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Gerschenkron's Model of Industrialization in the Context of Economic Backwardness: A Critical Evaluation

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Abstract

This paper outlines Alexander Gerschenkron's model of industrialization in the context of economic backwardness. In this model Gerschenkron seeks to account for the leading features exhibited in the industrial development of backward countries, where by 'backward economies' he means economies which succeeded Britain in the path to modern industrial capitalism due to the absence of one or more 'prerequisites' of rapid industrialization present in eighteenth century Britain. The absence of prerequisites such as capital, a wage labour force, or entrepreneurial initiative, causes such backward industrializers to substitute for missing factors through such devices as the state mobilisation of investment funds and the building of large scale, capital-intensive, plant. As a result, the trajectory of late-industrializers will diverge systematically from that of early industrializers, depending on their initial degree of backwardness. It is argued that, while Gerschenkron's analysis does shed important light on the industrial history of nations, the model is too poorly specified, and rests upon too many fallacies, to be properly convincing as an explanatory account of the industrialization process.

Alexander Gerschenkron (1904-1978) was an economic historian with a passionate interest in the process of industrial development. Industrialization was the subject of most of his studies eager in economic history, and in particular the industrial development of Europe in the nineteenth and twentieth centuries. It was not industrial development as such that attracted Gerschenkron's attention (for, after all, industrial development in some form has been a ubiquitous feature of all human history), but rather those sudden accelerations in the rate of industrial growth, the 'great spurts' in industrial progress that we tend to designate as 'industrial revolutions', that really interested him. This subject he approached with an almost

innocent delight, rarely pausing for long to worry about the effects of industrialization – whether upon the people who experienced it or upon the environment it disfigured. His viewpoint was that of the simplistic Whig or everyday man in the street: industrialization was an engine of modernization, and modernization meant progress. To industrialise was to be modern, to move forward, to advance to a bigger, better, future; not to industrialise was to remain backward, to languish, to miss out upon possibilities other more developed nations were enjoying. Industrialization was, for Gerschenkron, the natural order of things for Europe in the nineteenth century, and the central questions preoccupying him were these:

1. What, if any, with the prerequisites or conditions that promoted industrialization?
2. Why might a nation have failed to embark upon the industrialization process?
3. How did successfully industrializing nations achieve this result – by what means did they industrialize through a transformative industrial spurt?
4. What might be the lessons of successful industrializers for those nations, including modern less-developed countries, that had yet failed to go through an industrial surge of their own?

This was Gerschenkron's mental universe, and one which he explored from his first papers in the early 1950s until his death in 1978.¹ Its origins must surely be traced to his childhood and early years in Russia before World War One. Russia was seen as possessing, in the nineteenth century, a notoriously backward economy and society, one which, embroiled in the antiquated legacies of serfdom, had failed to industrialize in the kind of ways exhibited by other great European powers such as Britain, France, and Germany. While some, such as the Populists or conservative ideologues of Tsarism, might celebrate this as being indicative of Russian exceptionalism, for others it was a disability to be overcome. Russia, they felt, ought to take its place among the modernising nations of Europe, and this meant developing a technically advanced industrial base and shifting from an agrarian to an industrial economy. This was the ambition of Count Witte in the 1890s, and it was this spirit of Russia, surging forward into modern industrial growth and embarking on a path converging to that of the more developed states of Western Europe, which imbued Gerschenkron's approach, not merely to the economic history of Russia, but to that of Europe more generally. Put simply, what interested Gerschenkron were marked discontinuities or 'surges' in the rate of industrial growth, where these surges were, in some way, initiated by a deliberate act of policy – be it by governments or banks, and this was, for Gerschenkron, the basic form industrial development took in nineteenth century Europe and beyond.

