

The Dynamics of Technology, Trade and Growth

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Catching-Up From Way Behind. A Third World Perspective on First World History

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Schumpeter once said that ‘the upper strata of society are like hotels which are ... always full of people, but people who are forever changing’ (Schumpeter 1934: 156).² It is tempting to use the same metaphor on nations. Taking a long view, many nations have in sequence joined the upper strata hotel: Britain, the United States, Germany, Japan and others. Once there, however, they have tended to stay. The country occupying the best suites have changed, but all who ever moved into the hotel, still -compared to the Third World – ‘constitute „the rich”, a class ... who are removed from life’s battles’, to continue quoting Schumpeter on this issue (Schumpeter 1934: 156). These countries, however, are the home of only a minority of world population.

The last 10 years have brought about a changing perspective on how economic growth actually happens. This improved understanding, however, has mainly evolved around the countries which are already living in Schumpeter’s upper strata hotel – the Triad of Europe, Japan, and the United States. In this chapter I shall mentally leave this hotel, and see the world from the Third World point of view. Unfortunately, the focusing on the upper strata is somewhat in the spirit of the master himself. Schumpeter’s own aristocratic manners, habits, and tastes were not exactly compatible with viewing the world from the point of view of the ‘losers’ or laggards.

There is a second, and, less obvious, reason for studying the problems of the Third World. Understanding underdevelopment in the Third World can contribute effectively to a better un-

¹ The author is grateful to Daniele Archibugi, Charles Edquist, Keith Smith and the editors of this volume for helpful comments. The usual disclaimer applies.

² This part has been added since the first German edition, Leipzig, Duncker & Humblot, 1912.

derstanding of the growth process in the industrialized countries. The economic problems of the industrialized world give weak and unclear symptoms, much in the same way that early stages of an illness produce general and unspecific symptoms: a fever or a headache. As the illness advances – as the patient gets sicker -stronger and more specific symptoms appear, making a diagnosis possible. My contention is that the study of the economically very sick nations can [168] significantly contribute to the understanding of the developed world, for example the European Community running a slight fever.

We traditionally place the catching-up of the Third World in a different profession – that of development economics – from that of industrialized country catching-up. In doing this, we perpetuate a fragmentation of economic science which is instrumental in blocking our path towards a better understanding of the process of economic development.³ The long distance to be covered today by the Third World to get to the present theoretical possibility-frontier of living standards and technology, is very similar to the long distances which in the past were faced – at different times in history – by countries like England and Japan. These countries, as did the US and Germany, at some point in history went through remarkably successful catching-up processes starting from very far behind what was then the *avant garde* countries economically. For this reason history becomes a very useful laboratory, where successful strategies for catching-up from way behind can be studied. Economic ideologies of successful national take-off periods in different countries, although separated by centuries, have key common elements. These common elements also distinguish them as a group from the neoclassical economic policy which today is the foundation of the IMF and World Bank policy towards the Third World. My premise is that historically all *long-distance* catching-up processes have shared certain important elements. With marginal exceptions for tiny economic areas, there appears to be only *one* type of national strategy which has led to long-distance catch-up through the centuries. I shall call this the *List-cum-Smith* model. There is reason to believe that this will be the only possible strategy also in the future.

In this chapter I attempt to do the following: Part 1 focuses on the recent insights in the growth process, but looks at them from the point of view of the Third World. Part 2 looks at successful long-distance catch-up strategies in a historical perspective going back 500 years and more. A key insight provided by history is the view that economic development at any point in time is *activity-specific*. Historically, there has been a clear perception that only some activities induce growth – these are ‘better’ than normal economic activities. In Part 3 I attempt to isolate the factors causing some economic activities to be ‘better’ than others, and to provide a Quality Index or Quality Meter for ranking economic activities according to their potential for creating development with growth. Part 4 describes the diffusion process of gains from new technologies – why technological progress in some cases is appropriated by the producing nations, and sometimes spreads entirely to the consumers. The Clinton administration’s emphasis on ‘high quality jobs’ is an example of an intuitive approach to [169] the same set of problems. At any point in time, the people and nations who capture the high quality activities inhabit the top floors of Schumpeter’s hotel.

I argue that historically the common interventionist strategy of the industrialized world created a ‘platform’, above which the virtuous circles of development later became self-sustaining under a non-interventionist policy. I call this the *List-cum-Smith* strategy, because it combines the nurturing of ‘superior’ economic activities with competitive markets. Later ‘path depend-

³ In an earlier work (Reinert 1980), I have argued for studying underdevelopment in a framework including First World historical national strategies, technological change, and industry analysis.

ence' took off from these platforms, created by skilful use of both regulation and market. Below this platform, similar cumulative processes, in the form of vicious circles, work towards a convergence of the poor countries.⁴ The Quality Meter and the alternative modes productivity gains spread in the world economy, are mechanisms which create two convergence groups of nations – one rich and one poor – with a remarkable lack of *middle-class* countries.

1. THE VIEW OF THE VANQUISHED – A THIRD WORLD LOOK AT RECENT THEORETICAL INSIGHTS

Understanding the problems of *underdevelopment* is in a way a process of turning the many recent insights in the process of economic growth and development upside down. This often implies simply looking at the same evidence, but from the side of the loser, not the winner. Historically, a parallel to this can be found in the similarity of dynamic world view that underlies both Marx and Schumpeter, in spite of their very different conclusions. This similarity is readily admitted by Schumpeter,⁵ who suggests that the similarities between Marx and himself are 'obliterated by a very wide difference in general outlook' (Schumpeter 1951: 161). Marx tended to see the destructive side of the capitalist system, while Schumpeter emphasized the creative aspect of that destruction. Schumpeter saw the rise of the cotton textile mills in Manchester, Marx (1867: 389) saw the bones of the cotton weavers who previously supplied India and England 'bleaching the plains of India'. Similarly, Chandler, Porter, Lundvall/Nelson and Perez/Freeman, emphasize the winners — the *star industries* in Porter's first book – without paying much attention to what happens to the losers – Porter's *dog industries* – that are necessarily a part of the same system. Their focus is on understanding the frontiers of technological development, as if all economic activities could be at that frontier. In the following examples I apply the view from the 'dog' industries – a *view of the vanquished* – to what are probably the six most significant new [170] theoretical insights into the economic growth process of the industrialized world to have emerged during the last decade: 1) Chandler's 'scale and scope', 2) Porter's 'competitive advantage', 3) Lundvall and Nelson's 'national innovation systems', 4) Perez and Freeman's 'techno-economic paradigms', 5) Nelson and Winter's 'evolutionary theory', and 6) Chandler and Laznick's 'organizational capabilities'. All of these, although insightful, have the common feature that they only look at 'frontier' industries, the 'high quality jobs' in Robert Reich's terms.

1. Alfred Chandler has given us a theory of the growth of big business which has greatly improved our understanding of the development of the industrialized world – the First World. In order to understand the Third World we must keep in mind that for every spectacularly successful US Steel Corporation, there was an equally spectacular failure of a US Leather Corporation which tried the same strategy as US Steel.⁶ Understanding *development* means being able to pinpoint the potential US Steels out there, understanding *underdevelopment* is understanding *why US Leather Corporation failed* where US Steel succeeded.

2. Michael Porter's first book on industrial strategy (Porter 1980) is in many ways a list of

⁴ Reinert (1980: 39 and 41) shows the characteristics of the two circles.

⁵ In the foreword to the Japanese edition of his *Theorie der wirtschaftlichen Entwicklung*, Schumpeter describes how he looked for 'a source of energy within the economic system which would of itself disrupt any equilibrium that might be attained It was not clear to me at the outset ... that the idea and the aim are exactly the same as the idea and the aim which underlie the economic teachings of Karl Marx' (Schumpeter 1951: 160).

