

The Role of the State in Economic Growth.

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‘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.’

Adam Smith, prior to his meetings with the French physiocrats, in *The Theory of Moral Sentiments* (1759), in *Collected Works*, London, Cadell and Davies, 1812, Vol. 1, p. 320 (my emphasis).

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‘Without the Utopians of other times, men would still live in caves, miserable and naked. It was the Utopians who traced the lines of the first city....Out of generous dreams come beneficial realities. Utopia is the principle of all progress, and the essay into a better future’.

Anatole France¹

1. Introduction: ‘The Renaissance State’ vs. ‘Natural Harmony’.²

In 1338 Ambrogio Lorenzetti finished his frescoes *Allegory of Good and Bad Government* in the Town Hall of Siena. The fresco symbolising *good government* shows thriving shops, fine buildings and dancing citizens enjoying their leisure. *Bad government* is shown as ruin, rape, robbery and murder. The *Allegory of Good and Bad Government* represents the optimistic Renaissance view of Man’s untapped potentials to improve his own situation. Theirs was a view of history being a continuous optimisation process where ‘Man’s wit and will’, applied to harnessing the forces of Nature, held enormous potentials for improving his lot: ‘the never ending frontier of knowledge.’

The starting point for Renaissance economics, and the birth of the modern State, was an acute awareness of the suboptimality of the present situation of Mankind - steeped in the ignorance and poverty of the Middle Ages. This situation could clearly be improved, and this optimisation was chased as an ever-moving target in the distance. The propellant of this process was **learning** - the acquisition of **new knowledge**. This process resembles today’s evolutionary economics at its best³.

The usefulness of a State in this process arises out of the Renaissance concept of the *common weal*⁴ - or the ‘common good’ - a *systemic dimension* which is lost in the atomistic and static structure of today’s mainstream economics. In this paper we use the term ‘Renaissance State’ for a type of activist and idealistic State which, we shall attempt to show, has been an ‘obligatory passage point’ for all presently industrialised nations, bringing the nation into economic activities creating a *common weal* through increasing returns and self-enforcing feedback mechanisms. At a very simple level, a *common weal* arises out of the synergies stemming from the sharing of fixed costs - either resulting from specialised *tools* or from specialised *knowledge*, like the old story of the blind man and the deaf man whose *weal* was improved by acting together. We shall argue that the growth of complex economies has important similarities to the growth of complex technological systems - and that, in both cases, increasing returns are at the core of positive feedback mechanisms which increase welfare. Such systemic synergies are further based upon *diversity* - just as the both the very existence and the *common weal* of a household fundamentally rests on synergies arising from Man and Woman being different. A *common weal*, then, is systemic and synergy-based - it is a dynamic concept in a process which increases the size of the economic pie - much as the process described by the early Adam Smith at the cover of this paper. Adam Smith here recommends government intervention to promote a certain industry (which operated under increasing returns), neither to help the consumer nor to help the producer, but because it benefited the system as a whole - the *common weal*. At this point it is important to point out that the actions emanating from an understanding of a *systemic common weal* are very different from the idea of distributive *collective action* - in a setting of static rent-seeking and zero-sum games - in modern Anglo-Saxon economics.⁵

¹ Quoted in Fuz, J. K., *Welfare Economics in English Utopias from Francis Bacon to Adam Smith*, The Hague, Martinus Nijhoff, 1952, p.1.

² The author gratefully acknowledges the creative suggestions and criticisms of Arno Daastøl contributing to this paper. The usual disclaimer applies.

³ See e.g. Lundvall, Bengt-Åke, *The Learning Economy - Challenges to Economic Theory and Policy*, paper presented at the EAEPE-Conference, Copenhagen, October 1994. Dynamic optimisation is discussed in Nelson, Richard, ‘Recent Evolutionary Theorizing About Economic Change’, in *The Journal of Economic Literature*, Vol. XXXIII, No. 1, March 1995, pp. 58-59.

⁴ It is interesting to note that people promoting the *common weal* were seen as being the enemies of the tyrants, like in this phrase from 1579: ‘Ridding good Commonwealmen out of the way, that he may maintaine himself stil in his tyranny’(Golding, *De Mornay*, quoted in *The Oxford English Dictionary*, Oxford, The Clarendon Press, 1933, Vol 3, p. 696)

⁵ Our analysis is based on the role of positive and dynamic systemic effects influencing the size of the economic pie. This is a very different argument from that which shows that distributional conflicts over the sharing of the

The economics of State involvement in the Renaissance was both immensely activist and idealistic. Albert Hirschman, in his 1991 book,⁶ discusses the arguments which, since the late 18th century, have been used against this type of activist and idealistic interference with the 'natural harmony' created by the market mechanism. Hirschman in his book gives us the history of ideas listing the arguments why Ambrogio Lorenzetti's optimistic frescoes expressing Man's ability to improve his own destiny were, at best, naive and futile. Hirschman has collected the arguments in favour of *passivity as a strategy*⁷ - a natural corollary to Ricardo's 'dismal science'. In this paper we shall discuss the role of the State in economic growth and in the history of economic thought as being torn between two fundamentally different economic outlooks: a *production-centered* and *activistic-idealistic* Renaissance tradition and a *barter-centered* and *passivistic-materialistic* tradition of Adam Smith, David Ricardo and neo-classical economics.

Hirschman divides the arguments against any active strategy on the part of the State in three categories, and finds to his surprise that both the traditional 'right' and the traditional 'left' gradually started to make the same kind of arguments:

1. **Perversity.** Any attempt at improving the economic or social order will have the opposite effect of that intended. This argument is clearly present already in Adam Smith's late works.
2. **Futility.** Any attempt at changing the social or economic order is doomed to fail.
3. **Jeopardy.** Any attempt at changing the social or economic order will carry with it costs that are so high as to jeopardise what has previously been achieved.

The *zeitgeist* of the late 1990's is clearly closer to that described by Hirschman than to the optimism of Lorenzetti and his times. But, the fall of the Berlin wall now gives us an opportunity to re-examine the role of the State in economic development under less ideological pressure than, not only since the start of the Cold War, but since the *Ghost of Communism* entered the stage 150 years ago. However, we are seriously hampered by the fact that at the core of present-day mainstream economics - as a result of the standard assumptions of neoclassical theory - still lies a 'natural harmony', in a world void of any systemic effects, of Samuelson's *factor price equalisation*: The natural harmony which will make all wage earners of the planet equally rich - if we can only 'get the prices right' and 'provide a level playing field'.

Out of these philosophies of 'natural harmony' rises the rejection of the State as such, like in the 'Civil Disobedience' of Henry David Thoreau (1849) and its present-day manifestations, as in the 1995 bombing of the US Federal Building in Oklahoma City. We live in a society caught between, on the one hand, the wish for the simple individualistic life of Thoreau, with its roots in the late 18th century, whose ideal is living outside any society ('Why are people so worried', says Thoreau, 'the one who does not eat, does not have to work.'). On the other hand, we are addicted to a standard of living which can only be kept up in the network of a fine grained specialization, the synergies and scale of which are essential to the production of *systemic* effects, to the *common good* of Renaissance economists. These economists observed the wealth of populous and economically diversified cities - like Venice - in stark contrast to the poverty of the undiversified economic base in the countryside and in agricultural/administrative cities like Naples. Even the often pessimistic Machiavelli, who 'wants to present us with Mankind in its most negative and depressing aspects'⁸, says it this way: '**Il bene commune** è quello che fa grandi le città' - 'The *common good* is what makes the cities great'.

However, today considerable tension is created by the fact that any systemic effects in the economy - and consequently any role of the State - are external to the core of the ruling economic theory. This fact is all the more harmful because, as we shall attempt to show in this paper, the experiences of the presently industrialised countries indicate that the need for State interventions is stronger the poorer the country. Those who produce economic theory all live in nations where a strong State is taken for granted - where the 'obligatory passage point' of a Renaissance-type state is long history.

The assumptions of neo-classical theory correspond to a world which fits Henry Thoreau's ideal: *no human institutions* and *no systemic effects*. Reading Thoreau is the key to understanding the dissatisfaction of the

pie - both statically and over time - may very well reduce its size, as in the anti-social collective actions described e.g. in the works of Mancur Olson.

⁶ Hirschman, Albert O., *The Rhetoric of Reaction. Perversity, Futility, Jeopardy*, Cambridge, Mass., Harvard University Press, 1991.

⁷ I owe this term to Arno Daastøl.

⁸ Canina, Attilio, 'Il Pensiero Finanziario di Niccolò Machiavelli', Bologna, Zanichelli, 1937, p. 168.

average American with Governments of any kind. Thoreau shares with Adam Smith a strong aversion to any type of human institutions and collective action, a view - clearly inspired by Rousseau - that the institutions of civilised society have corrupted Mankind. To Adam Smith all human institutions - private and public - 'so invariably produce 'absurd' results that they have no presumptive legitimacy'⁹.

Neo-classical economics has kept Thoreau's and Adam Smith's myth alive by failing to internalise the systemic synergies of societies, among multitudes of professions, each with a minimum efficient size of operation, which, in turn, also cause societies themselves to have a *minimum efficient size*. This *minimum efficient size of societies* grows as more knowledge is added and more professions are formed - increasing the standards of living - and **forming the fundamental connection between geography and economics**.¹⁰ These same factors led to the creation - in succession - first of the Mediaeval city economies, then of national economies, and finally of 'globalisation'. The needs for a State essentially arise from the same synergies and interdependencies, and from the differing abilities of economic activities to provide the increasing returns which are at the core of this system.

One of the problems of today's mainstream is then, that - through its assumptions of a complete absence of increasing returns to scale and of perfect information - it has produced a theory which is as individualistic as Henry David Thoreau's visions: there are no systemic external effects present at the core of the theory. Economic theory today fails to tell us why we cannot have our cake (atomistic individualism) and eat it too (a high standard of material living). This is essentially the reason why theories of the State, of the Firm, or of any other human institutions are external to the core of economic theory. Renaissance economists tell us that the State exists because of the systemic effects in an economy, effects which also the early Adam Smith glorifies (see the cover of this paper). Today's practice of labeling - in a rather *ad-hoc* manner - all unexpected economic effects either as 'externalities' or 'market failures' contributes little to the understanding of economic systems. Ad-hoc exceptions are more easily seen, and acted upon, close to home, in the industrialised countries, rather than far away in the Third World. For this reason, the fundamental argument for the single market in the European Union is the existence of increasing returns observed in practice (The Cecchini Report), but without any ties to trade theory. On the other hand, the theoretical foundation for the EU policy against the Third World is that such increasing returns *do not* exist (conventional trade theory which does not allow for asymmetrical trade between increasing and diminishing return activities). In other words, the theory behind the European Single Market is based on exactly opposite assumptions from that of the EU policy towards the Third World. A consistent use of assumptions would have lead to the EU recommending protection of increasing return activities - industry - in resource-based Third World countries (which has been shown to work under sometimes extreme Diminishing Returns)¹¹.

This frequent and inconsistent 'assumption-juggling' in economic theory was denounced already by Joan Robinson. From the point of view of the Third World this may be seen as an alternative version of 'The Golden Rule' - the one who has the gold makes the rules. We see it as an important task ahead for economic theory to *internalise the externalities* which produce welfare: the systemic synergies of scale and scope which have their origin in the creation and implementation of new knowledge in those production processes which are subject to increasing returns.

The World Bank 1997 **World Development Report** - to be entitled 'The State in a Changing World' - will focus on the role of state in economic development. Predictably it will continue the discussion on the role of the State which was started with the publication of *The East Asian Miracle*¹². This paper discusses the historical role of the State in a different framework of assumptions than that of the World Bank. These assumptions are spelled out in Chapter 2. In our view, the successful East Asian nations essentially follow very similar strategies to those followed first by England (starting in the 1480's) and later by all other presently industrial nations in the early

⁹ McCraw, Thomas, 'The Trouble with Adam Smith', in *The American Scholar*, Vol. 61, No. 3., Summer 1992, p. 364. Thomas McCraw is Professor of Business History at Harvard Business School.

¹⁰ This relationship between technical change, scale and geography is very well explained in Bücher, Karl, *Die Entstehung der Volkswirtschaft* (i.e. 'The Emergence of National Economies'), Tübingen, Laupp, 2 Vols., 1918-19. The first volume appeared in 1893. An English edition of the first volume was published as *Industrial Evolution*, Toronto, University of Toronto Press, 1901. The only work with a similar scope in the English-speaking literature is Polanyi, Karl, *The Great Transformation, the political and economic origins of our time*, (1944), Boston, Beacon Press, 1957. Polanyi frequently quotes Bücher.

¹¹ See Reinert, Erik, *International Trade and the Economic Mechanisms of Underdevelopment*, Ann Arbor, University Microfilm, 1980.

¹² *The East Asian Miracle. Economic Growth and Public Policy*, New York, Oxford University Press for the World Bank, 1993.

stages of development. World Bank studies do not go back more than 50 years, so these similarities are unlikely to be uncovered in their normal process. Likewise, the history of economic thought having today largely been reduced to a genealogy of neo-classical economics, the record of the past economic policies of the presently industrialised countries has to a large extent been ‘unlearned’. There is no such thing as an academic sub-discipline called ‘History of Economic Policy’, and the industrial powers of Europe and North America seem to be unified in a common misconception about their own past, about the role of the State in bringing them out of poverty.

In this paper we attempt to lift the field of vision beyond the post World War II era, in order to show that in this 500 year perspective, the active role of the State in the East Asian ‘miracle’ - as described by authors like Amsden¹³ and Wade¹⁴ - is essentially business as usual: ‘**an obligatory passage point**’ in the transition from underdevelopment to development. In Chapter 2 we provide a different set of assumptions to that of mainstream economics as to how economic welfare is created and distributed. In Chapter 3 we attempt to produce an inventory of the roles historically played by the State to promote the **common weal**. Chapter 4 takes a closer look at the systemic theories behind these policy measures. In Chapter 5 we attempt to show that - while making little sense in a limited neo-classical framework - these policies of *Schumpeterian mercantilism* are fully compatible with a variety of recent new approaches to economic theory. Chapter 6 looks at this in the perspective of two parallel economic canons. Chapter 7 relates the demise of ‘Renaissance economics’, and Chapter 8 briefly comments on the role of State-owned enterprises in this system, Chapter 9 looks at the role of Adam Smith in making new knowledge into a zero-sum game in economic theory, and Chapter 10 provides the conclusions.

2. Mechanisms Causing and Diffusing Economic Growth and Welfare: the View of the *production-based & activist-idealistic Renaissance Tradition*.

A paper purporting to trace the influence of the State on economic growth must - implicitly or explicitly - be based on a model of the mechanisms which cause economic growth. Below we shall attempt to clarify how our assumptions differ from those of Adam Smith and of the neo-classical system. Partly using the terminology of Werner Sombart, we base our analysis on a *production-centered, activist-idealistic* set of assumptions, in contrast with today’s mainstream, which in this context can be labeled *barter-centered and passivistic-materialistic*.

Our set of assumptions differs from that of today’s mainstream economic theory, and therefore also concludes with a different view of the role of the state in economic growth. To clarify: If the conditions of ‘real world’ did correspond to the assumptions of neo-classical theory, we would have shared the view that any attempt to influence income growth and distribution would be futile. However, as we shall argue, the factors causing uneven economic development - where State intervention may play a role - are the very factors which neo-classical theory assumes away. When neo-classical theory is ‘right’, it is, on key points, ‘right for the wrong reason’. We would for example argue that the benefits from international trade are mainly caused by what Schumpeter called *historical increasing returns* - a blend of increasing returns and technical change - rather than on the static gains in the Ricardian theory. The need for ‘governing the market’ arises from such factors which are left out of mainstream theory.

There seem to be three important aspects to this question, *one*: how economic growth is **created**, *two*, the alternative mechanisms through which growth and welfare are **diffused** between and within the nation-states, and to the individual, and *three*, how this alternative understanding is based on a different philosophical basis. These three aspects are briefly discussed in the next three sub-sections.

2.1. Assumptions about the causes of economic growth.

One important starting point is that, in our view, today’s mainstream economics - as a cluster of variants around the neo-classical paradigm - fundamentally lacks a theory of economic development beyond seeing it as a process of adding capital to labour. In 1956 Stanford economist Moses Abramowitz showed that capital

¹³ Amsden, Alice, *Asia’s Next Giant: South Korea and Late Industrialization*, New York, Oxford University Press, 1989.

¹⁴ Wade, Robert, *Governing the Market. Economic Theory and the Role of Government in East Asian Industrialization*, Princeton, Princeton University Press, 1990.

accumulation only accounted for 10-20 per cent of US economic growth - which he then referred to as 'a measure of our ignorance about the causes of economic growth'.

What are the forces creating welfare? It seems that search process for 'the approximate causes of growth', as Abramowitz calls them, follows the path of Ibsen's Peer Gynt, to whom the onion - and his inner self - only revealed layer after layer, but no core. We would argue that the factors listed below should be seen as 'reactants', factors which, when they are all present - and only then - produce economic welfare. These 'reactants' have been uncovered layer after layer in modern economics, starting at the top of the following list:

The causes of increased economic welfare:

1. Markets
2. Capital
3. Technology (the *techno*- part: new hardware/tools)
4. Technology (the *-logy* part: new human skills and new knowledge)
5. The attitude to new knowledge (men's and nations').
6. Systemic aspects giving rise to positive feedback mechanisms (increasing returns, 'scale and scope')
7. Man's rational will ('wit and will')

Today's mainstream economic theory basically limits itself to **the first two factors only**. Markets and capital are clearly necessary, but far from sufficient building blocks for a theory of economic growth. New research under the heading of 'evolutionary economics', as sponsored by the OECD under the title TEP (Technology and Economy Programme) also includes factor 3, and increasingly also factor 4. Another striking feature of the economics of Adam Smith - in addition to his distaste for human institutions already mentioned - is his long and deliberate proofs that the production of knowledge, from the point of view of the individual as well as for society, is a zero-sum game. This is probably where Adam Smith most clearly breaks with the Renaissance tradition, and a key point which we shall discuss in more detail in Chapter 9 of this paper. Today - partly as an effect of the TEP programme - the opposite message of Adam Smith's is slowly sinking in: The driving forces of the economic system are innovations created by new knowledge. Nations who stop innovating do not keep their standard of living, they lose their standard of living even though they keep the same efficiency.

2.2. Assumptions about the mechanisms which diffuse growth and welfare.

Another, and most important, dimension to the phenomenon of economic growth is that it seems to be a product of a number of systemic effects which are not captured by theories atomistically studying only the single actors in the system. These aspects - *synergies*, *economies of scope*, or *systemic economies of scale* - are the starting points of positive feedback mechanisms - virtuous circles - in the economy, and they only appear in view when *the system as such* is the object of analysis. The presence or absence of such factors determines how economic growth spreads in the economy - essentially in one of two forms: either as **higher wages** to man-the producer or as **lowered prices** to man-the-consumer. In a closed system, the two modes of collecting the benefits from technical change makes no practical difference. In international trade between two different labour markets with an asymmetrical trade pattern (trading *increasing return products* for *diminishing return products*) which of the two models operates makes all the difference.