¹ Gerschenkron's early papers on industrialization were collected in his 1962 volume, *Economic Backwardness in Historical Perspective: A Book of Essays* (Harvard University Press, Cambridge, Massachusetts). Further important essays can be found in his *Continuity in History and Other Essays* (Harvard University Press, Cambridge, Mass., 1968)

Gerschenkron's Model of Industrialization

Gerschenkron's model can be defined in terms of the overall theme of *industrialization in the context of economic backwardness*. There are two key terms here. First, industrialization. By industrialization Gerschenkron really means industrial revolution, and we can more usefully say that the focus of his analysis is industrial revolutions in the context of economic backwardness. What is an industrial revolution? Gerschenkron envisages an industrial revolution in conventional terms as an elaboration upon the original British Industrial Revolution of the later 18th century. Its essential elements are:

1. A marked discontinuity in the growth of industrial output. A time-series of industrial output would exhibit a clear discontinuity or 'kink' indicative of a marked and sustained acceleration in the rate of growth of industrial output – from, say, 1 or 2% per annum to 4, 5, 6% or more. This is the 'great spurt' to which he repeatedly refers.
2. An application of new, more productive, technologies *via* investments in fixed capital.
3. The development of factory production and an urban industrial proletariat.
4. The emergence of entrepreneurs willing and able to formulate plans, innovate, and invest for the future.
5. A shift in the structure of the economy from the agrarian to an industrial basis.

These are, for Gerschenkron, the defining features of an 'industrial revolution' and they will tend to be present, in varying degrees, in any great industrial spurt worth its name. Of these, the acceleration in industrial growth over a sustained period is the most crucial, and Gerschenkron cannot really envisage an industrial revolution without a great spurt in the growth rate of industrial output. As he explains:

The more we learn about the nature of the industrialization process in a number of now advanced countries, the greater becomes the assurance with which we can assert that in very many cases the industrial development, after a certain period of preparation, assumed the form of a big spurt during which for a considerable length of time the development preceded at an unusually rapid pace. Whether we look at the history of modern industrialism in England, France, Germany, Russia, or Italy, we can discern such upsurges in the growth of industrial output ... most of the important industrializations in Europe started in the form of more or less violent industrial revolutions.¹

The second key term is 'economic backwardness'. What does this mean? Quite simply, economic backwardness is the state of any national economy in a world where *one* country has embarked upon a surge of modern industrial growth. 'Backwardness',

¹ A. Gerschenkron, *Economic Backwardness in Historical Perspective* (1962), p. 36.

Gerschenkron writes, 'is a relative term. It presupposes the existence of more advanced countries.'¹ This is where Gerschenkron's teleological understanding of history becomes crucial. History goes in one direction – towards industrial modernity. This trajectory was revealed once and for all when Britain, the first industrial nation, made this advance. As soon as *one* country undergoes an industrial revolution, and thus advances decisively into the modern industrial future, *all other countries can, from this moment, be considered in varying degrees backward*; that is to say, they are behind in the race of industrial modernization. So, if two countries, A and B, are broadly comparable in economic development at a given moment, but A enters upon a period of accelerated industrial growth, country B can, from this point, be considered 'backward.' An obvious example would be Britain and France in the eighteenth century. Historians have often considered these countries as evenly matched in terms of economic development in the eighteenth century, some going so far as to suggest that Britain's priority in entering upon the Industrial Revolution was almost a fortuitous event, reflective of no necessity or inevitability.² Yet, once Britain *did* take this step into the Industrial Revolution in the 1760s, from *this* point France and all other European countries became, in Gerschenkron's scheme, 'backward'.

Now Gerschenkron's interest was in those industrializations which occurred in the context of economic backwardness. He was not particularly interested in the British Industrial Revolution and wrote little on this. Rather, he was interested in all the subsequent industrial revolutions, since, by definition, all these industrial surges, through the simple fact of following behind the British Industrial Revolution, occurred under conditions of relative economic backwardness. The industrial development of France, Germany, Austria, Italy, and Russia proceeded, in each case, within the context of economic backwardness. Yet economic backwardness was not a one-dimensional phenomenon; it was something that existed in degrees. 'In practice', he wrote 1957, 'we can rank the countries according to their backwardness and even discern groups of similar degree of backwardness.'³ How did he do this? 'One way', he continues, 'of defining the degree of backwardness is precisely in terms of absence, in a more backward country, of factors which in a more advanced country served as prerequisites of industrial development.'⁴ Taking, first, the pioneer industrialising nation, namely Britain, he identifies the factors which could be considered as making that first Industrial Revolution possible. These conditions are then regarded as *prerequisites* for modern industrial growth. That is to say:

Ind (A) = f(a,b,c,...,n)

¹ *Ibid.*, p. 42.