⁶ The success of the trusts which sought static rents like the Leather Trust, part of the Beef Trust, was limited to the lobbying for tariffs.

recipes and prescriptions for avoiding being in a business where the assumptions of neoclassical economics are valid – how to avoid working where there are no barriers to entry, no economies of scale, and where information is reasonably perfect. Understanding underdevelopment is understanding what happens to the industries where Porter’s strategies don’t work – the industries he tells his customers to keep away from, the ‘dogs’ in his classification (Porter 1980). In the Porter book which economists read – *The Competitive Advantage of Nations* – the author carries the conclusions drawn from the arena of industrial competition to the national level (Porter 1990). The core of the advice he gives to nations is essentially the same that he gives to corporations: grow ‘star’ industries – ‘good’ industries – and keep away from the ‘dog’ industries. However, aggregate world demand consists of products both from ‘star’ industries and ‘dog’ industries, thus opening up for a game with very variable payoffs. Limited by demand for ‘star’ industry products, the winners in Porter’s game can only be a small fraction of the world population. What are the solutions for the rest, the vast majority of the world population? ‘Competitiveness’ in Porter’s scheme consists of positioning your own country in the ‘star’ activities, where imperfect markets will shuffle wealth your way. The core of Porter’s theory is like observing, correctly, that doctors make more money than lettuce pickers, and then recommend that the world population should consist exclusively of doctors. Later in the chapter I shall argue that Porter’s national strategy recommendations are essentially a more sophisticated version of the [171] recommendations of the dynamic part of two very old schools of economic thought the mercantilists and the cameralists.

3. A third important development is the research around the concept of *National Innovation Systems*, generally associated with Bengt-Åke Lundvall (1992) and Richard Nelson (1993). Interactive learning, research and development and the resulting innovation are, correctly in this writer’s eyes, seen as crucial factors in explaining economic growth. If the ‘national innovation system’ approach is extended from being another recipe book for the growing of ‘star’ industries, into being a more generalized theory of economic development, it is haunted by an implicit assumption very similar to the one which haunts Porter: it does not discuss sufficiently the fact that, at any time in history, economic activities possess widely different opportunities for learning. As long as there is demand also for goods in the non-learning areas, trade is no longer a win/win game. That would only happen if learning potential was the same in all activities – that one ‘unit of learning’ in every activity changes the output by the same quantity. The cumulative nature of knowledge is frequently, and correctly, pointed out. You are not likely to build a 747 if you have not built other, simpler aircraft previously. But there is more to it than that at any point in time, world learning focuses – is ‘available’ – only in a few out of the total spectrum of economic activities. We tend to name historical periods after the economic activities where learning took place at that time: in the stone-working industry in the stone age, in the bronze-working industry in the bronze age, and in manufacturing industry in the machine age.

4. Radical changes in the technology systems, penetrating the majority of economic activities, were named changes in the ‘techno-economic paradigm’ by Perez (1983). The new technological paradigms, however, not only penetrate different industries to different degrees, new technology often ‘hits’ some activities in the *value chain*⁷ of an industry and not others. In my student days in Cambridge, Massachusetts, this fact was visualized by a very old uniformed man from Western Union. He daily plodded across the Charles River bridge to deliver by hand international cables which at an incredible speed had been carried around the world by satellite – except for the

⁷ Porter (1985) elaborates on the concept of ‘value chains’.

last one mile. Today, thousands of people in Haiti are making a living producing baseballs using a needle-and-thread technology which has changed minimally over the last few hundred years, while golf balls are made with machines. The machine age came to the harvesting of wheat, but not yet to the harvesting of strawberries. The neglected historical *sequence of mechanization*, and the resulting trade patterns, has profound implications for explaining differences in GNP per capita. Understanding growth is understanding how to grab the activities which first create or benefit from the new techno-economic paradigms. [172] Understanding poverty is understanding the trade patterns caused by the *sequence* in time and space of introduction of these new paradigms.

5. In their *Evolutionary Theory of Economic Change*, Nelson and Winter (1982) describe markets as a selection mechanism among firms. This selection is strongly influenced by the *capabilities of the firm*, in addition to the important effects of random events. Understanding the process of economic development and underdevelopment requires changing the unit of analysis; applying the analysis of the evolutionary selection process to what happens between *nations*, not firms. Markets are a selection mechanism by which different economic activities are distributed among nations, according to the capabilities of these nations. One key mechanism at work is that economic activities requiring few capabilities (needle-and-thread technology) are automatically shed by the rich countries to the poor. For this reason, among others, random events like production with new technologies are far from randomly distributed among nations. Through the logical selection process of the market, low wages – in short: being poor – become the key success factor for Third World manufacturing businesses. A consequence of this strategy is that poor countries specialize in the economic activities where the industrialized countries have not found any scope for learning.

6. The final factor which I would like to discuss from the point of view of the Third World is Chandler's and Lazonick's (1991) view of *organizational capabilities* as the key to the success of a firm. Thomas McCraw of Harvard Business School suggests that the national counterpart of *organizational capabilities* in firms is the Listian concept of *National Productive Power*⁸ (see McCraw 1993, addendum). In such a framework the national standard of living of a country – and indeed sometimes the physical survival of its inhabitants – will be determined by the same selection process as the one which determines the profit rate – or survival – of a firm. This is a potentially very useful connection between micro- and macroeconomic theory. To understand underdevelopment, the key question is not how to build *capabilities* and *productive power*, it is: what happens if you stick to your comparative advantage in an activity whose capabilities have become commonplace, with skills which have played out their course, in activities left over from exhausted techno-economic paradigms? What are the economic consequences of being a populous and skilled nation specialized in stone-age technology, if the rest of the world is far into the iron age already?

Faced with the compelling logic of the market, that activities which cannot be further mechanized should be carried out by cheap labour, any attempt at 'technology transfer' to the Third World tends to run against the extremely strong forces of the world market. 'Technology transfer' [173] therefore becomes one of the slogans based more on wishful thinking than on any real understanding of the mechanisms at work, on a par with 'new world economic order'.

⁸ This concept seems to have originated with Adam Mfiller. His 1809 book is the main work of a German school of economics which is sometimes referred to as the 'Romantic School'.

2. HISTORICALLY SUCCESSFUL LONG-DISTANCE CATCH-UP STRATEGIES: ECONOMIC DEVELOPMENT AS ACTIVITY-SPECIFIC

The striking contrast between the historically successful long-distance catching-up strategies – Britain, the United States, Germany, Japan – and today’s economic theory is that these strategies were *activity-specific*. The solution to problems of economic development was to *get into the right business*, which almost inevitably meant manufacturing. This view is expressed in literally hundreds out of the thousands of mercantilist tracts written, particularly in Britain, Germany, and France, starting in the early sixteenth century.⁹ Following Adam Smith, today’s studies of mercantilism have concentrated on the monetary aspects of their theories. I suggest that there is an important ‘*Realökonomisch-mercantilist*’ school, whose national economic strategies were responsible for a fairly even development within Europe, in contrast with that of the Third World.

To the early economists, all economic activities were different – much in the same way all professions today are different from an individual’s point of view. To an individual, his choice of profession will to a large extent determine his future income and social standing. In pre-Ricardian times, society’s future income and standing between nations was determined by its *choice* of economic activity. The neoclassical notion that ‘all economic activities are alike’ would be as meaningless to a pre-Ricardian economist as it is to a young person today facing the problem of choosing a profession. To a person, choosing a career of washing dishes in a restaurant provides a dramatically different future than deciding to become an engineer. Pre-Ricardian national strategy broadens this argument into one where a nation of engineers will be better off than a nation of dishwashers.