In a previous paper we have referred to these two alternative mechanisms of as the **collusive** (shared by the producing society at large) and the **classical** (atomistic) modes of distributing the benefits of technological change.¹⁵ The **collusive** mode of income distribution took place system-wide and parallelly in all industrialised countries behind the *barriers to entry* created by Fordist mass production. Demands for higher monetary wages to labour were met, while at the same time money supply was increased at least at the pace of the increase in national physical productivity. In the perfectly competitive **classical** model of income distribution, people should have got richer by having their purchasing power increased through *falling prices* - just like Adam Smith and Ricardo predicted - not through the *raising monetary wages*. We have also argued that the term

¹⁵ Reinert, Erik S. 'Catching-up from way behind, A Third World view perspective on first world history', in Fagerberg, Jan et. al., *The Dynamics of Technology, Trade, and Growth*, London, Edward Elgar, 1994.

'competitiveness' and its historical equivalents have been used to describe the existence of such systemic results of dynamic imperfect competition and of a *collusive* spread of the benefits from technological change.¹⁶

The practical consequences in world income distribution created by the two different modes of distributing the benefits of technical change, can best be seen in the traditional service sector. In this huge sector in any economy there is normally very little difference in productivity between First World and Third World workers. A bus driver, a barber, or a chambermaid are about as productive in Bolivia or Haiti as they are in Norway or Italy. Why then do the barbers or bus drivers in Bolivia or Haiti have real wages *which are only a fraction* - 10-20 per cent - of the real wages of a barber or a bus driver in Norway or Italy? Why does the invisible hand reward people with the same productivity so widely differently in different economies? We would argue that this is the result of *Strukturzusammenhänge* - of systemic effects - created by the fact that a large part of the benefits resulting from technological change in increasing return activities are spread in the *collusive mode*, i.e. as higher monetary wages in the local labour market rather than as lowered prices internationally. In the perspective from a poor sub-Saharan nation, what we see as 'economic development' basically appear as a system based on 'industry rent' from increasing return activities which spreads throughout the national labour markets. The existence of increasing return activities - and their accompanying barriers to entry - creates a national *common weal* which gives the Norwegian bus driver real wages which are five times higher than his equally productive Bolivian counterpart.

We would argue that the origin of such systemic effects is found in the fixed costs which accompany Man's tools: The increasing sophistication of tools (and accompanying fixed costs) and of specialised human skills to work the tools, leads to increasing *minimum efficient sizes* of operations in an ever-increasing number of professional specialisations and in an ever-increasing diversity of products and services. This causes *cumulative causations* and *path dependency*. As an example: the village which had enough volume to support its own blacksmith (fixed cost of energy in hearth), had a clear advantage over a smaller village with no blacksmith in the next cumulative step up the ladder of technological sophistication. This is the reason why 'the division of labour is determined by the size of the market', Adam Smith's deep insight which later disappeared from neo-classical economics. This is also the explanation for the great importance of a large population which is held unanimously by pre-Smithian economists.

2.3. The different philosophical underpinnings of the *activistic-idealistic* tradition.

Promoting new knowledge was a fundamental driving force for the economic policies of the Renaissance - and later of all *real-ökonomisch* mercantilism, cameralism and Colbertism. If one puts together a list of economic interventions in Renaissance economics, such as later in Figure 1, it becomes clear that the element uniting these seemingly most diverse economic policies is the *promotion and protection* of new knowledge. These policies further rested on the assumption, implicit or explicit, that *some knowledge was more valuable than other*. Consequently, it was in the interest of the State to create and protect such knowledge. On a philosophical level, this valuable knowledge emanates from the mind of Man. Therefore, any theory not taking Man's mind and Man's soul into consideration, will not understand the increase in Man's material condition, i.e. economic growth.

In the *activist-idealistic* tradition, economics and the social sciences require a *different kind of understanding* than the natural sciences. The social sciences, concerned with the ends and values instead of laws, should aim to **understand** (verstehen). The natural sciences, on the other hand, aim mainly to **describe and conceptualise** (begreifen). *Qualitative* relationships are at the core of the *Geisteswissenschaften* - the Humanities, or literally, the sciences of the mind. A crucial aspect of these sciences is therefore their *irreducibility to natural science*. Although economics is also about numbers, there is also a basic incommensurability between numbers (quantities) and some fundamental aspects of economic science, like Man's wit and will. The German economic tradition continued the Renaissance tradition. Here the inner unity (*Strukturzusammenhang*) of the *Geisteswissenschaften* - e.g. the refusal to isolate 'economic man' from the rest of the human being - shines through from Leibniz to Werner Sombart. The *common weal* in Renaissance economics is also the result of such a synergetic *Strukturzusammenhang*. The fact that our two *equally efficient* bus drivers - one in Bolivia and the other in Norway - have such widely different real wages, is a product of economic *Strukturzusammenhänge*, of which today's atomistic economic theory and economic policy is totally ignorant.

¹⁶ Reinert, Erik S. 'Competitiveness and its Predecessors - a 500-year cross-national Perspective', in *Structural Change and Economic Dynamics*, Vol. 6, 1995, pp. 23-42.

The economic policies resulting from theories of this kind were carried out with varying degrees of understanding of the underlying principles. These policies were, in our meaning of the word, not based on what we would normally call scientific analysis. These theories were based on ‘clues’, on a mode of inference called *abduction* - or *phronesis*, Aristotle’s third form of knowledge¹⁷. This tradition is continued by the Italian philosopher Giambattista Vico (1668-1744), by the US philosophical tradition of C.S. Pierce, and in economics in Kaldor’s ‘stylised facts’.¹⁸ According to Pierce, ‘(Induction) can never originate any idea whatever. No more can deduction. All the ideas of science come to it by the way of Abduction. Abduction consists of studying facts and devising a theory to explain them. Its only justification is that if we are ever to understand things at all, it must be in that way.’¹⁹ Pierce here describes the role played by the formulation of *hypotheses* as the fundamental element in the creation of new knowledge, in the German 18th century philosophers Leibniz and Wolff.

We shall explain how policy is generated through abductive reasoning with a parallel from the history of medicine: Starting in the 12th Century sailors in the Mediterranean used lemons to prevent scurvy.²⁰ This was a very effective practical method. However, the explanation as to *why this method worked* only appeared in 1929, with the discovery of Vitamin C²¹. Likewise, we would claim that it is entirely possible to establish good economic policies for a period of time, without fully understanding the factors involved. For example, identifying ‘progress’, or ability to pay more taxes, with the use of machinery in an increasing number of industries would result in a beneficial public policy, even if the causal relationship between the use of machinery and wealth were not clearly established, or had been ‘unlearned’. The intuitive abduction often precedes what we would think of as a more ‘scientific’ type of knowledge. This view that abduction anticipates ‘science’ was expressed by the English economist Edward Misselden in 1623: ‘Wee felt it before in sense, but now wee know it by science’²².

We would argue that business decisions are made - mostly under high degrees of uncertainty - based on such intuitive abduction about what is good for the firm, on what at business schools is called ‘management by gut feeling’. Early statesmanship seems to have worked in a similar way. Going through the voluminous letters and instructions of Colbert²³, 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’²⁴ - of dynamic bottlenecks - retarding the system and demanding managerial attention.

By differentiating intuitive abduction from ‘science’, the position of writers like Friedrich List comes in a new and different light. List is full of interesting ideas and has an intuitive understanding of the mechanisms at work (he sees that lemons will do the job against scurvy, and argues for their use), but he fails to develop concepts which explain to us clearly what’s going on (he fails to point clearly to Vitamin C). As Werner Sombart says about List: ‘His concepts levitate like undelivered souls on the banks of Hades’²⁵ However, just like lemons helped against scurvy 800 years before the exact mechanisms through which they work were established, economic growth was successfully promoted using ‘new knowledge’ and ‘use of machinery’ as proxies for the underlying factors causing systemic economic growth.

¹⁷ For a more general discussion of these issues, see 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,’ Norwegian Institute of Foreign Affairs (NUPI), Working Paper No. 540, December 1995. Forthcoming in *The European Journal of Law and Economics*.

¹⁸ For a discussion of Kaldor’s use of stylised facts, see Lawson, Tony, ‘Abstraction, tendencies and stylised facts: a realist approach to economic analysis’, in Lawson, Tony, J. Gabriel Palma and John Sender (eds.), *Kaldor’s Political Economy*, London, Academic Press, 1989.

¹⁹ Pierce, Charles S., in Hartshorne, C. and Weiss, P. (eds.), *Collected Papers of Charles Sanders Pierce*, Cambridge, Mass., Harvard University Press, 1867. Vol. V, p. 146. Quoted in Lawson, *op. cit.*, p. 68.

²⁰ Villner, Katarina, *Blod, Kryddor och Sott*, Stockholm, Carlsson Bokförlag, 1986, pp. 110-113.

²¹ Mervin, Leonard, *Vitamin C*, Willingborough, Thorsons Publishers, 1981, pp. 14-15.

²² Misselden, Edward, *The Circle of Commerce*, London, Nicholas Bourne, 1623.

²³ See Clément, Pierre (Editor), *Lettres, Instructions et Mémoires de Colbert*, Paris, Imprimerie Impériale/Imprimerie Nationale, 1861-1872, 7 Vols. in 10 + 1 Volume ‘Errata Général et Table Analytique.’

²⁴ 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.

²⁵ ‘...seine Begriffe ‘schweben’ umher wie die unerlösten Seelen an den Ufern des Hades’, Sombart, *op. cit.*, p. 929.

3. The Three Roles of the State.

For the purpose of the paper we find it useful to divide the roles of the State into three broad categories:

1. The State as a **provider of Institutions** - in the widest possible sense, including order and security. ('Establishing the rules of the game'/'providing an even playing field')
2. The State as a **provider of Income Distribution** and as an 'insurance company.' (Preventing evil/'Sharing the pie')
3. The State as a **promoter of Economic Growth** (Promoting happiness/'Increasing the size of the pie').

There are, of course, other alternative classifications of the roles of the State. Wilhelm von Humboldt says: 'A State then, has one of two ends in view; it designs either to promote happiness, or simply to prevent evil.'²⁶ Another German economist, Adolph Wagner, divides the role of the State into two different categories of objectives: Law and Power (Rechts- und Machtzweck) and Culture and Welfare (Kultur- und Wohlfahrtszweck).²⁷ However, for our purpose it is important to divide the welfare aspect expressed in the other classification into *two very different categories*: the *creation* vs. the *distribution* of income.

This paper essentially deals with point 3 - the role of the State in the Creation - rather than the Distribution - of Income, but a few remarks on points 1 and 2 are necessary to draw lines of delimitation, and to clarify where and how the categories overlap.

To point 1 - '**The State as a Provider of Institutions**'. These institutions may, on the one hand, be seen as preconditions required by the invisible hand in order to get on with its job of creating economic growth. On the other hand they may be seen as part of a wider and more active strategy as that under point 3, the State as actively 'increasing the size of the pie'. However, we choose to put these fundamental institutions - which hardly come under the attack of the thesis of futility, jeopardy and perversity - in this separate category. These basic institutions include private property and the well-worn German concept of a *Rechtsstaat* (Civil- or Legal- State). As standards of living grow, secondary demands are created and the State is extended into a *Kulturstaat* (a Culture State), providing institutions for education, science, charity, sanitation, etc.²⁸ Summing up, one German author says: 'Food, drink, clothing, shelter, amusement, social intercourse, - these are the primary wants with the covering of which private economy is mainly occupied; peace, order, security, culture, relief - these are the higher needs which are mainly served by the public economy.'²⁹

To point 2 - '**Sharing of the Pie and Distributing Risk**': The thought of distributing the inevitable risks of life is a very old one - the participants of the camel caravans of the Near East 2.200 b. C. had a risk sharing system. Modern insurance traces its root to the middle of the 14th Century. The same ideas of risk sharing are present during the beginnings of the welfare state, already in Byzantine Empire, where the idea of sharing the risks of life gradually develops into a role of income distribution. Thoughts around welfare are found very clearly in the writings of German philosophers Gottfried Wilhelm Leibniz (1646-1716) and Christian Wolff (1697-1754). Leibniz suggested that a national health system should be established.³⁰ The health system should be the basis for a welfare guaranteed by the State.³¹ Wolff specifies clearly that he wants a State which secures welfare for

²⁶ Humboldt, Wilhelm von, *The Sphere and Duties of Government* (1854, German original in 1852), Bristol, Thoemmes Press, 1996, p. 19.

²⁷ Wagner in *Handwörterbuch der Staatswissenschaften*, Vol. 7, 4th edition, Jena, Gustav Fischer, 1926, p. 773.

²⁸ Although the division of the roles of the State into three groups is not his, I here roughly and very briefly follow the historical development of the State in Cohn, Gustav, *The Science of Finance*, translated by Thorstein Veblen, Economic Studies of the University of Chicago, No. 1, Chicago, University of Chicago Press, 1895.

²⁹ Cohn, *op. cit.*, p. 73. This part is also quoted in Baumol, William, *Welfare Economics and the Theory of the State*, London, Longmans, Green, 1952, p. 153-154.

³⁰ In his *Directiones ad rem medicam pertinentes*, 1672.

³¹ 'Leibniz verfolgt das Ziel einer Heilkunde im Zeichen der Aufklärung, das heißt für ihn, die Grundlage für einen *staatlich zu garantierenden Wohlstand* zu schaffen (Italics in original), Krüger, Mathias, 'Leibniz Vorstellungen zur Organisation eines öffentlichen Gesundheitswesens', in Müller, Kurt, Heinrich Schepers and Wilhelm Totok (eds.), *Studia Leibniziana Supplementa*, Vol XII, Band 1, Wiesbaden, Franz Steiner Verlag, 1973, p. 234.

the individual, but not one which automatically provides for him ('Ein Wohlfahrtsstaat, aber kein Versorgungsstaat'³²) - a most difficult balance to this very day.

Clearly 'sharing the pie' is not a wholly independent exercise from that of 'increasing the size of the pie'. Economic arguments for income redistribution include the argument that a certain income distribution is required to create and maintain a mass market. This argument seems to be one used to defend the enormous transfer payments within the European Community; i.e. 'Poverty is bad for business'. One can further argue that an unequal income distribution threatens the social fabric of society, and therefore the nation itself and its economy. A most important argument - similar to that used by 19th century US economists - is that a continuous increase in the price of labour relative to the price of capital is a key factor in the virtuous circle created by State intervention: the increasing relative price of labour is a strong incentive for further mechanisation, which again allows for even higher wages and higher profits, and so on. By making labour more skilled, it is made more valuable. This was also an important argument of 19th century US economists against the dismal pauperisation theories in English classical economics, and formed the basis for the dual policy of 'The High Wage Strategy' and 'The American System of Manufactures' giving protection to increasing return activities. We would see this argument for income distribution as part of the virtuous circles which are created by State intervention under the next point.

To point 3 - '**The role of the State in Increasing National Wealth (Increasing the size of the pie)**'. Clearly the institutions in point 1 and 2 are necessary, but in our view not sufficient, conditions for economic growth. The objective of this paper is to look at the more active role of the state in economic development - 'the developmental State'. We most look behind the State as a provider for institutions for which there is a 'natural demand' into another role of *creating demand* for things which are necessary, but for which there is no articulated demand. If people do not want to educate their children - because they are themselves not educated, and because they need their daily labour - the State plays a new role: The State uses 'its power of coercion in order to create a general demand for the institutions which it has established', says Cohn³³. Here enters a more visible hand - the role of *The State as a Factor of Production* to use Luigi Einaudi's term,³⁴ originally from Adam Müller (1809)³⁵. It is the role of this visible hand which forms the core of this paper. The role played by the State is contained in the felicitous term coined by Robert Wade in 1990: 'Governing the Market'.³⁶ It is clearly particularly to this role of the state that the message of futility, perversity, and jeopardy is directed.

Historically the roles of the State as a promoter of economic growth can be listed under the following headings:

- a) **Getting the nation into 'the right business'**, i.e. recognising, as a historical starting point, **the activity-specific nature of economic growth**. The importance of this neglected point in today's economic theory cannot be overestimated. We are tempted to quote John Stuart Mill, who, when talking about *diminishing returns*³⁷, makes the following statement: '**I apprehend (the elimination of this factor) to be not only an error, but the most serious one, to be found in the whole field of political economy. The question is more important and fundamental than any other; it involves the whole subject of the causes of poverty;...and unless this one matter be thoroughly understood, it is to no purpose proceeding any further in our inquiry**'³⁸. We all intuitively understand that stockbrokers make more money than people washing dishes. But in economic theory, and accordingly in our economic policy towards the Third World, the profession does insist - making a hypothetical case - that a *nation* of stockbrokers would achieve **factor price equalisation** (the same wage level) with a *nation* of people washing dishes. We intuitively understand that Japan could not have reached her present position by making inexpensive shirts, rather than inexpensive cars or electronics, and that Pavarotti could not have made the same fortune picking lettuce as singing, but this intuitive knowledge is not compatible with today's barter-centered economic theory³⁹.

³² Namslau, Günter, 'Rechtfertigung des Staates bei Christian Wolff', in Kraus, Herbert (ed.), *Internationale Rechtliche Abhandlungen*, Berlin, Dr. W. Rothschild, 1932. p. 96.

³³ Cohn, *op. cit.*, p. 73.

³⁴ Einaudi, Luigi, *Del concetto dello 'stato fattore di produzione', e delle sue relazioni col teorema del risparmio dall'imposta*, Estratto dal *Giornale degli Economisti e Annali di Economia*, Padova, CEDAM, 1942.

³⁵ *Elemente der Staatskunst*, Vol. 5, Berlin, Sander, 1809.

³⁶ Wade, Robert, *Governing the Market. Economic Theory and the Role of Government in East Asian Industrialization*, Princeton, Princeton University Press, 1990.

³⁷ Which is the conceptual opposite of the point we are making here.

³⁸ Mill, John Stuart, *Principles of Economics* (1848), New York, Kelley, 1987, p. 176.

³⁹ Such considerations - that different economic activities present different potentials for economic growth - were at the core of pre-Smithian English economics and of US and German 19th Century economics. Chapter 9 in this

At any point in time, different economic activities present different *windows of opportunity* for adding new knowledge under dynamic imperfect competition, and thus for creating positive feedback systems. As long as there is a demand both for *low* and *high* skill activities, the world market may produce *lock-in effects* trapping nations in a comparative advantage of being poor and unskilled. The State plays an important role in the opening of such *windows of opportunity*. Historically **all presently industrialised nations**⁴⁰ - for the right or for the wrong reasons - have passed through an initial stage with a policy based on the understanding that *not all economic activities are equally feasible as starting points* for the self-enforcing positive feedback system which we call development. Appendix 1 and 2 of this paper outline economic systems in the *presence* and *absence* of such positive feedback mechanisms - of *development* and *underdevelopment*. The benefits from dynamic increasing returns which spread as higher wages - not only as lower prices - is *activity specific*.

This argument - so crucial to the understanding of the wealth and poverty of nations - is closely related to the debate on the residual which was started by Moses Abramowitz in 1956. Abramowitz showed that capital *per se* can only explain 10- 20 per cent of growth in the United States - the rest, 80-90 per cent, is the 'residual' which Abramowitz called 'a measure of our ignorance' about the causes of economic growth. We find it of utmost importance to our argument that Abramowitz today sees this residual as being activity-specific' - that it varies between different economic activities. In a letter to this author, dated August 16, 1996, Abramowitz comments on my previous publications on this issue: 'I agree with much of what you say. I agree in particular that the "residual" and growth in general are industry-specific.' A recognition of the activity-specific nature of economic growth in our opinion not only completely undermines the assumptions on which today's world economic order rest, but it also explains the why an unintended by-product of the World Bank 'Adjustment Policies' in poor Third World and former communist countries sometimes has been to reinforce a negative *lock-in effect* producing a fall in GNP per capita. In other words, the activity-specific nature of economic welfare explains why a notoriously inefficient planned industrial economy produced a *higher standard of living* in the former Soviet Union than a largely deindustrialised and more 'efficient' market economy now does in Russia. These are fundamental issues which the world community and the World Bank now must face - they can no longer be hidden under the veil of 'transitology', of being temporary effects of a transition from one system to another.

