ThePoliticalArithmetic-AnatomyexpoundedbyPettyin1670'swasasprout,asitwere,oftheanatomyofearlycapitalistsociety,witheconomicsasthemainaxis, but,moregenerally,asproutofmodernsocialsciencesaswell.

ThiscanbeseeninthefactthatPettywasregardedasoneofthefoundersofeconomics,statistics,thescienceoffinance,descriptive
geographyandeconometricsduringthatperiodstretchingfromthemiddleofthe19th
century
totheoutbreakofWorldWarII—theperiodwhichsawmodernsocialsciencedeveloped
andthendevelopedthroughsubdivisionandproliferation.

Ahistoricalstudyofthedevelopment
ofthelabourtheoryofvalue,whichwasthekeynoteofPetty'sPoliticalArithmetic-
Anatomy,fortwocenturiesorsosfrom1670'supto1870's,clearlyrevealsthathewas
thegreatest
scholarinthel17thcenturyinthisfieldandSmithacomparablepeakinthe18th.

Itisalsobetoadnotthatforaboutacenturybetweenthesetwobritishpioneers therewas
avisiblestagnationintheoreticalprogressonthelabourtheoryofvalue.

Thismayappear
tobesomehowstrange,ifonethinksofthenormaldevelopmentofbritishcapitalisminthis
veryperiod,forthelabourtheoryofvalueisatheoryineconomicswhichpresupposes
theexistenceofcapitalistsociety.

ButthestagnationinthedevelopmentofthistheduringtheperiodbetweenPetty
andSmithdoesnotmeanany"interruption"or"decline"ofthelabourtheoryofvalue.
Halfacenturyfrom1691,ortheyearwhenPetty'sPoliticalAnatomyofIrelandandNorth's
Discoursesupontradewerepublished,through1752whenHume'sPoliticalDiscourses
was
putforth,wasaperiodreferredtoas"volloriginellerKöpfe"andoneofthemost
importantéras"fürdieErforschungderallmählenGenesisderpolitischenÖkonomie."

InEnglandalone,needlesstoemphasize,economicswasstudied,byvariousmethodsfrommanyn
gles,byanumberofauthors,suchasChild,Davenant,Locke,Barbon,NorthandMande-
ville.

Forallthis,therecanbenodoubthat,insofarasthelabourtheoryofvalue
was
concerned,thereappearedfromtheyeardownofSmithnoscholarthat

couldsurpassPettyinscholarlyactivity,that"allebedeutenderekonomischenSchriften,
positivodernegativ,anPettyanknüpfen,"1andthat"vorpraktischenInteressen[jenerZeit]
dieAnfängewissenschaftlicherAnalysedurc]PettyundseineNachfolgerganznindenHinter-
grundgedrängtwaren."2WhythenwasPetty'slabourtheoryofvalue(undoubtedlyone
ofthebeginningsofscientificanalysisasMarxputit)pushedcompletelytothebackground

and left to remain undeveloped?

What Marx called “the practical interests” are certainly relevant; but the writer proposes to lay them aside here and instead to present an approach to this problem of evolution of the labour theory of value by focusing upon its starting point which was Petty. In this sense, this paper forms a supplement to the writer’s earlier work (in Japanese), *William Petty, a study in the formation of his Political Arithmetic-Anatomy*, Vol. II. His ultimate aim is to clarify the historical uniqueness of Petty’s labour theory of value.\(^3\)

I

If one wants to study Petty’s labour theory of value with the above question in mind, attention must be paid to the following three facts: 1) his theory was enunciated in his first main work on economics, *A Treatise of Taxes & Contributions* (1662) published immediately after the Restoration of 1660; 2) it was developed in this book more clearly and precisely than in any other work published later; and 3) this work was put forth under the shelter of anonymity. These facts were important, for the first point was inseparably related to the very birth and establishment of his theory, and the other two were closely connected with the social conditions prevailing in the Restoration period from 1660 through the Glorious Revolution of 1688 (or one year after his death)—a religio-politically complicated, reactionary period in British history.

In his *Taxes*, Petty expounded the labour theory of value in complete form, particularly in connection with the theory of rent. This was no doubt stimulated by the urgent need of modernizing the taxation system after the Restoration, *i.e.* creating a land tax paid in money uniform throughout the country. And his search for the substance of rent as a tax source finally led him to develop the labour theory of value.

