

The Other Canon: The History of Renaissance Economics.

Its Role as an *Immaterial* and *Production-based* Canon in the History of Economic Thought and in the History of Economic Policy.

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1. Typologies of Economic Theory and the Foundation of the Two Canons.

It has been said that economics as a science - or pseudo-science - is unique because parallel competing canons may exist together over long periods of time. In other sciences, periodical and radical *gestalt-switches* terminate old theoretical trajectories and initiate new ones. In a paradigm shift the scientific world moves from a situation when everybody knows that the world is flat, to a new understanding when everybody knows that the world is round. This happens in a relatively short time. In economics the theory that the world is flat has been living together with the theory that the world is round for Centuries. In this paper we shall argue for the existence of an alternative canon to today's classical/neo-classical mainstream theory - a canon itself much older than that of the mainstream, which dominated the world view of the Renaissance. Using a metaphor from Kenneth Arrow, 'this tradition acts like an underground river, springing to the surface every few decades.'¹

We shall argue that during the Cold War the 'underground river' of Renaissance economics all but disappeared from economic theory, and that it is high time to bring this tradition back into the open again. Traditionally the Renaissance canon has been resurrected in times of crisis: during national emergencies which has put *production* - not *barter* - into focus, like when an exclusive focus on barter has caused financial bubbles which at some point burst, when nations are engaged in serious catching-up with the world leader at the time (like the US, Germany and Japan were in the 19th Century, or like Korea today), or when a war economy forces a national political system to focus on *production* (of materials of war). Today the urgency of a change of focus towards the Renaissance conception of Economics is particularly acute in the Third World and in formerly communist Eastern Europe. Unfortunately this is not where economic theory is produced.

The two different canons are based on fundamentally different *Weltanschauungen*. The lines of the two canons can be traced back to the period when the term economics was first used, to ancient Greece. While today's standard economics is based on a mechanistic and barter-centered tradition, Renaissance economics is dynamic and production-centered. The first tradition belongs to what Werner Sombart calls *ordnende Nationalökonomie*, which is concerned about *organising* the economic sphere. The second tradition is what Sombart calls *verstehende Nationalökonomie*² - what Nelson and Winter refers to as *appreciative economics*.³ The first explains Man's economic activities in terms of physics (of dead matter), the second in terms of biology (of living matter *and* of Man's wit and will). The first tradition is represented by Malthus' *dismal science*, the second by Christopher Freeman's *Economics of Hope*⁴ - by the *never-ending frontier of human knowledge*.

¹ Arrow uses this metaphor to describe the place of increasing returns in economic theory. Increasing returns has, explicitly or implicitly, been at the core of the economic analysis of the Renaissance canon ever since Antonio Serra described this phenomenon in 1613. Serra explicitly associated increasing returns with manufacturing industry. The quote from Arrow is in his foreword to Arthur, W. Brian, *Increasing Returns and Path Dependency in the Economy*, Ann Arbor, University of Michigan Press, 1994.

² Sombart, Werner, *Die Drei Nationalökonomien*, München & Leipzig, Duncker und Humblot, 1930.

³ Nelson, Richard and Sidney Winter, *An Evolutionary Theory of Economic Change*, Cambridge, Mass, Harvard University Press, 1982.

⁴ Freeman, Christopher, *The Economics of Hope*, London, Pinter, 1992.

Present mainstream economic theory places itself solidly in a canonical sequence descending from the Physiocrats, via Adam Smith and Ricardo to the neo-classical tradition beginning with Jevons, Menger, and Marshall. The sequence has been made clear to generations of economists as the 'Family Tree of Economics' featured on the inside back cover of many editions of Paul Samuelson's *Economics*. The alternative canon in economic theory runs parallel in time with the tradition of Samuelson's 'Family Tree'. We have named this alternative canon **Renaissance Economics** - since never before and never after have the values which this canon represents dominated the world picture as it did during the Renaissance. The mainstream canon is clearly a product of the next philosophical period, which was in opposition to Renaissance values and outlook: The Enlightenment. Rationality and individuality during the Renaissance was based on an image of man as a spiritual being: creative and productive. The Enlightenment had a more materialistic understanding of human rationality and individuality: mechanical and consuming. Today the Renaissance canon tends to disappear in the history of economic thought, as this branch of economics more and more concentrates on the predecessors of neo-classical economics. We would claim that the absence of the **History of Economic Policy** as a branch of Economics is responsible for bringing the alternative canon into virtual oblivion.

As already mentioned, Renaissance economics is optimistic: the *never-ending frontier of knowledge* stands in sharp contrast with Malthus' *dismal science* and with the production theory of mainstream economics, which still today essentially is a formalisation of a static view of Ricardo's corn economy. Other main features of the Renaissance Canon of economic theory are the following: The fundamental cause of economic welfare is Man's productive creativity and morality; the *immaterial* production factors. In order for these ideas to materialise, capital is needed. Capital *per se* is in this tradition sterile. The Renaissance tradition can be contrasted with mainstream using Schumpeter's description of the economics of John Rae - a 19th Century US economist of the Renaissance canon: 'The essential thing is the conception of the economic process, which soars above the pedestrian view that it is the accumulation of capital *per se* that propels the capitalist engine'⁵. Whereas classical economics focused on barter, exchange, and the accumulation of material capital, the Renaissance tradition focuses on production based on human creativity. For this reason Renaissance economics emphasises education, science, incentives, and entrepreneurship.

Mainstream economics defines its origins in the French school of **physiocracy**⁶ (i.e. 'the rule of nature'), where value is created by Nature, and harvested by Man. In Renaissance economics value originates through Man's wit and will (i.e. 'ideocracy' - the rule of ideas). During the mechanisation of the world picture which took place during the materialistically oriented Enlightenment, the defenders of the Renaissance tradition were the anti-physiocrats.⁷ The Renaissance tradition is holistic and idealistic - not atomistic and materialistic. Nevertheless, at the core of the system is the individual, set in a complex web of interrelations. The beneficial effects of these interrelations first became evident in Renaissance towns giving birth to the Renaissance expression of the **common weal** (*il bene*

⁵ Schumpeter, Joseph A., *History of Economic Analysis*, New York, Oxford University Press, 1954, p. 468.

⁶ Of which Schumpeter says: 'Its analytical merit is negligible, but all the greater was its success', Schumpeter, *op.cit.*, p. 175.

⁷ In Germany the main anti-physiocrat was Johann Friedrich von Pfeiffer, in France Abbé Mably, Accarias de Serrionne, Necker, Forbonnais, Jean Graslin, Abbé Galiani - a Neapolitan envoy at the Court of Paris - and, most critical of them all: Simon-Nicolas-Henry Linguet. For a list of works by German anti-physiocrats, see Humpert, Magdalene, *Bibliographie der Kameralwissenschaften*, Cologne, Kurt Schroeder, 1937, p. 1031-1032.

comune, das Gemeinwohl) - a synergetic understanding of Society as being more than the sum of its parts.⁸

Towns permitted communication which unleashed individual freedom, creativity, and diversification creating unprecedented wealth. Later nation-building in this tradition tried consciously to reproduce these synergetic benefits of towns on a larger, national scale. In order to achieve this, the sciences of law and administration had to be consciously cultivated and promoted. Renaissance economics emphasises the crucial role of nation-states and the duties of ‘the ruler’ - i.e. government - not only to regulate in order to provide incentives for the creation of welfare (in the ancient tradition of law and economics), but also the duty of ‘the ruler’ to initiate projects creating a *demand* for knowledge-based production.

An integral part of this nation-building strategy was a notion that a national market had to be **created** - that such a market did not appear spontaneously. For this reason, communication and state-initiated investments in large scale infrastructure projects holds a very strong position in the Renaissance tradition, from the dams and irrigation canals of the Sumerian kingdoms via Colbert’s canals to Kennedy’s Interstate road projects. Using modern terms, we could say that the strategy of Renaissance economics was to create **perfect competition** within the national borders and **dynamic imperfect competition** in the export trade. Contrary to the common preconceptions of economics before Adam Smith, ‘Competition was often artificially fostered (nationally)...in order to organise markets with automatic regulation of supply and demand’⁹. It was commonly agreed that a national competitive advantage had to be created in knowledge-intensive activities before free trade could be established with the most advanced nations.

The two types should be seen as ‘Ideal Types’ in the Weberian sense. Through time several distinguishing features clearly separates the two canons. One basic feature which distinguishes the two canons is in their different conceptions of the origin of wealth:

- ⇒ In the *mainstream canon* wealth originates from **material sources**: from nature, i.e. land, physical labour and capital. The accumulation of these assets takes place through **trade** and war. This accumulation is **static**, i.e. more of the same.
- ⇒ In the *other canon* wealth originates from **immaterial sources**: from culture; i.e. Man’s creativity and morality. The accumulation of assets takes place through **innovations** cumulatively changing Man’s stock of **knowledge** and of his **tools** (technology). This accumulation is **dynamic**, i.e. more of something new and qualitatively different.

A second major distinguishing feature between the two canons is:

- ⇒ In the *mainstream canon* the focus of analysis is **barter, consumption** and **accumulation** (Man the Trader and Consumer).
- ⇒ In the *other canon* the focus of analysis is on **production** and **innovation, productivity** being the pineal gland bringing together mind and matter (Man the Creative Producer).

⁸ The description of these synergetic effects are clear in Giovanni Botero (1589) and even more so in Antonio Serra (1613). To Serra these ‘virtuous circles’ have their origins in the increasing returns found in the manufacturing sector, which are absent in agriculture. Machiavelli is also clear on this point: ‘Il bene comune è quello che fa grandi le città.’

⁹ Eli Hecksher quoted in Polanyi, Karl, *The Great Transformation* (1944), Boston, Beacon Press, 1957, p. 278.

A third and fundamental difference between the canons is:

- ⇒ The mainstream canon is - since the Aristotelian idea of the complete independence of politics from all other aspects of social life - fundamentally atomistic and mechanical in its analytical approach. The unit of analysis is the *atomistic* unit (in economics: the individual).
- ⇒ The other canon - since Plato's *Republic* - is fundamentally *holistic*, organic and synthetical (from *synthesis*) in its approach (*die Ganzheit*). The units of analysis includes both individuals and their institutions in time and space.

At a very fundamental level, the two canons of economics are founded on two different views of how Man differs from other animals. We shall let Adam Smith represent the material and barter-based canon, and Abraham Lincoln represent Renaissance economics - the immaterial and production-based canon:

Adam Smith:

'The division of labour arises from a propensity in human nature to.. truck, barter and exchange one thing for another..It is common to all men, and to be found in no other race of animals, which seem to know neither this nor any other species of contracts...Nobody ever saw a dog make a fair and deliberate exchange of one bone for another with another dog.'¹⁰

Abraham Lincoln:

'..Beavers build houses; but they build them in nowise differently, or better, now than they did five thousand years ago..Man is not the only animal who labours; but he is the only one who *improves* his workmanship. These improvements he effects by *Discoveries* and *Inventions*....'¹¹

We shall also attempt to show the continuity of the immaterial and production-based canon through time: 1) that there is a continuity in this immaterial and production-based tradition in *economics theory* from the 1400's until today, that the **continuity of thought** and its geographical movements from nations to nations can be documented, mainly through citations 2) That the roots of this kind of economic theory, both in *philosophy* and in *economic policy*, can be traced back through the Byzantine and Carolingian¹² Empires, to Platonic philosophy and to the Sumerian Kingdoms. In other words, our approach is mainly *diffusionist*. However, we do not exclude 'independent discoveries' of the rational principles of Renaissance economics, particularly in times of national crisis and war. We also see a consistent pattern of application of the two canons in *catching-up* framework:

¹⁰ Adam Smith, *Wealth of Nations* (1776), Chicago, University of Chicago Press, 1976, p. 17.

¹¹ Abraham Lincoln, Speech of the 1860 Presidential Campaign.

¹² I.e.: The empire of Charlemagne and the succeeding French and German States.

No nation-state¹³ has ever gone through a transition from poverty to affluence without practising a long period of the immaterial and production-based canon as the fundamental guide for economic *policy*. This is true in France (where a modern starting point for policy could be Louis XI, (1461); and Montchrétien, Jean Bodin, and Sully for theory), England (where a logical starting point for policy is the reign of Henry VII, in 1485), in Germany, the United States (Benjamin Franklin, Alexander Hamilton, Daniel Raymond, Henry Clay, Matthew and Henry Carey, E. Peshine Smith) and Japan (Meiji Restoration). Today we see the production-based economic strategy at work in East Asia. The Third World is essentially as an area which has never experienced the Renaissance or the production-based canon.

On the practical policy-level the two canons produce conflicts. This is due to the fact that whereas in the Renaissance theory different economic activities offer different potentials for achieving national welfare, in the bartered-centred theory (leaving out the different circumstances under which they bartered goods is actually produced) all economic activities become qualitatively 'alike'. If anything, in the standard canon superiority is awarded to agriculture, which is more 'natural' a) because it delivers Nature's produce, and b) because competition here is more 'natural'; atomistic and 'perfect.'

Tracing the Renaissance canon of economic thought presents several problems. **First** of all, the history of economic thought has to a very large extent developed into a genealogy of neo-classical economics. For this reason the 'unorthodox' economists who are not part of the canonical sequence are left out. **Secondly**, the overwhelming dominance of Anglo-Saxon economists - today generally with very limited skills in languages other than English and mathematics - and of Anglo-Saxon economic policy in the post-WW II, has added an ethnocentric dimension to this development. A recent US book raises the issue of 'The Lack of Vision in Economic Theory' and becomes itself a study in lacking vision: the book does not at all venture outside Anglo-Saxon orthodox economics in its search for alternative visions. **Thirdly**, the people who represented the Renaissance canon are often - in spite of their profound impact on economic policy - not classified as 'economists'. Even Schumpeter's *History of Economic Analysis*, which is unique in this tradition in its geographical and linguistic scope, leaves out people like Leibniz and Wolff. As economists Leibniz and Wolff were not only very important for the economic policy of their time, but they also laid the foundation for the whole German economic tradition, which - during the 19th Century up until WW II - to a large extent coincided with the US and Japanese tradition. Schumpeter writes: '...the great names of Leibniz and that of his faithful henchman Christian Wolff, are left out advisedly: they were polyhistorians, of course, and greatly interested, among other things, in the economic events and policies of their day; but they made no contribution to our subject.'¹⁴ In a recent conversation an historian of economics from the University of Chicago conveyed to me that he did not consider Friedrich List to be an economist. Apparently only the orthodox economists defending the 'right' opinion (orthodox: literary those of 'the true faith') deserve to be called 'economist'.