- b) **Creating a comparative advantage in 'the right business'**. A common element of all successful strategies for catching up with richer nations is conviction that free trade is not wanted until the nation **has created a comparative advantage** in the 'right' economic activities (which, among other things, means skill-based, not resource-based). There is an important underlying perception in this that a world economic system, if there is world demand *both for skilled* (well paid) *and for unskilled* (poorly paid) *labour*, a nation may end up *locked into* a permanent comparative advantage in being poor and unskilled.
- c) A very strong emphasis on the role of the State as **a supplier of infrastructure**. This is a unifying element of most 'enemies' of classical and neo-classical economists, from Colbert (canals, turnpikes, ports, merchant marine, navy) to Friedrich List (known in Germany as 'the father of the German railway system') and to Al Gore/Robert Reich (the electronic super-highway). Infrastructure is, as all other **systemic** elements of the economy, conspicuously absent from today's economic theory (e.g. not to be found in *The New Palgrave*). Infrastructures are key factors in *extending markets* and are 'highways' which the positive feed-back mechanisms need in order to displace themselves geographically.
- d) **Setting standards** has been a very important task of the State, from the neo-classical point of view to lower transaction costs, from the evolutionary point of view to form a basis for standardised mass production. A visitor to the Renaissance towns of Italy can to this very day observe the iron bars fastened to the church wall on the main square, establishing the standard units of measurement valid in the city. Each city had different measurements, which made information and conversion tables on these issues an important task for early economic books.⁴¹ Today the **setting of standards** is important to hi-tech products like mobile telephony. Clearly the state also has an important role in setting legal standards and providing a social virtue which is

paper shows clearly how this intuitive understanding of the *activity specific* nature of welfare disappeared from economic theory: Adam Smith argues that seeking professions which are able to *absorb more human capital than others* is a zero-sum game both for the individual and for society. This proof was necessary in order to introduce the argument that free trade is beneficial also to the nations which specialise in the production of goods requiring the least amount of skills (e.g. to present the argument that it was not in the interest of the North American Colonies to industrialise).

⁴⁰ See Reinert (1994) and (1995), *op. cit.*, and Reinert, Erik, *International Trade and the Economic Mechanisms of Underdevelopment*, Ann Arbor, University Microfilm, 1980.

⁴¹ An example of such a book comprising 218 pages, first published in 1503 and going through five editions, is (Pasi, B. di), *Tariffa di pesi e misure (sic) corrispondenti dal Levante al Ponente; da una terra al laltra (sic): e a tutte le parte del mondo*, Venice, Bindoni, October 9th, 1521.

crucial to prosperity.⁴² This was a point much emphasized by Renaissance philosophers, and is rediscovered today in Fukuyama's book *Trust*.⁴³

- e) A responsibility of the State **to provide skilled labour and entrepreneurship** if in short supply. Early policy measures - often helped by religious wars - were aimed at bringing in skilled labour and entrepreneurs from abroad by granting exclusive rights (patents) for a limited time, or through bounties, tax relief, etc. The State is also an entrepreneur of last resort.
- f) Unless one firmly believes in Say's Law - that supply creates its own demand - the State clearly has an important role in **creating demand** in general. Out of the Victorian slums with only subsistence demand, a better income distribution of a growing economic pie paved the way for the mass markets. This development made industrial production and 'Fordism' possible, e.g. through the establishment of minimum wages. 19th Century US economists saw particularly well the role of raising labour skills to increase their market value - the policy which was called 'The High Wage Strategy'. There is reason to believe that the sharp fall in economic welfare experienced by weakly industrialized nations in the wake of 'structural adjustment', in part was due to the elimination of demand created by the State. In this context it is important to keep in mind that what we call 'economic development' is little more than a collective 'industry rent', the national distribution of which - in spite of our *laissez-faire* mythology - is the result of decades of 'artificial' redistribution, partly due to the activities of labour unions. Our understanding today of the connection between the key variables *growth of demand*, *income redistribution* and *higher wages pushing mechanisation* is very limited. In several nations today - like e.g. in Peru - there is evidently a break in the positive circuit created by these factors.
- g) The State has played a very strong role pushing the technological frontier by being **a supplier of high-quality demand** for national production, of demand for goods at the borderline of what, at any time, was technically feasible. Key mechanisms here have been infrastructure projects and warfare. Werner Sombart, in 1913, describes the destructions of war as being the starting point both for the creative spirit of Man⁴⁴ - for searches for synthetic substitutes for raw materials in short supply, but also for the *organizational capabilities* of the State.⁴⁵ This is a most important argument in the spirit of Chandler and Lazonick. Not only was State demand crucial for purposes of war and infrastructure, but the personification of the State - royalty and nobility - served as Porterian *demanding customers* for luxuries, and provided the basis for future technological expansion into lower-cost mass production. Historically the demand for luxury has played a role similar to that played by people who, 10 years ago, paid 4.000 dollars for a cellular phone, enabling later mass production to deliver better phones for 80 dollars today. Again, the function of State demand for luxury is brilliantly described by Werner Sombart.⁴⁶
- h) An emphasis on the value of knowledge and education **per se**. See the list of policy measures collected as *Schumpeterian Mercantilism* in Figure 1. (Scientific academies, education, patent laws and copyright protection, tariffs protecting the few activities where the production of new knowledge was focused, etc.).
- i) A long term goal similar to what in the 19th Century United States was called '**The High Wage Strategy**' - i.e. seeing high wages *per se* as a goal. At the core of this economic thinking was Man and his Needs ('Der Mensch und seine Bedürfnisse'), rather than a 'dead equilibrium' which reduces Man to one of several factors of production, the high or low reward of which has no place in the system. The importance of the wage level in explaining GNP is illustrated by the fact that today wages are typically 70 % of GNP: i.e. maximising wealth essentially means maximising national wages.
- j) An understanding of the importance of a **legal system** built to strengthen the above structures. To Christian Wolff - the 18th Century German economist and philosopher of law - a system of property rights assisting the dynamic symbiosis between 'persons who collected knowledge and people who collected money'⁴⁷ was seen as the core of a system creating - like Francis Bacon's system before him - a never-ending frontier of development.
- k) The State as an **entrepreneur and capitalist of last resort**. There is no reason to assume a 'sufficient' supply of entrepreneurship at any point in time and in any culture - the poorer the nation the less so. As we

⁴² I am indebted to Arne Disch for this point.

⁴³ New York, Free Press, 1995.

⁴⁴ This fact is also being rediscovered in today's evolutionary economics, but see Sombart, Werner, *Krieg und Kapitalismus*, München und Leipzig, Duncker und Humblot, 1913, for an absolutely brilliant analysis of the impact of warfare on technological change and on the *organizational capabilities* of the State.

⁴⁵ Sombart's argument is one of creative destruction: 'Wiederum steigt aus der Zerstörung neuer schöpferischer Geist empor...', *ibid*, p. 207. Schumpeter's German term for creative destruction is *schöpferischer Zerstörung*.

⁴⁶ Sombart, Werner, *Luxus und Kapitalismus*, München und Leipzig, Duncker und Humblot, 1913. These two volumes were published under the common heading of *Studien der Entwicklungsgeschichte des modernen Kapitalismus*.

⁴⁷ See Reinert, Erik. and Arno Daastøl, *op. cit.*

shall discuss in the short chapter on State-owned enterprises, moving the State into a role of capitalist of entrepreneur resulted from 'reverse salients' in the system, rather than from any ideological preference.

We would argue that - as economic agents - States exist for fundamentally the same reasons that firms exist, both of them for reasons not well captured by today's economic theory, which focuses on barter and atomism. We suggest that the absence of a *theory of the firm* in modern economic theory is caused by the same reasons which cause the absence of the *theory of the State* in the same body of theory. Both firms and states are institutions which are brought to life by the kind of *systemic synergies* which are excluded in neo-classical theory through the assumptions of full divisibility of resources, of perfect information, perfect competition, and of the absence of increasing returns.

To continue this analogy between *the State* and *the Firm*, we would argue that the size and strength of a firm to a large extent is determined by the sum of the countervailing forces of *economies of scale* and *diseconomies of scale*. Large chemical firms are the product of huge economies of scale in production, advertising and finance; coupled with the opposite effect - the diseconomies of bureaucratisation - in administration and coordination. Similarly the strength and size of the State is also torn between two opposite effects, well captured by von Humboldt⁴⁸: '*The highest good*' which arises from associations, like the State, '*is the very variety* arising from the union of numbers of individuals'. This *variety* is a core part of the synergies creating the common weal, and in my view also the underlying principle why, as in Adam Smith's argument, 'the division of labour' is so important. (See also Serra (1613), discussed later in this paper, on this point). However 'this variety is undoubtedly merged into uniformity in proportion to the measure of State interference'. Thus, the existence of a State tends to produce '*uniformity and inertness*', which is the very reverse of what caused State intervention in the economy in the first place, which was the need for '*variety and activity*' - i.e. the establishment of a large number of professions ('division of labour') through entrepreneurship.

The extent and size of a firm is a result of competitive powers - which are industry- and product-specific - on the underlying trade-off of increasing and decreasing returns to scale. Similarly, the extent and activity of the State (what we could call 'The Optimal State') should, at any point in time, reflect the paradox that having united in order to exploit the synergies and economies of scope which result from the *variety and activity* of Mankind, the potentially perverse effect⁴⁹ of producing *uniformity and inertness* is likely to occur. This *uniformity and inertness* threatens the variety and activity, the synergies of which the State was established to foment and exploit in the first place. Both in the case of the firm and the State, one important answer to the diseconomies of scale produced by size and growing complexities, lies in the concept of *organizational capabilities*. The Managerial Revolution was, in the world of business, the reply to these challenges.⁵⁰

The Role of the state in industrialised countries is often seen as one of protecting 'civil liberties', or the form of freedom which we would call *freedoms to*. However, the role of the State in the early stages of economic development is one of jump-starting the systemic effects which were to secure the *freedoms from* - freedom from hunger, freedom from injustices, freedom from ignorance. With time, however, another aspect of the dynamic balancing creating an 'optimal state' appears when the actions of the State to provide *freedoms from* are gradually seen as encroaching upon Man's *freedoms to*. The Smithian revolt against Renaissance economic policy can be seen as such a conflict, as seen in Turgot's arguing against the excesses of Colbertism. In England at the time, the policies of the 'developmental state' had entered into an area of diminishing returns of static and individual rent-seeking rather than the synergetic collective rent-seeking. Clearly a big dose of 'markets' was needed. However, as German, US, and Japanese economists in the 19th Century were so eager to point out, this did not mean that nations which had not reached the level of England could use the same policies there and then. The role of the State - like the particular balance of emphasis on *freedoms to* and *freedoms from* - is highly context-specific.

⁴⁸ Humboldt, Wilhelm von, *The Sphere and Duties of Government*, (1854, German original in 1852), Bristol, Thoemmes Press, 1996, p. 22.

⁴⁹ See the reference to Hirschman's 'perversity thesis' in the introduction to this paper.

⁵⁰ See Chandler, Alfred, *The Visible Hand: The Managerial Revolution in American Business*, Cambridge, Mass., Harvard University Press, 1977, and *Scale and Scope: The Dynamics of Industrial Capitalism*, Cambridge, Mass., Harvard University Press, 1990.

4. New Knowledge, Systemic Effects and Positive Feedback-Loops in Renaissance Economics: the consequent Role of the State.

Renaissance was brought into reality by philosopher-statesmen like Francis Bacon (1561-1626), who consciously used his utopian tract *The New Atlantis* as an essay in **forecasting the future in order to inspire and influence it**, a process he himself called ‘feigned history’.⁵¹ Bacon’s *New Atlantis* (published 1627) and his *Essay on Innovations* (about 1605), describe the development of society as being propelled by new inventions and innovations, and should, in my view, be considered as the earliest tracts of what we today would call *Schumpeterian economics*. In this paper we shall attempt to show that the economic policies carried out by the European nation-states starting with the Renaissance, although making little sense from the perspective of neo-classical economics, make eminent sense when seen in the perspective not only of Schumpeterian economics, but also of other recent developments in economic theory.

Not only in Bacon’s ‘feigned history’, but also in real history, these early inventions and innovations came about as the result of what, using a Chandlerian vocabulary, ought to be called the *organizational capabilities*⁵² of the State. During this Century’s conflict between planned economies and market economies, the relationship between the State and private entrepreneurs is still frequently seen as one of natural animosity. Historically, however, the roles of the State and of private entrepreneurs have been more in the spirit of complementarity and partnership, where the State facilitated and coerced private entrepreneurs into business, and - this failing - also moved in as an entrepreneur of last resort. The motivating force behind the European Commission’s 1995 ‘Green Paper on Innovation’ - which has been distributed in 30.000 copies - was precisely again to promote the *organizational capabilities* of the modern European states in maintaining the ‘competitiveness’ of Europe by strengthening its *National Innovation Systems*⁵³.

The foreword to the most recent advanced textbook in economic growth states that ‘economic growth comes largely from the accumulation of knowledge’⁵⁴. We shall attempt here to show that a principal historical role of the State from the Renaissance onwards has been precisely one of **promoting and protecting** new knowledge and innovations. In Figure 1 we have assembled what we consider the most important government interventions in economic policy starting in the Renaissance. We would argue that the common theme of these economic policies - the thread which unites them - is a just this concern for the **creation and protection of new knowledge**. Looking at history in a simple perspective of barter, not production, and under diminishing returns/single equilibrium/perfect information, the importance of these policies is lost. In the diminishing return/equilibrium perspective, any and all factors causing unequal economic growth are lost, creating the world of artificial harmony and world-wide factor-price equalisation. As we shall attempt to show later, a most important historical role of Adam Smith’s was precisely that of laying the ground for ‘perfect markets’ and ‘natural harmony’ by making the quest for knowledge into a zero-sum game - using the metaphor of a lottery - both from the point-of-view of the individual and from the point of view of the State. In this way Adam Smith effectively removed the quest for imperfect competition through new knowledge which was so important to Renaissance thinking. This is the root of why new knowledge and new technology hits today’s mainstream economics as ‘manna from heaven.’

Pre-Smithian economic thinking takes a holistic starting point - the People, the State. A fundamental underlying idea exists that the situation of each individual can be improved by measures which take into consideration the *collectivity of individuals*. In other words, there are *systemic effects* which cannot be found if one limits the horizon atomistically to study individuals alone. We shall argue that the existence of such systemic effects is the fundamental reason why the State has a role to play in economic growth. We still find the strong belief in this systemic approach in the early Adam Smith - before his conversion by the physiocrats. This is shown in the quote from the *Theory of Moral Sentiments* on the cover of this paper. In the later Adam Smith the atomism of John Locke takes over, but Smith’s fundamental insight that ‘the division of labour is limited by the size of the

⁵¹ Crother, J.G. , *Francis Bacon, The First Statesman of Science*, London, Cresset Press, 1960, p. 17.

⁵² See Chandler, Alfred, *Scale and Scope. The Dynamics of Industrial Capitalism*, Cambridge, Mass. Harvard University Press, 1990, and Lazonick, William, *Business Organization and the Myth of the Market*, Cambridge, Cambridge University Press, 1991.

⁵³ See Lundvall, Bengt-Åke (editor), *National Systems of Innovation*, London, Pinter, 1992, and Nelson, Richard (editor), *National Innovation Systems*, New York, Oxford University Press, 1993.

⁵⁴ Barro, Robert J. and Xavier Sala-i-Martin, *Economic Growth*, New York, McGraw-Hill, 1995, p. xvi.

market' is the description of one such systemic effect. We argue that the division of labour is only important if systemic economies of scale are at work. 'The division of labour' is, of course, lost in neoclassical theory. In this section we shall discuss the theories of the time as they relate to economic growth, and also try to see these theories in the perspective of modern evolutionary economics.

Figure 1. Schumpeterian Mercantilism: Promoting and Protecting New Knowledge in the Economic Policy of the Renaissance (starting in the 16th Century).

The Establishment of Scientific Academies.

- Bacon's 'New Atlantis': Salomon's House.
- Leibniz: Inspires the establishment of the academies of Berlin, Vienna and St. Petersburg.

Encouragement and Assistance to Inventors.

- Bacon: 'Upon every invention of value we erect a statue to the inventor, and give him a liberal and honorable reward'.⁵⁵
- Wolff: 'We should forbid mockery of inventors.'

Diffusion of new Knowledge/Education.

- Bacon: 'We have circuits of visits, of divers principal cities of the kingdom; where as it cometh to pass we do publish⁵⁶ such new profitable inventions as we think good.'⁵⁷
- Wolff as the 'educator of the German Nation'

Establishing an Apprentices System

- In England under Elizabeth I (1533-1603)
- In Germany as a result of the teachings of Leibniz and Wolff.

Patent Protection for new Inventions (Venice, 15th Century).

- Showing a sophisticated understanding of the *appropriability problem* of new knowledge.

State-owned Manufactures as 'Places of Learning'

- Emphasized by Werner Sombart.

Subsidies to Firms in Industries new to the Nation or Region.

- Serra: the number of different professions as a key factor in explaining the wealth of a city.

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⁵⁵ Bacon, Francis, 'New Atlantis', in, Andrews, Charles M.(Ed.), *Famous Utopias*, New York, Tudor Publishing, n.d., (1930s?), p. 272.

⁵⁶ 'Publish' here in its meaning of 'to make generally accessible, to disseminate, offer to the public' (See The Oxford English Dictionary, Vol. VIII, pp. 1561-62.)

⁵⁷ Bacon, *ibid.*, p. 272.

Figure 1. Continued from preceding page.

Tax Breaks and Bounties to Firms bringing in new Technology.

- Systematically applied in England starting under Henry VII in 1485.
- Import of skilled labour

Travel Restrictions for skilled Labour.

- Under penalty of death for certain skills in Venice.

Prohibition against the Export of Machinery.

- In force in England until the 1830's.

Prohibition against the use of Machinery in the Colonies.

- The heritage of this economic policy is still felt in many Third World countries, which, like Haiti, are specialised in the economic activities which have not yet been mechanised.

Export Duties on Raw Materials

- ensuring that local manufacturing industries have lower prices on raw materials than foreign competitors.

Import Duties on manufactured Goods, while national Competition insured.

- machines seen as a proxy for new knowledge, this measure maximises the flow of capital and labour to activities producing with machines, not manual power.

Strengthening the Navy.

- taking advantage of 'the economies of scale in the use of force'.

As we have said, 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*⁵⁸ written by Giovanni Botero (1543-1617). The English translation, published in London in 1606, is entitled *The Cause of the Greatnesse of Cities*. But, there were also huge differences between cities, between the opulence of Venice and the poverty of Naples, and this issue would be thoroughly discussed by Antonio Serra in 1613. In the best theoretical works of the time, this 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.
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.

4.1. The Size and Density of the Population.

One key aspect of this set of theories is the importance of having a large population. 'The power of a State is not the result of its territorial extension, but of its number of people, and its good government.' This phrase is found with little variation in the writings of virtually all economists and philosophers of the time, by Mun, Child, Petty, and Davenant in England, by Montchrétien, Forbonnais and Necker in France, and by Leibniz, Wolff, Becher, and Justi in Germany. One of the reasons for the great 17th Century interest in China, was its large population density which was seen as proportionate to the degree of knowledge and wisdom. This way of thinking is very far from today's *zeitgeist*, which has completely internalised the dismal science of Ricardo and Malthus in this respect. Because we have excluded knowledge and technology from today's economics, we fear overpopulation in Bolivia (with a population of 5 persons per square km) and in Peru (with 15 persons per square km), but we are not worried about Holland with 400 persons per square km.