It is to be recalled that the dispute between the king and the Parliament became increasingly intense during the Early Stuarts, and that the greatest points at issue were taxation as well as religion and monopoly, all closely interwoven with the problem of sovereign power. The reason why the national land tax paid in money became the apple of discord in the tax reform after the Restoration can be found in the revolutionary change in landownership carried out in a very short period in the course of the English Revolution of 1640–60—a land reform no less far-reaching in scope than that put into practice through the dissolution of monasteries as the result of the Reformation in 16th century England. Such a change or modernization of landownership was one of the most important issues in the English Revolution, so the institution of a national monetary land tax came to occupy the spotlight in the system of revenue taxes when the need of modernizing the tax system was discussed keenly during the Interregnum and after the Restoration.

Such a drastic change in the land system, be it noted, was brought about through the

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\(^3\) Concerning the history of economic doctrines in England for about a century from Petty through Smith, there are not a few studies, including J. Kuczynski, *Die Geschichte der Lage der Arbeiter in England von 1640 bis in die Gegenwart*, IV. Bd. I. Teil, Berlin, 1954; and R.L. Meek, *Studies in the labour theory of value*, London, 1956. It is to be noted that similar studies in Japan have a common feature; *i.e.*, though they do not necessarily start from Petty, all of them end with Smith, and that almost the same can be said of works on the Scottish Historical School.
Cromwellian Settlement in Ireland as well. It took the form of confiscation by the Commonwealth of England, but the object of confiscation was mainly lands, and the change in landownership in Ireland was not so much a reform of feudal landownership as a forced transition from joint ownership under the clan system to modern private ownership. Petty's theory of rent, his labour theory of value in particular, had its social basis in such a central problem in England and Ireland in the days of the English Revolution and, moreover, he devoted all his activities to the clarification and solution of this key problem in Ireland throughout the Commonwealth period.

Petty developed his labour theory of value by discussing the land rent problem. In his opinion, land rent (rent in general) alone was a normal form of surplus value. And as he delved further from the discussion of land rent (surplus value) into the theory of a measure of value, he found it in two factors “land and labour” between which he tried to establish the “par and equation.” On the other hand, in discussing the “natural price” he stated that the (exchange-) value of commodities was determined by human labour, which was necessary for their production (and which could be measured quantitatively in terms of hours). The concept of human labour, which was the most important one in his theory (be it noted, however, that the human labour producing the use-value of commodities and the human labour interpreted as a source of exchange-value were often confused in his reasoning), germinated in fact before the Commonwealth period or during the Civil Wars of 1640’s. In one word, integrated into his concept of human labour were two antecedent ideas, i.e., the idea prevailing at least since the 16th century that “labour is the father and active principle of wealth, as lands are the mother,” and the Puritan way of thinking that productive labour as service to social welfare was by itself service to God.4

In those days, on the other hand, along with the rise of the Third Class the epochal significance of discoveries and scientific propositions by Copernicus, Galilei, Bacon, Harvey, etc. began to be widely appreciated,5 and the scientific movement (intellectual revolution) rapidly gained ground. As a natural philosopher (particularly as a technical engineer-anatomist) and one of Bacon’s disciples, Petty defined “labour” from the technological-physiological point of view as “simple motions of men” essential for production of commodities and regarded it as a source of wealth. At the same time, he was invited as professor of anatomy at Oxford University after its reorganization. In 1648, he published his unique treatise on education, *Advice to Hartlib*, in which he stood for a social reform in terms of opulence of the whole nation through universal labour, division of labour, promotion of science and technology, encouragement of discoveries and inventions, etc., and this on the basis of thinking entertained by the left-wingers of the Puritans, or Levellers and Diggers who played a role as “manyheaded monster”6 in the English Revolution. In this respect, he again appeared before the public as one of the students of Bacon, who saw “the possibility of abolishing poverty, for the first time in human history.”7

Such a technological-physiological concept of labour developed into an economic one in