² C.f. N.F.R. Crafts, 'Industrial Revolution in England and France: Some Thoughts on the Question "Why was England First?"', *Economic History Review*, Vol. 30, No. 3 (August 1977), pp. 421-41.

³ Gerschenkron, *Economic Backwardness*, p. 44.

⁴ *Ibid.*, p. 46.

Where A is the first industrial nation whose breakthrough to modern industrialization is attributed to the presence of a series of preconditions, a,b,c etc. In the British case these preconditions might be considered to include: the presence of capital funds for investment (Marx's 'original accumulation'); the existence of a labour force willing to work for wages; a spirit of entrepreneurship among sections of the population; the prevalence of high standards of commercial honesty and trustworthiness; the rule of law; a productive agriculture; and the availability of key resources like coal and iron and a serviceable transportation system. Since these factors together proved sufficient to initiate the first Industrial Revolution, the failure of other countries to undergo such an advance must be due to the lack of one or more of these pre-requisites. In other words, to consider a 'backward' country such as B:

B ≠ Industrialise due to a lack of (a,b,c ... and/or n)

The greater the number of prerequisites a country is lacking the more backward it is. Thus France, although backward compared to the UK in the early 1800s, was only moderately backward since many of the elements necessary for successful industrialization – wealth, productive agriculture, resources, education, etc., were present. By contrast, Russia was more backward since many of the preconditions for industrial progress were absent – agriculture was unproductive, the population largely illiterate, standards of commercial honesty were poor, there was a lack of an entrepreneurial class, and so forth.

To summarise: An economy is considered 'backward' by Gerschenkron in so far as it has not experienced a sustained period of rapid industrial growth, and the greater the degree to which it lacks the prerequisites that were shown to be associated with the pioneer Industrial Revolution in the UK the more backward it is.

Thus far what we effectively have is a system of classification, a way of categorising economies in relation to the process of modern industrial growth. However, Gerschenkron's model is more than just a classificatory schema – it also has important dynamic features. What converts the model from a static to a dynamic one are two propositions.

1. First, a 'backward' country will be aware of a growing tension within it as the gap between it and the advancing industrial economies steadily widens. The breakthrough to modern industrial growth of country A does not leave countries B, C, and D unaffected. They are not indifferent to the industrial progress of country A. In terms of status or military capability the 'backward' countries cannot merely observe complacently the advances made by their rivals. More fundamentally, there is a growing consciousness *within* the 'backward' economy of the disparity between its potentiality and its actuality. A country becomes ever-more aware of the inferiority of its economic position

and of the potential growth to be experienced through closing this gap. To quote Gerschenkron:

The typical situation in a backward country prior to the initiation of considerable industrialization processes may be described as characterized by the tension between the actual state of economic activities in the country and the existing obstacles to industrial development, on the one hand, and the great promise inherent in such a development, on the other ... Industrialization always seemed the more promising the greater the backlog of technological innovations which the backward country could take over from the more advanced country ... In viewing the economic history of Europe in the nineteenth century, the impression is very strong that only when industrial development could commence on a large scale did the tension between the preindustrialization conditions and the benefits expected from industrialization become sufficiently strong to overcome the existing obstacles and to liberate the forces that made for industrial progress.¹

This ‘challenge-response’ mechanism has affinities, acknowledges Gerschenkron, to the theory of history expounded by Arnold Toynbee in his *A Study of History*.²