The population argument makes sense if, as Adam Smith claims, 'the division of labour is limited by the extent of the market'. If there are **fixed costs** and **minimum efficient scale**⁵⁹ involved in establishing new professions, which is certainly the case, then the argument makes sense that a larger population contributes to a larger division of labour. We shall see that Antonio Serra's 1613 works clearly stresses the importance of the division of labour, thus anticipating Petty by about 70 years and Adam Smith by about 160 years. One observation which can be made here is that Adam Smith's key contribution of the division of labour is not really compatible with the assumptions of neo-classical trade theory: If there are no economies of scale - i.e. no fixed cost - and perfect information, there is little reason for any division of labour at all. Samuelson's theory which proves factor price equalisation seems to be based on assumptions *which take away the very incentives which cause the division of labour*.

4.2. The different 'qualities' of economic activities.

'Renaissance economics' presented several levels of arguments for policy intervention, which may roughly be classified in three categories as follows: from observations of isolated and **activity-specific differences in welfare**, through the description of **systemic synergies** emanating from these activities, to the description - particularly perfected in one case - of **full-fledged positive feedback systems**:

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).

⁵⁸ Rome, Vicenzio Pellagalo, 1590.

⁵⁹ Good discussions on the role of *minimum efficient scale* is found in Chandler, Alfred, *Scale and Scope. The Dynamics of Industrial Capitalism*, Cambridge, Mass. Harvard University Press, 1990.

2. Some economic activities as core of **systemic synergies** which produce and spread welfare locally or nationwide ('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)

Just as we today would see a career of washing dishes in a restaurant as having a limited potential for creating income compared a career as a lawyer, the Renaissance economists extended this argument to apply to the *common weal* as well. In other words, they believed that the factors which created differences in welfare within an economy were the same factors which created differences in income between nations. As a result of the process of pre-Ricardian common sense, no factor-price equalisation would be achieved by putting all the people washing dishes in one nation and all the lawyers in another and open up for free trade between the two nations. In these theories economic growth is 'activity-specific', it is only available in some economic activities subject to dynamic imperfect competition, and not in others. As we shall see later in this paper, Adam Smith, in his late work, goes out of his way to prove that differences in income between professions do not exist. We are here talking about differences in wages - which constitutes more than 70 per cent of GNP in an industrialised economy - and not in profits.

What, Giovanni Botero asked in 1590, is more important for making a nation wealthy, the fertility of its soil or industry? No doubt, industry, says Botero. First of all 'because the things produced by the able hands of man are many more, **and have a much higher price**, than the things produced by nature.⁶⁰ Nature gives the material, but the object,..is the work of Man. Wool is a simple coarse material of nature. How many beautiful objects, varied in form and shape, the Arts can produce from this...'

We find the same line of reasoning among the German cameralist economists. The German writers of economics were - as opposed to their English counterparts - mostly employed by the rulers of the small German states. One of their main tasks was to increase the income from taxes to the regent. Their observations coincided with those of the Italian economists: The subjects who worked with machinery were able to pay much higher taxes than those working without machines. In this way the use of machinery became a proxy for a type of profession desired in a nation. The beginning of the industrial revolution in England - Henry VII's establishment of textile industries - was based on this same line of reasoning.⁶¹

Understanding economic development as being activity-specific leads to two different policy measures by the State. One is a set of *positive* measures, taken in **order to bring domestic economic activities into the 'right' industries**, those where the particular time period allowed for the build-up of new knowledge, the use of machinery, etc. The same understanding of the activity-specific nature of economic growth opens up for a set of *negative* measures, taken **in order to prevent other nations from getting into that 'right' type of activities**. Prohibiting the use of machinery in the Colonies was one such measure. Other measures aiming at the destruction of already established high-quality activities include the British policies in Ireland starting 1699, when the prosperous exports of high-skilled woollen manufactures were prohibited, and the more labour intensive and less mechanizable linen manufacture was brought in.⁶² In the beginning of the 19th Century similar policies were in force against Indian textile manufacture. At the same time contemporary US sources describe English commercial policy at the time as being aimed at preventing the United States industrialisation. As late as in 1904, the official history of the US Republican Party, which carries a laudatory foreword by President Theodore Roosevelt, comments: 'We had suffered quite enough before the Revolution from the policy of Great Britain in checking our industrial and mechanical aspirations, and keeping us a buying instead of a making

⁶⁰ Botero, *op. cit.*, p. 362. My translation.

⁶¹ See Reinert (1984) for a discussion of this.

⁶² A most perceptive contemporary comment on the negative impact on Ireland from being taken out of the 'right' industries, is contained in Hely-Hutchinson, John, *The Commercial Restraints of Ireland Considered*, Dublin, William Hallhead, 1779. All copies of this book, anonymously written by the Dean of Trinity College, were ordered to be burned by the Dublin hangman.

people..⁶³ The English debates made no secret of the fact that their strategy was one of keeping other nations from industrialising. In 1816 Brougham explained the English strategy in the House of Commons:

- ‘It is well worth while to incur a loss upon the first exportation, in order, by the glut, to *stifle in the cradle* those infant manufactures in the United States which the (Napoleonic) war has forced into existence.⁶⁴

We would argue that this is a fairly typical 19th Century comment. Also Richard Cobden - the champion of free trade - saw the elimination of the Corn Laws as means to weaken other nations’ manufactures. Cobden saw the high price of corn as the basic reason why England had not been able to hold on to her near-monopoly of world manufacturing. To Cobden free trade in corn was above all a means to prevent other nations from threatening the British near-monopoly of manufacturing exports:

- ‘The factory system would, in all probability, not have taken place in America and Germany; it most certainly could not have flourished, as it has done, both in these states, and in France, Belgium, and Switzerland, through the fostering bounties which the high-priced food of the British artisan has offered to the cheaper fed manufacturer of those countries’, says Cobden.⁶⁵

Historically the economic policies recommended in production-based economics follow two alternative lines of argument:

1. The **risks and perils** of a resource-based economy - being specialised in economic activities **not requiring high labour skills** and **subject to diminishing returns**. These two effects may combine into a **lock-in effect** trapping a nation in poverty (the ‘Bolivia Syndrome’), which technical change will not solve. Exporting natural resources constituted ‘bad trade’ in the orthodoxy of English economic policy until long after Adam Smith and David Ricardo. The most clear statement of this orthodoxy is contained in three volumes published by Charles King in 1721.⁶⁶In King’s Taxonomy exporting raw materials was ‘bad trade’. We later find this same line of argument in 19th Century United States, Germany, and Japan, and in 20th Century Australia and Canada.
2. The **benefits** of concentrating a nation’s economic activities in **mechanisable, skill-absorbing activities, subject to increasing returns** - a cluster of characteristics which for a long time could be efficiently short-handed as **manufacturing**. Exporting goods from these activities qualified as ‘good trade’ in King’s Taxonomy - the English orthodoxy which built her national strength. The Canadian and Australian arguments later added to this by showing that the presence of a national manufacturing base upgraded skills in the resource-based activity and prevented these activities from going into Diminishing Returns - making raw material exports from a manufacturing country a viable strategy.

What, then, are the characteristics of growth inducing - 'good' - economic activities? We have, in several publications, provided a ‘quality index’ of economic activities, listing the characteristics which, in a system of dynamic imperfect competition, ranks economic activities according their ability to provide increasing economic welfare to a nation. This ‘quality index’ is reproduced in Figure 2 on the next page.

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 2 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

⁶³ Curtis, Francis, *The Republican Party. A History of its Fifty Years Existence and a Record of its Measures and Leaders 1854- 1904*, New York, Putnam, 1904, Vol. 1, p. 42.

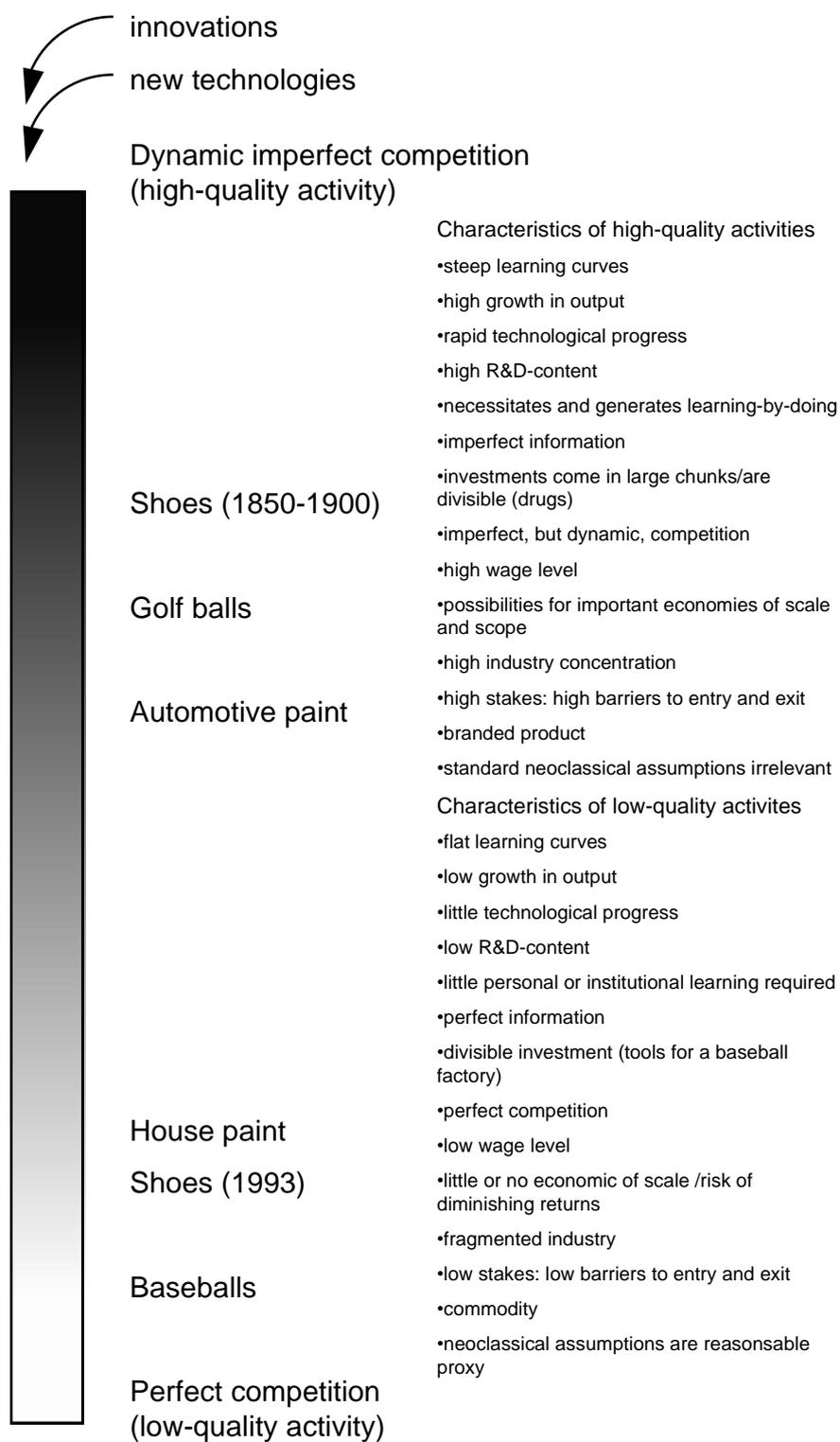
⁶⁴ *Ibid*, Vol 1, p. 40.

⁶⁵ This point is discussed in Reinert, Erik, ‘Raw Materials in the History of Economic Policy; or, Why List (the Protectionist) and Cobden (the Free Trader) Both Agreed on Free Trade in Corn’. Paper presented at the conference on the Repeal of the Corn Laws, Manchester, March 1996.

⁶⁶ King, Charles, *The British Merchant or Commerce Preserv’d*, London, John Darby, 1721. 3 Vols.

Figure 2.

The Quality Index of Economic Activities



competition' - to black: 'monopoly'. The latter is only a temporary state, as new technologies fall towards a lower score as they mature.

4.3. Diversity, Synergies, and Positive feed-back mechanisms in Renaissance economics.

The static **observation of higher welfare in some economic activities than in others** is very frequent. Daniel Defoe gives us a **systemic extension** of this argument as the line of reasoning which convinced Henry VII to start an English textile industry when he came to power in 1485: While living with his aunt in France, the future King of England had observed that not only were the French textile producers (who got all their raw materials - wool and Fuller's Earth- from England) much richer than their English providers of raw materials, but that **wealth spread to the whole community**: where there was manufacturing, also the shop-keepers were richer. There were synergetic effects between manufacturing industry and the common weal of people *outside* the manufacturing sector.

There are several arguments founded on this kind of **systemic synergy** caused by manufacturing. The quote on the cover from Adam Smith's *Theory of Moral Sentiments* - from before his meeting with the French physiocrats - shows him as a relatively traditional mercantilist in this aspect. The reasons given by German philosophers and statesmen Leibniz and Wolff for why a State is needed, includes an emphasis on **learning** which triggers positive systemic effects. The reason why there is so little conflict between the interest of the individual and *the common weal* in their system is precisely that increased knowledge produces more of both individual and collective profits, something like: 'The incoming tide (of knowledge) raises all boats'. Wolff observes that 'Some people collect knowledge like other people collect money', and indicates the benefits to society of putting these two types of people together.

The most remarkable of all economic treatises before Adam Smith is, in this author's opinion, no doubt the 1613 book by Antonio Serra, 'A Brief Treatise on the Causes which can make Gold and Silver Plentiful in Kingdoms where there are no Mines'⁶⁷. The title corresponds to our stereotypes of mercantilist tracts, that they are only about gold and silver.⁶⁸ In fact Serra produces a most sophisticated model, producing - on the one hand - systemic economic development, and on the other underdevelopment.

Serra's starting point is knowledge. On the dedicatory page he denounces 'ignorance as the cause and starting point of all evil'. He further comments on 'everybody's innate desire for knowledge'. He outlines the plan of his work as 1. Understanding why some nations, even though they have no mines, are very rich, and 2. Based on this understanding, to explain the apparent paradox that his own nation, the Kingdom of Naples, although abounding in natural resources has reached such an abysmal level of poverty that 'it does not leave us to breathe nor to enjoy what nature's has given us'. Serra is the first economist to describe increasing returns,⁶⁹ and with the increasing returns as his starting point, he describes positive feedback mechanisms which lead to virtuous circles of development in a national system.

Serra as two types of factors which cause the wealth of nations: 1. Particular (or specific) factors (*accidenti propri*), which can occur only in one nation and not in others, and 2. Common (or general) factors (*accidenti communi*), which may occur in any nation:

Particular factors:

The first particular factor in Serra's system is a **surplus of products** for export. His phrase 'The surplus (*soprabbondanza*) of goods which are produced in a kingdom in excess of its own needs and conveniences' reminds us of an Adam Smith type of 'vent for surplus' theory of international trade, but this is only the beginning of Serra's long and sophisticated reasoning. Serra explains that he lists this as a *particular* factor - rather than as a *general* or *common* one, by pointing out that a surplus - or a positive balance of trade - cannot

⁶⁷ Serra, Antonio, *Breve trattato delle cause che possono far abbondare li regni d'oro e argento dove non sono miniere*, Naples, Lazzaro Scoriggio, 1613.

⁶⁸ The title also influenced Say, who erroneously claims that to Serra only gold and silver were the sources of riches, see Coquelin & Guillaumin's *Dictionnaire de l'Économie Politque*, Paris, Guillaumin & Hachette, 1854, p. 610.

⁶⁹ Both Wilhelm Roscher in his *Principles of Political Economy*, Chicago, Callaghan, 1882, and later Schumpeter recognises this, see his *History of Economic Analysis*, New York, Oxford University Press, 1951, p. 258-259.

apply to all nations. His second particular factor is **the geographical position** (*il sito*) of the nation 'relative to other kingdoms and parts of the world...being a potent occasion, and almost a cause, of extensive trading of a kingdom'. Rating nations according to their geographical position, 'Venice holds the first place.'

General factors:

Serra lists four common or general factors which bring wealth, and, most importantly, *how these factors interact* with each other and with the *particular* factor of the geographical position of a nation listed above:

1. The **number and variety of industrial professions** (La quantità degli artifici..diversi). I see the 'number of professions' as fundamentally the same concept as 'the division of labour', in which case Serra anticipates this concept in William Petty's watch factory by 64 years and in Adam Smith's pin factory by 173 years. Clearly **the number of industrial professions** in a nation is a symptom - and a proxy - for a variety of economic factors: technological sophistication, a sophisticated pattern of demand, a large diversity of skills, and - due to a minimum efficient scale of production in each profession - of a large market. Serra rates this factor higher than the 'vent for surplus' factor which he has listed under particular factors. This is because to Serra industrial professions, most importantly, behave differently than agriculture.
2. **The quality of the population** (la qualità delle genti). The quality of a population is good 'when the inhabitants thereof are by nature industrious, or diligent and ingenious in building up trade not only in their own industry, but outside, and on the watch for opportunities to apply their industry.' On this factor Genoa gets the highest score, followed by Florence and, only third, Venice, which 'though it has more commerce than all the cities of Italy together, will nevertheless hold third place with respect to this factor.' Serra clearly relates the barrenness of the Genoese republic (*il loro paese sterilissimo*) to their industriousness and their wealth.

The presence of a great commerce (il traffico grande). Here we find Serra's description of how the various factors creating wealth interact and mutually reinforce each other in creating virtuous circles of development. In the case of Venice, 'she is aided by her extensive manufactures; a factor which brings a great many people there, not only because of the trades themselves, in which case the effect would be attributed to them, but also as a result of **the concurrence of these two factors together, because one gives strength to the other**, the great concourse due to commerce and due to the geographical situation being increased by the manufactures, and the manufactures being increased by the great concourse due to commerce, while commerce is made greater by the same concourse of people.'⁷⁰ It cannot be enough emphasized that the starting point for the virtuous circles described by Serra are to be found in the increasing returns of manufacturing.

3. **The regulations of the State.** (la provvisione di colui che governa). Here Serra emphasizes the role of government policy in order to create national wealth. This is a most difficult task, he says, because one policy measure can have very different effects in different industries: 'like the sun makes clay hard, but makes wax soft, like a low whistle which irritates the dog, but quiets the horse.' (One could here e.g. think of an economic policy assisting innovation by *subsidising research*, which would greatly benefit the pharmaceutical industry, but not at all help the printing industry, whereas a policy of *subsidising the purchasing of advanced machinery* would help the printing industry, but hardly affect the pharmaceutical industry.) In spite of these difficulties, Serra makes it clear that economic policy is the most important factor causing the wealth of nations.

5. The Role of the Renaissance State in the Light of recent Economic Theory.

We argue that the pre 20th Century involvement of the State in economic growth, starting in the Renaissance - while making virtually no sense in the 'fatally simple structure' of neo-classical economics⁷¹ - is eminently compatible with new approaches in the evolutionary economics of complex systems of e.g. W. Brian Arthur and

⁷⁰ '...ma ancora giova la quantità dei artifici che in essa si ritrovano, il di cui accidente causa concorso grandissimo di gente, non solo per gli artefici, mentre in tal caso a quelli si attribuirebbe la causa, ma per il **concorso di questi due accidenti insieme, poiché l'uno somministra forza all'altro**, e il concorso grande che vi é al rispetto del traffico e della ragione del sito cresce per la quantità degli artefici, e la quantità degli artifici cresce per il concorso grande del traffico, il quale per il concorso predetto diventa maggiore.'