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5 It was in the course of the intellectual revolution after 1640 that propositions and discoveries by Bacon and Harvey began to gain wide recognition. *Ibid.*, pp. 94, 179.
the labour theory of value, and this came mainly from Petty's experience as supervisor of the large-scale programs for establishment of a modern landownership system in the whole island of Ireland in the Commonwealth period. His activities as such covered, among others, the "survey and evaluation" of confiscated lands (the Down Survey) after the suppression of Irish rebellions by the Commonwealth Government, and the re-distribution of the confiscated lands among the English Protestants. And the practical problems he had to tackle in this connection included, first of all, the issue of rent as a basis for "estimation of land prices." It is also to be noted that his activities included a population census carried out under his leadership in Ireland in connection with the land reform programs. Adopted by Petty for implementation of these programs and solution of the related problems were the scientific methods as initiated by Galilei and Bacon which emphasized the merit of "experiment." His methods in particular might be characterized as mathematical, geometrical and astronomical as well as anatomical (as might be noted in the parallel comparison of "body natural" and "body politic" or the human body and society) and technological (with due importance placed on human labour). In carrying out these fundamental programs in Ireland (a series of comprehensive surveys about "land and people" or "land and labour") and solving the related problems, he attained remarkable achievements in their quantitative aspects, as can be seen in his *Hibernia Delineatio*. However, in their qualitative aspects as, for instance, the evaluation of land, he could not be regarded as completely successful because he was not so much an economist as an anatomist. But he learned a good deal from this failure, and his efforts for clarification of the qualitative aspects culminated in the labour theory of value, represented by the theory of rent, as expounded in his *Taxes*. His theoretical reasoning, however, relied on the belief in the existence of natural laws and was founded upon none other than the quantification of various phenomena in society.8

From the foregoing, it may be concluded that Petty's labour theory of value originated, in the setting of problems and in terms of main concepts and methods used, from the English Revolution, on the one hand, and, on the other, from the intellectual revolution led in England by such protagonists as Bacon, Hobbes, and Hartlib. When we think of Petty's co-authorship in Graunt's *Observations* (published in the same year as his *Taxes*) as well as his own works, there can be no doubt, after all, that his enunciation of the labour theory of value was one of the first and possibly the greatest applications of the methods of natural science

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8 Cf. A. F. Chalk, "Natural law and the rise of economic individualism in England," *The Journal of Political Economy*, Vol. LIX, No. 4, 1951, pp. 342-44. Mr. Letwin regards Petty as one of the greatest "scientific economists" in the 17th century and appreciates more highly his *Taxes* than *Political Arithmetic*. As reasons for this, he mentions two facts: namely, 1) the former work is consistently founded upon one principle that labour is the father of wealth, and 2) land rent is clearly defined as "surplus" of land products, and the scientific significance of his economic theory lies in this very theory of rent. See W. Letwin, *The origins of scientific economics*, *English economic thought*, 1660-1776, London, 1963, pp. 140-44. It is strange, however, that Mr. Letwin fails to pay almost no attention to the relations between the "principle" and "surplus." This may be attributed to his definition of "science" and "scientific." Cf. *Ibid.*, pp. viii-ix.

9 The greatest influence Petty received from Hobbes was probably his theory of state, but his complete reliance upon mathematics might also have come from Hobbes, who considered that "the true Mother of them (Arts of publique use), be Science, namely Mathematics." (*Hobbes' Leviathan*, Oxford, 1952, p. 67.) It must be noted, however, that mathematical and physical knowledge appears to have been, so to speak, Petty's born talent from childhood.
to the sphere of social science in those days.\textsuperscript{10}

Mr. Hill writes: "The England around which Daniel Defoe was beginning to tour at the end of our period [the Early Stuarts, 1603-1714] was very different from that through which James I rode in 1603. We are already in the modern world—the world of banks and cheques, budgets, the stock exchange, the periodical press, coffee-houses, clubs, coffins, microscopes, shorthand, actresses, and umbrellas."\textsuperscript{11} Such a revolutionary change in social life was brought about definitely by none other than the English Revolution. In final analysis, it is not too much to say that Petty created the labour theory of value as a by-product of his major concern with the land reform, or one of the basic problems in this revolution to modernize every aspect of human life.