It is really only after 1960 that the economic policies of Smith and Ricardo completely have won the day in economic policy, so the economists of alternative traditions who were crucial to the economic **policy** are therefore almost completely left out of today's history of economic thought. The last history of economics to give a good coverage of the theories behind the 19th Century economic policy was Ottmar Spann's *Die Haupttheorien der Volkswirtschaftslehre* which, first appeared in 1911. By 1936 this book had reached 24 editions and a total of

¹³ With the possible exception of small city-states, like Hong Kong or San Marino.

¹⁴ Schumpeter, Joseph Alois, *History of Economic Analysis*, New York, Oxford University Press, 1954, p. 117.

120.000 copies printed in German.¹⁵ There were translations to several languages, and, interestingly, the UK edition was published under the title *Types of Economic Theory*, flagging Spann's awareness of diversity: that there are, indeed, different types of economics, not only one monolithic canon.

2. The Family Tree of The Renaissance Canon of Economics.

Traces of the Renaissance canon of economics can be found already in pre-antiquity. Statecraft and the accumulation of knowledge - exemplified by the famous Library of Alexandria and the scientific academies of Sumeria under Hammurabi (2030-1995 BC) - were important features of the early Middle East Kingdoms of Sumeria and Egypt. These kingdoms also produced extensive literature and documents on economic and legal matters which survive today. As later in Asia and in the Andes, irrigation seems to have been the first technology which created important increasing returns to scale, and consequently required statecraft. Irrigation was therefore instrumental in the establishment of the first States. The cuneiform script of the Sumerians was to remain the standard for the Middle East region for the next 2.000 years, and the Code of Hammurabi tells of an enlightened and humane system of law.

Later, during the Phoenician dominance of the Mediterranean trade (about 1.000- 500 BC), the Renaissance principle that manufacturing was superior to the production of raw materials is clearly recognised. Serra (1613) was later to recognise this same principle - the superiority of manufacturing over the production of raw materials - as explaining why the Republic of Venice, with little or no raw materials, was so rich, compared to The Kingdom of Naples with her abundance of God-given natural wealth.

There is a clear continuity in the philosophical foundation of the Renaissance canon: Plato and other Greek philosophers were strongly influenced by Egyptian civilisation. Plato's *Republic* was to be an important blueprint for the enlightened Renaissance State. Renaissance philosophers like Leibniz and Wolff were later to rely heavily on Plato. In a previous paper we have elaborated more extensively on the philosophical basis for Renaissance economics.¹⁶

Augustine's *De civitate Dei* (413-426) was written in the Platonic spirit. Such occasional rediscoveries of Plato as Augustine's later lead to sporadic 'renaissances', e.g. the Carolinian Renaissance under Charlemagne (768-814). Charlemagne was counselled by Thomas of York, a follower of Augustine. Already under Charlemagne the fondness of Renaissance Economics for education, industry and infrastructure is most evident. Charlemagne was actively promoting textile industry e.g. in Friesland, and built roads and worked on a canal linking Europe's greatest rivers, the Danube and the Rhine.

France - under Louis XI (1423-83) - experienced an early mini-renaissance. Louis XI established a pattern which came to be typical of Renaissance economics: He allied himself with the middle class against the noblemen, establishing a tax system favouring middle class values of industriousness against the land-owning upper class. Louis established a pattern which later came to be typical of Renaissance economics: Urban values (industry) were

¹⁵ The US edition is *The History of Economics*, New York, Norton, 1930.

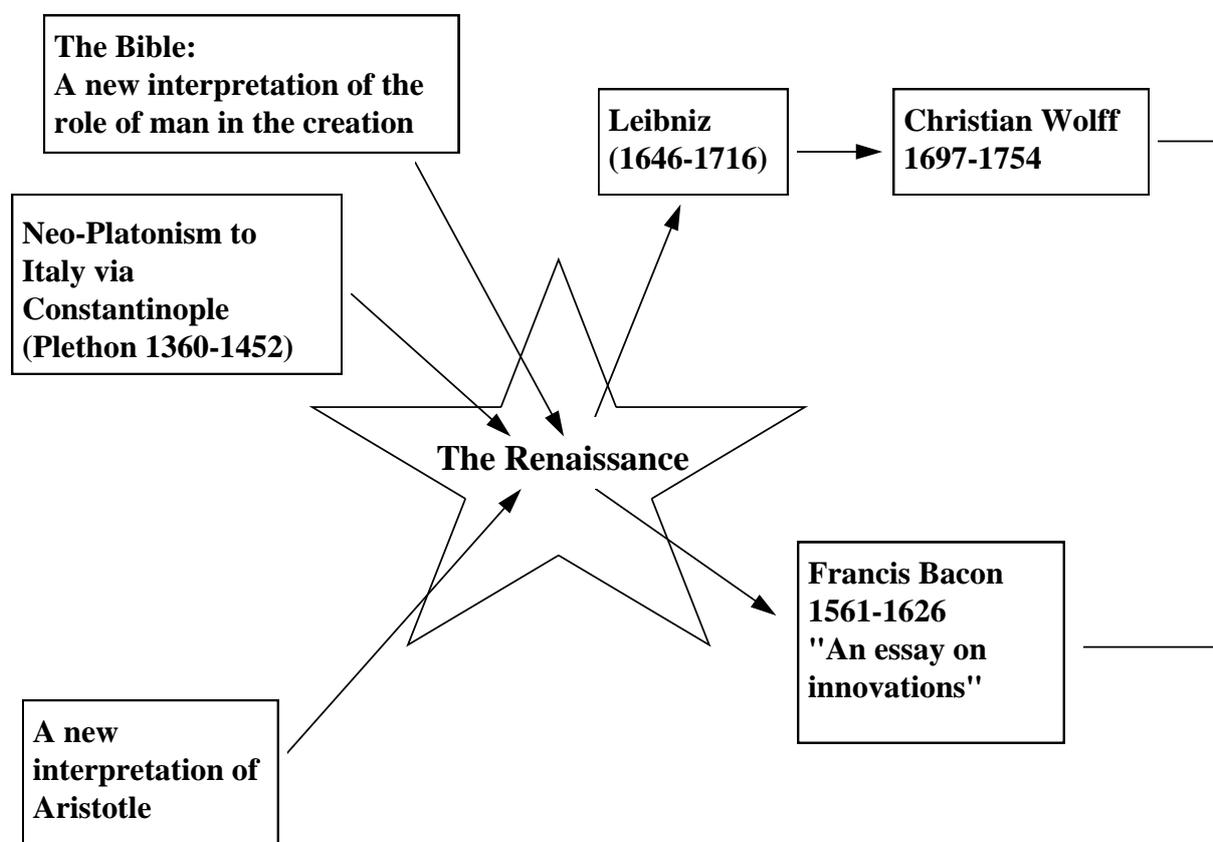
¹⁶ Reinert, Erik and Arno Daastøl, 'Exploring the Genesis of Economic Innovations: The Religious Gestalt-switch and the Duty to Invent as Preconditions for Economic Growth, in *European Journal of Law and Economics*, Vol. 4 (1997), pp. 233-283.

favoured against feudalism (agriculture and trade *per se*). It was Renaissance economics - creating centralised nation-states - which brought down feudalism. In Spain the *Revolt of the Comuneros* (1521) represents an occasion where the urban modernising faction loses out to the old feudal order.

The Renaissance was a rebirth of knowledge as the central engine of human change. The rediscovery of Plato, the re-interpretations of Aristotle, and the influences from the crumbling Byzantine Empire all led to a re-interpretation of Man's place in the Divine Scheme.

Innovations had previously been tantamount to heresy - all man was supposed to know was already there in the Holy Bible and in Aristotle. Knowledge production was confined to the interpretation of these scriptures. Roger Bacon was e.g. arrested in Oxford for 'suspicious innovations' in 1271. With the influence from the Eastern church, Man's perception of his role in the creation was completely reversed. Man was created in the image of God, and the most salient feature of God had to be his rational creativity. Consequently innovations were no longer heretic - on the contrary, ***Man's essential and pleasurable duty was to innovate.*** The next page shows the main inputs into the Renaissance and the philosophers who helped promulgate Renaissance economic thinking in Europe.

FIGURE 1



This new world view released an enormous creativity in all sciences and arts - this freedom gave us Leonardo da Vinci, Michelangelo, Raffaello, Kepler and Copernicus. In all arts and sciences the people of the Renaissance still stand out in a heroic light in history, all but the statesmen and economists of the Renaissance, who today come across as the caricatures which Adam Smith created. In the spirit of the Renaissance Francis Bacon - Queen Elizabeth's Lord High Chancellor - wrote, around 1605, *An Essay of Innovations*. Bacon became the 'scientific leader of the new industrialist'¹⁷ - urging the use of science to produce manufactured goods and profits. This fundamental conviction that a society based on manufacturing has fundamentally different and superior qualities than societies without a manufacturing base, is an essential feature of what we label Renaissance economics. Emphasis on the 'intrinsic value of manufacturing' has been an integral part of the economic policy of all nations which have ever successfully embarked on a strategy of *catching up* with the leading nations. Only when the catching up has been achieved, have the presently industrialised nations - one by one, starting with England - embraced the classical/neo-classical tradition. In other words, no nation has ever achieved general welfare without going through a period of Renaissance economics. In England this period lasted for more than 400 years, starting in the late 15th Century, Korea has achieved very much in only 40 years.

¹⁷ Crowther, J.G., *Francis Bacon. The First Statesman of Science*, London, The Cresset Press, 1960, p. 97.

Bacon's emphasis of scientific knowledge was very similar to that of Friedrich List more than 200 years later: 'Industry is the mother and father of science, literature, the art, enlightenment, useful institutions and national power... The greater the advance in scientific knowledge, the more numerous will be the new inventions which save labour and raw materials and lead to new products and processes.'¹⁸In this sense, there is a continuity of argument from the Renaissance, through Francis Bacon and Friedrich List to today's evolutionary economics which emphasises the role of Research and Development and of innovations for economic welfare. As to natural resources, List says that 'industrialisation will greatly increase the value of a country's natural resources.'¹⁹ This thinking was the basis for economic policy in the resource-rich nations which have achieved general welfare: Canada, Australia, and New Zealand. A manufacturing sector - although one which was not seen as being competitive with that of England - was needed in order to transform the natural resources of a nation into national wealth.

The view of industry which prevailed nations catching up with England during the 19th Century is expressed by Friedrich List in 1841:

'Let us compare Poland with England: both nations at one time were in the same stage of culture; and now what a difference. Manufactories and manufactures are the mothers and children of municipal liberty, of intelligence, of the arts and sciences, of internal and external commerce, of navigation and improvements in transport, of civilisation and of political power. They are the chief way of liberating agriculture from its chains.... The popular school (i.e. Adam Smith and J. B. Say, authors' note) has attributed this civilising effect to foreign trade, but in that it has confounded the mere exchanger with the originator.'²⁰

De-industrialisation, on the other hand, has been a corollary to economic disasters and massive reductions in human welfare, from the de-industrialisation of Holland after 1650, of France following the Napoleonic Wars, of Eastern Europe after the fall of the Berlin Wall, and of several Third World countries after the 'adjustment policies' of the post-McNamara World Bank. List, who originally had been a free trader, woke up to the crucial role of manufacturing by seeing the devastating effect of the de-industrialisation of France after the Napoleonic wars on the welfare of the nation.

In List we find again the synergy-based arguments of Renaissance economists like Giovanni Botero and Antonio Serra. As we said in the introductory chapter, the goal of the economic policy of the State was to increase the **common weal**, i.e. the prosperity of the community. This is the starting point of virtually all economic writing of the period. To the Renaissance economists systemic effects seems first to have arisen from the observation that widespread wealth seemed to accumulate in the cities - not in the countryside. This was the fundamental observation of one of the earliest best-selling books in economics, *Delle Cause della Grandezza delle Città*²¹ written by Giovanni Botero (1543-1617). The English translation, published in London in 1606, is entitled *The Cause of the Greatnesse of Cities*. This argument was to be discussed at great length by Antonio Serra in 1613.

¹⁸ List, Friedrich, *The National System of Political Economy* (1841), London, Longman, 1904, pp. 66-67.

¹⁹ *ibid.*, p. 79.

²⁰ *ibid.*, p. 142.

²¹ Rome, Vicenzio Pellagalo, 1590.

In the best theoretical works of the time, the difference between the wealth and poverty of cities and countryside, and between cities, is explained in terms of the following main factors:

1. The size and density of population. 2. The different ‘qualities’ of economic activities. Manufacturing being ‘good’ and agriculture being ‘bad’ 3. The presence or absence of **diversity** of economic occupations, and the different capacities of economic activities to initiate ‘virtuous circles’ or positive feed-back mechanisms. The systemic effects in the economy are described by Renaissance economists at three levels of sophistication:²²

1. Observations of **higher welfare in some economic activities rather than in others**, a static and non-systemic observation of welfare being *activity specific*. (As if today: lawyers make more money than people picking lettuce; therefore a nation of lettuce pickers will be poorer than a nation of lawyers).
2. Some economic activities as core of **systemic synergies** which produce and spread welfare locally or nation-wide (‘where there are many people working with machines, **also the shopkeepers** are wealthier than in other places where machines are not used’)
3. There are degrees of understanding how these systemic synergies develop into **positive feedback systems**, but the top performance is that of Antonio Serra in 1613, who has a descriptions of Venice as a true autocatalytic system where **increasing returns** and **diversity** - the latter expressed as *the number of different professions in a nation* (i.e. *degree of division of labour*) - are identified as being at the core of virtuous circles which generate wealth. Naples is the example of the opposite effect in Serra’s system, because the production of raw materials is not subject to increasing returns. (We also find Adam Smith in *The Wealth of Nations* asking himself: Why is there so little division of labour in agriculture? On the other hand agriculture is to him the only ‘natural’ activity. Smith fails, however, to make the connection that the ‘unnatural’ imperfect competition is a product of a sophisticated division of labour)

These synergy-based arguments are found today in the works on increasing return by authors like Paul David, W. Brian Arthur²³, and James Buchanan.²⁴ In our opinion these present-day authors are re-inventing the role of knowledge, synergies and path-dependence which are main characteristics of Renaissance economics throughout history. List’s view on the role of manufacturing in this context is made clear in the following quote:

‘The productive powers of agriculture are scattered over a wide area. But the productive powers of industry are brought together and are centralised in one place. This process eventually creates an expansion of productive powers which grow in geometric rather than in arithmetic proportion.