The *activity-specific* outlook on wealth creation can be traced back to the strategic importance the Venetians gave to their salt pans, already before the turn of the Millennium.¹⁰ The strategic decision of being in the right business had to be backed up in the political and military spheres by protecting supplies and markets for the ‘superior’ and ‘wealth-creating’ activities. Use of force was needed to protect the static and dynamic rents created by *being in the right business*. Historian Frederic Lane (1979) – in a book venturing into economic theory – explains the rise of empires as a [174] result of ‘*increasing returns* from the use of force as an economic service’.¹¹

Following Venice, England presents the most spectacularly successful use of the *activity-specific* strategy. Daniel Defoe describes the English strategy in his *Plan of English Commerce* in 1728.¹² In the early 15th century, England was a poor country, heavily indebted to her Italian bankers. Her chief export was raw wool. Henry VII, who came to power in 1485, had lived in exile in wealthy Burgundy, where English wool was being spun into cloth. The Tudor strategy which started with him was to bring England into the wealth-creating downstream activities in wool manufacturing that Henry had observed abroad. The English strategy was gradual, starting with import substitution. In 1489 tariffs on cloth were increased, and local cloth manufacturing was encouraged. The Crown paid for foreign workers to be brought in, and businessmen were paid bounties for establishing textile manufacturing firms. When sufficient manufacturing capacity had been achieved, England prohibited all export of raw wool. This development paved the

⁹ The bibliography of the German cameralist (mercantilist) literature (Humpert 1937) lists over 14,000 entries for Germany alone.

¹⁰ Hocquet (1990). In the early days of the Republic, much of the government revenue came from the sale of salt. See also Lane (1973: 58).

¹¹ The parallel with more recent days is striking.

¹² Palgrave regards Defoe as ‘an important authority for economic history’. See Higgs (1963).

way for what has been called ‘the closest approximation to a businessman’s government’ among the *ancien régimes* of Europe (O’Brien 1993: 125). As the wave of mechanization extended from wool to other areas of manufacturing, these new industries were in turn given the same preferential treatment given initially to the production of woollen doth. Friedrich List (1844: 12) later put it this way: ‘The principle *sell manufactures, buy raw material* was during centuries the English substitute for an (economic) theory’.

Taking up the example set by England, the economic strategies of the great industrial nations in their pre-take-off period share a core theme of the *activity-specific* nature of growth.¹³ This theme can be followed in economic writings from the early 1500s in Italy and England and France, a little later in the German cameralists. It is introduced to the United States through Alexander Hamilton¹⁴ and his favourite economist, the English mercantilist Malachy Postlethwayt, and from Friedrich List’s involuntary exile in the US it is reinforced again in the Germany of the Zollverein. In Meiji Japan the *doitsugaku* school – favouring the German model – came to be the most influential for the building of society, at least until 1945 (Yagi 1989: 29 and Bernd 1987). The Japanese took over the policies which dominated the German historical school: a basic distrust in free trade and an activity-specific attitude towards economic development, part of which was a belief in the superior ‘productive powers’ of manufacturing. In Japan, after 1883, ‘a stream of German teachers of political economy and related disciplines continually flowed in’ (Sugiyama and Mizuta 1988: 32). After World War II, the Japanese strategy was challenged by the American occupants, who suggested that the Japanese [175] should specialize, according to their Ricardian comparative advantage, in cheap labour. Japanese policy-makers in that period strongly rejected what we today could call the World Bank / IMF strategy of a ‘Ricardian’ specialization in low-cost labour. The ‘Asian Tigers’ headed by South Korea have in their turn inherited much of their activity-specific philosophy from Japan. Freeman talks about the osmosis¹⁵ in the development process from Japan to Korea, and Vogel (1991: 90) shows how ‘the Japanese model was of great importance to Taiwan, South Korea, Hong Kong and Singapore’.

A common thread of successful long-distance catching-up through the centuries, is a shared distrust of free trade until the nation is firmly established in what were seen to be the *right* economic activities – the *specific activities* which gave the nation ‘productive powers’. The United States over the last decade have – until the election of Bill Clinton – provided a counter-example to this strategy. Somewhat paradoxically, while postwar United States rode on the crest of perhaps the strongest technological wave history has seen, in that same country the neoclassical paradigm, with no room for technology, was perfected. Doubly confident both in her economic power and in the intellectual underpinnings of the neoclassical paradigm (boldly so even in spite of its unrealistic assumptions), the United States unlearned the activity-specific economic strategy which had dominated the nation’s policy over the last 100 years (although not always in the academic theory). The nation self-confidently faced the coming of a post-industrial society with the belief that the market can do no wrong. With the election of BUI Clinton, the United States is painfully rediscovering, now also in practical policy, that manufacturing matters, although there is little theoretical understanding as to why this is so. Interestingly, that manufacturing mattered

¹³ This is described in Reinert (1992).

¹⁴ It has been shown that Hamilton knew his Adam Smith, but rejected particularly the free trade conclusion. Excerpts from Postlethwayt’s *Universal Dictionary of Trade and Commerce* were scattered through Hamilton’s Army Pay Book, see Morris (1957). Hamilton’s view on the English classical economists was similar to that taken 80 years later by the Japanese, see Morris-Suzuki (1989).

¹⁵ Personal communication. [193]

was thoroughly accepted by the 19th century policy-makers in the United States, this was precisely the essence of what was called The American System (Dorfman 1947, vol. 2: 566–97). Then, as today, there were ‘high quality jobs’ and ‘low quality jobs’ both from the point of view of the individual and from the point of view of a nation. These terms are Robert Reich’s of today, but the same understanding was the foundation of the 19th Century ‘American System’, offering protection to manufacturing. In Part 3 of this chapter, I attempt to build a framework for understanding *high quality* and *low quality* jobs.

There was always a considerable lag in the economic understanding of *why* some economic activities created more wealth than others. If a remedy worked, it was not always considered important to understand *why*. The first to identify the qualities that made an activity ‘good’ for a nation was Antonio Serra in 1613.¹⁶ Serra associated ‘good’ activities as being the result of *increasing returns*, and associated these primarily with manufacturing. Most early works on national trade strategies, however, [176] merely list the characteristics of ‘good’ and ‘bad’ activities for a nation without giving any explanation as to *why*. One hundred years after Serra, Charles King’s detailed list of ‘good’ and ‘bad’ trade was very influential. Exporting manufactures was ‘good’, importing them was ‘bad’, except when manufactured goods were traded for other manufactured goods which was ‘to ... mutual advantage’ of the trading nations (King 1721: 3). King gives no explanations as to why this is so, but if one associates manufacturing with Schumpeterian ‘historical increasing returns’, and non-manufacturing with diminishing returns, the strategy makes sense.

Moving on to the next century, it is perfectly clear that increasing returns, to quote Schumpeter, were ‘an important feature of nineteenth-century analysis’.¹⁷ Increasing returns are very much present until and including the early editions of Alfred Marshall’s *Principles of Economics*, the first being in 1890. Marshall (1890: 452) emphasizes that national income may be increased by taxing commodities produced at diminishing returns and paying bounties to producers of commodities produced at increasing returns. This is probably the best description we shall ever get of Japanese growth strategy, but this key insight is lost in the later editions of *Principles*.

Marshall’s dismissal of increasing returns from economic theory over the life of his *Principles*, starting in 1890, represents an important watershed in economic theory. Marshall thereby opened the way for the world of economic theory to be inhabited by clones of ‘the representative firm’ – a world view which lasts until this very day. The reason why increasing returns disappeared from mainstream economic theory, is the same reason they were not allowed back after Frank Graham’s article on the subject in 1923: they are not compatible with equilibrium (see e.g. Viner 1937: 475–82).

The *activity-specific* strategies common to all presently industrialized countries – protecting for centuries manufacturing as ‘good’ economic activities – created a common platform from which growth became self-sustaining. The remarkable lack of long-distance catch-up processes starting in the (neoclassical) 20th century seems to be associated with a lack of long-term *activity-specific* strategies in the presently underdeveloped world. Third World nations are stuck with

¹⁶ Sena’s remarkable dynamic ‘model’ shows how wealth is created without the benefit of natural resources (Venice) on the one hand, and poverty remains in the midst of great natural resources (Naples) on the other. The parallel with modern Japan is interesting.

¹⁷ *History of Economic Analysis*, p. 259. The republishing of Serra’s work in 1801 may, or may not, have influenced this.

what we later shall describe as ‘growth-inhibiting’ economic activities.