The reform of the land system in those days meant the large-scale transfer of ownership in land, or the greatest property at that time, from the king and old nobles to the Third Class (estate). Politically it led to the overthrow of the absolute monarchy and economically to the destruction of the traditional system of property (land) ownership, \textit{i.e.} "proportion or balance of dominion or property in land."\textsuperscript{12} Harrington enunciated the theory of historical materialism in trying to clarify, through this change in the "proportion or balance," the historical development from "absolute monarchy" to "mixed monarchy"\textsuperscript{13} and thence to a commonwealth.\textsuperscript{14} The statement of this theory (1656) probably threw an enlightening light in that period when "the conflicts and controversies, the infinite variety of opinions expressed, ultimately produced a historical scepticism."\textsuperscript{15} When it was said just before the Restoration that "Sir W. Petty was a Rota man, and troubled Mr. James Harrington with his Arithmetical proportions, reducing Politie to Numbers,"\textsuperscript{16} the problem of "Politie" in this respect was no doubt that of "proportion" or "balance" of property as Harrington put it.

\section*{II}

The English Revolution in the middle of the 17th century was indeed a "great revolution comparable in many respects with the French Revolution of 1789" but a "very incomplete revolution, as can be seen as soon as the 1789 parallel is considered."\textsuperscript{17} To clarify in full its "greatness" and "incompleteness" in comparison with the French Revolution is an impossible task for the writer, but this can be seen to some extent in the following facts: 1)

\textsuperscript{10} As for the writer's view about the birth and growth of Petty's labour theory of value, please refer to his work (in Japanese) \textit{William Petty, a study in the formation of his Political Arithmetic-Anatomy}, 2 vols., Tokyo, 1958, 1964.
\textsuperscript{11} Hill, \textit{op. cit.}, p. 307.
\textsuperscript{13} Ibid., pp. 18-19.
\textsuperscript{14} Hill, \textit{op. cit.}, p. 182.
\textsuperscript{15} Ibid., p. 179. The scheme of the Cromwellian Settlement of Ireland is said to have been stimulated partly by Harrington's materialistic idea above referred to and to have been intended to set up a "commonwealth." Cf. E. Fitzmaurice, \textit{The life of Sir William Petty}, London, 1895, p. 23.
\textsuperscript{16} J. Aubrey, \textit{Brief lives, ed. by O.L. Dick}, London, 1950, p. 240. This idea of "balance", to say nothing of "proportion", too, was one of the new concepts in natural science (scientific concepts) in the 17th century just as was the case with the "balance of trade." G. N. Clark, \textit{Science and social welfare in the age of Newton}, Oxford, 1949, p. 119.
\textsuperscript{17} Hill, \textit{op. cit.}, p. 187.
The Restoration of 1660 was made possible only through the compromise between the landowners and upper classes in the cities and towns; 2) whereas in France absolutism culminated in the personal government of Louis XIV one year later or in 1661, in England the absolute monarch found it hardly possible to regain its sovereign power, and Charles II was not enthroned until the invitation came from the Parliament; and 3), on the other hand, the King’s promises in the Declaration of Breda,18 including the general pardon of all the revolution supporters but regicides, the settlement of property by Parliament, the religious toleration and the payment of arrears due to the army, all turned out something incomplete in practice. Such incompleteness became all the more conspicuous throughout the whole period of the Restoration.

With the Restoration as the turning point, the English king had indeed his sovereign power democratized, but he was not so much an Anglican as a Catholic and a pensioner of Louis XIV the French king. It is true, the system of feudal (land) tenure was abolished, but the enclosure for cultivation was replaced by that for sheep-grazing along with the increase of investment in land in such rapid tempo that the gap between landowners, big and small, became much wider than ever, aggravating and accelerating the uncertainty and bankruptcy of minor freeholders and copyholders. Thanks to a series of measures taken by the Government after the Restoration, including the tax reform, the encouragement of farm crops, the protection of industrialists, the Navigation Acts and the abolition of monopoly in industry, along with the absorption of farmers driven from their land, industrial production marked up a rapid gain, and foreign trade showed an expansion of 50 per cent in about three decades. Strikingly contrasted to all this was the not less steep upcurve of the “un-free” population, i.e. wage labourers and the poor, who had “no interest in the commonweal but the use of breath”, and who no doubt were the descendants of the “manyheaded monster” in the English Revolution. It was in this state of affairs that the so-called primitive accumulation of capital was stepped up in England in those days.