This is why the population of an industrialised society is brought together in a few conurbations in which are concentrated a great variety of skills, productive powers, applied science, art and literature. Here are to be found great public and private institutions and associations in which theoretical knowledge is applied to the practical affairs of industry and commerce. Only in such conurbations can a public opinion develop which is strong enough to vanquish the brute force, to maintain freedom for all,

²² These arguments are thoroughly discussed in Reinert, Erik ‘The Role of the State in Economic Growth.’ Paper presented at the Conference on ‘The Rise and Fall of Public Enterprises in Western Countries’, Università Bocconi, Milan, October 10-12, 1996. Working Paper No, 5, 1997. Centre for Development and the Environment (SUM), University of Oslo.

²³ Arthur, W. Brian, *Increasing Returns and Path Dependency in the Economy*, Ann Arbor, University of Michigan Press, 1994.

²⁴ Buchanan, James and Yong J. Yoon (editors), *The return to Increasing Returns*, Ann Arbor, University of Michigan Press, 1994.

and to insist that the public authorities should adopt administrative policies that will promote and safeguard national prosperity. ...

In addition the manufacturers are the focus of a large, lucrative, and world wide trade with peoples of varied standards of culture who live in many distant countries. Industry turns cheap bulk raw materials, which cannot be sent long distances, into goods of low weight and high value which are in universal demand'.²⁵

List was in many ways the main propagandist of the Renaissance canon: he emphasised the immaterial foundations of wealth (knowledge and Man's 'wit and will'), the superiority of manufacturing over agriculture and raw materials, the crucial role of infrastructure, and free trade among nations of the same level of development. These are all typical traits in pre WW I theories of economic policy both in German, United States and Japan. Later these thought were to spread to Korea and Taiwan, now entering China. However, List's analysis of **why** these policies were so efficient were so beneficial to economic growth are somewhat lacking. No doubt his observations were accurate, but one is left with the feeling that List fails to explain to the reader why his policies work. His theoretical concepts are vague and his explanation of the economic mechanisms at work are imprecise, or, as Werner Sombart says about List: 'His concepts levitate like undelivered souls on the banks of Hades'²⁶ However, his holistic vision of the fundamentals of economic development creating national wealth and/or poverty are almost unprecedented.

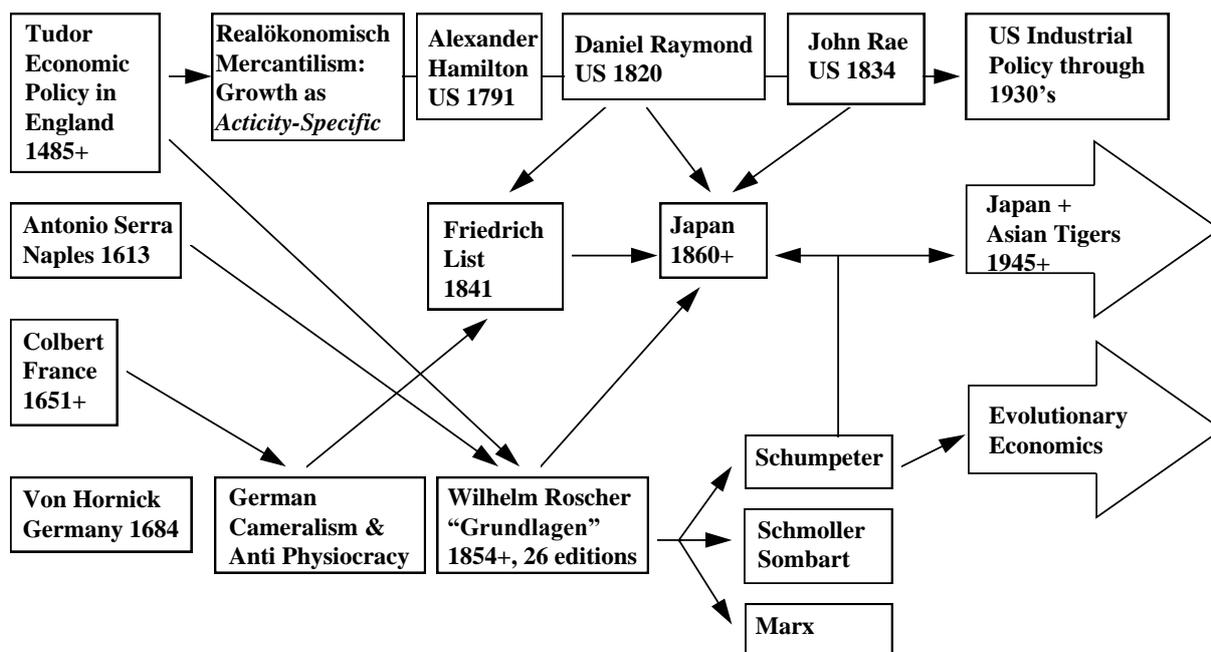
The Renaissance theory often works through **abduction** - the kind of intuitive knowledge that precedes induction and deduction. Lemons helped sailors in the Mediterranean prevent scurvy 800 years before the exact mechanisms through which these lemons work were established (i.e. Vitamin C). In the same way economic growth was successfully promoted in the Renaissance tradition of economics using 'new knowledge' and 'use of machinery' as proxies for the underlying factors causing systemic economic growth. The German cameralist tradition in economics recognised the superior potential of manufacturing over any other activity as a basis for collecting taxes. For this reason manufacturing was favoured in the German states, and increased economic wealth and technical change were by-products of this policy.

²⁵ List, Friedrich, *The Natural System of Political Economy* (1837), edited by W. H. Henderson, Totowa, N.J., Frank Cass, 1983.

²⁶ '...seine Begriffe 'schweben' umher wie die unerlösten Seelen an den Ufern des Hades', Sombart, Werner, *Der Moderne Kapitalismus*, Vol. 2, *Das Europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus*, München und Leipzig, Duncker & Humblot, 1928, p. 929.

FIGURE 2.

The Knowledge- and Production-based Canon of Economic Theory



We would argue that there is a strong continuity in this canon. During the 16th Century we find Antonio Serra, whose 1613²⁷ providing a theoretical framework to the mercantilist view that some economic activities, rather than others, were carriers of economic growth. Serra also explains the mechanisms creating the synergies which the mercantilists called *the common weal*. At the core of these mechanisms Serra sees the increasing returns which are found in manufacturing, but not in agriculture. The purpose of Serra's treatise is to explain the wealth of Venice and the poverty of Naples, in spite of the fact that Venice has virtually no natural resources, and Naples abounds. Serra in many ways provides the theory for why the English strategy - starting with Henry VII was so successful.²⁸

In France, the 17th Century policies of Sully and Colbert are based on the same type of reasoning. Going through the voluminous letters and instructions of Colbert²⁹, one is struck by his role as being that of a businessman in charge of a huge empire: As an entrepreneurial input-coordinator for France Inc., in a venture to get into knowledge-based activities, he was faced with what historians of technology call 'reverse salients'³⁰ - 'dynamic bottlenecks' - retarding the system and demanding managerial attention. In the German-speaking world an early spokesman for the same principles is Philipp Wilhelm von Hornick, whose 1684 work *Österreich über alles wann es nur will* was to appear in 16 editions, the last one as late as in 1784.

The bridge between English mercantilist policies and the industrial policy of the United States can be documented by two strong pillars: Benjamin Franklin's admiring and enthusiastic footnotes to the second edition of Whatley's late mercantilist tract³¹ and Alexander Hamilton. It has been shown that Hamilton knew his Adam Smith, but rejected particularly the free trade conclusion. Excerpts from Malachy Postlethwayt's *Universal Dictionary of Trade and Commerce* were scattered through Hamilton's Army Pay Book³² and later clearly provided much inspiration for his 1791 *Report on the Manufactures*.

When Wilhelm Roscher in the 1850's again solidly puts increasing returns on the map as a determinant of uneven economic development, he repeatedly quotes Antonio Serra. The German Historical School of economics thoroughly understands and appreciates the wisdom of realökonomisch mercantilism, although Sombart jokingly admits to the risk of defending any economic theory older than Adam Smith's: 'Ich sage das auf die Gefahr hin, als Neo-Merkantilist abgestempelt und in das Raritätenkabinett unseres Faches übergeführt zu werden.'³³

²⁷ Serra, Antonio, *Breve trattato delle cause che possono far abbondare li regni d'oro e argento dove non sono miniere*, Naples, Lazzaro Scoriggio, 1613.

²⁸ For a discussion of this strategy, see Reinert, Erik, 'Catching-Up From Way Behind. A Third World Perspective on First World History', in: Fagerberg, Jan et. al., *The Dynamics of Technology, Trade and Growth*, Aldershot, Edward Elgar, 1994.

²⁹ Clément, Pierre (Editor), *Lettres, Instructiones et Mémoires de Colbert*, Paris, Imprimerie Impériale/Imprimerie Nationale, 1861-1872, 7 Vols. in 10 + 1 Volume 'Errata Général et Table Analytique.'

³⁰ For a discussion of this concept, see Bijker, Wiebe, Thomas P. Hughes and Trevor Pinch (editors), *The Social Construction of Technological Systems*, Cambridge, Mass., MIT Press, 1989.

³¹ Whatley, G. *Principles of Trade. Freedom and Protection are its best suport: (sic) Industry, the only Means to render Manufactures cheap*, London, Brotherton and Sewell, 1774.

³² See Morris, R.B., *Alexander Hamilton and the Founding of the Nation*, New York, Dial Press, 1957, p. 285.

³³ 'I say this in spite of the risk of being branded as a neo-mercantilist, and as such to be transferred into the collection of the oddities of our profession.' Sombart, Werner, *Der moderne Kapitalismus*, Vol. 2: *Das europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus*, p. 925.

A crucial feature of 19th Century economic thought, is the mutual influence and theoretical cross-fertilisation which took place between the biggest nations which were attempting to catch up with England: Germany, the United States and Japan. They were united in their opposition to the theories of Smith and Ricardo, particularly as it came to free trade. Michael Hudson traces the ‘institutionalist (historical) school of economists which flourished in America during the final decades of the nineteenth century. The line appears to have run from the protectionist circle around Matthew Carey and Daniel Raymond, through Friedrich List to Germany and from there, via Roscher’s circles, to American students such as Patten and Ely studying at German universities.’³⁴ All the founders of the American Economic Association had studied economics in Germany. The transfer of Renaissance economic ideas to Japan after the Meiji Restoration was made by German economists - and by US economists who had studied in Germany - when ‘a stream of German teachers of political economy and related disciplines continually flowed in.’³⁵

Even in this Century the mercantilist inspiration to production-based economic can be traced. The main economist behind the *Third Reich* was Hjalmar Schacht, who was one of the two prisoners who were immediately freed after the Nürenberg trials. The subject of Schacht’s Ph. D. thesis at the University of Kiel in 1900 was: *Der theoretische Gehalt der englischen Merkantilismus*³⁶, i.e. ‘The Theoretical Content of English Mercantilism.’ Schacht’s skilful use of mercantilist production-based war economics, combined with a Keynesian understanding of credit, for a long time worked wonders for Hitler’s Germany. Schacht’s work also proves, though, the fundamental point of Renaissance economics that economics can and must not be separated from morality. The prominent and influential German economist J. F. von Pfeiffer (1715-1787) - the ardent anti-physiocrat - put it this way: ‘You can make of human beings what you want. The way he is governed, commends Man to good, or to evil.’³⁷

³⁴ Hudson, Michael, *E. Peshine Smith: A study in Protectionist Growth Theory and American Sectionalism*, Ph. Thesis, New York University, 1969, p. 45.

³⁵ Sugiyama, C. and H. Mizuta, *Enlightenment and Beyond. Political Economy Comes to Japan*, Tokyo, University of Tokyo Press, 1988, p. 32.

³⁶ Berlin, Gebr. Mann, 1900. The author’s full name appears here as *Horace Greeley Hjalmar Schacht*. Horace Greeley (1811-1872) was - just like the important US protectionist E. Peshine Smith, who we mention in this paper - a protégé of US statesman William Seward, US Secretary of State and one of the founders of the Republican Party. This party was the main proponent of ‘Renaissance economics’ in the United States at the time. Greeley founded the *New York Tribune* and was its editor for 31 years. One of *The Tribune*’s European correspondents was Karl Marx, whose dispatches to *The Tribune* became classics of Marxian socialism.

³⁷ ‘Man kann aus den Menschen machen, wass man will; die Art, mit der er regiert wird, entschliesst ihn zum Guten, oder zum Bösen.’ Pfeiffer, J. F. von, *Lehrbegrif sämtlicher oeconomischer und Cameralwissenschaften*, Mannheim, Schwan, 1777. Volume 3, Tome 1, (Des dritten Bandes erster Theil), p. 2.