Graham’s 1923 article represents an important conceptual bridge between pre-20th century economic thought and today’s gradual rediscovery of economies of scale and technical change – Schumpeter’s ‘historical increasing returns’ – as important factors causing uneven economic growth. Crossing that bridge, First World historical growth strategies and today’s theories and problems can be woven into a very [177] meaningful whole. History starts to make more sense.

What kind of conclusions can we draw from the historical sequence of catching-up strategies of the presently developed countries? Most presently industrialized countries have through the centuries passed through two distinct stages: 1) A *List-cum-Smith stage* of strong intervention against free trade to establish the nation in the ‘right’ industries. 2) A pure *Smithian stage* emphasizing free trade. Sequentially – after Venice -England was the first country to reach an industrial plateau where free trade would lead to a higher welfare level than continued protectionism. This stage was reached much later by Germany, the United States and Japan, who in the meantime continued their *List-cum-Smith* strategies. Only long after it was possible to trade manufactures for manufactures, a free trade regime was established between the industrialized countries.¹⁸

I would suggest that history presents us with two important *stylized facts*:

1. No nation of any size has ever joined what today is the rich convergence group – inhabiting the upper strata hotel – without a prolonged Listian phase of economic policy. In a Listian system ‘some economic activities are better than others’. In terms of the circular flow, the focus is on man as the *producer*.

2. Once world leadership has been achieved, the Smithian phase takes over in the successful catch-up country. In a Smithian system, ‘all economic activities are alike’. In terms of the circular flow, the focus is on man as the *consumer*.

Growth theory in the 1990s is focusing, no doubt correctly, on technical change, innovation, and learning – in addition to the traditional factor, capital. The enormous diversity of economic activity today obscures our view of what is a ‘good’ and ‘bad’ economic activity. Going back to 15th century England it is possible to see things more clearly.

At the time of Henry VII, out of all existing human activities, only *one* experienced rapid technical change: the manufacturing of woollen textiles. All other activities were basically carrying on as before. This one activity absorbed capital, because only here were there large scale investments to be made. This one activity had technical change and innovation. Only in this activity were there economies of scale and scope. Only this one activity offered any possibility for new learning. Only this activity created a *demand* for ‘organizational capabilities’. At that moment in time it was clear that economic progress was *activity-specific* — it was basically taking place in one economic activity and not in any of the others. The basis for building a ‘National Innovation System’ was to protect and support the one economic activity where innovation was taking place.

Studies of patents confirm the idea that economic progress develops [178] through changing ‘focal points’ of technological change (MacLeod 1988). The concentration of patenting in changing areas of manufacturing – and its almost complete absence in agriculture and services – give

¹⁸ This is the strategy recommended by King in 1721, and it also follows as the best strategy from Paul bagman’s 1979 and 1981 papers.

us a clue as to why the winning combination of *innovation* and *imperfect competition* is found mostly in manufacturing. The combination *innovation* + *imperfect competition* produces the kind of economic growth which ‘sticks’ in the producing nation.¹⁹ The mercantilist ‘national innovation system’ achieved this combination by protecting any economic activity in the process of being mechanized – the ‘good’ economic activities. In the remainder of this chapter we discuss issues related to this:

- How to determine ‘good’ and ‘bad’ economic activities.
- The two modes of diffusion of the benefits of new technologies.

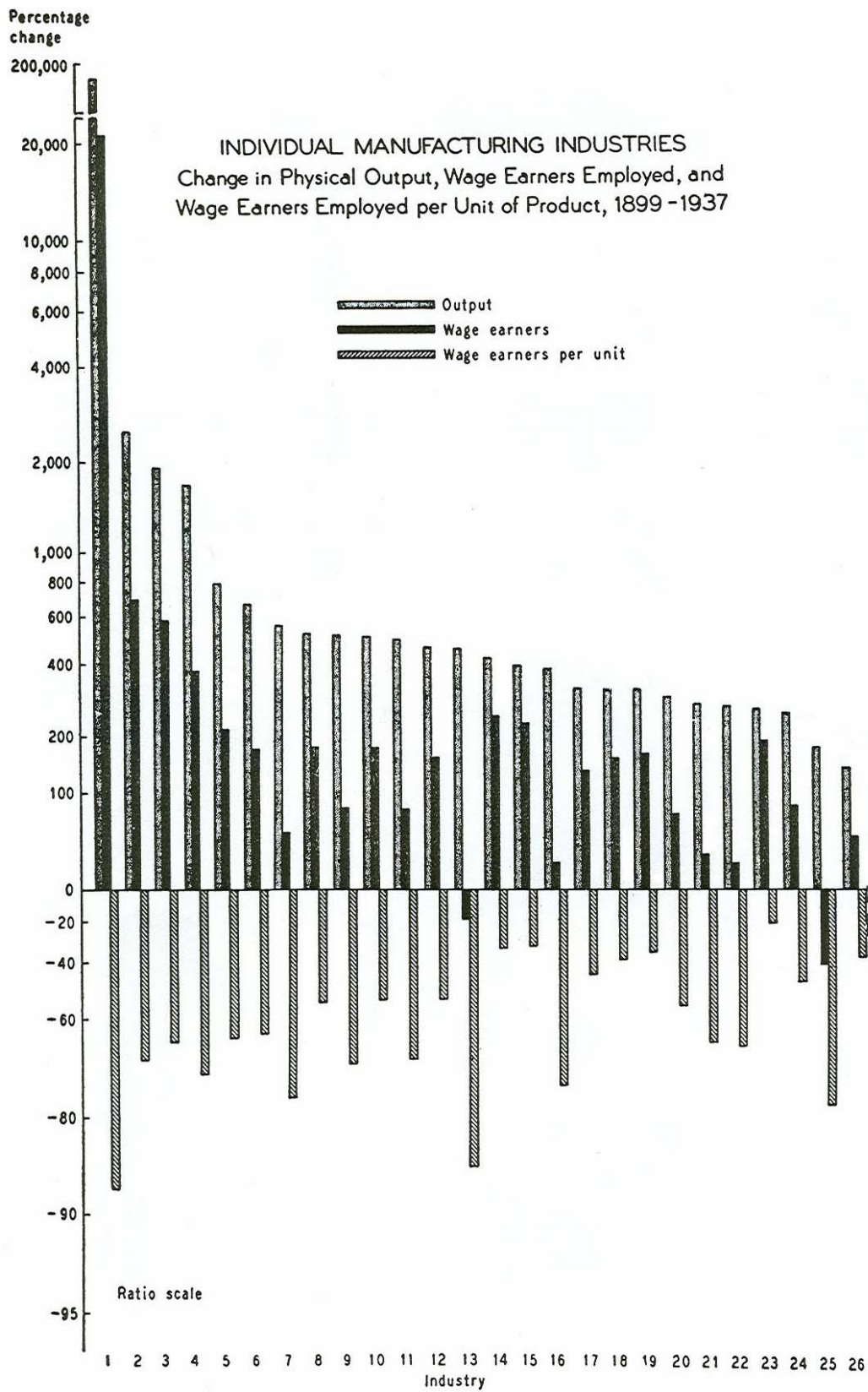
3. THE ‘QUALITY’ OF ECONOMIC ACTIVITIES AS A DETERMINANT FOR ECONOMIC DEVELOPMENT

The obstacle to our understanding the distribution of wealth and poverty between nations is embedded deeply in an economic theory which sees all economic activities as being alike. ‘All Chinese look alike to me’ is hardly a scientific approach to a study of China and Chinese culture. In neoclassical economic theory, on the other hand, the core assumptions make all economic activities ‘alike’. In a world with perfect information, no scale effects, and full divisibility of all factors, the outcome of increased world trade will be factor-price equalization. In the real world the gap between rich and poor nations is increasing steadily, in spite of huge increases in world trade. Clearly *relative efficiency* in the export sector is not a main determinant of wealth: the world’s most efficient golf ball producer (in an industrialized country) receives a monetary wage 30 times higher than the world’s most efficient baseball producer (in Haiti) – 30 cents an hour compared to a typical industrial country wage of 9 dollars an hour.