2. Second, a ‘backward’ country, provoked or stimulated or inspired into industrialization by the success of more advanced countries, must needs take steps to substitute for those developmental factors which were present in the leading nations but which are, by definition, lacking in the ‘backward’ economies. Remember: ‘backward’ economies are held to be so because they lack one or more of the factors that initiated modern industrial growth in Britain – be that a supply of skilled labour, productive agriculture, an available supply of investment capital, an entrepreneurial class, and so forth. Hence, the ‘greater a country’s degree of backwardness on the eve of its big spurt of industrialization, the more likely it is for factors which may have appeared as prerequisites of industrial development in less backward countries to be either absent or play a subordinate role.’³ It is Gerschenkron’s contention that the lack of these historic preconditions does *not* disbar ‘backward’ economies from rapid industrial progress because later industrializers can and must *substitute* alternative growth factors for those which they lack. There is no set of absolute preconditions for industrial progress – all can be substituted for. So, industrialization in backward countries will diverge systematically from that in pioneer industrial countries, and the reason is that later industrialisers must adjust their industrial processes and inputs to make good the absence of those initial conditions for growth enjoyed by successful pioneers. For example, if a backward country lacks the reserves of private capital to fund industrial growth then agencies like banks or the state must intervene to provide capital funds

¹ *Ibid.*, pp. 8-11.

² *Ibid.*, p. 11.

³ *Ibid.*, p. 113.

instead. And if a backward country lacks a supply of semi-skilled labour ready to work for wages then it may substitute machines for labour and exhibit a higher capital/labour ratio than did pioneer industrialisers, and so forth. Hence, Gerschenkron is able to argue that *the patterns of observed industrializations in Europe exhibited characteristics determined by the initial degree of backwardness of the country concerned*. Backwardness, then, is not only a defining characteristic; it is also a determining factor shaping the actual course of industrialization by prescribing the number and degree of substitutions necessary for an industrial ‘spurt’ to occur at all. As such, although Gerschenkron rejects the idea that there are certain prerequisites that must be present for industrialization, the concept of prerequisites ‘must be regarded as an integral part of this writer’s general approach to the industrial history of Europe.’¹ This is because it enables us to make sense of subsequent industrializations in terms of a pattern of substituting for absent preconditions:

It would seem that the lack of something that might be regarded as a *general* set of prerequisites of industrial development does not necessarily diminish the heuristic value of the concept of prerequisites. It is precisely by starting from that concept and by trying to understand how a given country managed to start its process of industrialization despite the lack of certain prerequisites that one can arrive at some differentiated and still coordinated view of industrialization in conditions of graduated backwardness.²

To substantiate these claims Gerschenkron cites the industrial histories of several European states. These states he ranks, for the mid-nineteenth century, in the following ascending order of ‘degrees of backwardness’:

1. France
2. Germany
3. Austria
4. Italy
5. Russia³

With reference to the economic history of these states in the period 1850 to 1914, Gerschenkron derives a series of propositions regarding economic development in conditions of relative economic backwardness.⁴

1. *The more backward an economy when it commences its industrial spurt, the more rapid and forceful will that spurt be – the sharper the observed ‘kink’ in its time series of industrial output.* ‘The rates and the margin between them in the “pre-kink” and the “post-kink” periods appear to vary depending on the degree of relative backwardness of the country at the time of the acceleration.

¹ *Ibid.*, p. 358.

² *Ibid.*, p. 50

³ C.f. *ibid.*, p. 44.

⁴ C.f. *ibid.*, p. 73.

The more backward the country, the sharper was the angle of the kink.¹ Late industrializers grow faster than early industrializers: Britain grew more slowly than France, France more slowly than Germany, and Germany more slowly than Russia. This is not, for Gerschenkron, a trivial statistical point in the sense that the smaller a country's industrial base the faster its growth must be. What he means is that the later a country commences industrialization the wider will be the disparity between the actual level of a country's development and its potential degree of development. As this creative tension increases so does growth accelerate when it actually begins – rather as an ever-more depressed spring expands all the more when the depression is released. One reason for this is that the best technology available to the late developer will be far more productive than that available to the early developer. Where Britain moved its goods by horse and cart and steam train, the late industrialiser can use motor vehicles, aeroplanes, and high-speed rail. Accordingly, where Britain's rate of industrial growth during the Industrial Revolution was around 2-3%, Germany's was around 6% and Russia's in the 1890s 8%. Backward countries industrialise faster.