⁷¹ A term used by English philosopher of science Jacob Brunowski.

Paul David.⁷² It is also compatible with the key elements of the new trade theory, with the theories of Paul Krugman from the 1980's (rather than those of the 1990's) and of Grossman and Helpman,⁷³ and to the debate on strategic trade policy⁷⁴. This is precisely because Renaissance economists did *not* see the economy as being deterministic, predictable, and mechanistic.

As we have attempted to show, synergetic and systemic economic effects which modern economics see as being typical of activities subject to increasing returns, were typically recognised - with varying degrees of sophistication - by a vast number of pre-Smithian economists, and used to argue for specific State intervention. The mechanisms creating these cumulative causations were much more clearly described by Antonio Serra in 1613 than by Friedrich List in the 1840's or by Gunnar Myrdal in the 1950's. Today the most surprising aspect of the new theories emphasising increasing returns, is that they are either applied to technological systems - where income distribution is not an issue - or to what we would call *symmetrical trade*, to trade between groups of nations all involved in activities subject to cumulative causations. In such cases the logic of State intervention is infinitely less than in the cases of *asymmetrical trade*, in the cases of Third World countries which are historically *locked into* exporting products produced under conditions of diminishing return, and importing goods produced under conditions of increasing returns.⁷⁵ The existence of symmetrical trade between nations *at the same level* of development, mutually in increasing return activities, is an argument for free trade and no intervention. Charles King argued already in 1721⁷⁶ that trading manufactured goods for other manufactured goods was 'good trade', beneficial to both trading nations, whereas exporting raw materials and importing manufactured goods was 'bad trade'.

These new theories, based on increasing rather than diminishing returns, open up for a process-dependent, organic world, where historical cumulative causations, positive feedbacks, and lock-in effects give multiple solutions - also clearly suboptimal ones. The *external economies* of Alfred Marshall, the *growth poles* of Perroux, the *linkages* identified by Albert Hirschman⁷⁷ and the observation of Michael Porter that *innovations thrive in clusters*⁷⁸ are also recognitions of important systemic effects of economic development - in all these theories past history reinforces into positive feedback systems and creates path-dependence. Other recent works on technological change - of authors like Christopher Freeman and Giovanni Dosi - also describe *the path dependent nature* of technological change. Surprisingly many early economic writers also recognise such systemic effects, and describe them.

An important insight from these modern theories is that **small differences early in the history of an industry may have huge effects further on** - like the 'butterfly effect' in chaos theory - whether the nation is going to be specialised in increasing or diminishing return industries. This clearly opens up a huge area for State intervention, and we argue that this is exactly the kind of intervention that what we have labeled *Schumpeterian mercantilism* has provided from England in the 1480's to Korea in the 1980's. Joshua Gee, in his 1738 treatise, presents a similar argument to the modern one:

⇒ 'The Trade of a Nation is a mighty Consequence (sic), and a Thing that ought to be seriously weighed, because the Happiness or Misfortune of so many Millions depend upon it. **A little Mistake in the Beginning of an Undertaking may swell to a very great one.** A Nation may gain vast Riches by Trade and Commerce, or for want of due Regard and Attention, may be drained of them'.

We argue that this dynamic view of the world finally opens up for a much larger role of 'human wit and will' - private and collective - in influencing the wealth of nations, rather than this wealth being a product of the

⁷² A good overview of these theories is contained in W. Brian Arthur's 'Positive Feedbacks in the Economy', in *Scientific American*, February 1990, pp. 80-85.

⁷³ Helpmann, Elhanan, and Paul Krugman, *Market Structure and Foreign Trade*, Cambridge, Mass., MIT Press, 1985, and Grossman, Gene M. (Editor), *Imperfect Competition and International Trade*, Cambridge, Mass., MIT Press 1992.

⁷⁴ Krugman, Paul, (Editor), *Strategic Trade Policy and the New International Economics*, Cambridge, Mass., MIT Press, 1986.

⁷⁵ This argument is developed in Reinert, Erik, *International Trade and the Economic Mechanisms of Underdevelopment*, Ann Arbor, University Microfilm, 1980.

⁷⁶ King, Charles, *The British Merchant or Commerce Preserv'd*, London, John Darby, 1721. 3 Vols., Vol. 1, p. 3.

⁷⁷ Introduced in Hirschman, Albert O., *The Strategy of Economic Development*, New Haven, Yale University Press, 1958.

⁷⁸ In Porter, Michael, *The Competitive Advantage of Nations*, London, Macmillan, 1990.

invisible hand of Providence. Since increasing returns are most typical in manufacturing, these new theories, inadvertently create theoretical support for the century-long mercantilist preference for manufacturing over the production of raw materials. In these early theories the use of machinery was often a proxy for 'good trade.' Again, this theory is being vindicated by recent theoretical development on the important role of machinery in economic growth.⁷⁹

The fundamental problem of neo-classical theory, and of the thinking behind the policies of the World Bank today, is that they are based on the implicit assumption that all economic activities are 'alike'. These theories fail to open up for the presence *and absence* of increasing returns and consequently of asymmetrical trade - trade between nations exporting products from increasing return activities (which create 'autocatalysing systems') and nations exporting diminishing return activities. 'New Growth Theory' explicitly combines increasing returns with perfect competition, which, in my view, is based on a fundamental misrepresentation of how new knowledge is produced and spread. In this way, although opening up for the benefits of increasing returns, most of these economists perpetuate factor-price equalisation. Some few articles in new growth theory open up for the world view on which this paper is based - i.e. for *inherent differences between economic activities* as being the starting point for explaining the present wealth and poverty of nations. The most notable exception is Robert Lucas Jnr. - last year's winner of the Nobel Prize in economics - whose 1988 and 1993 papers explicitly open up for this possibility.⁸⁰

Borrowing our terminology from the study of complex technological systems, we argue that these differences between economic activities made a strong (rather than a large) state into an 'obligatory passage point'⁸¹ for economic development. Seeing a nation as a complex system - like a firm or a technological systems - the need for *input coordination* arises. In the development of technological system - just as in the development of nations - *obligatory passage points* 'represent instances of power, because they discipline the interactions of actors.'⁸²

As nations evolve - just like when large technological systems evolve - there are 'components' in the system which may fall behind others, limiting its potential efficiency. In the study of large technological systems, these are called 'reverse salients'⁸³ - a dynamic conception of a what in a static system would be called a bottleneck, and where, at certain stages, *innovative energy has to be focused*.⁸⁴ We would argue that, in all presently industrialised countries, an active State has historically been an 'obligatory passage point' providing the necessary function of removing 'reverse salients', and of coordinating and coercing the various 'reactants' which together produce economic wealth.

We would argue that the role played by the State of Henry VI of England starting in 1485, of coercing entrepreneurship in order to establish a textile industry in England, is essentially an expressions of an understanding of the same *obligatory passage point* to development as could be observed when the Korean government coerced Samsung from trading activities into the manufacturing of semiconductors in the early 1980's. Also the other policy measures - some types of bounties, cheap credit, temporary protection of local market, etc. - are strikingly similar in both instances. The same reasoning underlies the two State actions 500 years apart: A fundamentally Renaissance notion that *new learning* is the basis for economic development, and that this new learning is able to create development - through what we would call virtuous feed-back systems - **in some economic activities rather than in others**. In both cases, resource-based activities - in the absence of a manufacturing base - were not seen as being able to do the job of lifting the nation out of poverty. This is what we refer to as the *activity-specific* element of economic growth; the fact that only nations which include a large enough percentage of activities subject to dynamic increasing returns have been able to develop, and that, in this light, the phenomenon that we call 'development' is essentially a 'dynamic rent' which labour, capital and governments collect from such a dynamic feed-back system.

⁷⁹ See De Long, Bradford, and Summers, Lawrence, 'Equipment Investment and Economic Growth', in *Quarterly Journal of Economics*, Vol. 106, May 1991, pp. 445-502.

⁸⁰ 'On the Mechanics of Economic Development', in *Journal of Monetary Economics*, Vol. 22, 1988, pp. 3-42 and 'Making a Miracle', in *Econometrica*, Vol. 61, 1993, pp 251-272 .

⁸¹ For a discussion of this concept, see Bijker, Wiebe, *Of Bicycles, Bakelites, and Bulbs. Towards a Theory of Sociotechnical Change*, Cambridge, Mass, MIT Press, 1995.

⁸² *ibid.*, p. 266.

⁸³ 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.

⁸⁴ *ibid.*, p. 4.

Based on the abundance of evidence of similar *production-* and *learning-*based, *activity-specific* strategies for early economic development since the late 1400's - they were clearly at the core of the now forgotten 19th Century development strategies of the United States, Germany and Meiji Japan - we argue for the existence of an alternative 500 year canon of economic theory. In the perspective of this alternative knowledge-based canon, the period of dominance of classical and neo-classical barter-based canon stands out as a 200 year old parenthesis.

In this system where growth is *activity-specific*, the State has played the necessary role of active midwife for all developed nation-states, much in the same way as entrepreneurs have played the initial role of strong input-coordination and midwifery in all big corporations. However, both companies and States grow up, and the role of the autocratic leader and champion is reduced in both cases. Once positive feed-back systems (autocatalytic systems) have put a nation on the path of dynamic increasing returns - having started what in the study of complex technological systems sometimes is called 'historical snowballing' - the role of the State is reduced to a more indirect one of maintaining the national innovation system, and of generating demand for new skills. In other words, the closer a nation finds itself to the virtuous circles of knowledge generation operating near the world 'frontier of knowledge', the more the nation-state has to depend on indirect measures of influencing the economy. The biggest 'latecomer advantages' of being able to catch up to a known technological frontier have been lost. For this reason the mythical MITI plays a very different role in the Japanese economy today than it did after World War II.

Once the vested interests of the ruling classes have been moved from resource-based activities (which, in the absence of a manufacturing sector, do not produce positive feedback systems⁸⁵) and into manufacturing, **the positive feedback system also embraces the political system:** *private rent-seeking* has been brought into the activities which also brings with it *collective rent-seeking*, and 'what's good for General Motors is good for the United States.' With this, we explicitly suggest that in some economic activities, much more than in others, there is a *community of interest* between the vested interests of the entrepreneur and the vested interests of the nation as a whole. This point was very clearly made by 19th Century US economists, particularly by Henry Carey,⁸⁶ who also made it clear that such effects could not be produced in the absence of manufacturing industry.

Because of this, perhaps the most important historical role of the State has been *to bring the economic activities of the nation into such positive feedback activities*. This factor is the fundamental common element between England in 1485 and Korea in the 1980's. This was also the core argument of the 'American System of Manufactures' and of the 'High Wage Strategy' which completely dominated the economic policy of 19th Century United States. The US Civil War was a war between the free traders of the South and the politicians of the North which argued that no national wealth could be created without the protection of domestic manufactures. Reading of the contemporary US sources leaves little doubt that 'Free Trade, Slavery, and Secession were...sworn allies.'⁸⁷ In this context, Latin America is best seen as a group of nations where the 'South' - the groups with vested interests in resource-based activities - won the civil wars⁸⁸.

This kind of argument - and the strategies of Henry VII and Korea 500 years apart - are essentially only dynamic versions of an industrial policy which Alfred Marshall recommends in the first edition of his *Principles*: 'A tax ...on the production of goods which obey the Law of Diminishing Return, and devoting the tax to a bounty on the production of those goods with regard to which the Law of Increasing Returns acts sharply'.⁸⁹ We would argue that Marshall here describes the most typical economic policy of what we today despise as 'mercantilism'. We find the same kind of reasoning again as the fundamental mechanism causing uneven economic development in Frank Graham's 1923 theory of international trade.⁹⁰ Most unfortunately, with the mathematisation of general equilibrium theory all such elements were gradually thrown out of economic theory as being 'not compatible

⁸⁵ Reinert (1996) elaborates on this point.

⁸⁶ Carey, Henry, *Harmony of Interests*, Philadelphia, Skinner, 1851.

⁸⁷ Logan, John A., *The Great Conspiracy, its Origin and History*, New York, Hart, 1886, p.30. This view is conformed e.g. in Curtis, Francis, *The Republican Party. A History of its Fifty Years Existence and a Record of its Measures and Leaders 1854- 1904*, 2 Vols., New York, Putnam, 1904.

⁸⁸ The tension between the 'modernizing' forces of industrialisation (the equivalent of the US 'North') and the resource-based power-base (the equivalent of the US 'South') is a much underresearched area in Latin American history, but see e.g. Gootenberg, Paul, *Between Silver and Guano, Commercial Policy and the State in Postindependence Peru*, Princeton, Princeton University Press, 1989, and McEvoy, Carmen, *Un proyecto nacional en el siglo XIX, Manuel Prado y su visión del Perú*, Lima, Universidad Católica, 1994.

⁸⁹ Marshall, Alfred, *Principles of Economics*, London, Macmillan, 1890, p. 452.

⁹⁰ Graham, Frank, 'Some Aspects of Protection further considered', in *Quarterly Journal of Economics*, Vol. 37, 1923, pp. 199-227.

with equilibrium' or, 'as inconsistent with free competition, and therefore as outside the scope of the present discussion.'⁹¹ In this way economics moved increasingly further into the realm of pure ideology, the ideology being hidden in the assumptions, as Joan Robinson and others have claimed. The nations producing behind the barriers to entry created by the *largest effects of increasing returns* and with the *most exclusive* new information, were the very nations forcing upon the world a model assuming *no increasing returns* and *perfect information*. In our view, the seriousness of the long term practical consequences of this on the poor world will only dawn upon us over the next decade. The further removed an economy operates from the assumptions of neo-classical economics, the greater its vested interests in making other nations operate as if this theory were a true reflection of reality.⁹²

We would argue that, since the end of World War II, 'Cold War Economics' has contributed to strengthen this development even further: The political need for an economic theory providing an ideological defence line against communism, and the further mathematisation of general equilibrium economics mutually reinforced each other. The historical coincidence is that both these forces demanded that the elements which created anything but a harmonious and even economic growth be eliminated. Economic theory developed, as Paul Krugman put it, along 'the perceived line of least mathematical resistance'.⁹³ At the height of the Berlin Blockade Paul Samuelson proved the universal harmony of 'factor-price equalization' based on the standard assumptions of neo-classical theory. At the height of McCarthyism, Milton Friedman defended the use of these seemingly counterfactual assumptions as the basis of economic theory. The crossfire of mathematisation of a static neo-classical theory and of political demands - both needing perfect markets - cleaned out of economic theory all the factors which cause uneven economic growth, and consequently also most of the factors which bring about a need for a State intervention.

The following is an example of the poverty-equilibrium which the historical absence of a development state is likely to create: The world's *most efficient* producers of base-balls for the American sport are located in Haiti: Their wages are 30 US cents per hour. Their technology is the same as the US producers' - all base-balls are sown by hand. All the skills and capital of the United States have not managed to mechanise this production - it is a relic left over from a techno-economic paradigm long past. Just like in Keynes' unemployment equilibrium, such poverty-equilibria may lock nations into a comparative advantage of being poor and ignorant, in industries requiring low skills. This in spite of their being the most efficient producers in the world with the best available technology. Historically the 'development state' has taken a nation into economic activities which require higher skills, and thus established a platform from which successive growth becomes more self-sustaining with much less intervention.

We consequently argue that the presence of a 'development state' - taking the nation-state into increasing return activities - as an obligatory passage point is determinant for economic welfare. The most interesting aspect of such poverty traps is how the systemic aspects of development create widely differing wages in professions where productivity of labour and capital is essentially the same the world over. The cumulative effects which today generally have their roots in the export sector, spread through the labour market also to activities which, by themselves, are not subject to increasing returns: The vast majority of workers in any nation are employed in the traditional service sector. Productivity in these activities vary very little from nation to nation, as in our example with the bus drivers in Norway and in Bolivia. The systemic effects accompanying economic growth - which are created by increasing returns - produce what we in the next section shall call a *collusive distribution* of the gains from technological change: In the Fordist mass production paradigm - centred on the nation-state - the gains from technological change spread to a large extent as higher domestic monetary wages - rather than as lowered prices internationally.

6. The Two Canons of Economic Theory.

Next year's European Conference on the History of Economics - in Athens - is based on the 'role of the canon in the history of economics.' The call for paper notes that in most sciences the authority of the 'classics' have been

⁹¹ This is the way the famous trade theorist Jacob Viner dismisses these arguments. See Viner, Jacob, *Studies in the Theory of International Trade*, New York, Harper, 1937, p. 473.

⁹² This is certainly true in the short term - and according to 19th Century US economists and politicians this was a main feature of English classical economy - but in the very long term it is in nobody's interest that whole regions of the world remain poor and outside the world market.

⁹³ Krugman, Paul, *Rethinking International Trade*, Cambridge, Mass., MIT Press, 1990, p. 4.

challenged - not so in economics, 'where the canonical sequence of Smith, Ricardo, Marx, etc. still constitutes the skeleton for most teaching and scholarly discussion'. The question if alternative 'canons' exist is also raised.

In this paper we argue that a parallel tradition - an alternative canon - exists. The theoretical conflict between the forefathers of today's mainstream economics and the forefathers of the alternative canon has existed since the 1622-23 debate between Gerard De Malynes⁹⁴ and Edward Misselden,⁹⁵ where Malynes represented a static theory rooted in *barter* and Misselden represented a theory centred around *learning* and *production*. In the history of economic thought, their debate is interpreted as being about exchange controls and the balance of trade.⁹⁶ 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'⁹⁷. Objecting to this definition, Misselden says: 'It is against Art to dispute with a man that denyeth the *Principles* of Art'. 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'⁹⁸.

In the late 18th Century a new type of economic theory came into being, focusing on the 'natural harmony' of Nature. This was true a paradigm shift in Kuhn's sense. The incentives of Renaissance economics to produce knowledge through a process which we have labeled **dynamic and knowledge-producing rent-seeking** - or **Schumpeterian Mercantilism** - had 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'⁹⁹, 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**.¹⁰⁰

Just as Renaissance economics sees no limits to progress - they truly see 'a never ending frontier of human knowledge' - in Adam Smith's system 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 reached¹⁰¹. It is only here that we see the practical consequences of Adam Smith and parts of today's ecology movement sharing the same assumptions - no new knowledge entering the system. The 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.' As we shall discuss later, 'knowledge' and 'institutions' are the

⁹⁴ 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.

⁹⁵ 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,

⁹⁶ 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.

⁹⁷ Misselden, *op. cit.*, (1623), p. 8.

⁹⁸ *Ibid*, p. 102.

⁹⁹ On this point see Viner, Jacob, *The Role of Providence in the Social Order. An Essay in Intellectual History*, Philadelphia, American Philosophical Society, 1972.

¹⁰⁰ Sombart, Werner, *Der Moderne Kapitalismus*, Vol. 2, *Das Europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus*, München und Leipzig, Duncker & Humblot, 1928, p. 919.

¹⁰¹ Smith, Adam, *Wealth of Nations* (1776), Chicago, University of Chicago Press, 1976, p. 106.

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.

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 Maercatus 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'**¹⁰².