We have seen that the growth of the presently rich countries was based on a theory where economic development is *activity-specific*: it happens only in a small part of the whole spectrum of economic activities at any one point in time. Today, locating these ‘superior’ activities concentrated in any broad industrial category, as in the past, is difficult. Almost all activities and industries, even the most pedestrian ones, have some segments offering the winning combination of innovation and imperfect competition. The process is not fully understood until one reaches the product and brand level. [179]

¹⁹ Innovations applied under near-perfect competition, like the invention of the container, tend to lower prices and GDP as measured, and therefore create ‘Solow-Paradoxes’.

Figure 8.1.



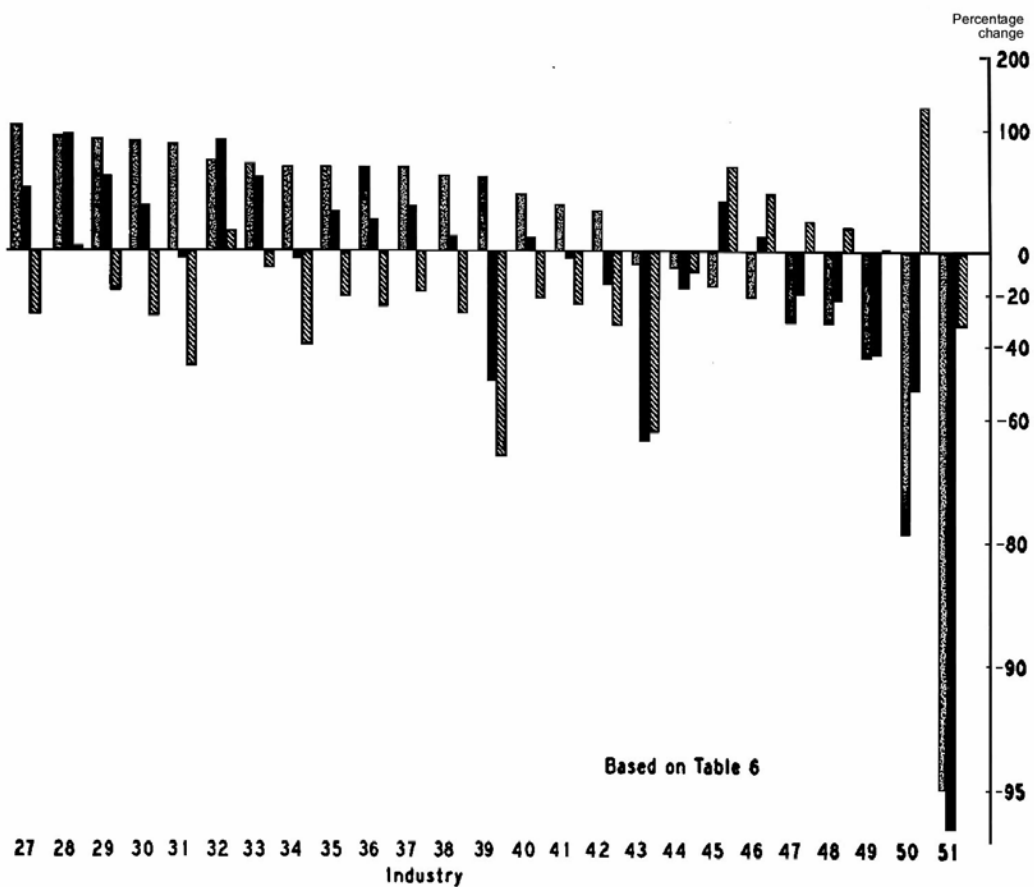
[180]

INDUSTRY

- 1 Automobiles, incl. bodies and parts
- 2 Chemicals, industrial, incl. compressed gases and rayon
- 3 Petroleum refining
- 4 Beet sugar
- 5 Fruits and vegetables, canned
- 6 Ice
- 7 Glass
- 8 Paper and pulp
- 9 Silk and rayon goods
- 10 Knit goods
- 11 Printing and publishing, total
- 12 Butter, cheese and canned milk
- 13 Cigars
- 14 Rice
- 15 Paints and varnishes
- 16 Coke-oven products
- 17 Zinc
- 18 Liquors, distilled
- 19 Steel-mill products
- 20 Tanning and dye materials
- 21 Copper
- 22 Explosives
- 23 Wood-distillation products
- 24 Fertilizers
- 25 Blast-furnace products
- 26 Jute goods

INDUSTRY

- 27 Cotton goods
- 28 Hats, wool-felt
- 29 Shoes, leather
- 30 Cane sugar
- 31 Salt
- 32 Meat packing
- 33 Cottonseed products
- 34 Leather
- 35 Woolen and worsted goods
- 36 Liquors, malt
- 37 Shoes, rubber
- 38 Carpets and rugs, wool
- 39 Lead
- 40 Cordage and twine
- 41 Gloves, leather
- 42 Hats, fur-felt
- 43 Chewing and smoking tobacco
- 44 Flour
- 45 Ships and boats
- 46 Cars, railroad
- 47 Lumber-mill products
- 48 Turpentine and rosin
- 49 Linen goods
- 50 Locomotives
- 51 Carriages, wagons and sleighs



Economic development is a process which requires the presence of several *reactants*: capital, education, skills training, institutional factors (property, credit), entrepreneurship, and a technological ‘wave’ or ‘window of opportunity’. The absence of any of these reactants will impede the development process. The understanding of this process is difficult, because not only does the ‘formula’ – the right mix of reactants – for growth change over time, it also changes from industry to industry at any point in time. Growth-producing innovations have different ‘fingerprints’ in every industry. In a recent article Moses Abramovitz (1993) enters into these important but neglected problems, but only on an aggregate national level. Further studies into the ‘fingerprint’ of innovation in different industries would be useful.

An innovation creates a *demand* for education, for skilled labour, for R&D, and for capital. By identifying the economic activities which at any point in time were *in the process of being mechanized* – where new skills were in high demand – the ‘primitive’ industrial policy of mercantilists and cameralists managed to single out the ‘winning’ activities, those at the start of a steep learning curve.

Figure 8.1 shows the distribution of technological opportunities in 51 industrial sectors of the US economy from 1899–1937.²⁰ The growth in productivity rates varies enormously; although we can assume that the same capital, skills and institutional factors were present over the whole spectrum of activities. Clearly, the US would not have taken world leadership if it had been only in industries 27–51. No amount of capital or learning would have achieved the results that in fact were achieved, without the industrial activities on the left side of the chart. Secondary effects spiral from the activities to the left: these activities are the ‘wage setters’ of the economy, and the upward pressure on wages in turn increase the use of capital in the rest of the economy at the expense of the increasingly more expensive factor labour. Demand grows as the result of higher monetary wages. In the end, the multiplier effect of technological progress in ‘wage setting activities’ is formidable, and forms a core mechanism in the virtuous circles of development. We tend to forget, however, that technological change comes in focused ‘clusters’; in the stone-working industry in the stone age, bronze-working industry in the bronze age, etc.

Uneven distribution of wealth seems to have the same basic causes nationally and internationally. Wage-level differences inside nations are caused by the same mixture of static and dynamic factors, which cause the polarization of the world in a rich and a poor convergence group. Interestingly, in the 1980s sociologists have studied the US economy with a dual-economy approach, an approach used in development economics for a long time (see e.g. Tolbert *et al.* 1980, Hudson and Kaufman 1982).²¹ This [182] resulted in a ranking of economic activities similar to that in Figure 8.1 -from ‘good’ to ‘bad’ – which is inexplicable, or rather pure nonsense, from a neo-classical viewpoint.²²

The challenge in economic theory is to find a level of abstraction, where useful generalizations can be made without making all economic activities either *all equal* or *all different*. To a businessman, his firm is unique. The opportunity seen by an entrepreneur is a unique vision, if not in other ways, in the geographical location of his business. At this level of abstraction we are faced with billions of economic agents who are all *unique*. To the other extreme – in neoclassical

²⁰ This chart is taken from Solomon Fabricant (1942).