3. The Two Canons Contrasted.

AREA OF ORIGIN:	NATIONS CATCHING UP	DECAYING, MATURE AND / OR UNDEVELOPED NATIONS
	PROGRESSIVE LAND-POWER	SEA-POWER / REGRESSIVE LAND-POWER
	CONTINENTAL	INSULAR / LANDED BACK-WATERS
SOCIAL ORIGIN:	NATION-STATE MONARCHY STATE / INDUSTRY PRODUCTIVE CAPITALISTS	FEUDALISM ARISTOCRACY MERCHANT-/ LANDED CLASS EXTRACTIVE CAPITALISTS
INCLINATION:	PRO-STATE (important)	ANTI-STATE (played down)
TYPE:	NATIONAL ECONOMICS INDUSTRIAL CAPITALISM	COSMOPOLITAN ECONOMICS FINANCIAL CAPITALISM
IMAGE OF MAN: (and of state)	HOMO FABER /- LUDENS GOD-LIKE (potential) rational (self)active creative (producing) compassionate	HOMO ECONOMICUS ANIMAL-LIKE irrational / superficially rational (acting according to next point below) re-active (instincts, hunger, sex) non-creative (consuming) non-compassionate
ROLE OF MAN:	PRODUCER	CONSUMER
CORE OF MAN:	SPIRITUAL SOUL	ANIMAL & MACHINE-LIKE
MORAL OBLIGATION:	SPIRITUAL	BIOLOGICAL
DUTY: of the individual:	IMITATE GOD perfect oneself and your fellow citizens	SURVIVE pursue one's own interests follow your instincts and feelings
of the state: of the civil servant:	"welfare state" make state work well for the public interest	laissez faire make state work for a minimum interest
IMAGE OF WELFARE STATE:	COLLECTIVELY ALLOCATIVE	INDIVIDUALLY ALLOCATIVE (OR COLLECTIVELY DISTRIBUTIVE: FABIANISM)

SOURCE OF WEALTH:	IMMATERIAL creativity / learning (dynamic accumulation) morality culture knowledge	MATERIAL accumulation (static accumulation) trade, war ,looting nature land labour (quantitative) capital
ORIGIN OF RENT:	COMPETENCE CREATION OF VALUE	WEALTH: NATURE, CAPITAL (surplus) FLUCTUATIONS IN VALUE
PROPELLING POWER:	INNOVATION-DRIVEN	WEALTH-DRIVEN
MOST PRODUCTIVE CLASS:	SCIENTISTS ENTREPRENEURS ARTISTS INTELLECTUALS	LAND-OWNERS (The Physiocrats) MERCHANTS (Municip. mercantilism) PHYSICAL WORK
ECONOMIC FOCUS:	PRODUCTION / KNOWLEDGE	BARTER / AGRICULTURE (classical school, physiocrats)
MARKET FOCUS:	MONETARY MARKET GOODS MARKET ADMINISTRATION GIFT EXCHANGE REDISTRIBUTION	MONETARY MARKET
EMERGENCE OF MARKETS:	ASSISTED standards legal framework patents infrastructure education	SPONTANEOUS = SELF-ORGANISING
VALUE FOCUS:	VALUE IN USE moral and physical magnitudes	EXCHANGE VALUE monetary magnitudes
EMPHASIS ON:	“REALÖKONOMI” (production)	FINANCE ECONOMICS
ECONOMIC FOCUS:	PRODUCTION SUPPLY TECHNOLOGY	CONSUMPTION DEMAND MARKETING
COMPARATIVE ADVANTAGE FOCUS:	COMPETENCE dynamic learning	NATURE static (given: stick to what you already master)
GENERAL OUTLOOK:	OPTIMISTIC ("Never ending frontier of knowledge")	PESSIMISTIC ("The Dismal Science")
GOAL: emerging from:	HAPPINESS freedom of the mind freedom to and from	HAPPINESS freedom of the flesh freedom to
SOCIETAL GOAL:	GROWTH OF CIVILISATION	MATERIAL GROWTH

	general morality and welfare	individual material wealth
ECONOMIC POLICY:	SELECTIVE / DIFFERENTIATING	GENERALISING
LEVEL OF ABSTRACTION:	MEDIUM	HIGH
VIEW OF ECONOMIC ACTIVITIES:	DIVERSITY (producing inequality)	REPRESENTATIVE FIRM (actors all "alike", produce equality in theory)
NATURE OF ECONOMIC GROWTH:	FUNDAMENTALLY UNEVEN NON-EQUILIBRIUM PROCESS	FACTOR-PRICE EQUALISATION
ECONOMIC GOAL:	GENERAL BALANCED GROWTH (all branches in national synergy: agriculture, industry, service, state)	UNSPECIFIED GROWTH IN GENERAL (national specialisation from international division of labour)
ECONOMIC MEANS:	PRODUCTIVITY GROWTH research invest	CUTTING COSTS ("downsizing") buy cheap and sell dear balanced budget
GENERAL STRATEGY:	OFFENSIVE visible hand	DEFENSIVE invisible hand
ECONOMIC POLICY INSTRUMENTS:	HIGH PRODUCTIVITY giving high wages & low unemployment	LOW COSTS low wages giving low inflation and low demand
CENTRAL BANK:	national bank (politically regulated)	"independent" bank 1) free banking (private market) 2) central banking
CREDIT POLICY: IN PRODUCTION: IN FINANCIAL MARKET:	SELECTIVE expansion regulated	GENERAL contraction (fear of inflation) expansion (free)
TAXATION POLICY:	TAX UN/LOW PRODUCTIVE CAPITAL AND CONSUMPTION	TAX CONSUMPTION, POLL-TAX
SUBSIDY-POLICY:	LEARNING, HIGH-TECH FUTURE PRODUCTIVITY (INFANT INDUSTRIES) + SOCIAL PURPOSES (GRANDFATHER-/SUNSET INDUSTRIES)	UNCLEAR
STATUS OF PROPERTY:	CARETAKER the individual as caretaker for the public interest	SOVEREIGN the individual as sovereign ruler

GENERAL ECONOMIC POLICY:	INTERVENTION regulation state initiatives	NON-INTERVENTION deregulation private investments
RENT-SEEKING:	REGULATION of rent seeking in order to create general (industrial) rent for (re)distribution	PREVENTION of rent seeking
NATIONAL GOVERNANCE:	CENTRAL strong state	DECENTRALISED minimal state
INTERNATIONAL GOVERNANCE:	INTER-NATIONAL bi-/ multi-lateral agreements	OVER-NATIONAL (Quesnay, Say, Bentham) “world government” for free-trade
CUSTOMS POLICY:	SELECTIVE REGULATED while catching up	GENERAL FREE TRADE
DEVELOPMENT AID:	TRANSFER OF COMPETENCE REDISTRIBUTE PRODUCTIVE POWER	TRADE, LOANS AND DEBT REDISTRIBUTE MONEY (if anything)
ECONOMIC POLICY:	REGULATION (public) through National Bank bureaucracy legal system , concerning credit investments contract conditions	DEREGULATION (private) through independent banking (private or central)
INITIATOR OF INVESTMENTS:	PRIVATE STATE in public goods like: soft infrastructure like: education “culture” research and new technology hard infrastructure like: transportation of ideas raw materials (incl.. energy, water) finished goods waste	PRIVATE

ECONOMIC TRADITIONS:

Religious scholasticism	Feudalism
National (state) Mercantilism	Commercial (municipal) Mercantilism
French Colbertism	
German Cameralism	
Anti.-Physiocracy	Physiocracy
National System	Cosmopolitan System
American System	British System
US. Civil War: North	US. Civil War: South
German Ethical-Historical School	Liberalism
American Institutionalism	Classical / Orthodox School
	Marginalism
	Neo-classical School
	Monetarism

PHILOSOPHICAL PLATFORM:

ONTOLOGY:	IDEALISTIC	MATERIALISTIC
EPISTEMOLOGY: (source of human knowledge in general)	RATIONALISTIC mind	EMPIRISTIC sensualistic
METHODOLOGY: (source of scientist's knowledge on economics)	(WIDE) EMPIRICIST NON-FORMALIST qualitative and quantitative SYNTHETICAL	RATIONALIST FORMALIST quantitative ANALYTICAL (abstracting)
LEVEL OF ABSTRACTION:	MEDIUM	HIGH
TAXONOMY: (Classification, status of Universals; general concepts)	REALISTIC	NOMINALISTIC
STATUS OF THEORY:	REALISTIC	INSTRUMENTALISTIC
PHILOSOPHICAL TRADITION:	HOLISTIC/ NEO-PLATONIC	ATOMISTIC / ARISTOTELIAN
MORAL TRADITION:	DEONTOLOGICAL (rules)	UTILITARIAN (ends) (also rule-utilitarianism)
RELIGION:	MONISTIC	HEDONISTIC

4. The Two Canons: Selective Use, Methodological Schizophrenia and Opportunistic Ignorance.

Of course, we do not imply that the world is a binary one, where all economists belong either to one tradition or the other. On the contrary, a key characteristic of several important economists is their at times schizophrenic allegiance to both sets of theory. One example of this is the conflict between the Marshall whose 'Mecca of the economist' lied in economic biology³⁸ and the Marshall of the appendices to his *Principles* which were deeply steeped in 'physics-envy'. In order to create the equilibrium which characterises today's physics-based standard economic theory, Marshall paradoxically had to restore to a *biological* metaphor. Increasing returns had been an important argument for industrial policy ever since Antonio Serra in 1613³⁹ all through the 19th Century. In order to reconcile the existence of increasing returns with equilibrium, Marshall uses a lengthy metaphor of firms growing and dying like trees in the forests.⁴⁰ This evolutionary growth process supposedly counteracts the tendency towards uneven accumulation caused by increasing returns to scale.⁴¹ The argument which killed all future biological analogies in neo-classical economics, was a biological analogy. This biological analogy was important in making economics into what it is today, a profession where a physics-inspired equilibrium is the central gestalt.

Schumpeter emanated from the Renaissance tradition of the German historical school and spent his life on the hopeless task of formalising the creative essence of Renaissance economics - of entrepreneurship, novelty, and creative destruction - into the framework of dead equilibrium which is at the core of neoclassical economics. Schumpeter was, indeed, 'a living, breathing contradiction' as Mirowski puts it⁴². We would claim that this contradiction was a result of being steeped simultaneously in two irreconcilable paradigms.

Seen from this point of view, Marx was also steeped in the same two irreconcilable paradigms. In terms of his emphasis on technology and economic dynamics, Marx - like Schumpeter - is a clear member of the Renaissance production-based canon. Marx' and Schumpeter's visions have a common basis in the German economic tradition. In Anglo-Saxon economics these economists come across as extremely original, seen from the German side they are both firmly rooted in that alternative canon. The one aspect of Marx' theory which decidedly belongs to the Anglo-Saxon canon is his use of Ricardo's labour theory of value. The labour theory of value is out of place in the German tradition where entrepreneurship, ideas, knowledge, leadership, and management necessarily contribute importantly to the value added created by physical labour.

Adam Smith himself, although he was - after John Locke and Bernard de Mandeville - the true founder of the mainstream canon - suffered from the same canonical mental split. In his discussion of the Navigation Act he was clearly in favour of the protectionist policy, shutting

³⁸ Marshall, Alfred, *Principles of Economics*, London, Macmillan, 1890, p. iv.

³⁹ Serra, Antonio, *Breve trattato delle cause che possono far abbondare li regni d'oro e argento dove non sono miniere*, Naples, Lazzaro Scoriggio, 1613.

⁴⁰ Marshall, *op.cit.*, pp. 315-316.

⁴¹ This problem is discussed in Hart, Neil, 'Increasing returns and economic theory: Marshall's reconciliation problem', University of Western Sydney, *Discussion Paper Series*, No. E9004, 1990.

⁴² Mirowski, Philip, 'Doing what comes naturally: four metanarratives on what metaphors are for', in Mirowski (Ed.), *Natural Images in Economic Thought*, Cambridge, Cambridge University Press, 1994, p. 5.

off Dutch ships. His argument was to a large extent based on considerations of national defence. To Adam Smith 'The art of war... is certainly the noblest of all arts'.⁴³

It is of great interest to note that to Adam Smith - the father of free trade - the mercantilist and protectionist Navigation Act was 'the wisest of all commercial regulations in England.'⁴⁴ This apparent 'double standard' and selective use of the different canons in order to suit English interests was frequently denounced by German and US economists in the 19th Century. Their slogan was 'Do as the English did, not as they say.' Today an appropriate strategy for the Third World would be 'Do as the Americans did, not like the Americans tell you to do.' Part of this playing of a double standard was, and is, an 'opportunistic ignorance'⁴⁵ of the history of one's own nation's economic policy.

The early Adam Smith, before his meeting with the French physiocrats, clearly expressed the Renaissance view of a the **Common Weal** - the synergetic effects of society - as being the motivation force for the establishment of manufactures. These were neither established to assist the producer, not to assist the consumer:

'The same principle, **the same love of system**, the same regard to the beauty of order, ...frequently serves to recommend those institutions which tend to promote the public welfare. ...When the legislature establishes premiums and other encouragements to advance the linen or woollen manufactures, its conduct seldom proceeds from pure sympathy with the wearer of cheap or fine cloth, and much less from that with the manufacturer or merchant. The perfection of police (i.e. policy), the extension of trade and manufactures, are noble and magnificent objects. The contemplation of them pleases us, and we are interested in whatever can tend to advance them. They make part of **the great system of government**, and the wheels of the political machine seem to move with more harmony and ease by means of them. We take pleasure in beholding the perfection of so beautiful and grand a system, and we are uneasy till we remove any obstruction that can in the least disturb or encumber the regularity of its motions.'⁴⁶

As we have indicated, the two alternative canons have their ebbs and flows through history. However, quite often we also find the same nation-state applying both canons at the same time - but for different end-users. For example, it is clear that England starting in the 1820's used Ricardo's trade theory (the barter-based classical canon) for export, and Charles Babbage's works on the importance of machinery and of science (the knowledge- and production-based Renaissance canon) for domestic purposes. This fact was well pointed out at the time by one member of the US House of Representatives, who commented that Ricardo's economic theory, like so many other British products, was intended for export only. The US itself conveniently followed this same canonical dualism towards Japan in the 19th Century. At a time when the United States was busily protecting her own industries, US Admiral Peary was sent to Japan in order to use convince that nation of the benefits of free trade. This resulted in the 'unfair treaties' which have such a dominant position in the Japanese perception of their own history.

⁴³ Smith, Adam, *Wealth of Nations* (1776), Chicago, University of Chicago Press, 1976, Vol. 2, p. 219. (Book V, Ch. I, Pt. I)

⁴⁴ Smith, Adam, *Wealth of Nations* (1776), Chicago, University of Chicago Press, 1976, Vol. 1, p. 487. (Book IV, Chapter II).