Just at that time, two parties—the Whigs and the Tories—entered the political scene for the first time in English history, but their political conflict was nothing more than formal in terms of policy. And this came from their common fear about the ever-increasing descendants of the “manyheaded monster,” and the fear over the dissenters in the case of the Tories in particular.19

The remarkable progress and then subsequent stagnation of scientific study under such complicated conditions, however, claims our attention. First of all, the Royal Society was founded in the same year as Petty’s Taxes and Graunt’s Observations were published, marking the realization of Bacon’s great ideas, and unquestionably it attained remarkable achievements in all spheres of natural science and technology. This clearly reveals that “although the Puritan was defeated, the revolution in thought could not be unmade.”20 At the same

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20 Hill, op. cit., p. 190.
time, it means that Bacon's "striking recommendation" for overall application of the methods of Natural Philosophy to politics and other disciplines (i.e. social sciences) was not completely put into practice. In fact, the Royal Society itself found its activities gradually shrinking after the publication of Newton's Principia (1687), or after the Glorious Revolution, to the latter half of the 18th century. In 1703, Newton was elected president of the Royal Society, but thereafter he himself gave up his study in natural sciences and came to take more interest in theology and history.

Reflected upon such a decline of scientific studies was the religio-political reaction following the Restoration. This reaction was initiated specifically by the promulgation of the Clarendon Code (1661-65), including the Corporation Act (1661) and the Act of Uniformity (1662). The ultimate aim of such legislation was to place Anglicanism on a firm foundation and thereby to purge all the Non-Conformists from every sphere of social life, i.e. to expel all the Puritans, including even the Presbyterian moderate Non-Conformists, not only from the Church of England but also from Oxford and Cambridge where a large number of Puritans and Baconians had been teaching since the English Revolution. Such reckless ostracism put back the English universities to the worst conditions prevailing before the Revolution, and deprived the Royal Society and educational institutions of the freedom to study economic problems. It is easy for us to imagine how mercilessly these measures, together with the Licensing Acts (1662-95), violated the freedom in study and thought in this reactionary period.

The reason why Petty published his Taxes anonymously and did not welcome its second printing may be found in these political conditions in the latter half of 17th century England. For, in enunciating the labour theory of value and standing for the increase of productive powers, he boldly criticized both the old and contemporary systems, particularly the restored

21 B. Farrington, Francis Bacon, philosopher of industrial science, London, 1951, p. 113. Sprat in 1667 published his work on the history of the Royal Society, partly for the purpose of vindicating that the Society and its particular emphasis on "experiment" would do no harm not only to the Church of England but also English universities at that time. T. Sprat, History of the Royal Society, ed. by J. I. Cope and H. W. Jones, London, 1959, 3rd Pt. Because of the great persecution against Puritanism, "revolutionary politics ceased to be expressed in religious form" (Hill, op. cit., p. 250), and this naturally exercised influence on the progress of science.


23 G. R. Cragg, Puritanism in the period of the great persecution, 1660-88, Cambridge, 1957, pp. 4-5, 185-86. M. H. Curtis, Oxford and Cambridge in transition, 1558-1642, Oxford, 1959, pp. 279-80. Letwin, op. cit., p. 83. It is said that Oxford University in 1683 formally denounced treatises on politics leading to or stimulated by the English Revolution, written by such pioneers as Hobbes, Milton and Baxter, and reduced to ashes most of their great works. Hill, op. cit., p. 249. It is to be noted that Graunt, who played his role as a member of the trained bands (militia), or the main force of the Parliamentary Army, in the English Revolution, was converted to the Roman Catholic in 1660's, and that Petty, who entertained just the same thought as that of the Levellers at one time, breathed his last, pledging royalty to the Church of England. This might have been ascribed partly to the fact that they gradually got conservative in thinking as they became men of great property in the course of the Revolution, and partly to the ever-wider mood of politico-religious reaction in the Restoration period. There can be no doubt that both of them became nouveaux riches in the turmoil of revolutionary commotion.

religious system and the attempted restoration of feudal revenues. With the only exception of *Taxes*, his economic and statistical works were all published after his death, i.e. after the Glorious Revolution, including *Verbum Sapienti*, *Political Arithmetick*, *Political Anatomy*, *Quantulumcunque concerning Money* and *A Treatise of Ireland*. Published under his authorship during his life were only several essays on Political Arithmetic, which were designed in substance to aim at the theory of capital accumulation but in form regarded as pioneering works in vital statistics.