²¹ The concept can be traced back to the first years of this century, see The Royal Tropical Institute (1961).

²² I am grateful to Tom McCraw of Harvard Business School for pointing these articles to me.

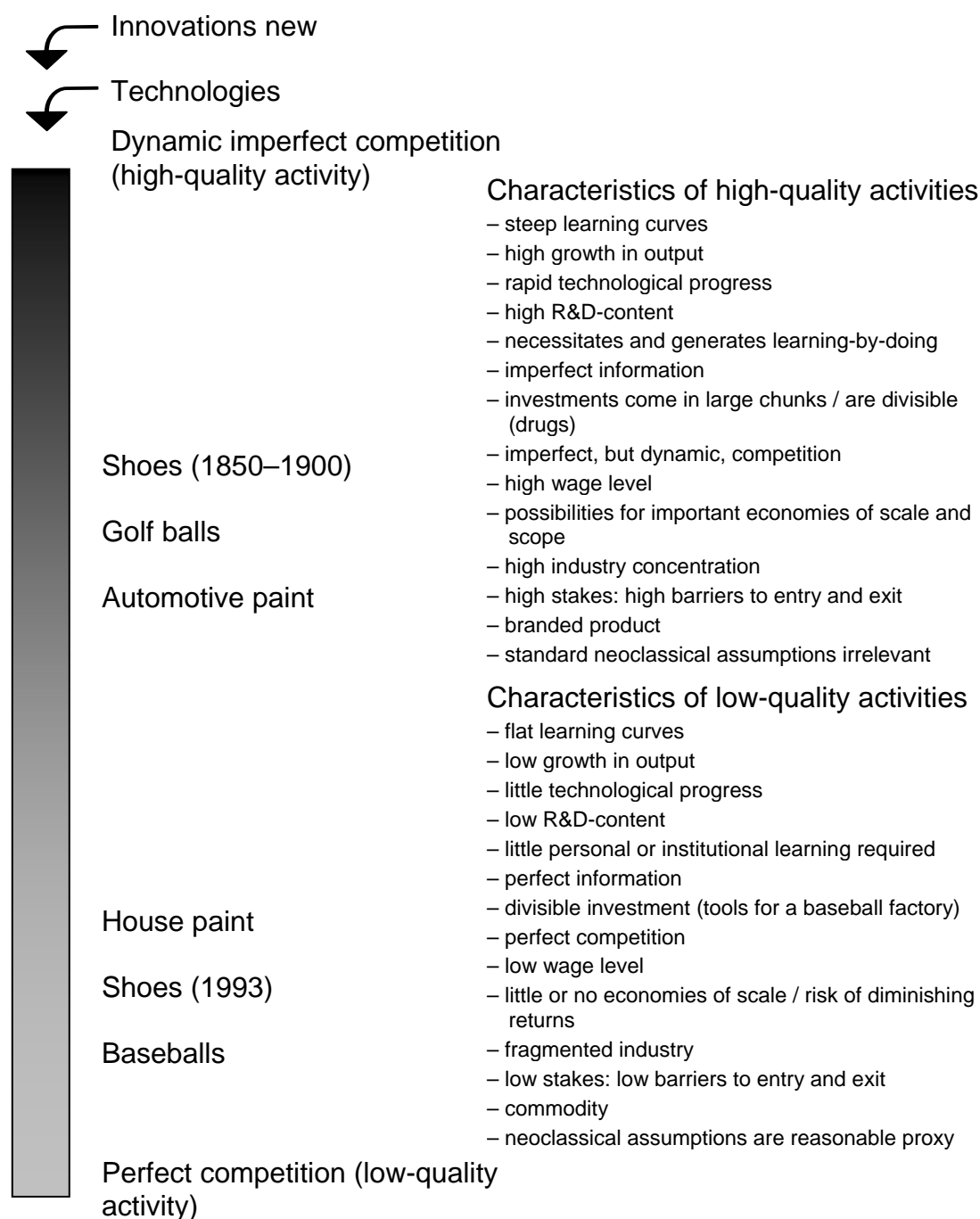
theory – all economic activities are *equal*.²³ Case studies of firms, industries, and nations are useful building blocks for theories, but a theory on a higher level of abstraction is needed.

What, then, are the characteristics of growth inducing – ‘good’ -economic activities? Identifying these characteristics must be seen as a task comparable to the measuring of IQ – quantifying the unquantifiable. In economic theory we have defined two extremes of a continuum reasonably well: perfect competition and, at least statically, monopoly. Under perfect competition we would achieve factor-price equalization, we would all be equally rich. Under monopoly, we can predict high rents transferred to the monopoly holder from the rest of the world. A core problem in economic theory is that the profession has, at least until the recent events of new growth and trade theory, *little meaningful to say about varying degrees of imperfect competition*, the conditions under which virtually all economic activities produce and trade. The situation is similar to being able to measure two extremes, black and white, without having any way of measuring the various intermediary shades of grey. This is particularly bothersome in economics, where no activities over any length of time belong to either of the categories we have defined well. In terms of ‘degree of perfect/imperfect competition’, economic activities are scattered over the spectrum from almost white – where the assumptions of neoclassical theory are reasonably valid – to almost black, where the same assumptions are highly unrealistic. Game theory seems to be in a similar situation, having only the extremes, games with two players and infinite number of players, well defined.

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. In Figure 8.2, I attempt to create an area from light to dark grey where ‘the quality’ of economic activities at any time can be roughly plotted on a scale from white – ‘perfect competition’ – to black: ‘monopoly’. The latter [183]

²³ See, however, Lucas (1988, 1993) for examples of neoclassical models incorporating differences with regard to learning between activities.

Figure 8.2. The Quality Index of economic activities



[184] is only a temporary state, as new technologies fall towards a lower score as they mature. The upper part of the quality index corresponds to Schumpeter’s metaphor of the upper strata of a market economy being like hotels which are indeed full of people, but people who are forever changing. Activities with a high score are *growth inducing*, activities with a low score are *growth inhibiting*. Jaroslav Vanek – in a comment to one of my earlier papers – suggests that the quality axis should be seen as a third dimension in the traditional geometrical presentation of trade theory.

The factors listed are correlated, but clearly not in any way perfectly so. The two lists of factors, those creating high-quality and those creating low-quality activities, exhibit a negative type of correlation: in their extreme form, the characteristics in the two groups are mutually exclusive. Each of the characteristics in one group is, in this form, incompatible with *all* characteristics in the other. The ‘quality’ of an economic activity for a nation, its ability to pay high wages and potential for high profits, can be read off on this scale. High-quality activities carry with them high risks in innovation and new technologies, and high barriers to entry also carry with them high barriers to exit. Consequently, there is no direct relationship between the quality of an activity and its profit level, only its *potential* profit level. A high-quality activity can be ruined in shake-out periods by huge losses across the industry. These losses are caused by high barriers to exit. However, this normally does not drastically affect wage levels. In spite of the huge losses in the airlines industry in recent years, wages of airline pilots are much higher than those of bus drivers. Airlines are still a high-quality economic activity for a country, due to their potential economies of scale.

As they are presented at the moment, the factors are a blend of causes and effects. I therefore choose to call them ‘characteristics’. *Barriers to entry* boils down to being a common denominator of the forces at work. The system is a closed one, except for an opening at the top, in the black end. Here new knowledge – technological change – enters the system as a temporary monopoly, and then falls towards perfect competition over time at greatly differing speeds. Nathan Rosenberg’s frequently used example of the innovation with shipping-containers fell reasonably fast on the scale towards perfect competition. Patented drugs fall more slowly. Patents are of course set up for this very reason, to keep profits up in order to encourage investment in research. Even when technological progress no longer takes place in an economic activity, static scale effects may give the activity in question a high value score (= dark grey).