⁴⁵ This is Gunnar Myrdal's term.

⁴⁶ Smith, Adam, *The Theory of Moral Sentiments* (1759), in *Collected Works*, London, Cadell and Davies, 1812, Vol. 1, p. 320 (our emphasis).

In this Century the same contradictory policies have continued. A book from the Washington-based Institute for International Economics in 1986 starts the description of US trade policy as follows: ‘With bipartisan regularity, American presidents since Franklin Delano Roosevelt have proclaimed the virtues of free trade. They have inaugurated bold international programs to reduce tariff and non-tariff barriers. But almost in the same breath, most presidents have advocated or accepted special measures to protect problem industries. Together the two strands of policy have produced a contradictory profile.’⁴⁷ On these occasions arguments from the Renaissance-based canon - e.g. under the heading that ‘knowledge-based manufacturing matters’ - are invoked from the industry in order to protect the national manufacturing base. Nearby - also in Washington - the World Bank, following a strategy that ‘manufacturing does not matter’, carry out structural adjustment programs which in many cases lead to the deindustrialisation of whole nations, with a consequent collapse of national welfare. This is the paradigm of **organised free trade** - an oxymoron if there ever was one - which seems to follow the Golden Rule: ‘the one who has the gold makes the rules’.

An important feature of the **opportunistic ignorance** on the part of today’s leading industrialised nations, is the fact that the history of their own economic policy - the policy **that they themselves used in order to catch up with the rich nations** - to a surprising extent has been unlearned. This is very clear in the United States. The economists who laid the foundations for 19th Century US trade policy and industrial policy are hardly mentioned in today’s history of economics, and if they are mentioned at all it is to point out their ‘failures’. It is curious how today’s American economists virtually unanimously declare how both the industrialisation of their own country and the New Deal were carried out by ‘bad economists.’ Economists like E. Peshine Smith⁴⁸ - who later was a key person in bringing the ‘American System of Manufactures’ to Japan - Matthew Carey, Alexander Everett, Calvin Colton, Francis Bowen and Stephen Colwell are unknown today, only Henry Carey is remembered by a few.

This is of course a parallel to the well established - but still intuitively surprising - ‘fact’ of economic science that the Renaissance economists who brought Europe out of the Middle Ages all belonged to the despised category of ‘mercantilists’. We have collectively absorbed Adam Smith’s caricature of all economists before himself: that they mistook gold for real wealth. German economist Eugen Dühring scorns *die Karrikierer des Merkantilismus* - the caricature makers of mercantilism - who ‘only too often spoke as if the business people and the statesmen of the day almost believed that precious metal could be used as food for the human body’⁴⁹. The important systemic aspects of the Renaissance theory - the creation of a national *common weal* - is left out of today’s accounts.

This strategy of ‘theory juggling’ and ‘assumption juggling’ - condemned by Joan Robinson - is also present in the European Community. The Cecchini Report on the single European market identifies most of the benefits from the single market as coming from *economies of scale*. On the other hand, the EU policy towards the Third World is based on a theory where economies of scale and increasing returns do not exist. During the 19th Century the existence

⁴⁷ Hufbauer, Gary C., Diane T. Berliner and Kimberly A. Elliot, *Trade Protection in the United States: 31 Case Studies*, Washington D.C., Institute for International Economics, 1986, p. 1.

⁴⁸ On E. Peshine Smith see Michael Hudson’s 1969 Ph.D. thesis: *E. Peshine Smith: A Study in Protectionist Growth Theory and American Sectionalism*, Ann Arbor, University Microfilm. In the 1970’s Hudson edited a series of reprints of 19th Century US economists.

⁴⁹ Dühring, Eugen, *Kritische Geschichte der Nationalökonomie*, 1879, quoted in Sombart, *op. cit.*, p. 913.

of increasing returns in industry was an important argument for the protection of industry in all the nations which followed the English path to industrialisation. Today, this argument is only used internally in the European Union, not in their policy towards The Third World. The industrialised nations are - using the 19th Century accusation against the British - today 'pulling up the ladder' of development from those who tried to industrialise later. Only in Asia - where the activity-specific Renaissance strategy is copied from Japan - do we see real catching up.

Friedrich List saw very clearly that Adam Smith's theory was in a clear contradiction to the policy followed by England during her ascent to world power. List's succinct and accurate resume of the history of English economic policy is as follows: 'The principle *sell manufactures, buy raw material* was during centuries the English substitute for an (economic) theory.'⁵⁰

To List, English classical economic theory 'conceal(s) the true policy of England under cosmopolitan expressions and arguments which Adam Smith had discovered, in order to induce foreign nations not to imitate that policy. In is a very common clever device that when someone has attained the summit of greatness, he kicks away the ladder by which he had climbed up, in order to deprive others of the means of climbing up after him. On this lies the secret of the cosmopolitical doctrine of Adam Smith, and of the cosmopolitical tendencies of his great contemporary William Pitt, and of all his successors in the British Government administrations. ... William Pitt was the first English statesman who clearly saw in what way the cosmopolitical theory of Adam Smith could properly made use of ...'⁵¹

The actual historical record of free trade confirms that England carried out at home the very same principles which her theoretical economists tried to prevent in t to the rest of the world. Conventional wisdom has it that in the 19th Century France was a fortress of protectionism while England was the bastion of free trade. When the actual trade data are consulted, however, the surprising conclusion is that 'French average tariffs were...consistently below those of Britain throughout most of the Nineteenth Century, even after the abolition of the Corn Laws.'⁵² The double standard is not new.

5. Communication and Infrastructure in Renaissance Economics

In the Renaissance tradition the basis for human economics, in the first place, is Man's ability to think and to generate hypothesis. Secondly it is dependent upon Man's ability to communicate. This communication is dependent on the phenomenon of *consensus gentium*, which we elaborated upon in our article on Leibniz and Wolff.⁵³ Leibniz - in particular - argued in his 1695 attack on the materialist empiricism of Locke and on the dominant British philosophical school, that only Man's **rational spirituality** could explain this phenomenon of interpersonal understanding and communication in the idealist tradition.

⁵⁰ List, Friedrich, *Das Nationale System der politischen Oekonomie* (1844), Basel, Kyklos, 1959, p. 12. Our translation. This is part of List's own foreword to the work, which has been drastically reduced in the English edition.

⁵¹ List, Friedrich, *The National System of Political Economy* (1841), London, Longman, 1904, p. 368-369.

⁵² Nye, John Vincent, 'The Myth of Free-Trade Britain and Fortress France: Tariffs and Trade in the Nineteenth Century', in *The Journal of Economic History*, Vol. 51, No. 1, March 1991, p. 23.

⁵³ Reinert and Daastøl, 1997, op.cit.

As already mentioned, the important concept of the *common weal* was a synergetic one. Serra (1613) specifically relates the wealth of a city to the number of different professions in a city. Adam Smith's 'division of labour' - taken from William Petty - clearly also implies similar increasing returns to scale. This is probably the reason why 'the division of labour' - although heralded as Adam Smith's greatest achievement - has never been integrated into any classical or neoclassical economic model. The division of labour is in some very fundamental sense not compatible with constant returns to scale. The division of labour is a result of fixed costs - either in knowledge or in other tools - which automatically cause increasing returns to some degree. However, taking away the diminishing returns of Malthus' and Ricardo's corn economy would remove any clear cut market solution in today's models: The lines of the demand functions and the supply function would never cross, and no equilibrium would be found. Price and quantity would remain undetermined within the model. Exogenous factors would be left with the task of solving this basic problem - voiding standard economic theory of its central postulate of an equilibrium as well as of any practical use.

In the Renaissance conception of economics there were therefore increasing returns to the size of nations. Recreating and extending this urban advantage to the whole nation-state was a central challenge to Renaissance rulers. Both List and Wallerstein point out that while England achieved this national unity, Holland did not develop beyond a collection of city-states. This was a main reason for Holland's loss of leadership.

Early municipal (city-state) mercantilists observed the beneficial effects of denser populations clustered in towns giving rise to productive synergetic effects through differentiation, personal and political freedom, as well as economics of scale. Having a large population was therefore regarded as a great benefit to any nation. Later, state mercantilists tried to emulate the same positive mechanisms on a national scale by state initiated construction of various means of communication and transportation. Mercantilist politicians and economists tried 'artificially to reap the observed benefits of the cities' high population densities - in geographical areas with sparser population densities. Dutch author Pieter De La Court in 1645 wrote *The Welfare of the City of Leiden*. In 1662 his scope had widened to *The Interest of Holland*.

Law and order, industrial quality control, labour codes, labour discipline, standardisation of language, measurements, coins and education, the construction of roads, canals, diligence and postal routes as well as 'refuelling stations' along transport routes were all a part of this strategy. These measures were intended to create *national* welfare as opposed to the *municipal* mercantilist strategy which flourished, in the main, in coastal city-states. These city-states mostly functioned as enclave economies which were relatively isolated from the hinterland. The first volume of Heckscher's⁵⁴ *Mercantilism* is appropriately entitled 'Mercantilism as a Unifying System.' In its pursuit of power and wealth, state mercantilism fused the monarchic and municipal mercantilist traditions. This alliance between the King and the middle class - opposed to the feudal aristocracy - created a powerful instrument: The Nation-State.

In sparsely populated areas a policy of corridor development was pursued, similar to the old silk-road caravan tracks between the Roman and Chinese empires. By artificially creating dense populations in areas along the transport routes, the construction of these arteries was

⁵⁴ Heckscher, Eli, *Mercantilism*, London, Allan and Unwin, 1935, 1st Swedish edition; *Merkantilismen. Ett led i den ekonomiska politikens historia*, Stockholm, Norstedt, 1931.

made economically more worthwhile. Additionally, this strategy opened up marginal areas for development.

The purpose of the huge investments in infrastructure were in some ways similar to the purpose of the city states itself. As List notices, the infrastructure allowed for greater communication between citizens. This made political control of the individual more difficult, and therefore created a greater political freedom. Only in densely populated areas, a critical mass of public opinion could acquire enough strength to develop into democracy. At the same time the expansion of markets through improved communication allowed for greater possibility of economies of scale, higher diversification and production for niche markets and higher production for a monetary market - as opposed to the barter market. The economies of scale allowed for improved technology, and made it possible for a higher percentage of the population to engage in new activities, again contributing to diversity, division of labour and economies of scale in a positive feed back circle. The mercantilists' promotion of manufacturing also intended to emulate these positive effects of the city modelled as a huge productive machinery: the factory.

6. Canonical Battles: The Head-on Confrontations .

Occasionally the two canons meet head-on in what we have labelled *Canonical Methodenstreite*. Below we describe five of these Methodenstreite:

Canonical Methodenstreit 1: Misselden vs. Malynes (1622-23)

The theoretical conflict between the forefathers of today's mainstream canon and the Renaissance canon has existed at least since the 1622-23 'English' debate between Gerard De Malynes⁵⁵ and Edward Misselden,⁵⁶ where Malynes represented a static theory rooted in *barter* and Misselden represented a theory centred around *learning* and *production*. Both Misselden and Malynes were Dutchmen from Antwerp working in London. In the history of economic thought, their debate is interpreted as being about exchange controls and the balance of trade.⁵⁷ The controversy between the two was an 'acrimonious, even abusive' one, in which 'ink was shed like water'⁵⁸.

However, by going back to the sources, one finds that the main line of attack by Misselden against Malynes is his 'mechanical' view of man - Malynes has left out Man's 'art' and 'soul'. Misselden quotes at length a paragraph from Malynes, where Malynes reduces trade to three elements, 'namely, Commodities, Money, and Exchange'⁵⁹. Objecting to this definition, Misselden says: 'It is against Art to dispute with a man that denyeth the *Principles* of Art'.

⁵⁵ Malynes, Gerhard, *The Maintenance of Free Trade, According to the three essentiall (sic) Parts...Commodities, Moneys and Exchange of Moneys*, London William Sheffard, 1622, and *The Center of the Circle of Commerce, or, A Refutation of a Treatise,.....lately published by E.M.*, London, Nicholas Bourne, 1623.

⁵⁶ Misselden, Edward, *Free Trade and the Meanes (sic) to Make Trade Flourish*, London, Simon Waterson, 1622, and, *The Circle of Commerce or the Ballance (sic) of Trade*, London, Nicholas Bourne, 1623,

⁵⁷ Schumpeter discusses the controversy between the two men in his *History of Economic Analysis*, New York, Oxford University Press, 1954, pp. 344-345. See also their respective entries in 'The New Palgrave'. In all cases these references are purely to the mechanics of money and exchange.

⁵⁸ Buck, Philip, *The Politics of Mercantilism*, New York, Henry Holt, 1942, p. 23.

⁵⁹ Misselden, *op. cit.*, (1623), p. 8.

Misselden scorns Malynes for not seeing the difference between a heap of stones and logs and a house - because Man's productive powers and his soul has, which produce the house, have been left out. A similar criticism can be made of neo-classical economics.

Misselden represents the acute Renaissance awareness of the enormous territory to be covered between Mankind's present poverty and ignorance, and the enormous potentials. This released enthusiasm and energy. The situation recalls Keynes' frustration with the suboptimal situation of the world under the Great Depression. We shall attempt to show that both to the Renaissance philosophers/economists as well as to Keynes, the formula needed to 'free' society from its suboptimal position was what Keynes called 'Salvation through Knowledge'⁶⁰.

In the late 18th Century a new type of economic theory came into being, focusing on the 'natural harmony' of Nature. Malynes, and later Bernard de Mandeville (also a Dutchman) were predecessors of this view, which culminated with Adam Smith's work written when the English had caught up with and forged ahead of the Dutch. Mandeville is best known for his work *Fable of the Bees* (1714, but an early version in 1705). Interestingly Malynes - in 1655 published *The Commonwealth of Bees*. The use of bees in a harvesting economy as a metaphor for a human economy leaves out the role of creativity, novelty, and intelligence. Still today, a fundamental and unresolved problem of standard economic theory is to how deal with novelty.