To repeat, Petty’s labour theory of value is developed most clearly in his main work *Taxes. Quantulumcunque concerning Money*, in which “the last vestiges of mercantilist views have completely disappeared,” is devoted not to the positive enunciation of theory of money based upon the labour theory of value but to the liquidation of mercantilist views (particularly about money) which were inherent in all his earlier works. It is said that *Political Arithmetick* was not published when Petty completed his manuscripts, mainly because it might “offend France.” Another reason may be that in this work, though he formally stood for industrial capital at that time, Petty found the essential supporters of productive powers in the dissenters. *Political Anatomy*, too, remained unpublished during his lifetime. This probably was because his view on the development of Ireland contradicted the mercantilist colonial policy embodied, among others, in the Cattle Act and Navigation Acts.

From the foregoing, it may be said that Petty’s labour theory of value, which was the intellectual outcome of the English Revolution,—if not Petty’s inner thoughts themselves—suffered some sort of stagnation along with the decline of natural science in general as the drift of reactionary opinions gained ground in the Restoration period. The same was the case not only with his other progressive ideas and proposals, but also with all the scientific and intellectual achievements attained through the English Revolution—the Royal Society’s activities in natural sciences, studies by Boyle and other scientists, and social thoughts and proposals by Hobbes, Harrington, Milton, Winstanley and the Levellers. With such stagnation of intellectual activities in the background, the Dissenting Academies and schools set up by the Non-Conformists (expelled from society by the Act of Uniformity) gradually became the true supporters of science in and after the latter half of the Restoration period. In these institutions, French, mathematics and natural science in general were taught, and experiments conducted. Some dissenters went for study to Scotland, Switzerland and the Netherlands where Calvinism had established itself. Stimulants to the revitalization of science and technology in the 18th century came not from the Royal Society and the famous English universities but from these Dissenting Academies and individual craftsmen.

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25 Many of Petty’s ideas and propositions attracted little attention and remained unrealized until the latter half of the 18th century. They include, among others, the manhood suffrage, the principle of “no taxation without representation,” the census of population and national wealth, the system of land registry, and the establishment of a Central Statistical Bureau. Cf. Lansdowne’s “Introduction” to *The Petty Papers*, London, 1927, Vol. I, pp. xxxiii–xxxviii. In those days these were all unacceptable proposals. Moreover, King Charles II is said to have criticized Petty as “the man Aiming at Impossible Things.” Needless to mention, however, all of these ideas were put into practice step by step during and after the latter half of the 18th century. Cf. The Petty-Southwell correspondence, 1676–87, London, 1928, p. 281. E. Strauss, *Sir William Petty*, London, 1954, Chapt. 19.

26 Hill, *op. cit.*, p. 191.


If this was the case, attention must be directed to the most enlightened cities\textsuperscript{29} in 18th century Great Britain, \textit{i.e.} Edinburgh and Glasgow, in one word, to Scotland. All the more is this the case when we reflect upon the fact that social sciences were born and grew up in the 17th and 18th centuries, strongly supported by the remarkable prosperity of natural sciences and technology.

III

In 1603, James VI, the king of Scotland, ascended the English throne as James I; and this meant the personal union of the two countries. About a century later during which the English Revolution broke out, or in 1707, the two countries were united under one Parliament, marking the founding of the United Kingdom, though it took a century more for it to place Ireland as well under its unitary rule.