2. *The more backward a country is when it begins industrialization the greater its propensity to focus on the production of capital goods as opposed to consumer goods.* Where Britain grew first through the expansion of cotton textiles, countries like Germany and Russia focused far more upon capital goods like iron, steel, and mechanical engineering. Gerschenkron attributes this capital-goods bias partly to the fact that technical progress has tended to be faster in the capital goods sector. A late industrialiser will want to borrow the most advanced technology from the more developed nations, and in the context of the nineteenth century this most advanced technology was in blast furnaces and mechanical and electrical engineering, not in textile or clothing factories.
3. *The more backward a country is when it experiences its great 'industrial spurt' the higher will tend to be the capital/labour ratio within its factories.* A backward economy will utilise technologies that substitute capital for labour. This appears rather paradoxical: surely a backward country will have ample supplies of cheap labour and hence a low capital/labour ratio? This, says Gerschenkron, is a misconception. Certainly, a backward country is likely to have cheap labour, but this labour will probably lack the skills and cultural traditions necessary for the discipline of factory labour. Russia, for example, had a large population, but much of this population was tied to the land and worked in industry only in order to raise funds with which to return to the village. Russia, in other words, did not have a large industrial proletariat or urban wage labouring class, and hence needed to substitute capital for labour to make good this deficiency.
4. *The more backward an economy when it commences its industrial revolution the greater will be the degree to which it adopts large scale plants.* Partly this

¹ A. Gerschenkron, *Continuity in History and Other Essays* (1968), p. 34.

reflects the technical requirements of up-to-date capital goods production. But it also represents another example of substitution. Later developers tend to lack a modern entrepreneurial class with long time horizons, managerial skills, and high standards of commercial honesty. The late industrializer therefore utilises large scale plants, often operated initially by foreign-trained managers, in order to economise upon its relatively scarce supplies of skilled entrepreneurs.

5. *The more backward an economy the more it will have to improvise institutional instruments to make good the lack of existing investment capital.* In Britain available capital funds were sufficient to initiate industrialization, and industrialization itself generated capital for further growth through the re-investment of profits. Backward countries characteristically lack these initial capital resources, and the capital-intensive nature of their development means that re-invested profits are unlikely to be sufficient to provide for industry's significant capital needs. Hence alternative institutions must evolve to make good the lack of capital. In moderately backward countries like France and Germany the device evolved to fill this capital gap was the Investment Bank. In the France of the Second Empire the Credit Mobilier, under the direction of the Pereire brothers, was created to provide industry with investment capital, while in Germany it was the investment banks which provided funds to businesses and took a share in their control and management. These banks fuelled industrial growth through credit creation. In more backward countries such as Russia the banking system was unable to fulfil this need and it required the state to intervene to provide capital, subsidising firms, providing governmental orders, and building social overhead capital projects like the Trans-Siberian railway. Hence the prominent role of the state in the 'Witte System' of the 1890s.

These, then, are the five main features which Gerschenkron sees as characterising industrial development in conditions of economic backwardness. The more backward an economy is, that is to say, the more deficient it is in the conditions for modern industrial growth, the more it will need to find substitutes for those initially absent factors. Of course, once industrialization is under way an economy's resources will develop and further substitutions will take place. For example, while investment banks were crucial in Germany's initial take off into rapid growth, as the German economy grew and firms became larger and better resourced, they were increasingly able to provide for their own capital needs and the importance of investment banks declined – though it never entirely ended. Similarly, where Russia's initial industrial spurt of the 1890s was heavily dependent upon the state, Gerschenkron argues that Russia's second industrial surge in the years 1906 to 14 was far less dependent on state patronage, with a developing banking system stepping in to provide a larger share of investment capital. It was thus that he was able to suggest that 'Russia on the eve of the war was well on the way toward a westernisation or, perhaps more precisely, a Germanization of its industrial growth. The "old" in the Russian economic system was