This 'harvest economy' was central also to the French physiocrats: 'physiocracy' = the rule of nature'. As we shall see, the anti-physiocrats were defending the Renaissance tradition. In physiocracy all economic activities other than agriculture were seen as sterile. In Adam Smith we again find an 'animalistic' view of Man, as in the dog metaphor already quoted in the introduction to this paper. Within today's evolutionary economics we find the same schism: part of the evolutionary school tend to substitute 'biology-envy' for 'physics-envy', leaving out the creative dimension of Man. Today Adam Smith's 'invisible hand' finds its equivalent in Paul Krugman's view of the economy as a self-organising system: 'Global whether is a self-organising system; so surely, is the global economy'.⁶¹ The implications are clear: Man is at the mercy of an irrational destiny we cannot influence, particularly not on a collective level.

In his *Theory of Moral Sentiment* Adam Smith makes it very clear that messing around with destiny is not the business of Man: 'The care of the universal happiness of all rational and sensible beings, is the business of God and not of man. ... Nature has directed us to the greater part of these (means to bring happiness about) by original and immediate instincts: ... (which) prompts us to apply those means for their own sake, and without any consideration of their tendency to those beneficent ends which the great Director of Nature intended to produce them.'⁶² The parallel with Krugman's whether metaphor is obvious. Albert Hirschman's 1991 book, *The Rhetoric of Reaction. Perversity, Futility, Jeopardy* ⁶³traces the history this theoretical school.

⁶⁰ Ibid., p. 102.

⁶¹ Krugman, Paul, *The Self-Organizing Economy*, Cambridge, Mass. & Oxford, Blackwell, 1996, p. 99.

⁶² *Adam Smith: Theory of the Moral Sentiments*, 1759 (Liberty Classics 1976), part. VI, section II, Ch. III, p.237: Interestingly, this appears in a book which is said to represent the diametrical opposite of *Wealth of Nations*, the first based on the axiom of altruism and the second on self-love.

⁶³ Hirschman, Albert O., *The Rhetoric of Reaction. Perversity, Futility, Jeopardy*, Cambridge, Mass., Harvard University Press, 1991.

In our view, both Adam Smith and Krugman fit the traditional moral hedonism, exemplified in this quote from Jeremy Bentham:

‘Nature has placed Man under two sovereign masters, pain and pleasure. It is for them alone to point out what we ought to do, as well as determine what we shall not do ... every effort we make to throw off our subjugation, will serve but to demonstrate and confirm it. In words a man may pretend to abjure their empire: but in reality he will remain subject to it all the while. The principle of utility - the greatest happiness or greatest felicity principle - recognises this subjugation, and assumes it for the foundation. ... Systems which attempt to question it deal .. in caprice instead of reason, in darkness instead of light.’⁶⁴

Typically, the proponents of the barter-centered mechanical theories of wealth appear in the wealthy nations. At the time of the Misselden/Malynes controversy Holland was the leading nation and England and France were attempting to catch up. The City was at the time to a large extent a Dutch ghetto. Other early ‘English’ free traders were in fact other Dutchmen working in the City, like Vanderlint. Nicolas Barbon, another English free trader, was - just as John Locke - born in England but educated in Leiden.⁶⁵

The shift from an emphasis on Man’s creativity (Misselden) to an emphasis on ‘natural harmony’ (Malynes) was a true paradigm shift in Kuhn’s sense. It must be admitted, however, that the incentives of Renaissance economics to produce knowledge through a process which we have labelled **dynamic and knowledge-producing rent-seeking** - or *Schumpeterian Mercantilism* - in many cases degenerated into **static rent-seeking**. Whereas the optimistic theory of the Renaissance focused on the limitless potential of ‘Man the Producer’, the new economic theory came to focus on ‘Man the Trader and Consumer’. The two theories were steeped in very different realities - the old one in Man’s ability to create and produce, and the new one in a world of barter, based on the mechanics of an *ordre naturel* - the ‘Natural order’. The old theory was dynamic and organic and centered around ‘thought’ (Logos) and ‘werden’ (becoming), the new theory was mechanical and static, centered around ‘matter’, and ‘sein’ (being). In the old theory the market was present in the role of a servant of active human beings who knew where they were going, in the new theory the market acquired many of the characteristics of ‘Providence’⁶⁶, as the manifestation of the *ordre naturel*. Werner Sombart fittingly calls the Renaissance economics **activistic-idealistic**, and the economics from Adam Smith onwards **passivistic-materialistic**.⁶⁷

Just as Renaissance economics sees no limits to progress - they truly see ‘a never ending frontier of human knowledge’ - in Adam Smith’s system, which followed Malynes’, nations reach a stationary state where they can ‘advance no further’, when that ‘full compliment of riches which the nature of its soil and climate...allowed it to require’ had been reached⁶⁸. It is only here that we see the practical consequences of Adam Smith sharing the same assumptions as part of today’s ecology movement - no new knowledge enters the system. The

⁶⁴Jeremy Bentham: An Introduction to the Principles of Morals and Legislation, (1780), London, University Paperback, Ch. I, p.11.

⁶⁵ On this issue, see Raffel, Friedrich, *Englische Freihändler vor Adam Smith*, Tübingen, Laupp, 1905.

⁶⁶ On this point see Viner, Jacob, *The Role of Providence in the Social Order. An Essay in Intellectual History*, Philadelphia, American Philosophical Society, 1972.

⁶⁷ Sombart, Werner, *Der Moderne Kapitalismus*, Vol. 2, *Das Europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus*, München und Leipzig, Duncker & Humblot, 1928, p. 919.

⁶⁸ Smith, Adam, *Wealth of Nations* (1776), Chicago, University of Chicago Press, 1976, p. 106.

only logical consequences of a theory which does not allow for the production of new knowledge is either a stationary state (Adam Smith) or an 'ecological disaster.' This disaster can be predicted by simple extrapolations. However, each level of knowledge carries with it its own level of 'sustainability.' 'Knowledge' and 'institutions' are the conspicuously and 'actively absent' factors in Adam Smith's system, i.e. these factors are not only ignored, but it is actively argued that they have no relevance.⁶⁹

Just as the focus of Renaissance economics was on production, the focus of neo-classical economics is on barter and exchange. Leibniz, in 1671, sees the origin of barter as being in production, and quotes Aristotle: 'Nam Maercaturus transfert tantum, Manufactura gignit' - *Trade can carry only as much as the factories produce*'. To Leibniz, the poverty of the producing artisans was an important argument for the establishment of an active State. **'After all, is not the entire purpose of Society to release the artisan from his misery ?** The farmer is not in need, since he is sure of his bread, and the merchant has more than enough'⁷⁰.

Canonical Methodenstreit 2: Anti-physiocracy vs. Physiocracy & Adam Smith (ca. 1770-1830)

The second Methodenstreit between the knowledge-based Renaissance school and the predecessor of today's standard (neo-classical based) economic theory starts in the 1770's with the rise of the Physiocratic school in France. It may be said that the physiocratic school in some sense was a reaction to the perversion of Colbertism into a policy of indiscriminate taxation - devoid of the central principles of Colbertism. But, it can also be said that it was the reaction of the landowners against Colbert's policy of systematically diverting resources from agriculture to manufacturing.

The physiocrats continued the animalistic view of Man:...sometimes they regard man as a browsing animal, concerned only with his nourishment, the maximum production of the fruit of the earth as his social ideal.⁷¹

The anti-physiocratic movement has received little attention in the history of economic thought. These authors, however, represented the true continuation of Renaissance economics. Interestingly, two of the main opponents of physiocracy in France were clergymen: Abbé Mably and Abbé Galiani, the Neapolitan envoy to the Court of Paris.⁷² Galiani was to take a position which in many ways foreshadowed the position of the historical school in late 19th Century Methodenstreit: 'Abstract principles are no good for commercial policy. Corn laws which are good in one time or place may be bad in another. ... The statesmen who admired Colbert should not imitate him, but ask himself, "What would Colbert do if he were her now ?"' ⁷³This criticism of a very abstract and context-free theory was very similar to the reaction of Reverend Jones, against the writings of Ricardo in 1820. Richard Jones was the father of

⁶⁹ This point is discussed in Reinert, Erik S., 'The Role of the State in Economic Growth', presented at the Conference on 'The Rise and Fall of Public Enterprises in Western Countries', Milan, Bocconi University, October 1996.

⁷⁰ Leibniz, Gottfried Wilhelm, 'Society and Economy' (1671), reprinted in *Fidelio*, Vol. 1, No. 3, Fall 1992, p. 54.

⁷¹ Higgs, Henry, *The Physiocrats*, London, Macmillan, 1897.

⁷² A good description of Galiani and his unique standing in French society at the time is found in Pecchio, Giuseppe, *Storia della Economia Pubblica in Italia*, Lugano, Tipografia della Svizzera Italiana, 1849, pp. 80-86.

⁷³ Higgs, *op. cit.*, p. 117.

the English historical school of economics, which became very influential during the latter half of the 19th Century.

One of the main opponents of the physiocratic school⁷⁴ in France was Forbonnais, who refused to admit that trade and industry are sterile. Also to Forbonnais the main agent creating wealth is Man - not nature itself: without human agency **the land itself** is doomed to absolute or relative stability. Other contemporary French opponents of physiocracy were Accarias de Serrionne, Graslin, Necker, and Linguet.

Perhaps the most ardent anti-physiocrats were found in Germany. Under the heading 'Antiphysiokraten', Humpert's bibliography of the German cameralist school lists 25 works - published between 1771 and 1832.⁷⁵ The best known of these work is Johann Friedrich von Pfeiffer's *Der Antiphysiokrat*.⁷⁶ Pfeiffer was also the author of the most influential economic work in Germany at the time. Other continental opponents of physiocracy were Johann Jakob von Moser, Dohm, and Sonnenfels.

Canonical Methodenstreit 3: The American System vs. The British System (19th Century United States)

The US opposition to English classical economic theory started with Benjamin Franklin and continued with Alexander Hamilton's 1791 'Report on the Manufactures'. This Methodenstreit on the policy level lasted all through the 1930's, although on the theoretical level English classical economics was to be increasingly taught at the Ivy League universities in the late 19th Century. At one point Cornell University offered parallel courses in the two traditions. Important economists in this tradition were Daniel Raymond, Matthew and Henry Carey, John Rae, E. Peshine Smith and many others. The last great economists of this tradition were Richard Ely and Simon Patten, who - like most US economists who studied abroad in the 19th Century - studied in Germany.

On the policy level, the nations industrialising in the 19th Century were to take up the example which had been set by England - and later abandon by her when she had reached world hegemony. The great industrial nations in their pre-take-off period share a core theme of the *activity-specific* nature of growth.⁷⁷ Economic growth could only be achieved by including activities with fast technological change and a rapid growth in output in the nation's portfolio of industrial activities. This theme can be followed in economic writings from the early 1500 in Italy and England and France, a little later in the German cameralists. It is introduced to the United States through Alexander Hamilton and his favourite economist, the English mercantilist Malachy Postlethwayt⁷⁸, and from Friedrich List's involuntary exile in

⁷⁴ The anti-physiocrats are discussed in Weulersse, Georges, *Le mouvement physiocratique en France*, Paris, Alcan, 1910, vol. 2, pp. 256-682, and in Higgs, op.cit., pp. 102-122.

⁷⁵ Humpert, Magdalene, *Bibliographie der Kameralwissenschaften*, Cologne, Kurt Schroeder, 1937, pp. 1031-1032.

⁷⁶ Pfeiffer, Johann Friedrich von, *Der Antiphysiokrat, oder umständliche Untersuchung des sogenannten physiokratischen Systems für eine allgemeine Freyheit und einzige Auflage auf den reinen Ertrag der Grundstücke*, Frankfurt am Main, Schäfer, 1780.

⁷⁷ This is described in Reinert, Erik, *Thoughts before Takeoff. Hva mente økonomen i de nåværende i-land om næringspolitikk og økonomisk vekst før disse landene ble rike?*, Parts 1 and 2, Oslo, STEP-Group, mimeo, 1992.

⁷⁸ It has been shown that Hamilton knew his Adam Smith, but rejected particularly the free trade conclusion. Excerpts from Postlethwayt's *Universal Dictionary of Trade and Commerce* were scattered through Hamilton's Army pay book, see Morris, Richard B. *Alexander Hamilton and the Founding of the Nation*, New York, Dial

the US it is reinforced again in the Germany of the Zollverein. In Meiji Japan the *doitsugaku* school - favouring the German model - came to be the most influential for the building of society, at least until 1945.⁷⁹ The Japanese took over the autarkic views that dominated the German historical school. In Japan, after 1883, 'a stream of German teachers of political economy and related disciplines continually flowed in'⁸⁰

A common thread of successful long-distance catching-up through the centuries, is a shared distrust of free trade until the nation is firmly established in what was seen to be the *right* economic activities - the *specific activities* which increased the nation's 'productive powers'. Through the dynamic imperfect competition (i.e. Schumpeter's 'historical increasing returns') in these specific activities, real wages could be raised: first in the 'engine' industry and subsequently spreading through the whole national labour market. In the US tradition, adding skill to the labourer was the logical way of increasing his price or value (= wage) This tradition survived in the United States up until and including the economists who were taught by Ely's and Patten's generation. In a letter to one of the authors, dated August 16 1996, Moses Abramowitz comments: 'I agree in particular that the "residual" and growth in general are industry-specific. That has seemed clear to me since I was a graduate student in the Thirties and read the Kuznets and Burns books...' This certainly points to a link - if not a necessarily very strong one - between the old American school and present day 'economics of catching up'. Robert Reich's 'high quality jobs' continues in this tradition without any references to its rich history.

We would argue that in 19th Century US economic policy, the general view was that some economic activities were better than others. Differences in wage levels, both nationally and between nations, seem to result from varying degrees of imperfect competition - caused by both static and dynamic factors. The factors at work have long been identified both by businessmen and in industrial economics, and they are correlated.