The gravity in the system – the speed with which economic activities fall from temporary monopolies to perfect competition – is also determined by the intensity of competition. More intense competition causes [185] the gravitational power to increase, as we are experiencing in our time with successive generations of computers. A more rapid fall of innovations through the system – more perfect competition and more classical spread of benefits (next section of the chapter) – combined with wage and exchange rigidities, will by itself increase unemployment. This is, in my opinion, a relevant point for the present employment situation in Europe and the US.

This Quality Meter is in my view useful in conceptualizing a number of issues in economics, old and recent: competitiveness, Porter’s world view, Bill Clinton’s crusade for high-quality jobs, national wage differentials, and, most importantly, the clustering of the world in two groups of nations, the haves and the have-nots. Historically, the Quality Meter opens for an explanation as to why colonialism made sense to the colonial powers. This is not clear in neoclassical analysis, see e.g. Fitzgerald (1988). Colonial economic policy assured the mother-country exclusive access to the activities with the highest score on the Quality Meter. There is also considerable historical evidence that the colonial powers consciously pursued policies based on notions which are compatible with the Quality Index – that access to high-quality activities was prohibited in the colonies. The ‘industrialicides’ – the conscious killing off of advanced sectors in colonial economies – testify to this. Perhaps the clearest examples are from British colonial policy: the prohibition of the prosperous woollen industry in Ireland starting in 1699, described by Hely-Hutchinson (1779), and the destruction of the cotton-textile industry in India around 1814 (Chopra 1990). The prohibitions on the export of machinery, in force in Britain until 1843, also

indicate an understanding of economic power which is compatible with the Quality Index. The machinery question is described in Berg (1980). All in all, the Quality Index is able to throw new light on why many '*realökonomisch*'-oriented mercantilists were essentially right, although often for the wrong reasons.

If the Marshall Plan worked wonders in a few years in postwar Europe, it was because the nations in question were brought back in the top-floor industries, where they were active before the war. The reason 'technical assistance' to the Third World – originally seen as an extension of the Marshall Plan – has failed so miserably in the Third World in general, is because these countries lacked everything the *List-cum-Smith* stage has given Europe, the United States, and Japan. Most postwar attempts at Third World industrialization under protectionism, like in Mexico and India, did not develop well essentially because the competitive aspect – the *Smithian* element of *List-cum-Smith* – was missing. This led to static rent-seeking and very inefficient industries based on government industrial licences.²⁴ [186]

4. THE CLASSICAL AND COLLUSIVE MODES OF DIFFUSION OF TECHNOLOGICAL GAINS

To the classical economists, productivity improvements would show up in the economy as lowered prices for the goods which experienced these improvements (see e.g. Smith 1776: 269, and Ricardo 1817: 46–7). At the time of Smith and Ricardo, the gold standard facilitated the result they predicted. In a closed economy, holding velocity of circulation constant, the increase of goods in the economy resulting from technological progress would chase only the same amount of bullion. Prices *would have to fall*. Rapid technological progress would therefore lead to deflation – which it in fact often did until the gold standard was abolished.

When the gold standard was abolished, people in the industrialized countries got rich in a different way than before – instead of seeing the price of industrial goods fall as it used to, they now saw their monetary income rise. Previously deflation had caused awkward social problems: it was difficult to convince people who had to take continuous pay cuts that, in spite of these pay cuts, they were still getting richer, because the price of the goods they purchased fell at an even faster rate than their wages. The monetary policy which followed after the gold standard was abolished became, from the point of view of the industrialized nations, a more sensible one: money supply kept rising with the amount of goods in the economy, or slightly faster, creating a small inflation which seems to have served to oil the machinery of development. Now the producer in an activity not exhibiting productivity improvements – e.g. the barber – got rich by raising his prices at the rate everybody else had their salaries raised, not only by having the price of manufactured goods lowered.

As shown in Figure 8.1, from 1899 through 1937, within the US, labour productivity in the automotive industry increased by about 900%, and many other industries recorded productivity improvements exceeding 100%. However, in many US industries: meat packing, hats, railroad cars, lumber-mill products and others, labour productivity did not change at all in the same period.²⁵ Yet, the workers in the industries which had no productivity increase at all over this 40-

²⁴ List was writing on Germany, where he wanted free trade established between more than 30 small states, each with high tariff barriers. That ferocious competition would erupt once these barriers were removed goes without saying.

²⁵ Data from Fabricant, *op. cit.*, pp. 90–91.

year period had their good share in the unprecedented growth in the US economy over that period. But, as opposed to what was expected in the classical model, this did not come through an improvement in their terms of trade. The increase in real wages came essentially through increased monetary wages as the national stock of money grew, not through improvements in the terms of trade in the ‘dog’ industries. In this way the huge productivity advances in the ‘star’ industries spread to a much larger extent *inside the producing nation* than to customers abroad. A similar view on wage determination is held by the [187] French regulation school (see Boyer 1988).

Terms of trade between developed and developing countries seems to have changed very little, in spite of the widely different changes experienced in productivity between industries within each nation (Figure 8.1). This observation would support the impression that each country keeps its ‘average’ productivity increase in the form of a higher standard of living. This again suggests that the *choice of economic activity* is strategically crucial to a nation.

The benefits of technology clearly spread in the economy in a different pattern from what the classical and neoclassical economists expect. I call this the *collusive*²⁶ mode of diffusing the benefits from technological change: the benefits are divided among the capitalists, the workers, and the government *in the producing nation*. (The word collusive does not imply a conspiracy. This collusion comes about by the normal working of the economic, social, and political forces.) Inside a nation, social and democratic forces, labour mobility, and the distributive effects of a huge government sector ensure that the wage level and standard of living in the ‘dog’ industries do not lag too far behind those of the ‘star’ industries. Interindustry differences are, of course, much greater in a society like the US than in a ‘wage solidarity’ culture like the Scandinavian, but the same mechanisms are at work.

Faced with a *collusive spread*, the US during the period covered in Figure 8.1 would grow richer if it could move workers from the hat industry to the automotive industry. Importing hats and exporting cars will – under the collusive diffusion of technological improvements that in fact happened – improve the US welfare position as compared to autarky. This opportunity is created by the fact that not all economic activities are mechanized at the same time and to the same extent. Things would look different, as US economist Henry Vethake said in 1838, ‘if improvement in all the arts were to take place *at the same rate*.’²⁷ This is clearly not the case. A more realistic picture is the one given by Kodama: ‘It is more like the principle of surf-riding; the waves of innovation come one after another and you have to invest to ride the waves; if you miss, you are out of the game’ (Kodama 1991).

A *classical spread* is the result of the usual assumptions in neoclassical economics. However, in a Schumpeterian world view, a purely classical spread is hardly plausible. The dynamics of the system are generated by the technological change which creates disequilibria – and the higher profits created in the industries experiencing technological change are necessary in order to draw capital to these higher risk and more capital-intensive activities. In addition, a classical spread of the benefits – only in the form of price reductions to customers at home and abroad – would not be seen as fair and democratic in the producing country. That industrial-[188]ized country workers receive their share in the productivity improvements in terms of higher wages is an integral part of the credo of industrialized societies.

²⁶ This matter is discussed more in detail in Reinert (1990).

²⁷ Italics in original.

In the late 1930s, the Brookings Institution published a series of books aiming at ‘nothing less than a general re-examination, in the light of modern developments, of the operation of the capitalistic system of wealth production and distribution’ (Bell 1940). The studies conclude that the benefits of technological progress may be spread in the US economy in two different ways:

1. *Raising money wages (my collusive mode)*. ‘The most obvious method by which the income of the masses might be expanded... it is the method which has been steadfastly pursued by labor organizations... and it is the method which has been officially experimented with under the auspices of the National Recovery Administration.’ (Moulton 1935). It is recognized, however, that this gives a disproportionate wage lead for manufacturing and railway workers.