The fundamental characteristic of the new 'classical' economic theory was its conscious de-emphasis on the role of human knowledge which comes across very clearly in Adam Smith's late work, i.e. *The Wealth of Nations*. The new economics of the late 18th Century was to produce the 'dismal science' of Malthus and Ricardo, and fundamentally to change Man's view of the role of the State. The old theory emphasized systematic effects emanating from *das Ganze* - from the whole as a system. The new theory, starting with Adam Smith and reaching its apex with Paul Samuelson's factor-price equalisation in 1950, had the individual as its sole unit of analysis. However, not even the whole individual became the unit of analysis, only a part of the individual labeled *Homo Oeconomicus* who engaged in *barter*. Excluded was not only the state, but also *Homo Faber* - man the innovator and producer.

In economics, the mechanical world view is centered around barter, accumulation, physical metaphors, equilibrium, and optimality. In this mechanical view, a fundamental characteristic of Man is his propensity to barter. The organic view in economics is centered around inventions, production, evolution, biological metaphors, and disequilibrium. In an evolutionary system, almost by definition, no optimality exists, except as an ever-moving target in the distance¹⁰³. In this organic view a fundamental characteristic of Man is his propensity to explore, to invent, and cumulatively and continuously to create new knowledge. In this perspective, today's evolutionary economics still may be seen as being too 'mechanistic' - substituting biology-envy for 'physics envy' in a process where the role of *conscious human effort* - individual and collective - as the main engine propelling evolutionary change is still missing.

One fundamental difference between the two world views appear when authors from the two schools describe how Man differs from animals. The most famous representative of the barter-centred theory of development says it this way:

'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.'

Adam Smith, *Wealth of Nations* (1776), Chicago Edition, p. 17.

The reply from the production-centred theory of development:

'..Beavers build houses; but they build them 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*....'

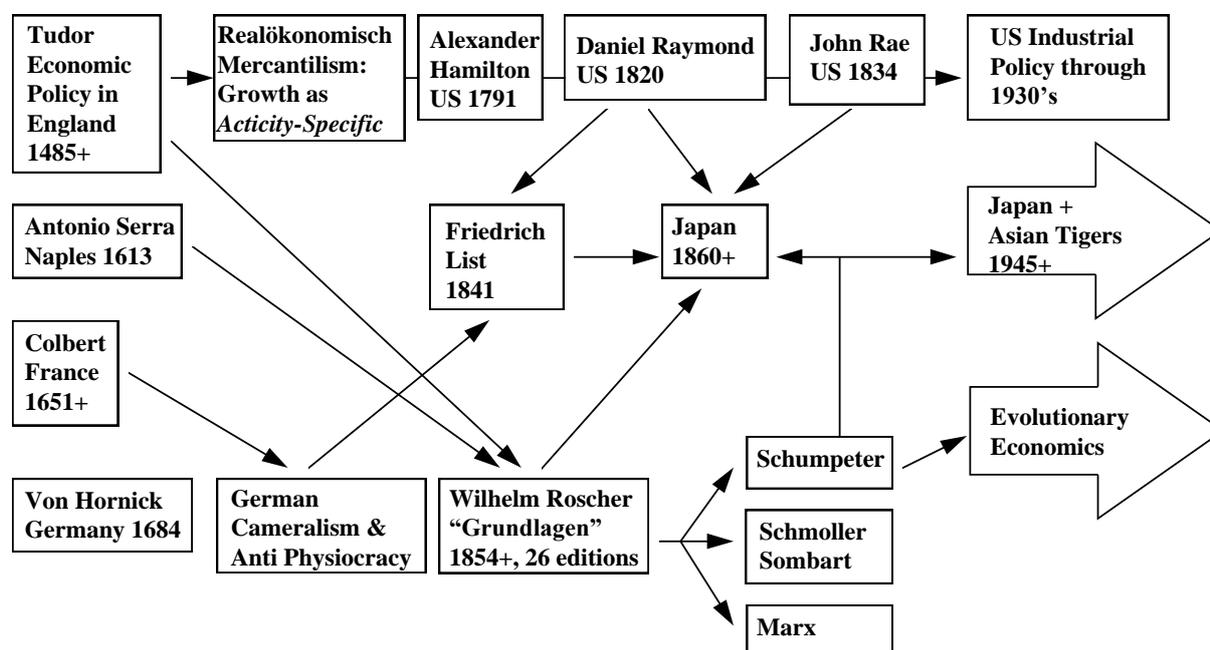
Abraham Lincoln, Speech of the 1860 Presidential Campaign.

Figure 3.

¹⁰² Leibniz, Gottfried Wilhelm, 'Society and Economy' (1617), reprinted in *Fidelio*, Vol. 1, No. 3, Fall 1992, p. 54.

¹⁰³ This point is discussed in Nelson, Richard, 'Recent Evolutionary Theorizing About Economic Change', in *The Journal of Economic Literature*, Vol. XXXIII, No. 1, March 1995, pp. 58-59.

The Knowledge- and Production-based Canon of Economic Theory



The roots of the problems of today's mainstream economics can be traced back to these conflicting views on Man. We would argue that it is time for economic theory to find again the knowledge-based and production-based alternative to today's economic tradition. This tradition is traced over the last 500 years in Figure 3.

Adam Smith's 19th Century enemies in the United States would ask how Adam Smith's theory explains economic growth. How do you get more bones into the economy by teaching dogs to barter and to make contracts? And, how do you explain with Adam Smith's theory why dogs today eat canned dog food and not bones? Although Adam Smith has a 'general tendency of things to improve' in the background, these improvements descend on mankind as 'manna from heaven' - not as a result of organised conscious effort - and hit everybody at the same time.

The term *laissez-faire* is today used as a slogan for no government intervention. However, from the context of how and when the remark was made, a different interpretation is possible. The term is known through the French physiocrats, but the term was not invented by them. Quesnay perpetuated the term as a slogan for the non-intervention of government. However, the physiocrats picked up an expression which long before had been used by a merchant called Legendre¹⁰⁴, who was consulted, around 1680, by Colbert, as to what could be done to promote trade and welfare. This merchant then dropped the words which became famous: 'laissez-nous faire', to which later Quesnay added: 'Ne pas trop gouverner' - 'Do not govern too much.'¹⁰⁵ However, it seems important to keep in mind that Legendre at this point had the whole arsenal of Schumpeterian mercantilism at his disposal, he may very well have expressed the feeling that this was all the government could be expected to do - that the maximum point of government intervention had been reached, that the rest was up the entrepreneurs.

7. 'United by a Common Misconception about our Past' - The Decline and Fall of Renaissance Economics.

¹⁰⁴ This account is given in Roscher, Wilhelm, *Principles of Political Economy*, Chicago, Callaghan, 1882, Section X (10), p. 36.

¹⁰⁵ Joseph Garnier in Coquelin et Guillaumin, *Dictionnaire de l'Économie Politique*, Paris, Guillaumin/Hachette, 1854, Vol. 2, p. 19.

‘Es evidente que hay muchas maneras de hacer historia, casi tantas como de deshacerla.’

José Ortega y Gasset, *La Rebelión de las Masas*, (1937).¹⁰⁶

‘A nation’, said Harvard political scientist Karl Deutsch, ‘is a group of persons united by a common error about their ancestry and a common dislike of their neighbours’¹⁰⁷ This saying is presumably valid for all tribes - including academic tribes. The same maxim seems most appropriate when applied to our understanding of the role of the state in bringing Mankind out of poverty and ignorance. The history of Renaissance economics in today’s textbooks is not unlike a history of Rome written by the Huns.

Just as the Black Legend - *la leyenda negra* - has disfigured Spanish history, our view of mercantilism has been deformed by *the Midas Legend* - the legend that the mercantilists were only interested in gold. Modern civilized society was formed during the Renaissance, all artists and scientists of the Renaissance - from Gallileo to Michelangelo - are our heroes. Renaissance Man is still a term denoting profound knowledge in many fields. Yet, we are told by virtually all modern histories of economics that the economic theory behind all this was only about collecting gold.

In the field of Cold War Economics, just like in the cold war politics of a Latin American banana republic, anyone not siding clearly with either of the two superpowers were the ones most at risk, they would - literally - be shot at from both sides (or, not get a university appointment). Cold War Economics was in many ways a battle of Utopias, where, as Colin Clark once put it, ‘theory’ was mistaken for ‘science’. This was a relatively unsophisticated scientific war between ‘good guys’ and ‘bad guys’, like in the Western movies of the time, where the market was seen as either ‘good’ or ‘bad’. This led to a polarisation of economic theory - the combined effect of the Cold War and the process of mathematisation of a static system crowded out other, and most relevant aspects. Focusing on the quantifiable factors in their barter-based models, the economics profession came to be prisoners of their own limited toolbox. As the history of economic thought also slowly came to be filtered through neo-classical lenses, the debates of the past were reinterpreted to fit the Cold War mold. Historical authors were given labels as free traders (good guys) or protectionists (bad guys), while both the historical context and the other often very sophisticated aspects of these older theories were lost. This is the history of economic thought with which we still live.

Another feature of this is that some nations come to be curiously at odds with their own past. Nowhere is this more clear than in the United States. US banknotes provide a portrait gallery of people whose economic policy today would be ridiculed both by the World Bank and in American university textbooks in economics - from the views of Benjamin Franklin that ‘protection and competition’ was the only way to make manufactures cheap in the United States¹⁰⁸, to George Washington who, for the same reasons, insisted on a necessarily primitive American-made suit at the first presidential inauguration, via the protectionists Hamilton and Jackson, to Thomas Jefferson’s attempt to prohibit the works of Ricardo in the US, to the view of Abraham Lincoln (quoted earlier) that at the origin of wealth there are *inventions* and *innovations*. The uncomfortable fact that the US Civil War - to a large extent a war between the free traders of the Southern Confederacy against the protectionist North - was won by the ‘bad guys’, who represented despicable mercantilist theories of economic development, is today seriously played down. With this development the real treasure of US economic theory, which even today is very relevant - a Century of thought from Daniel Raymond to John Rae, E. Peshine Smith and Simon Patten - is all but deleted from the national collective memory, and from the history of economic thought. Most 19th Century US economists made it very clear that their economic policy was specific to the situation of the US economy *then*, they would not have recommended protectionism as a solution for the problems of the United States today. One of several studies puncturing the myth that US economic policy during its first 100 years was

¹⁰⁶ ‘There are many ways to make history. Almost as many as to unmake it.’ Madrid, Espasa-Calpe, 1964, p. 163.

¹⁰⁷ Deutsch, Karl, *Nationalism and its Alternatives*, New York, Knopf, 1969, p. 3.

¹⁰⁸ Benjamin Franklin is the author of the laudatory footnotes to this effect in the second edition of Whatley, G, *Principles of Trade. Freedom (sic) an Protection are its best Suport(sic): Industry, the only Means to render Manufactures cheap*, London, Brotherton and Sewill, 1774. This book title succinctly puts together two important points: that effective protectionism leading to dynamic national rent-seeking must lean on freedom to establish new business, on competition, (as opposed to the static rent-seeking resulting from protectionism in India or post-war Latin-America), and that, from the point of view of the real wages paid in non-industrialised nations, manufactured imports appear very expensive. The solution was to establish a *competitive* economy based on manufacturing in the United States.

one of a weak State and of *laissez-faire* was written by a Harvard historian: *Economic Policy and Democratic Thought*.¹⁰⁹

We seem to be still suffering from the illusion in 19th Century economic theory of an automatic development - a view also largely shared by Marx. However, this view had its strong opponents also in the 19th century, particularly in Germany and the United States. German economist Eugen Dühring, the great defender of US economist Henry Carey in Europe, 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'¹¹⁰. The important systemic aspects of this theory - the promotion of the *common weal* - is mostly left out of today's accounts.

Welfare is clearly a product of conscious human will, not of any invisible hand of Providence. Johann Gottfried Hoffman in his *Theory of Taxation* (1840) puts it this way: 'The delusion that security of life and property, the productivity of labor, and the consequent possibility of acquisition and enjoyment, and even the elevation of the spiritual and the ennobling of the moral nature - that these goods came to Man in the gift of gratuities, is itself a proof of the advanced stage of culture which the greater part of Europe at present occupies. **As the grown man has long since forgotten the pains it cost him to learn to speak, so have the peoples**, in the days of their mature growth of the State, **forgotten what was required in order to free them from their primitive brutal savagery.**'¹¹¹ Another German economist, Gustav Cohn, who was born in the year Hoffman's *Theory* appeared, picks up the argument and continues: 'In point of fact, how significant was the involuntary testimony which the eighteenth Century, with **its repudiation of the historic State and its yearning after the primordial state of nature**, bore to the blessings of the inherited culture which it ungratefully enjoyed.'¹¹² This description - written more than 100 years ago - also fits the zeitgeist of today. Again today a 'repudiation of the State' and 'the end of the nation-state' - based on English classical and neo-classical economics - is mixed with a 'yearning after the primordial state of nature.' In fact such anti-modernist movements seem to occur towards the end of techno-economic paradigms. Rousseau and Adam Smith represented the 18th Century version of this movement. The 19th Century *fin de siècle* movement comprised nihilism, and towards the end of the 20th Century we see a post-modernism bordering on nihilism. Out of the late 19th Century *fin de siècle* mood grew both the *Blut und Boden* movement and the conservative revolution of the 1920's and 30's, paving the way for irrational nazism.

The new type of economic theory brought with it a very different view of on the role of government. There were good objective reasons for this. The old mercantile system had degenerated, and Adam Smith's basic idea that the English and French economies now needed a heavy dose of market was no doubt correct. However, Adam Smith was so successful in ridiculing all economists before the Physiocrats that the whole production-based tradition in economics was slowly lost.

Reconstructing a new economic theory which exogenised both knowledge and State was clearly much less risky to advanced nations than to the more backward ones. Adam Smith's only mention of the invisible hand in the *Wealth of Nations* can easily be read as the description of a virtuous circle which takes on the character of a *perpetuum mobile* - of 'historical snowballing' - once it has properly been put into motion. The closer a nation is to the frontier of human knowledge, the less the State has to contribute in *direct* interventions. Or, as Keynes said in 1923: 'The more troublous the times, the worse does a *laissez-faire* system work.' The issue was therefore not, said Keynes, one between collectivism and *laissez-faire*, but between targeted state action and a socialism which was out of date and contrary to human nature.¹¹³ This requires a strong State, but not a big State.

The Midas Legend is more deeply entrenched than ever. Anyone who dares to comment positively on any aspect of economic theory before Adam Smith can make Werner Sombart's words his own: 'Ich sage das auf die

¹⁰⁹ Cambridge, Mass., Harvard University Press, 1948. Prepared under the direction of The Committee on Research in Economic History, Social Science Research Council.

¹¹⁰ Dühring, Eugen, *Kritische Geschichte der Nationalökonomie*, 1879, quoted in Sombart, *op. cit.*, p. 913.

¹¹¹ Hoffmann, J.G., introduction to *Lehre von den Steuern*, quoted in Cohn, Gustav, *The Science of Finance*, translated by Thorstein Veblen, Economic Studies of the University of Chicago, No. 1, Chicago, University of Chicago Press, 1895, p. 60

¹¹² Cohn, *ibid.*, pp. 60-61, my emphasis.

¹¹³ Quoted in Skidelsky, *op.cit.*, p. 152.

Gefahr hin, als Neo-Merkantilist abgestempelt und in das Raritätenkabinett unseres Faches übergeführt zu werden.’¹¹⁴

8. The Role of Public Enterprises in this System.

Although other papers of this conference will cover this subject more fully, I shall add a few comments in an attempt to reconstruct the role of public enterprises within the now unlearned logic of pre-Ricardian economics. In this section, I shall largely follow the subject as treated by Werner Sombart.¹¹⁵ Unfortunately Sombart’s profound understanding of the growth of the capitalist system is mainly accessible in German.¹¹⁶ This problem of inaccessibility is strengthened by the most unfortunate neglect of pre-war German economic theory, a neglect today apparently promoted by the Germans themselves. This nation has all reason to be proud of their heritage in economic theory, but Germany seemingly attempts to unlearn this tradition collectively together with less fortunate aspects of the past. This sad state of affairs, coupled with the US misconceptions - bordering to denial - of their own 19th Century economic theory and economic policy, in my view bereaves the world of the only existing full-fledged and viable alternative to the neo-classical tradition.

Sombart makes the point that the reasons given for the establishments of State-owned industries in the historical record does not give justice to their importance:

⇒ **‘The importance of (State-owned enterprises) for the creation of modern industry cannot be overestimated. These served to set, not only a prototype example of industry, but also the pace and pattern for the new form of organisation. It was the State-owned enterprises which, due to the demands they created, often served as catalysts for the development of capitalist industries. These enterprises are so essential that they cannot be left out of an account of the development of capitalism, which - although their conceptual roots lay elsewhere - they furthered in thousands of ways.’**¹¹⁷

In the quote at the cover of this paper, the early Adam Smith explains how government intervention is neither made to help the consumers, nor to help the producers, but for the interest of the *system*, the *State*, the *common weal*. Similarly, state-owned enterprises were primarily established in the interest of the State. The following were the main motivations:

1. **Administrative Reasons.** On occasion the State administration found that, in certain industries, the only practical way of carrying out the necessary controls was by State ownership. This was most often done for reasons of financial policy, particularly in the case of mining of precious metals.
2. **To meet the Needs of the Ruler and the Court.** Many state-owned manufactures were set up seemingly with the sole objective of providing luxury goods to the King. Rulers and ruled took pride in showing off the skill level and production capacity of their nation - be it in producing china, silk or tapestries - seemingly much in the same way nations are proud of their athletes today. As already mentioned when discussing the role of the State in providing demand for skills - of the State as a Porterian *demanding customer* - the effect of the mass production of luxuries clearly had an effect of making such goods more accessible further down

¹¹⁴‘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.

¹¹⁵ Sombart, Werner, *Der moderne Kapitalismus*, Vol. 2: *Das europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus*, pp. 847-857.

¹¹⁶ A small group under the leadership of Prof. Jürgen Backhaus of the University of Limburg in Maastricht in the Netherlands - the ‘Heilbronn Group’ - is attempting to resurrect German economic theory and make it accessible in English, based on a conviction of its relevance today. A result of one of their annual conferences in Heilbronn, Germany, three volumes have just been published on English on the economics of Werner Sombart: Backhaus, Jürgen (Editor), *Werner Sombart - Social Scientist*, Marburg, Metropolis Verlag, 1996.

¹¹⁷ ‘Für die Entstehung der modernen Industrie kann man die Bedeutung dieser Gründungen nicht hoch genug einschätzen. Denn sie sind es, die vielfach als Muster, noch öfter als Schrittmacher neuer Organisationen dienen. Sie sind es, die durch ihre Nachfrage oft genug als den Kristallisationspunkt für die Entwicklung auch der kapitalistischen Industrie bilden. Ihre Erwähnung ...darf ..in einer Darstellung des Werdegangs des modernen Kapitalismus nicht fehlen, den sie aus den angegebenen Gründen in tausendfältiger Weise gefördert haben, trotzdem sie ihrem Geiste nach aus anderer Wurzel erwachsen sind.’, Sombart, *op. cit.*, p. 847.

the social ladder, and, more importantly, of building up technical and managerial skills which spread to other activities.