Figure 3 on the next page attempts to create an area from light to dark grey where the 'quality' of economic activities at any time can be roughly plotted on a scale from white - 'perfect competition' - to black: 'monopoly'. The whole system is constantly moving, as new knowledge enters on top and - with varying gravity and speed - fall towards 'perfect information' and perfect competition as they mature. We would claim that the 'gestalt' expressed in Figure 3 corresponds to the 19th Century US idea on why some nations were wealthier than others, and why nations had to reach the top of the quality index before free trade would be beneficial to the nations. At the bottom of this hierarchy sit *the world's most efficient producers* of baseballs - in Haiti - making US dollars 0,30 per hour. This type of production has not been mechanised anywhere. Higher up sit the world's most efficient producers of golf balls - in a mechanised production - making 9 dollars an hour. We would claim that *no nation of any size* has ever reached national welfare without going through a period of this kind of thinking. The realökonomisch-oriented mercantilist school clearly had a *Weltanschauung* comparable to this one. Charles King very influential 1721 volumes is perhaps the work which most clearly expresses this.⁸¹

Press, 1957, p. 285. Hamilton's view on the English classical economists was similar to that taken 80 years later by the Japanese, see Morris-Suzuki, Tessa, *The History of Japanese Economic Thought*, London, Routledge, 1989.

⁷⁹ Yagi, Kiichiro, 'German Model in the Modernisation of Japan', in *The Kyoto University Economic Review*, Vol. 59, No. 1-2, April-October 1989, p. 29.

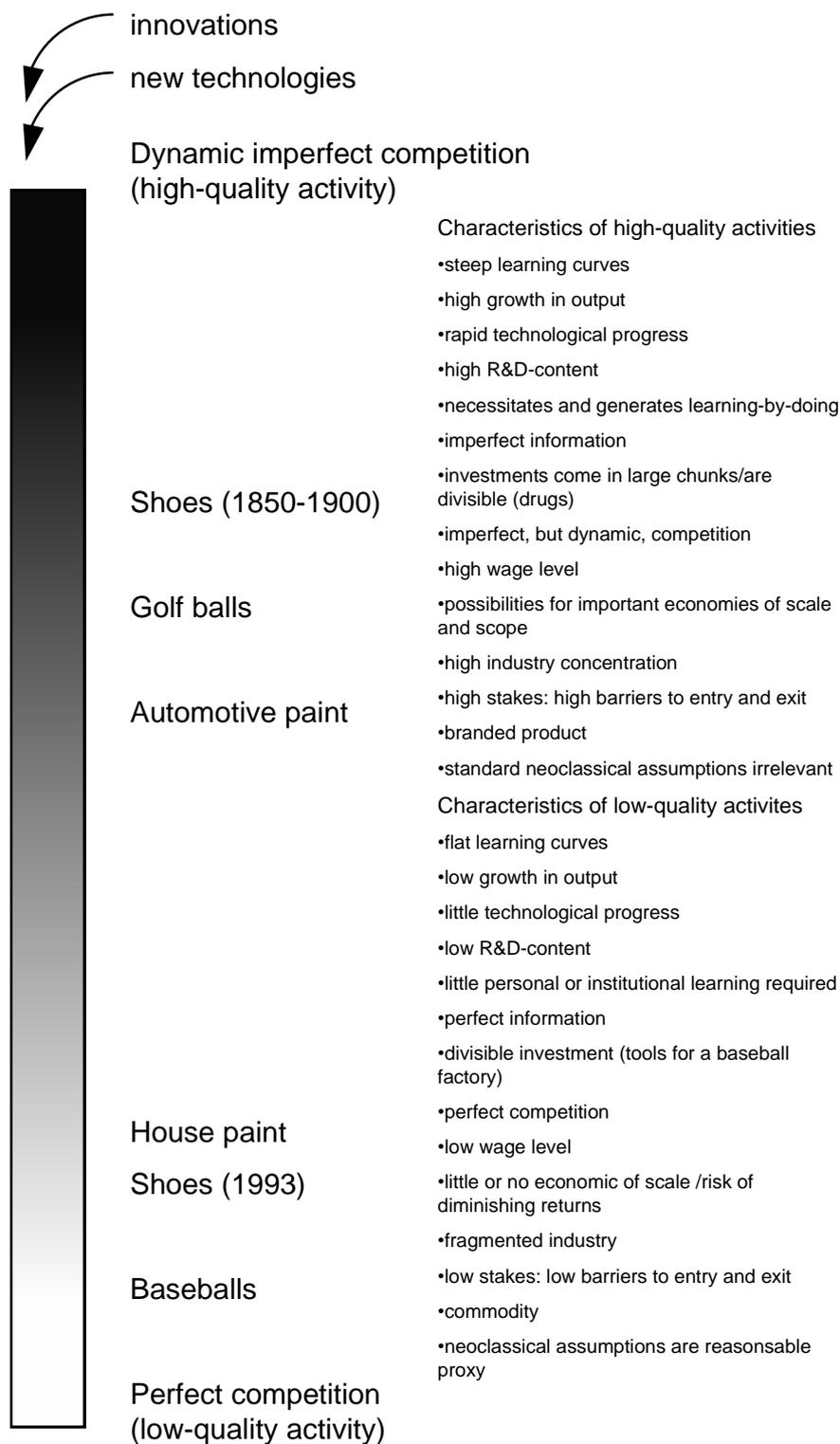
⁸⁰ Sugiyama, Chuhei, and Hiroshi Mizuta, *Enlightenment and Beyond. Political economy comes to Japan*, Tokyo, University of Tokyo Press, 1988, p. 32.

⁸¹ King, Charles, *The British Merchant: or Commerce preserv'd*, London, John Darby, 1721, 3 Vols.

Figure 3 unites the economic factors which prevent factor-price equalisation ever to take place in the world economy. *Within* one nation - within the same labour market - the same forces are at work, but the dispersion in the wage level becomes much less pronounced. *Within* a nation several factors unite to create a tendency towards larger equality in wages: the mobility of labour, the similar education and knowledge levels, the pressure from labour unions, etc. The wage level of the traditional service sector seems - in all nations - to be determined by the existence or not of 'high quality activities' in the nation. If no high quality activities are present, real wages in this sector are low. In this traditional service sector - barbers, bus drivers, chambermaids, etc. - productivity levels all over the world tend to be very similar. Their real wages, however, are widely different. The barber or bus driver in Bolivia or Russia - although equally efficient as those of the First World - have real wages which are only a fraction of their Swiss or Norwegian counterparts.

The quality index of economic activities, in our opinion, answers the question as to why 'the invisible hand' compensates workers with equal efficiency in different countries so widely differently. We would claim that because of this mechanism what to most people seems like a

FIGURE 3.
The Quality Index of Economic Activities



globally ‘efficient’ market does not maximise world welfare. By distributing *production* of knowledge-intensive high quality produce to all labour markets - not by distributing capital - the average standard of living on a world level may be raised considerably. The argument presented here is very close to that of German philosopher Leibniz, and of early US economists, starting with Benjamin Franklin⁸², Alexander Hamilton, and Daniel Raymond in the late 18th and early 19th Century.

Canonical Methodenstreit 4: The Historical School vs. Marginalism (1883-1908)

The resounding success of Ricardian economics and its extreme laissez-faire policies during the 1840’s provoked a theoretical countermovement following the political events of 1848. The international depression in 1873 further increased the opposition against the classical economic tradition all over Europe. The stronghold of the opposition was in Germany, where the older historical school founded by Bruno Hildebrand – whose book was published in 1848⁸³ – Karl Knies and Wilhelm Roscher increasingly challenged both the theoretical foundations and practical conclusions of Ricardian economics. Later a new generation of historical economists led by Gustav Schmoller - the younger historical school – for a long time completely dominated German academic and practical economics.

Carl Menger, the founder of the Austrian marginalist school, in 1883 published his book: *Untersuchungen über die Methode der Sozialwissenschaften und der politischen Ökonomie insbesondere*. Menger had dedicated his first book to Wilhelm Roscher – the prominent German economist of the Historical School. Menger closed the preface praising recent German economics and hoping that his book ‘be regarded ... as a friendly greeting from a collaborator in Austria.’ The reply from Germany to his books was not friendly. Schmoller reviewed the *Untersuchungen* unfavourably in his *Jahrbuch*, and Menger replied in a small book entitled *Errors of Historicism* in 1884.⁸⁴ Of all the *Methodenstreite*, this – the most famous one – is paradoxically the least fundamental of them all. Menger and Schmoller essentially shared the same critical attitude towards the mechanical and barter-based English theory. Their personalities and pride clashed, but compared to Ricardian economics the two are next of kin. This *Methodenstreit* created a debilitating civil war inside The Other Canon.

Schmoller wanted theory to be empirically founded, in opposition to the English classical tradition that founded theory on introspective assumptions, and deducing far-reaching practical conclusions from these abstract structures. This practice was what Schumpeter labelled ‘the Ricardian vice’. Today’s standard explanation of the *Methodenstreit* generally fails to point out how similar their criticism of Ricardian economics was. The New Palgrave describes the *Methodenstreit* as follows: ‘(Schmoller) rejected Menger’s deductive method for three chief reasons: its assumptions were unrealistic, its high degree of abstraction made it largely irrelevant to the real-world economy, and it was devoid of empirical content. The theory was therefore useless in studying the chief questions of importance to economists; how

⁸² See particularly Franklin’s comments printed as footnotes to the second edition of Whatley, G. *Principles of Trade. Freedom and Protection are its best support: (sic) Industry, the only Means to render Manufactures cheap*, London, Brotherton and Sewell, 1774.

⁸³ Hildebrand, Bruno, *Die Nationalökonomie der Gegenwart und Zukunft*, Frankfurt, Literarische Anstalt, 1848.

⁸⁴ Menger, Carl, *Die Irrtümer des Historismus in der deutschen Nationalökonomie*, Wien, Alfred Hölder, 1884. See also Ritzel, Gerhard, *Schmoller versus Menger*, Frankfurt am Main, n.p., 1950.

have the economic institutions of the modern world developed to their present state, and what are the laws and regularities that govern them? The proper method was induction of general principles from historical-empirical studies'.⁸⁵ However, reading through Menger's *Errors of Historicism* with the perspective of what economics has become in the year 2000, it becomes clear how 'Other Canon' both Schmoller and Menger in fact were. We shall return to this argument in Chapter 4.

The historical school was deeply steeped in the German tradition of embracing *die Ganzheit* - the whole. This search for *die Ganzheit* forced the historical school to cross the boundaries into what in the English tradition were other - and to them unrelated - academic disciplines. In the German historical tradition it would be complete nonsense to exclude any information relevant to the question asked - be it from the realm of climatology, pedagogy or any other branch of human knowledge. In the German tradition economics was a science that integrated all the others. However, it is not at all clear that Menger disagreed with this. Menger drew up a picture – a model – of the economic forces at work, but, like Schumpeter later, he insisted that history was an 'indispensable' tool for the profession.

To Menger, the problem of the historical school was that they suffered from a kind of a 'case-study syndrome': they collected raw materials for a theory, but never got around to establishing a proper theory. This criticism is similar to that of Thorstein Veblen. However, this criticism is more appropriate to some members of the historical school than to others. It is indeed crucial to define what is meant by 'theory'. The marginalist tradition came to seek 'pure theory', a formalist kind of theory that excluded from economics all the forces that in the Renaissance tradition were the driving forces of history. However, of all the marginalists, Menger was clearly the closest to the historical school, as we shall discuss later he both 'invented' marginalism and, at the same time, went far beyond it.

The criticism of the marginalists from the historical school was that the very source of wealth - Man's wit and will - had disappeared. This had led to an *Entgeistung der Volkswirtschaftslehre*, the role of Man's wit and will had been left out of the science. The German ethical historical school - with its US followers like Richard Ely and Simon Patten - followed the Renaissance tradition of seeing economics as a normative science, setting out to transform society for the benefit of the common weal. Morality was, to them, rational, and part of the *Ganzheit* of the economics profession. In contrast, to British empiricist philosophy and classical economics, morality was irrational and based on sympathy (feeling) in the tradition of Hume and Smith. Accordingly, to the English school morality was totally separated from economics.

Canonical Methodenstreit 5. The US Institutional vs. The Neoclassical School (20th Century)

Institutional economics presents a continuation of the US and German 19th Century economics tradition. Institutionalism – a term originally coined only to describe the work of Norwegian-American economist Thorstein Veblen (1857-1929) – continued the radical trend of 'The American System' in opposing the abstract structures of English theory.

⁸⁵ Fusfeld, Daniel R, 'Methodenstreit', in *The New Palgrave Dictionary*, Macmillan, London 1987, p. 454.

The institutionalists were very critical of the established economic doctrine, but most of them did not seek to throw it out completely. Since their theory was *praxisnah* – empirical and close to reality – the institutionalists attracted the attention of policy-makers. Academically and in terms of influence US institutionalism peaked in the troubled 1930's, and it may be argued that institutional policy-makers in the early 1930's anticipated the Keynesian policy prescription without his elaborate theoretical framework.

Although institutionalism declined rapidly after World War II – really during the years of McCarthyism – its influence on economic policy-making in Washington still lingers on. Two recent and informative books trace the demise of institutional economics in the United States: Yuval Yonay's *The Struggle over the Soul of Economics* ⁸⁶, and a collection of papers: *From Interwar Pluralism to Postwar Neoclassicism* ⁸⁷

Today Paul Krugman complains that 'It is not just that economists have lost control of the discourse; the kinds of ideas that are offered in a standard economics textbook do not enter into that discourse at all....'⁸⁸ If we ask ourselves *to whom* the economists have lost control, Krugman lists an alliance of 'policy makers, business leaders and influential intellectuals' ⁸⁹ These are the groups which today defend the common sense and pragmatism of institutional economics against the unmitigated rule of standard textbook economics. To the *Ricardian Vice* labelled by Schumpeter we may add the *Krugmanian Vice*: the vice of possessing more relevant economic theories – like e.g. new trade theory – but refusing to employ these principles in real world economic policy.

Thus, though neo-classicism won the day in academia and in our economic policy towards the Second and Third Worlds, the eclectic pragmatism of the institutional school lives on in the policy-making both in United States and in Western Europe. In academia, the proponents of this school are today mostly scattered in business schools, departments of governments, and of international affairs. As a result of the virtual eradication of Other Canon economists from departments of economics, the poor countries of the world are still treated to undiluted neo-classical economics as administered by the Washington Institutions.