2. *Price reductions (my classical mode)*. The series of studies concluded that ‘the *most advantageous* means of broadly distributing the benefits of technological progress was by reducing prices in line with increasing efficiency in production’ (Bell 1940). The practical difficulties in achieving this were outlined in a third volume in the series: *Industrial Price Policy and Economic Progress* (Nourse and Drury 1938). The conclusion was that in a market where both the industry in question and the labour unions charge what the market can take for products and labour respectively, a large amount of what from an international trade point of view is a ‘collusive spread’ is inevitable in a market economy.

Clearly, in most industries, the benefits of technological development spread with elements of both modes. Distribution problems *within* a nation, which was the object of the Brookings Institution study, will be alleviated through competition in the labour market, through labour mobility, through the high government share in GNP, through the relocation of industry to areas in the country with less expensive labour, and, particularly in the case of Europe, through the ‘wage solidarity’ of labour unions. Internationally, these mechanisms work in a very limited way, as does the huge redistributive machinery of national governments. The inevitability of a ‘collusive spread’ makes a nation’s *choice of economic activity* so crucial. As a result of the collusive spread of technological progress, the world’s most efficient baseball producer makes 30 US cents an hour in Haiti, and the world’s most efficient golf ball producer makes 30 times as much in an industrialized country, as noted above.

Hans Singer, a former student of Schumpeter, raised the distribution issue of technological progress in his paper to the 1949 meeting of the [189] American Economic Association. Singer²⁸ pointed out unquantifiable factors, however, and his important insight drowned in the attention paid to the terms of trade argument presented by Prebisch. Measuring prices – terms of trade – appealed to the traditions and static world view of the economics profession. The remarkable lack of change in terms of trade between industrialized and primary-producing nations over time, showed by Kindleberger and others, really served to reinforce Singer’s point: each group of nations is able to keep its own productivity improvements as an increase in national welfare.

Table 8.1 shows the characteristics of the *classical* mode (price reduction) and the *collusive* mode (raising money wages). In a truly classical spread, the innovation immediately falls to the lower level of the Quality Index in Table 8.1. The use of containers could be an example of such an innovation. The two modes are not mutually exclusive – in most cases they are both present to some degree. Under autarky, it makes no immediate difference to GNP whether the benefits spread in a classical or in a collusive way. In an open economy with restricted labour mobility it makes all the difference in the world.

²⁸ Published as Singer (1950).

5. REDISCOVERING OLD STRATEGIES FOR DEVELOPMENT IN A NEW ECONOMIC PARADIGM

The neoclassical paradigm in economics is being challenged by new theoretical approaches. A central feature in a Kuhnian change in paradigm is a ‘Gestalt-switch’, that the object of study – in this case the economy -starts to be perceived as a different *Gestalt*. If economics is to make progress towards understanding the causes of national wealth and poverty, it is necessary to dispense with the view of the world economy as a *Gestalt* consisting of a mass of undifferentiated ‘representative firms’, all operating under perfect information and competition. The implicit assumption that ‘all economic activities are alike’ will have to be abandoned. A new and more relevant economic theory will have to consider the differences between economic activities – their use of factors like fixed costs, scale, and knowledge – and the cumulative effects of these factors over time. The description of this new multifaceted world-economy *Gestalt* will require new, but unfortunately less accurate tools than those presently used. The Quality Index of economic activities is one example of such a tool. Simple and absolute ‘truths’ – like the absolute superiority of free trade under all circumstances – will yield to much more complex, but also more useful, views. The Quality Index of economic activities is one example of such a tool. Simple and absolute ‘truths’ – like the absolute [190]

Table 8.1. Characteristics of the two modes of diffusion of productivity improvements

	The Collusive Mode	The Classical Mode
Characteristics of mode		
Divisibility of investments	Indivisible, comes in ‘chunks’	Divisible
Degree of perfect information	Imperfect (e.g., patents, internal R&D)	Perfect (competitive market for technology itself)
Source of technology from user company point of view	Internal, or external in big chunks = high degree of economies of scale	External
Barriers to entry	Increase	No change
Industry structure	Increases concentration	Neutral
Economies of scale	Increase	No change
Market shares	Very important	Unimportant
How benefits spread		
GNP as measured	Highly visible	Tends not to appear (Solow-paradoxes)
Profits level	Increases stakes: possibilities for larger profits or losses	No change
Monetary wages	Increase	No change
Real wages (nationally)	Increase	Increase
Price level	No change	Decreases
Terms of trade	No change	Turns against industries experiencing technological progress
Examples of innovations in the two groups	New Pharmaceuticals, main-frame computers, automotive paint production	Electricity, telephones, sewing machines, use of PCs, dispersion paint production, containers
Where found	Mainly in industry, in recent products and processes	In primary and tertiary industry, use of new basic technologies, mature industry

[191] superiority of free trade under all circumstances – will yield to much more complex, but less useful, views. Readers who are worried about this development may find some consolation in Schumpeter’s words: ‘The general reader will have to make up his mind, whether he wants *simple* answers to his questions or *useful* ones – in this as in other economic matters he cannot have both’.²⁹

The evolutionary paradigm will be able to throw new light on mercantilist industrial policy. A new understanding of pre-20th century industrial policy is seeping even into neoclassical economics, without the authors being aware of it. Old practices are being restored, without any historical references, and only used for First World consumption, not for the Third World.³⁰ The best *realökonomisch*-oriented mercantilists can be seen as having built efficient national innovation systems. Today the goal of enlightened industrial policy is to create the innovation-driven society: positioning the nation in the upper echelons of the Quality Index where growth-inducing activities carried out under imperfect competition create wealth. The economics profession knows, in some place in the right part of the brain – where intuition is seated – that Japan would never have made her way to international economic leadership if she had concentrated on pyjama production instead of car production and electronics. However, the profession as a whole refuses to build this ‘knowledge’ into the models produced by the left side of their brains. The Quality Index or Quality Meter for economic activities is intended as a device to connect the two parts.

The mercantilists – English, German and French in particular – identified the superior economic activities with the use of machinery.³¹ In a world where very few economic activities had been mechanized, the use of new machinery was synonymous at once with innovation, technological change, learning, imperfect competition, high profits, high wages, and national welfare. Today the economists who were associated with the most spectacular catching-up operations in human history, England starting in the late 15th century, United States and Germany starting in the 19th century, are not even mentioned in the textbooks. A basic reason for this, of course, is that the strategic factors used to create and maintain wealth historically, contradict the very foundations of the neoclassical theoretical construction: perfect information and the absence of increasing returns to scale.

If a nation’s economic activities historically are concentrated in the lower area of the Quality Index, the workings of the market will reinforce this position by assigning only mature products, produced with common knowledge and technology, to the poor nation. As the pressures of an increasingly perfect competition weigh on a product, cheap and unskilled labour becomes a key success factor for companies. Therefore, the [192] production of a product like baseballs – until now unmechanized – is fanned out to Haiti, while the mechanized production of golf balls and tennis balls is kept in the industrialized countries.³² As a result, the Third World receives the activities working under perfect competition and a *classical spread* of benefits, while the First World monopolizes the upper part of the Quality Index, the top floor of

²⁹ Schumpeter in his foreword to F. Zeuthen (1930).

³⁰ Paul Krugman of MIT, whose contributions to the rediscovery of increasing returns has already been mentioned, with hindsight now approves of Canada’s protectionist policies (Krugman 1992: 42). See also endnote 31.

³¹ This policy is being rediscovered in the US, see De Long and Summers (1991).

³² This argument can be seen as an extension of the product life-cycle effects associated with Raymond Veron and Lou Wells, see Vernon (1966) and Wells (1972).

Schumpeter's capitalist hotel. The Third World mainly receives the destructive part of the Schumpeterian *creative destruction* – the destruction of the existing non-market economies. The invisible hand tends to shuffle the gains from technological progress to the industrialized countries in the form of rents, through the mechanisms described in this chapter. An understanding both of the historical strategies of the First World, and of the differing 'qualities' of economic activities are necessary ingredients in economic strategies of poor nations facing a long-distance catching-up process.