their work. Francis Hutcheson occupies a modest position in history books. Gershom Carmichael is most often not mentioned at all. Sooner or later the hitherto unassailable status of Adam Smith as the founder of economic science is bound to be questioned as well. The common impression among modern economists is that their medieval precursors mainly preached about the sins of usury and fraud in the marketplace. Most of them did that too, sometimes apparently with some success, like Bernardino. But that does not exhaust their contributions;

³²Hutcheson, 1755, II, 12, pp. 54–55.

³³*Wealth of Nations*, I, iv, 5, p. 26.

³⁴*Principles*, XX, p. 182.

³⁵Senior, *Lectures*, 1826–30, Course 1, Lecture 4; quoted in Bowley, 1937, p. 205.

³⁶Kauder, 1953, 650.

³⁷Smith, *Lectures*, 176.

³⁸Robertson and Taylor, 1957, 181; see Marshall, *Principles*, pp. 348–349.

their analytical efforts were considerable. Peter Olivi is an extreme case; his analytical power was exceptional but it was shared to a lesser extent by other, half-forgotten writers, who claim attention.

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