5. International Trade Policy and the Two Canons.

A conclusion of the barter-based canon - from the height of neo-classical economics - is Paul Samuelson's 1949/1950 proof that international trade, under the usual assumptions of neo-classical economics, will produce *factor-price equalisation*. If all nations would only convert to free trade, the price of the factors of production - capital and labour - would be the same all over the world. In reply to the communist utopia that every man should give according to ability, and receive according to need, came the even more powerful neo-classical utopia: Under capitalist free trade, all wage earners of the world would be equally rich. This theory is still the very foundation upon which the present world economic order rests.

⁸⁶ Yonay, Yuval, *The Struggle over the Soul of Economics*, Princeton University Press, 1998.

⁸⁷ Morgan, Mary S. and Malcolm Rutherford (editors), *From Interwar Pluralism to Postwar Neoclassicism*, Annual Supplement to History of Political Economy, Volume 30, Durham, Duke University Press, 1998

⁸⁸ Krugman quoted in Reder, Melvin W., *Economics. The Culture of a Controversial Science*, Chicago, University of Chicago Press, 1999, p. 6.

⁸⁹ *Ibid.*, same page

The contra-intuitive conclusion that all wage-earners of the planet will be equally rich under free trade, in our view shows the affiliation of neo-classical economics with the pedantic and circuitous reasonings of scholasticism. This danger is inherent when the language of communication is mathematics; as Wittgenstein says: 'All mathematics is self-referential'. In its extreme form scholasticism also 'proves' things which contradict common sense and intuition. Already Friedrich List accused the English classical canon of 'scholasticism'. In this same spirit Danish economist L. V. Birck entitled his article discussing the theories of Böhm-Bawerk 'Moderne Skolastik'⁹⁰.

In the early 19th Century the immediate common sense reply to Ricardian trade theory - e.g. in United States in the very influential writings of Daniel Raymond - was one intuitively appealing to the role played by *knowledge*. The reasoning of pre-Ricardian common sense was continued along this line of reasoning: If lawyers make 10 times the annual income of people washing dishes, why should a nation consisting of lawyers be equally rich as a nation inhabited by dish-washers ? From the 1621 volume of Charles King, it has been clear to the Renaissance canon that 'symmetrical' international trade - between nations at the same level of development - is beneficial to both nations, whereas 'asymmetrical trade' is beneficial fundamentally only to the more advanced of the two trading partners. In our view - in the spirit of US and German 19th Century economics - symmetrical trade implies trade of goods at roughly the same level on the quality level in Figure 3, whereas asymmetrical trade implies trade of articles at very different vertical positions on the quality index in the same figure 3. Exceptions to this would be if a very large and dynamic nation, or group of nations, would absorb a smaller but poorer nation and upgrading its standard of living. Portugal in the EU might be such an example recently.

Samuelson - as well as Ricardo - had failed to specify factors which were central in the Renaissance canon: 1) knowledge in and by itself, and 2) the differing capacities of economic activity to *absorb* knowledge. This argument - the different capacity of economic activities to absorb knowledge - was a key argument by an early American protectionist, Daniel Raymond⁹¹: Because **different professions have different capacities profitably to absorb capital** (human or other) - different professions have different 'windows of opportunity' for creating welfare. One cannot profitably add as much human capital to the job of washing dishes as to the job of being a lawyer. For this reason economists would recommend their children professions which require a university education - although by doing this they express what they - at the level of a nation - would describe as 'a mercantilist preference for one profession to another.' Adam Smith, however, is very consistent on this point: all risks consider it is safer to let your son become a shoemaker's apprentice than to become a lawyer. (Adam Smith had no children).

A succinct version of the Renaissance view of the role of international trade in the creation of the *common weal* is found in James Steuart: 'If the greater value of labour be imported, than exported, the country loses.'⁹² The more advanced Renaissance economists focused on this aspect, which we have called 'The labour-hour-terms-of trade'⁹³. This was the important

⁹⁰ Birck, L.V., 'Moderne Scholastik. Eine kritische Darstellung der Böhm-Bawerkschen Theorie', in *Weltwirtschaftliches Archiv*, Vol. 24, No. 2, pp. 198-227. Birch heads the article with a motto from Carlyle: 'That dismal science !'

⁹¹ Raymond, Daniel, *Principles of Political Economy*, Baltimore, Fielding Lucas, 1820.

⁹² Steuart, Sir William, *Principles of Political Economy*, London, Millar & Cadell, 1767, Vol. I, p. 336.

⁹³ For a discussion of this, see Reinert, Erik S., *International Trade and the Economic Mechanisms of Underdevelopment*, Ann Arbor, University Microfilm, 1980.

variable to watch if one was interested in the welfare of the common man. Today, the world's most efficient producers of baseball (which are hand-sown) works in Haiti earning US dollar 0,30 an hour, whereas the world's most efficient producers of golf ball (a mechanised production) - in an industrialised country - makes at least 9 dollars an hour. In the mercantilist/Renaissance view, by exporting baseballs and importing golf ball Haiti exchanges 30 hours of labour (baseballs) for 1 hour of labour (in golf balls). Haiti has a very large share of the world market in baseballs. The key thing to keep in mind here is that both baseball producers and golf ball producers are in this example producing with *state-of-the art technology*: whereas golf ball production is mechanised, all the capital of the United States has yet to mechanise the production of baseballs. This uneven advance of technical change makes it possible for a nation to be locked into a comparative advantage of being poor and ignorant. This possibility is ignored in today's economic theory, but was clearly perceived by the more sophisticated Renaissance mercantilist, who held the variables of 'skill' and 'knowledge' up front.

Since the time of the Methodenstreit between Misselden and Malynes, free trade has consistently been a logical strategy of the leading technological and economic power. Protecting and building knowledge in order to catch up has been the pattern of nations which have caught up, and later overtaken, the leader. It is important to note that in virtually all cases, protection in order to accumulate knowledge in order to catch up has been a temporary measure. Since world trade consists of both knowledge-intensive and less knowledge-intensive goods, there would be a clear risk for 'uneducated' nations in specialising in being poor and ignorant. This dimension is today completely lost both in economic theory and in practical policy.

In our opinion it is evident that the core assumptions of standard economic theory may play a political role in protecting the vested interest of the leader against the laggards. To a nation which possesses unique technical knowledge, the assumption of 'perfect information' and 'perfect competition' is beneficial. Likewise, an assumption of constant returns to scale will benefit a nation which engages in mass production of manufactured goods, but be very damaging to nations specialising in agriculture and extractive activities subject to diminishing returns. It is therefore - in our opinion - legitimate to talk about 'assumption-based rents' in economic theory. The rents accruing to the nation exchanging 1 hour of labour exporting golf balls for 30 hours of labour in importing baseballs - both produced at state-of-the-art technology - is in our opinion such an 'assumption-based' rent. One may indeed divide today's world divided into two groups of nations: those which at some point have been through a stage of Renaissance economics - i.e. the industrialised nations - and the others, the poor 'South' which continue to produce assumption-based rents for the industrialised North.

6. The Two Canons in Present Economics: Theory and Practical Policy.

In the preliminary remarks to his *Principles of Economics* John Stuart Mill makes the following remark:

'It often happens that the universal belief of one age of mankind - a belief from which no one *was*, nor without any extraordinary effort of genius or courage, *could*, at that time be free - becomes to a subsequent age so palpable an absurdity, that the only difficulty there is to imagine how such a thing can ever have appeared credible.It

looks like one of the crude fancies of childhood, instantly corrected by a word from any grown person.⁹⁴

Today the strongest conclusion of standard economic theory is that of world factor-price equalisation: If only world wide free trade is adopted, all wage earners of the world will be equally rich. In our view, this 'law' of factor price equalisation - on which our policy towards the Third World is based - clearly qualifies as one of the beliefs which to a subsequent age will become a palpable absurdity. Just like in the common practice of bleeding sick patients - a universal belief in the medical profession for Centuries - today's practice of applying the law of factor-price equalisation and its political corollaries is also one which fundamentally hurt the weakest patents; in this case the poorest nations.

No doubt free trade is a cornerstone in world welfare among the rich nations. But the enormous gains from symmetrical free trade are not the static gains of Smith and Ricardo, they are the synergetic, dynamic, and scale-based gains from trade which *realökonomish* mercantilists in the Renaissance tradition - from Antonio Serra in 1613 to Friedrich List - have long pointed to, and which modern economists like Paul David, W. Brian Arthur and, at times, Paul Krugman are rediscovering.

Occasionally other intuitive flash-backs from Renaissance economics appear in today's formal theory. One important example is Robert E. Lucas' 1988 article 'On the Mechanics of Economic Development'⁹⁵ where, as in US 19th Century economics, the potential to learn differs between economic activities. In his model, the nations which have acquired most human capital will also attract more physical capital, which will be applied more productively there. Because of this, increasing the world mobility of capital under a free trade regime will increase - not diminish - both international inequalities and international migratory pressure. We would argue that Lucas - a later Nobel Price winner in economics - in this paper has recreated a classical mercantilist argument for why vicious and virtuous circles dominate the world economy: why - **because economic activities are qualitatively different** - unrestricted free trade between nations of different stages of knowledge development will lead to significant loss of welfare for nations below a certain threshold of knowledge.

Lucas says in his paper that 'The consequences for human welfare involved in questions like these are simply staggering: Once one starts to think about them, it is hard to think about anything else.'⁹⁶ One important problem in today's standard economics is that any graduate student in the profession is able to produce a model which 'proves' any pet idea he might have. As long as the profession continues to confuse 'theory' with 'science' - as long as the models are produced with only very limited, if any, testing in the real world - the science of economics produces models which can 'prove' anything or everything. This gives today's politicians a virtual 'smörgåsbord' of alternative theories, often contradictory, to pick from and to apply according to national preferences and vested interests. Lucas 1988 model - which is *really relevant* for the problems of world poverty - disappears in a sea of other elegant, but irrelevant, models.

Three factors have, in our opinion, led to a near-disappearance of the Renaissance tradition in the post World War II era:

⁹⁴ Mill, John Stuart, *Principles of Political Economy* (1848), New York, Kelley, 1987, p. 3.

⁹⁵ In *Journal of Monetary Economics*, 1988.

⁹⁶ *Ibid.*, p. 8.

1) The Cold War created an enormous demand for economic and political arguments against the totalitarian threat to the West. The perfect markets of neo-classical theory provided an ideological defence line. Communism promised that everyone should receive according to his needs. Neo-classical economics returned with an even more powerful argument: under their system all wage earners of the world would get equally rich, i.e. the promised land of factor-price equalisation. Although the basis for the theory was there earlier, in our view it is not only a coincidence that the influence of neo-classical formality reached its height in the cold war. Samuelson's 'proof' of factor-price equalisation came during the Berlin blockade, and Milton Friedman's 1953 defence of the use of any assumptions as long as they worked came at the height of the McCarthy era. The Cold War needed Ricardo and Smith, and they did their duty !

2) The mechanisation of the world picture which started with the Enlightenment will probably - with the benefit of hindsight - prove to have peaked during the same post WW II period. The choice of mathematics as the *lingua franca* of economics - and the way in which the profession was mathematised - clearly also contributed to the demise of Renaissance economics. Key variables in Renaissance economics are simply irreducible to mathematics. Renaissance economics depend on a different form of understanding, the qualitative understanding which German philosophers call *verstehen*, as opposed to the quantitative *begreifen* which characterises the hard sciences. Trying to bridge these two worlds was the impossible task which Schumpeter had assigned himself. The creative processes underlying economic change proved impossible to reduce to linear mathematics based on 19th Century physics. Modern complexity theory, however, seems to be able to achieve what Schumpeter desired.

3) Research and production for World War II produced a formidable knowledge-base which fed the post-war innovation and production boom. Once the Fordist technological paradigm had been set in motion, there was no demand for Renaissance economics' explanation of the role of human creativity as the primary engine of growth. Post WW II society was living off the stock of human creativity which, as so often before, had been set free in a war economy. Having learned from Keynes how to even out the ruffles of the business cycle, the economics profession was confident. The path of economic research proceeded - undisturbed by the real world - down the path of least mathematical resistance. Unfortunately, having learned to iron out the business cycle was mistaken for having found the philosopher's stone creating welfare. Keynesianism's emphasis on financial and monetary aspects, while justified in the crisis of the 1930's, helped financial capitalism take the upper hand over production capitalism in the 1990's.

In our opinion these three factors - the cold war demand for a particular kind of theory, the choice of physics-based static models, and the flourishing innovation activities after WW II - reinforced each other in a most unfortunate spiral to virtually eliminate the Renaissance canon of economics. Economics was elevated to a level of abstraction where it was unscientific to be relevant.

Today evolutionary economics is growing as an alternative to the standard, neo-classical based economic theory. With the TEP-Programme (Technology and Economy) of the OECD of the early 1990's, evolutionary economics gained prominence as a policy guide in the industrialised world. At its best, this evolutionary theory captures the essence of Renaissance economics. At its worst, it only substitutes a mechanical economic understanding based on physics - 'physics envy' - for a mechanical economic understanding based on biology: 'biology envy'. Evolutionary economics needs to be moved along the axis from *matter* to *mind*, not only from physics to biology.

Although the potential benefits from applying evolutionary and institutional theorising would be much larger in the Third World than in the First World, this theory has not yet had any influence on the Third World policy of international institutions like IMF and the World Bank. This is probably because the vast majority of World Bank economists - regardless of their nationality - are educated in economics departments of American and English universities, where evolutionary theory is not thought. In the same way as Renaissance knowledge was created outside the old university structure - in the scientific academies - in most countries Schumpeterian evolutionary economics is today largely practised outside university economics departments.

Economics as it is practiced in the economics departments is essentially longer in demand in the OECD countries. These theories are too general and too abstract, and are perceived as being irrelevant for any practical purposes in the real world. Presently standard textbook theories in their pure form are - in practical policy - fundamentally applied only in the Third World. These textbook theories are applied in the Third World by IMF and World Bank economists who have virtually no experience in the economic policies of the wealthy nations. This is, in our view, an ethically fundamentally disturbing case of selective use of economic theory, which has enormous implications on the welfare of the poor. The world community is today indeed applying different medicines in the wealthy nations than in the poor nations. The need to resurrect Renaissance non-equilibrium economics – The Other Canon - also for application in Eastern Europe and in the Third World is therefore an urgent one.