3. **For Reasons of Statesmanship/to further the *common weal*.** As already frequently mentioned, the State intervention was often made under this heading. Reasons given were those of creating employment, increasing exports, reducing dependence on foreign nations, etc. Often State ownership appears as ‘entrepreneurship of last resort’. Also tariffs were used to promote industries out of the same logic, the State trying to establish industries with the minimal tariff which would attract investors. Certain industries were seen as being mandatory for the *common weal*, and this results in the obvious pattern that the most backward nations tended to have the highest tariffs.
4. **For Reasons of National Defence.** The importance of national defence for technological development has been enormous - from the earliest history to the contribution of Reagan’s Star War programme to cellular telephone communication. A main challenge to statesmen of today is to devise mechanisms of financing technological developments other than as unintended by-products of warfare. To this point we refer to Sombart’s *Krieg und Kapitalismus*, which we have cited in Chapter 3. Obvious State industries in this respect are gunpowder and armaments, but also industries closer to the core of industrial and commercial development, like iron foundries and shipbuilding. However, the technologies and logistics needed to supply the huge armies also contributed to develop skills, scale, and scope in the State-owned production and distribution of goods like bread and clothing. The shortage of natural raw materials for the purposes of war are clearly most important reasons for research and inventions in the field of synthetic materials.

State-owned industries seems to have been part of role of the ‘obligatory passage point’ played by a strong and active State. These companies were - as Sombart emphasises - ‘places of learning’, not only for technical skills, but also for *organizational* and *social* capabilities. These are deep and elusive, but nevertheless indispensable skills for the process of economic development. Military demand seems to have had the same positive effect in the United States as in Europe. Ely Whitney financed the development of the revolutionary ‘cotton gin’ from the profits from selling rifles to the Revolutionary Army, and the whole concept of production with interchangeable parts - paving the way for industrial mass production - originated in the production of rifles in the US. However, in the United States a much larger role was played by private entrepreneurs than in Europe. Although in their trade policy and in terms of ‘getting the nation into the right business’ the United States was clearly in line with Europe, we here face a difference in historical development. We can only speculate if this was because of a considerably better supply of entrepreneurship in the United States - a crucial factor in economic development - if it was a result of a later industrialisation when a historical prototype of industrialisation was evident in Europe, of ideological preference, of having a more developed industrial structure before really threatening foreign wars appeared in US history (WW I), or all of the above.

Clearly the starting point of many technological trajectories was statal or para-statal demand, not only from war but also from the construction of infrastructure, power generation, a national telephone system, etc. Examples abound: that the automotive industry in Japan has its origins in the demand for trucks for the Imperial Army¹¹⁸ is a typical one. Import substitution based on reasons of national security seems to have played an extraordinarily important role through the centuries. Over time this lead to a **convergence of industrial structure**, establishing a **common platform of technological knowledge** in all advanced countries. With this relatively similar industrial structure as a starting point - from this common platform - the process of specialisation and globalisation today mutually benefit the advanced countries.

The need for national security supplies forced nations into increasing return activities, even though their natural comparative advantage may originally have been elsewhere. National security considerations helped *create* a new comparative advantage in the production of skill-intensive increasing return goods. Our problem today is, however, that having unlearned this historical insight, we pretend that the nations which have **not** been through this process of cumulative knowledge-building - the nations which have **not** reached this platform of knowledge - will equally benefit from the globalisation process. In terms of skills and scale, this common platform of knowledge creates the basis for a *symmetrical* pattern of international trade among the advanced countries, of a pattern of specialised trade between people with similar levels of skill, like that of lawyers trading with physicians. The *asymmetrical* trading relationships between the North and the South is more like a nation of skilled lawyers trading with a nation of unskilled lettuce pickers - there are no logical reasons why any factor-

¹¹⁸ See Odigari, Hiroyuki, and Akira Gota, ‘The Japanese Innovation System: Past, Present and Future’, in Nelson, Richard R. (Editor), *National Innovation Systems. A Comparative Analysis*, New York, Oxford University Press, 1993.

price equalisation should take place between the two, unless some technological development opens up for lettuce-picking profitably to absorb as much human capital as the study of law. In the existence or not of a common 'platform of technological knowledge and organisational skills' seems to lie the main historical difference separating the two convergence groups in the world economy - the rich 'North' and the poor 'South.'

9. Exogenizing the Engines of Growth: Adam Smith and the loss of *Knowledge, Institutions, and Systemic Effects* in Economic Theory.

At the time of the publication of Adam Smith's *Wealth of Nations* in 1776, no doubt the mercantilist system had developed from its Renaissance origins of a dynamic and wealth-producing quest for dynamic rents from new knowledge, to a system often characterised by static rent-seeking. Adam Smith's prescription of a heavy dose of market was no doubt a correct one. However, Adam Smith did much more than prescribing more market and less intervention. He produced a system which removed the very engines of growth from the previous world view: **1.** He efficiently argued that knowledge was of no value either to society or to the individual (see below). This counterintuitive reasoning is retained in today's economic theory when it predicts equalisation of wages between nations exchanging goods produced at extremely different skill levels. **2.** His theory removed human institutions. ('(Adam Smith) exhibits a powerful aesthetic aversion to any type of collective action, a visceral distaste bordering on revulsion. For him 'human institutions' so invariably produce 'absurd' results that they have no presumptive legitimacy.'¹¹⁹) **3.** His atomistic view removed all systemic effects and constructs a theory of individuals void of any uniqueness, all governed by their 'human nature' which is the same in all human beings.

The paradox of Adam Smith is that he saw an important Renaissance-type *systemic effect* - the division of labour - as being the source of wealth, an idea which was there both in Serra (1613) and very explicitly in Petty (1691). Yet, Smith's other assumptions - atomism, no increasing returns, no institutions, no new knowledge - ousted this key systemic insight forever from classical and neoclassical theory. Says US economist George Stigler: 'Almost no one used or now uses the theory of division of labour, for the excellent reason that there is scarcely such a theory....There is no standard, operable theory to describe what Smith argued to be the mainspring of economic progress.'¹²⁰

The loss of human knowledge, of institutions, and of any notion of systemic *common weal* in economic theory is, in this writer's opinion, a fundamental reason for our failure to capture why the world polarises into two convergence groups of nations - one wealthy and one poor. We argue for the importance of recognizing that what got Mankind from the cold and draughty caves into economic welfare was more than the discovery of barter and of 'getting the prices right' - that it required immense addition of knowledge and skills. A basic assumption running through pre-Smithian economics was that different economic activities contributed differently to the *common weal* - that the uneven advances of human knowledge was intimately tied to the process creating uneven growth. The professions which absorbed more knowledge - embodied or disembodied - were seen as the carriers of the common welfare of a nation. On this background it is interesting to go through Adam Smith's works with one particular question in mind: What is the role of knowledge in Adam Smith's system?

In Chapter X of book I, Adam Smith explains what causes differences in wages between professions - i.e. in a national economy. Wages constituting more than 70 % of GNP in a modern industrial nation, differences in national income between nations are principally a result of differences in wages, rather than differences in profits. We would further argue that, with an international economy with increasing factor mobility, the distinction between a theory of international trade as opposed to a theory of national trade is losing its importance. The only aspect which divides a theory of *international* from a theory of *national* trade is the question of factor immobility. Therefore Adam Smith's answer to the question as to which circumstances, 'either really, or at least in the imagination of men, make up for a small pecuniary gain in some (employments), and counter-balance a great one in others', is of great interest.

Smith lists five reasons why some people are paid better than others. The list is remarkable in that in each and every point raised, Adam Smith goes out of his way to explain why **human knowledge** and **human skills** do *not* produce a higher standard of living than ignorance - neither to society nor to the individual. If people with more knowledge and more skills have higher incomes - which was also observable at the time of Adam Smith - it is never due to the fact that skills and knowledge produce value, but due to one of the following five reasons:

¹¹⁹ McCraw, *op. cit.*, p. 364.

¹²⁰ Stigler quoted in McCraw, *op. cit.*, p. 362.

1. Wages vary with **the agreeableness of the employment**. For this reason, ‘the most detestable of all employments, that of the public executioner, is, in proportion to the quantity of work done, better paid than any common trade whatever’¹²¹. Under this point Adam Smith also discusses why human skills and talent are often very well rewarded - attempting to explain what he sees as the ‘exorbitant rewards’ of artists, ‘operasingers &c.’. The rewards to these talents are to Smith a direct result of ‘the discredit which attends the employment of them as the means of subsistence.’ To Smith the fact that society rewards extraordinary talent is a direct result of the fact that ‘we despise their persons’. ‘While we do the one (i.e. despise them), we must of the necessity do the other (i.e. pay exorbitant rewards).’ ‘Should the public opinion or prejudice ever alter with regard to such occupations, their pecuniary recompense would quickly diminish’.¹²² Smith argues that if we just would just stop despising our actors, artists and sportsmen, their incomes would fall to the level of an agricultural laborer. His system does not allow for a pecuniary reward which is coupled with admiration - his *natural system* has to pair ‘high reward’ with ‘despise’.
2. Wages vary with **the cost of learning the business**. Smith makes it very clear, however, that ‘the cost of apprenticeship accounts for the wages of manufacturers being higher than those of country labour.’¹²³ There is therefore no advantages to manufacturing over agriculture, although the earnings in manufacturing ‘may be somewhat greater, it seems evidently, however, to be no greater than what is sufficient to compensate the superior expense of their education’. In other words, the mercantilist tradition that nations who export the products from professions of higher skills will be wealthier than nations exporting products with low skills is here strongly refuted. From the point of view of both society and the individual, adding knowledge to labour is, in Smith’s system, clearly a zero-sum game.
3. Wages vary with **constancy of employment**. For this reason, professionals like masons and bricklayers who ‘can neither work in hard frost and foul weather’, and who is not secured constant demand for his services, will have a higher wage than people who are permanently employed. ‘The high wages of these workmen, therefore, are not so much the recompense of their skill, as the compensation for the inconsistency of their employment’.¹²⁴ Again, any role of skill and knowledge is refuted.
4. Wages vary with **the trust to be reposed**. Some professions - Smith mentions goldsmiths, physicians, lawyers, and attorneys - are higher paid because of the ‘great trust which must be reposed in the workmen.’¹²⁵ We have to have confidence in these people, says Smith, and the reason we pay them more is that we do not have confidence in people who are not well paid. ‘Such confidence could not safely be reposed in people of a very mean or low condition. Their reward must be such, therefore, as may give them that rank in society which so important trust requires.’¹²⁶ To Adam Smith, in other words, we do not pay lawyers and doctors better than people who wash dishes because their skills are more valuable, but because we have to trust these people, and couldn’t dream of having confidence in people from the lower classes of society.
5. Wages vary with **the probability of success**. ‘Put your son apprentice to a shoemaker, there is little doubt of his learning to make a pair of shoes: But send him to study law, it is at least twenty to one if ever he makes such proficiency as will enable him to live by his business.’ For this reason, Adam Smith looks at the skilled professions like a lottery: ‘those who draw the prizes ought to gain all that is lost by those who draw the blanks. Since, according to Smith, only one in twenty lawyers ‘make something out of their profession, this one lawyer ‘ought to receive the retribution of his own so tedious and expensive education, but that of more than twenty others who are never likely to make anything by it.’¹²⁷ Again, to society, knowledge is a zero-sum game.

As opposed to today’s economists, Adam Smith is consistent in carrying his anti-mercantilist theory down to the family level. Few economists today recommend their children to get a job washing dishes rather than to go to university, using the argument that ‘factor-price equalization is just around the corner anyway’. Privately - but not at the national level - today’s economists not only see the value of human capital, but they also accept US economist Daniel Raymond’s most important point from 1820¹²⁸: **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

¹²¹ *Wealth of Nations* (1776), Chicago, University of Chicago Press, 1976, p. 113.

¹²² p. 120.

¹²³ p. 114.

¹²⁴ p. 116.

¹²⁵ p. 117.

¹²⁶ p. 118.

¹²⁷ Smith, *op. cit.*, p. 118-119.

¹²⁸ Raymond, Daniel, *Principles of Political Economy*, Baltimore, Fielding Lucas, 1820.

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)

Today's economic theory addresses the problem of differing absorption capacities of knowledge by assuming that all activities have the same production function - that the necessary extension of skills is automatically brought to life by the addition of capital to labour. This describes a process of creating economic growth which is similar to the process of adding water to instant coffee: One assumes that the knowledge necessary in order to increase productivity is already there in equal measure in all human activities.

Adam Smith further argues that the choice of profession is of no importance, and he dispenses with skill and knowledge as economic factors based on two assumptions:

1. He assumes that labour comes from the same pool of people: 'If, *in the same neighbourhood*, there was any employment either more or less advantageous than the rest, so many people would crowd into it in the one case, and so many would desert it in the other, that its advantages would soon return to the other employments.'
2. He assumes that skills can be learned extremely fast. Investing in machines and instruments may take a long time, says Smith, 'but when both have been fairly invented and are well understood, to explain to any young man, in the completest manner, how to apply the instruments and how to construct the machines, cannot well require more than the lessons of a few weeks: perhaps those of a few days might be sufficient. In the common mechanical trades, those of a few days might certainly be sufficient.'

Adam Smith's discussion on what causes a difference in retribution between professions leads up to a severe criticism of the English statutes of apprenticeship. These dated from Elizabeth I - from the time of the cultivation of knowledge *per se*, which provided apprenticeships of up to seven years. Adam Smith saw apprenticeships as an extreme waste, since he is of the opinion that everything could be learned 'in a few days'. Unlike some later economists, like Alfred Marshall, Adam Smith was not a practical man - he 'seemed the unlikeliest of guides to the practical world' in the words of Harvard Business School professor Thomas McCraw¹²⁹.

In both Adam Smith and in neo-classical theory there is in some fundamental way a contradiction between the notion of perfect markets and the way the economy adds knowledge. This problem spills over to how economic theory today explains profits.¹³⁰ There is no incentive to produce new knowledge in perfect markets - the possibility of appropriating the fruits of new knowledge is absent. By letting new knowledge enter the system like 'manna from heaven', the very engine of growth - the search for new knowledge which creates imperfect competition - is excluded from mainstream theory. For this reason, an understanding of how different degrees of imperfect competition is caused *by conditions of production* is at the very core of any understanding of economic growth. Economic theory, however, does not have a relevant theory of production, and of the role of human knowledge in this process. Thorstein Veblen in his 'Preconceptions of economic science' says it this way: 'To sum up: classical economics, having primarily to do with the pecuniary side of life, is a theory of the process of valuation.'¹³¹ Production is left out. In the words of Werner Sombart: 'There is like a tacit agreement in (the profession) than one has reached the conviction that the science of economic life, in so far as this is studied by the economics profession, is a science of the circulation and distribution of goods.'¹³²

Did Adam Smith believe that the invisible hand would produce factor-price equalization? Hardly. In the *Theory of Moral Sentiments* Smith explains how **the invisible hand** promotes income distribution. However, to a modern ear, his arguments are hardly convincing. Smith bases his argument on the principle that *the rich have a limited capacity to consume, and therefore are forced to share with the poor*: 'It is to no purpose, that the proud and unfeeling landlord views his extensive fields, and without a thought for the wants of his brethren, in

¹²⁹ McCraw, *op. cit.*

¹³⁰ The lack of a coherent explanation of profit in the today's introductory textbooks in economics is contained in Naples, Michele, I., and Nahid Aslanbeigui, 'What *does* determine the profit rate? The neoclassical theories presented in introductory textbooks', in *Cambridge Journal of Economics*, Vol. 20, 1996, pp. 53-71.

¹³¹ Veblen, Thorstein Bunde, 'The Preconceptions of Economic Science', in: *The Place of Science in Modern Civilisation and other Essays*, New York, Huebsch, 1919, p. 144.

¹³² Sombart, Werner, *Der moderne Kapitalismus*, Vol. 2: *Das europäische Wirtschaftsleben im Zeitalter des Frühkapitalismus*, München and Leipzig, Duncker & Humblot, 1928, p. 917.

imagination consumes himself the whole harvest that grows upon them. The homely and vulgar proverb, that the eye is larger than the belly, was never more fully verified than with regard to him. The capacity of his stomach bears no proportion to the immensity of his desires...The rest he is obliged to distribute...The rich...consume only little more than the poor. They are **led by an invisible hand** to make nearly the same distribution of the necessaries of life, which would have been made, had the earth been divided into equal portions among its inhabitants....¹³³

10. The Loss of the State and the Revenge of the Centaur.

One of the most moving paintings of the Renaissance is Sandro Botticelli's 'Pallas and the Centaur', painted in the late 1480's. This work shows Pallas - the ancient goddess of wisdom - mildly and somewhat condescendingly caressing the head of a centaur, symbolising Man's past of ignorance and violence. The expression of embarrassment on the centaur's face is precious - he is so obviously ashamed of his wild and ignorant past. The symbolism - the victory of reason, wisdom and peace - comes across in an atmosphere densely filled with harmony, a feature which makes Botticelli's works so unique.

The economists of that time - and pre-Smithian economists in general - seems to have been aware of this ongoing battle between the wisdom and peace of Pallas and the violent ignorance of the centaur. Challenging the passions and energies of the centaur into productive - rather than destructive - activities was a main challenge of the Renaissance.¹³⁴ This was a matter which could not be left to any self-organising invisible hand. The prominent and influential German economist J. F. von Pfeiffer (1715-1787) - an ardent anti-physiocrat - puts it this way: 'You can make of human beings what you want. The way he is governed, commends Man to good, or to evil. The advantage of the nation must be the advantage of its members. He who separates these advantages, is an ignorant who damages the public body (*Staatskörper*).'¹³⁵

This paragraph in Pfeiffer summarises two important aspects of the pre-Smithian development state. The quality of the 'system' makes Man good or evil, and like in Chandler's works on managerial capitalism, there is a conscious and visible hand - Man's wit and will - which holds this system together. The second point, which Pfeiffer saw as being connected, belies the present Anglo-Saxon notion that pre-Smithian economics - and especially German cameralism - collectivistically subdued the interest of the individual to the interest of the State. Just like in the quote from the early Adam Smith on the cover of this paper, the overall growth of the system prevented the need for any static concerns for Pareto optimality: 'The incoming tide lifts all boats'.

The invisible hand starts working when conditions have been created bringing the vested interests looking for *private rate of return* in line with the interests of the *public rate of return* - when, like Pfeiffer says, what is in the interest of the individual also is in the interest of the collectivity. This happens when a critical mass of labour in a nation is employed in activities subject to increasing returns, and when the fruits of these increasing returns are allowed to filter out, to a large extent, as higher monetary wages inside the producing nation, rather than as lowered prices for foreign customers. In this way the core of society escapes from the static economics of zero-sum games: where the gain of one individual is the loss of another. Such activities - which 'raise all boats' - are the starting point of what the historians of technology call the process of 'historical snowballing' - of the virtuous circles of development. Under such conditions - in increasing return activities and *when appropriate mechanisms for the distribution of dynamic rents have been established* - the saying attributed to Alfred P. Sloan is true to a surprising extent: 'What is good for General Motors is good for the United States.' In Appendix 1 and 2 we have outlined (from Reinert 1980) the self-reinforcing virtuous and vicious circles of development and underdevelopment - of 'historical snowballing' and the lack of it - as described in this paper.

The metaphor of 'the invisible hand' was frequently used by Adam Smith in his works on astronomy and in the 'Theory of Moral Sentiments.' It is only once mentioned in *The Wealth of Nations* - and in a context which, if

¹³³ Smith, Adam, *The Theory of Moral Sentiments*, in *The Collected Works of Adam Smith*, London, Cadell and Davies, 1812. Vol. 1, p. 317-318.

¹³⁴ This point is admirably made in Albert Hirschman's *The Passions and the Interests*, Princeton, Princeton University Press, 1977.