The union of England and Scotland led to the rapid economic development of the latter country in the subsequent decades. But the conflict remained unabated, concerning and after the establishment of the United Kingdom, between the Highlands, where the ancient clan system, formed by the Celts, had been retained, which was similar to that in Ireland, and the Lowlands with Edinburgh and Glasgow as urban centers. And it burst into the two revolts (1715 and 1745), attempted by the Highlanders under the leadership of the Jacobites who supported King James II of England. But the revolts were mercilessly suppressed. It was late in the 18th century that the two countries began to be united into a homogeneous kingdom under the name of Great Britain. It must be noted, after all, that these revolts were, so to speak, a Civil Revolution in Scotland, and that the defeated Highlanders were driven to Glasgow and other industrial cities.\textsuperscript{30} It is little wonder that these cities witnessed the remarkable mushrooming of modern industry, especially after the middle of the 18th century.

Moreover, unlike in the case of England, Scotland had received the strong influence of Calvinism after the Reformation, as might be noted in the fact that there the Presbyterian Church was firmly established by J. Knox late in the 16th century. Such a progressive tradition later turned out to be one of the stimulants to the English Revolution, and remained prevalent throughout the 17th century. Despite the Glorious Revolution and the Union, the Presbyterian Church could retain its position as the National Church of Scotland.\textsuperscript{31}

The kaleidoscopic change in the politico-economic conditions and the progressive religious tradition above referred to were the most important factors responsible for the prosperity of Glasgow and Edinburgh as the enlightened cities. The intellectual blossoming of Scotland thus brought about made Scottish universities, University of Glasgow in particular, much

\textsuperscript{29} B. Williams, \textit{The Whig supremacy, 1714-1760}, Oxford, 1949, p. 270.

\textsuperscript{30} Marx, a.a.O., I. Bd. SS. 767-68. It might well be said that in these revolts the Highlanders played just the same role as that of the Irishmen in the English Revolution a century before.


Three of their achievements claim special mention.

First of all, natural science and technology made conspicuous headway, stimulated by the rapid development of industry and simultaneous with the northward movement of the woolen industry in England in the latter half of the 18th century. This might be noted in the fact that the main scientific and technical champions of the Industrial Revolution came from Scotland and the northern parts of England. They were J. Black, J. Priestley, J. Watt, J. Hargreaves, R. Arkwright, etc., all of whom were great scientists and technologists at Glasgow, Edinburgh, Yorkshire and Birmingham.

Secondly, the Scottish Historical School steadily gained influence in the middle of the 18th century. It was featured by its attempt to place the historical development of human society on the basis of property relationships. If this was the case, this school might be interpreted as stemming from the notable change in property relations brought about by the above-mentioned "Revolution" in Scotland and as an 18th century edition of the historical theory enunciated by Harrington about a century before. Smith, a central figure of this School, writes: "That security which the laws in Great Britain give to every man that he shall enjoy the fruits of his own labour, is alone sufficient to make any country flourish, ...; and this security was perfected by the revolution, much about the same time that the bounty was established." The bounty" in this case was none other than "the bounty upon the exportation of corn" in 1689, and "the revolution", the Glorious Revolution. Thus, the perfection of the security by which every man could enjoy the fruits of his own labour might well be interpreted as the establishment of private property ownership or bourgeois social order. This is really a very compact, but convincingly adequate and decisively important evaluation of the English Revolution by Smith. It seems to the writer, however, that this view of the great economist has little been appreciated duly to date.

Thirdly, this very Smith completed his life work, Wealth of Nations. What was the origin of his thought, even if discussions are concentrated on his labour theory of value alone, is too wide and too complicated a question for the writer to give an immediate answer. But it may well be said that Smith's labour theory of value was a harvest of what Petty sowed a century before, and that Smith built up more elaborately and more systematically his theory as a foundation of independent political economy, based upon the achievements of various sciences in the past century in Great Britain and the Continent and from the much broader and higher point of view.

In the light of these considerations, it may be concluded that the transition or development of economic theory from Petty to Smith, together with historical theory (or social sciences in general), was regionally the movement from England to Scotland and the northern parts of England, and that the same was true with natural science and technology as well.
And the above-mentioned stagnation of scientific activities for about a century from Petty through Smith and accordingly the historical uniqueness of Petty's labour theory of value can in final analysis be found in the unique nature and significance of the English Revolution in the 17th century with all its achievements and shortcomings. In a word, the greatness and incompleteness of Petty's labour theory of value may consist in the greatness and incompleteness of its father, the English Revolution, or in the social foundation upon which the Industrial Revolution developed in the subsequent decades.