¹³⁵ 'Man kann aus den Menschen machen, wass man will; die Art, mit der er regiert wird, entschliesst ihn zum Guten, oder zum Bösen. Der Vortheil der Nation, muss der Vortheil ihrer Glieder sein. Wer diese Vortheile trennt, ist ein Unwissens der, der dem ganzen Staatskörper schadet.' Pfeiffer, J. F. von, *Lehrbegrif sämtlicher oeconomischer und Cameralwissenschaften*, Mannheim, Schwan, 1777. Volume 3, Tome 1, (Des dritten Bandes erster Theil), p. 2.

read in the perspective of the preceding chapters of this paper, can be taken to indicate an awareness of just such a process of *historical snowballing*. The chapter in question (Chapter II of book IV) starts with a description of how protective duties have created a number of industries in Great Britain. Smith thereafter describes a centripetal system whereby merchants - because they prefer to trade closer to home - bring their capital there. This argument is really the description of the start of a virtuous circle. It is this tendency, for reasons of risk/distance, of capitalists to support *domestic* rather than foreign industry - *implicitly assuming that such an industry exists* - which is the starting point of the beneficial work of the invisible hand in Smith's system. If one reads the whole chapter, it can be argued that Smith uses the 'invisible hand' in the context of *historical snowballing*. But it is most important to keep in mind that the starting point of this system is - in Smith's narrative - the fact that all industries of Great Britain were created by mercantilist protectionism.

The negative counterpart of historical snowballing - rendered in Appendix 2 - produces poverty, violence and ignorance. In the 1490's, Botticelli - who was also a novelist - experienced the Renaissance backlash of Savonarola's violent revolution against the Medicis in Florence, when the books authored by him were burned. In the late 20th Century we are also experiencing the comeback of the Centaur - of Man's ignorant and violent past: in Somalia and Liberia the State as a civilizing agent, for all practical purposes, has ceased to exist. In Rwanda and Burundi tribal wars commit mutual genocide. A similar 'system of unreason' bothered Keynes during World War I: 'When reason dies, monsters are born.' No doubt these processes are partly produced by diminishing returns in agriculture in a situation of population pressure, when there is no employment outside the diminishing return sector. In this case, the failure of neo-classical economics to distinguish between increasing and diminishing return activities seems to be closely linked to the failure of the international community to improve the situation.

This retrogression of civilisation suggests the fragility of the veneer of what we would call a *civilized society* which holds the primitive centaur at bay. Today seemingly more and more countries are threatened by the process of 'somalisation' - the return to power of what the international press descriptively labels as 'war lords.' The same development threatens part of the former communist nations. In Russia we can only be baffled by the fact that a notoriously inefficient planned economy managed to produce a GNP per capita which was clearly considerable higher than what the 'free' market is able to produce today. We probably cannot continue to explain this through the new science of 'transitology' for much longer. This proves the point of 19th Century mainstream US and German economics: Having a relatively inefficient industrial sector - in the process of being educated to graduate into participation in a bigger market - is infinitely better than not having an industrial sector at all.

There is no doubt that Renaissance economists would have put together a very different strategy for the transition of the former communist nations than has been done in the 1990's: above all they would have established an appropriate legal system and adopted long-term mechanisms to save and upgrade the manufacturing industries. Deindustrialising nations is equal to removing most of the increasing return activities which increase the *common weal* system-wide - the activities which not only create isolated pockets of welfare. Reducing nations to resource-based activities (subject to diminishing returns) and to a traditional service sector only, is tantamount to 'bombing them back to the stone age.' Today economic policy too often lets the ideological criterion of a nations 'openness' to foreign imports overrule the concern for keeping increasing return activities in business. This not only reduces local GNP and world welfare; such a policy also creates the kind of nature-based poverty which is the main threat to global sustainability. People and nations who are not in the position to make a living from their knowledge may easily end up with no other alternatives for survival than making a living rapping the environment.

And, these retrogressing countries are 'market economies.' It is difficult to blame the state of affairs on excessive government intervention or on their 'having got the prices wrong'. Cuhn's 19th Century explanation, essentially that we have unlearned that societies have to go through a process of Renaissance-type State building, is still fundamentally correct. We argue that a strong State - leading a nation into increasing return activities - historically has been an *obligatory passage point* in the development of any nation. If this is the case, to what extent does a world economic order based on an ahistorical and atomistic neo-classical economic theory - with its thesis of futility, perversity and jeopardy - contribute to the 'barbarisation' which we are witnessing? In our view, quite a lot. We see the present *zeitgeist* as being a product of a few very fundamental influences - of a 'handful of metaphors' to use McCloskey's term. We are still victims of the excesses of Adam Smith's (at the time justified) criticism of a mercantilism which had lost much of its original content and had degenerated into protecting monopolies rather than to create and protect knowledge. Our ideas are still locked into a pattern shaped by a 100 year fight with communism, when the utopia of communism fought the utopia of factor price equalisation - a fight which lead to the demise of all alternative economic theories after World War II.

The glorification of Adam Smith's primitive faith in the invisible hand of Providence - rather than in the rational will of Man - is in our view product of a most unfortunate combination of events: The assumptions needed in order to turn Adam Smith into an unassailable theoretical bastion against communism coincided fully with the assumptions which were needed in order to convert economics into mathematics. In a world where the increasing disparities between rich and poor are clearly attributable to imperfect knowledge, imperfect competition and increasing returns, the assumption of perfect competition is powerfully cemented. The welfare of the rich nations are clearly a product of a dynamic 'industry rent' which, in the short term, is not hurt by neo-classical adjustment policies. However, the same adjustment policies in a relatively backward economy will kill off what little there is of advanced economic activities in these nations - through what we have elsewhere called the Vanek effect - and destroy welfare.

The World Bank and the IMF tend to use to the criteria of 'openness of the economy' as the main criteria for success. Clearly an advanced nation with high skills is better off in an open economy than in a closed one. A favorite example is the success of Chile as an open economy - after a Century of natural and State-sponsored protection (including under Pinochet). To this Friedrich List and the 19th Century US economists would have unanimously responded: Of course, Chile's advanced economy - especially when seen in relation to those of her neighbours - was mature to graduate into the world economy. But 'Openness' as a criterion for success is meaningless without a reference to the degree of skills contained in a nation's exports.

'If the rod be bent too much one way, says the proverb, in order to make it straight you must bend it as much the other', says Adam Smith (when discussing the French physiocrats). This proverbial maxim seems to apply to the general attitude towards the State after the fall of the planning paradigm: since the market economy was clearly 'wrong' and is dead, we can continue to assume that markets must be perfect and atomistic. In such a framework it is difficult to find a place for the State in the promotion of economic development. It is not clear today how a reasonable balance can be restored. There is a very long way from the appearance of theoretical 'toy models' showing the importance of increasing returns - as we see today - to a World Bank interference with the market through a systematic nourishing and protection of such activities in the Third World. The ideological barriers seem difficult to overcome. When science is wrong, the burden is unequally distributed. During the Centuries, when bleeding the patient was a cure-all in the medical science, the weakest were the ones whose situation deteriorated the most. Similarly, in a world economic order based on an atomistic economic theory void of human institutions, on perfect competition and the absence of increasing returns, where 'deregulation' and 'openness' to imports are seen as a cure-all, the poorest nations are again the ones who suffer.

We are now again facing a battle which will prove to be at least as long and unrelenting as Keynes' battle against the monetary orthodoxy. Many nations of the world are trapped in an 'underdevelopment equilibrium' which is not unlike the 'unemployment equilibrium' of the interwar period. To get the world out of 'the unemployment equilibrium', Keynes had to slay the dragon defending the gold standard. Belatedly, economists came to recognize, with Keynes, that national welfare can be positively influenced by monetary stimuli: the thesis of futility, perversity and jeopardy had been proved wrong.

What is the formula to get a large part of the world population out of this 'poverty equilibrium'? E.A.G. Robinson recalls the 'burning sense of the world's stupidities' which animated Keynes as a lecturer on the economic situation of his day.¹³⁶ According to Keynes, slayer of the foregoing dragon, the recipe for gaining long term influence in the face of massive theoretical disagreement is 'violent and relentless truth-telling', which will work 'even if slowly'.¹³⁷ This time the battle is carried inside the 'black box' of economics, in order to show that the contents of the black box - the 'quality' and diversity of the activities in which a nation is engaged - are perhaps the main determinant of the standard of living of nations. In addition to this, a relatively equitable income distribution is an indispensable factor, but income distribution *without the nation being in the right activities* is a futile exercise. As previously mentioned, economic development should be seen as the product of a set of 'reactants', all of which have to be present in order to set off the desired reaction leading into 'autocatalytic' - self-reinforcing - systems. The dragon which has to be slain is the dragon defending the assumptions of perfect information, perfect competition and constant returns to scale - a set of assumptions which must be get rid of *en bloc* - not cautiously investigated one by one and then put back into the theory as is done in new growth theory.

The result will, in my view, confirm the common sense of Daniel Raymond's 1820 thesis on the US economy updated to the global economy: The factors which determine the differences in standard of living *between* nations are essentially the same factors which determine the differences in standard of living *within* nations:

¹³⁶ quoted in Skidelsky, Vol. 2, p. 652.

¹³⁷ quoted in Skidelsky, Vol. 2, p. 21.

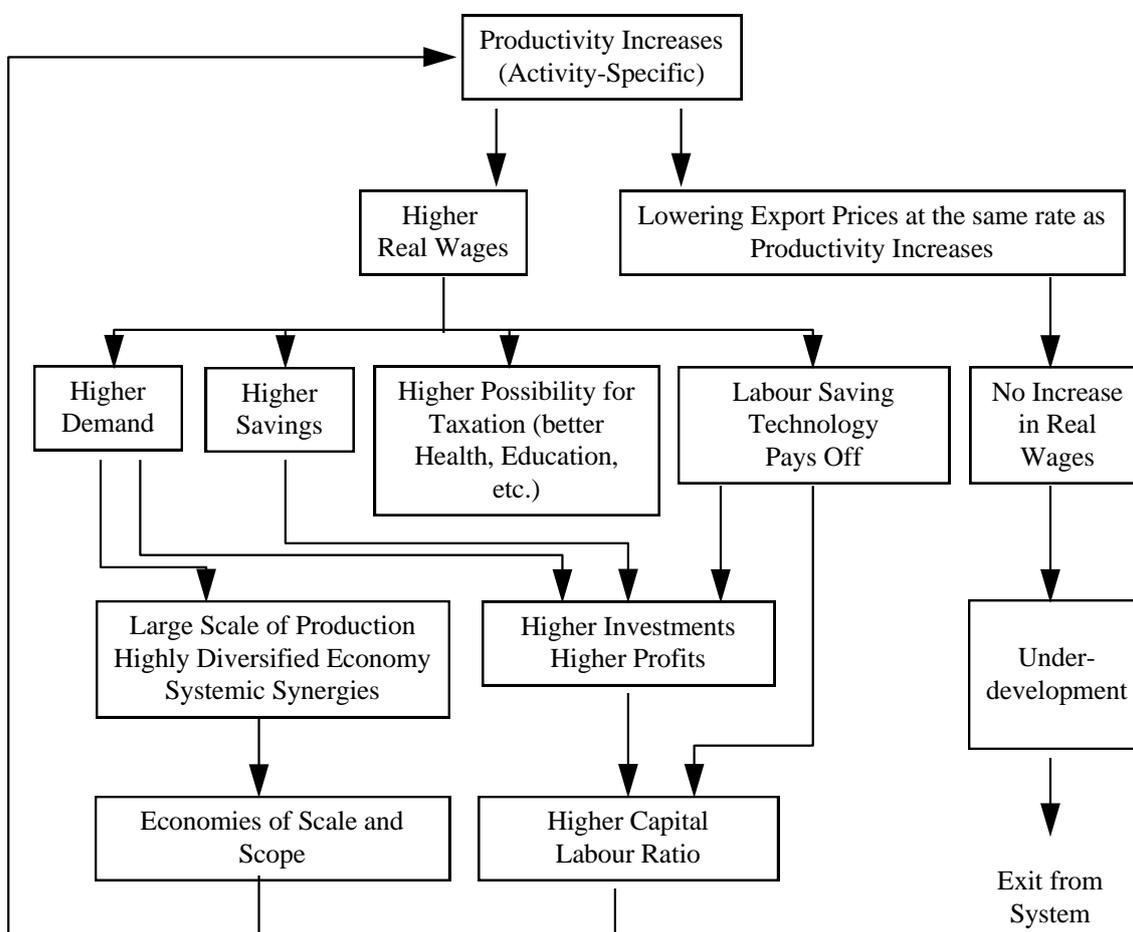
levels of knowledge and skill which create successions of temporary oligopoly power based on dynamic imperfect competition. However, the spread effects of the leading sectors are such that the standards of living of the vast majority of wage earners of a nation, in the traditional service sector (barbers, bus drivers etc.) - whose efficiency is virtually the same in rich and poor nations - are determined by the skill level of the export sector. A Bolivian barber and bus driver are just as efficient as their Norwegian or German counterparts, but the systemic effects of the world economy is such that their real wages are just a fraction of that of their First World counterparts. This is a result of what we have called the *collusive* spread of the benefits from technological change - the fact that these benefits in large part are taken out as higher real wages in the producing countries rather than being distributed in the *classical* way, as lowered prices to the world markets.

For this reason, a more equitable distribution of world income cannot be achieved by distributing *income as such* - which inevitably will result in putting whole nations on the dole. A better world income distribution can only be achieved by distributing *production* of skill-intensive 'high quality' activities - those which produce systemic feedback systems in the local labour market - to poor countries. This is also the activity-specific lesson from The Asian Tigers. This is a dynamic consideration beyond any concern of static 'Pareto optimality' - by increasing the skills of the 'laggard' countries by distributing production, they will buy more, not less, from the First World. This was the point made by the defenders of the 19th Century 'American System of Manufacturing' in their discussions with English economists: the US demand for imports would increase as a result of more industrialisation, and above all, this demand would be upgraded to more skill-intensive articles. They proved to be right, and proved their point that mutually optimal solutions - what Henry Carey called the *harmony of interests* - in the case of asymmetrical economic development, can only be found with the help of a visible hand of the State, which makes a conscious economic policy based on theories which have internalised the causes of uneven economic growth.

Successful State interventions have created dynamic imperfect competition - a process of *dynamic and collective* national rent-seeking - which increases enormously the size of the pie. The State has given temporary help, and with clear strings attached. Unsuccessful State interventions may at a first glance look similar to the successful ones, e.g. because also they protect national manufacturing industries. However, the less successful State interventions - like in India and many Latin American nations - have created *static* rent-seeking through relatively permanent protection with no strings attached, leading to a 'shallow' industrialisation, to inefficient monopolies with a limited potential to increase the pie. In spite of their inefficiencies, however, it is important to keep in mind that a relatively inefficient industrial sector produces a much higher GNP than having no industrial sector at all - this is one of the lessons of the 'transitology' of former communist states. Deindustrialising inefficient nations is not a viable option if one has a minimum concern for human welfare. This dilemma is very similar to that facing Germany in the 1830's; a situation with more than 30 small states, each with an extremely protective tariff. The solution in Germany was a first stage which removed the tariff between the 30 German states, and created an enormous competition *among nations of fairly similar skill levels*. Within this *symmetrical* trade pattern the nation continued to build skills, later to finally 'graduate' to compete openly in the world markets. In this way the State completes its most important historical function - to establish the nation solidly *in economic activities subject to increasing returns*, and to set up a dynamic national system where *innovations* are an essential by-product of the way its national industry competes.

Appendix 1

The "Virtuous" Circle of Economic Development

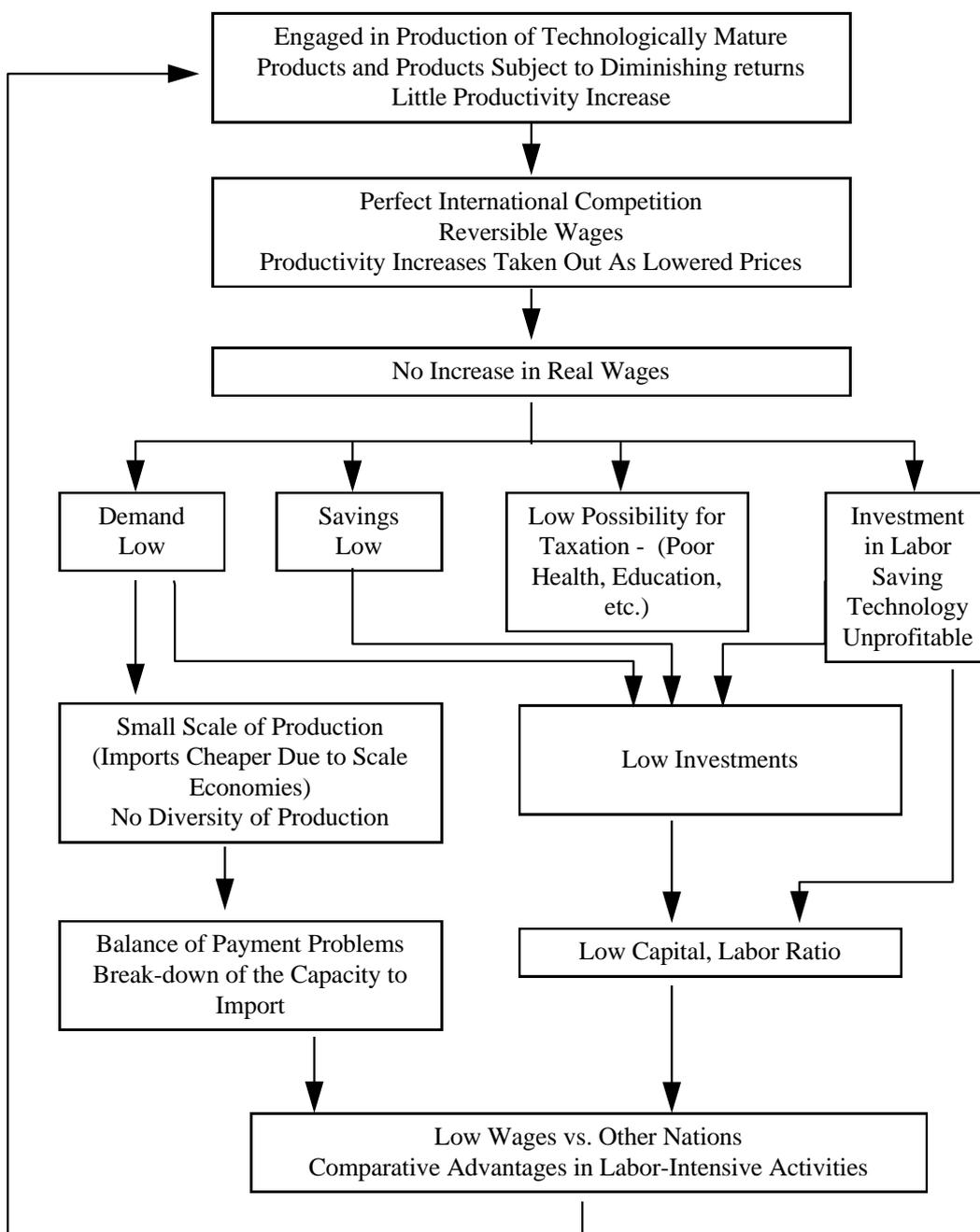


Note: In a closed system, with constant employment rate, the only way GNP per capita can grow is through the "Virtuous Circle." However, the system can be cut-off at any one point, e.g., if higher demand goes to foreign goods alone, the circle will break.

Source: Reinert (1980) *op.cit.*, p. 39.

Appendix 2

The "Vicious" Circle of Economic Underdevelopment



Note: It is futile to attack the system at any one point, e.g., increasing investment when wages are still low and demand is absent. An instance of this is poor capital utilization and excess capacity in Latin American LDCs.

Source: Reinert (1980), *op.cit.*, p.41.

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