definitely giving way to the “new”.¹ In other words, as a state’s degree of economic backwardness diminishes as it grows so will its need to substitute for absent preconditions diminish as the growth process itself generates the very preconditions initially absent. The ‘process of industrialization is also a process of diminishing backwardness ... What was once in vain looked for to serve as a ‘prerequisite’ or ‘cause’ of industrial development comes into being as its effect.’² It should also be added that Gerschenkron does not consider his model wholly deterministic. It is about explaining broad patterns of growth, not rigidly accounting for every detail. For instance, although Italy was a definitely backward economy in the nineteenth century its industrial spurt, which Gerschenkron locates to the years 1896 to 1908, was, at an annual average rate of 6.7% per annum, not especially rapid.³ One reason for this is that the Italian government did not favour mechanical engineering, but rather promoted the textile and iron industries, both of which had limited growth potential in Italy (in the case of iron because of a lack of local coal supplies). Another reason was that state-sponsored railway construction occurred in the 1880s, prior to Italy’s industrial revolution, which meant that when that revolution finally got underway it did so without the benefit of a stimulus from that important nineteenth century engine of growth. Italy, says Gerschenkron, would have grown faster at the turn of the twentieth century if railway construction had not preceded its ‘great spurt’.

Assessment

Gerschenkron’s writings are a great way to approach the industrial history of nineteenth century Europe. What can appear a bewildering array of national economic histories are brought under Gerschenkron’s integrating analysis, each national industrialization being understood in terms of the degree of economic backwardness from which it commences. Such an organising principle provides a useful way to approach the economic history of any state – as Gerschenkron shows when he applies it to Italy, and even when a ‘great spurt’ does not occur it can help us to make sense of why did not, as in the case of Bulgaria. Gerschenkron’s passion for the dynamics of industrial growth is infectious and helps us escape the parochialism of particular national histories to draw examples and insights from across Europe. And these insights are significant. The idea that each particular industrialization involves tailored substitutions to be made for missing elements does help us understand actual industrial revolutions – especially, of course, in the case of Russia; and any reader of Gerschenkron is unlikely to neglect the importance of investment banks in the industrialization of France and Germany.

¹ Gerschenkron, *Economic Backwardness*, p. 142.

² *Ibid.*, p. 124.

³ *Ibid.*, pp. 76-78.

Yet, notwithstanding these fruitful and creative insights, there are numerous problems with Gerschenkron's schema – some of them rather profound. It would unbalance this paper to enumerate all of them here, so I shall confine myself to a few chief points.

1. Gerschenkron's analytical framework rests upon exceedingly simplistic teleological reasoning. History's arrow is held to travel in one direction, from the non-industrial to the industrial, this development is progressive, and the defining characteristics of this industrialization were set by the British Industrial Revolution of the late 1700s. All countries that do not happen to have industrialized in the British fashion are deemed 'backward', and successful industrialization is defined in terms of (what Gerschenkron takes to be) the British model of factories, steel mills, railways, and engineering. In this way, a particular series of events that happened to occur in Britain in the late 1700s and early 1800s is extrapolated into the necessary path that all nations will, or will want to, emulate in order to follow, *mutatis mutandis*, the same trajectory. Industrializing Britain showed Europe, if not the world, its future. There is, of course, a complete lack of nuance here. Just because the British Industrial Revolution took a certain form (and it is not at all clear that what he considered that Revolution to be was in fact the form it took, or indeed whether it was a Revolution at all), it does not follow that other industrializations had to be 'revolutionary', or that this was the only way to successfully industrialize, or that industrialization even revealed the course of the future at all. It may be that other countries *did* see Britain's industrialization and wished to emulate it – which is really Gerschenkron's argument, but this was a voluntaristic choice: it was not a *necessary* feature of industrialization as Gerschenkron implies. Economic development has taken numerous forms through history, and many developed countries today never went through a 'great spurt'. To found a model on one (imperfectly understood) observation, namely the British Industrial Revolution of the late 1700s, is a decidedly precarious and not very robust procedure.
2. Gerschenkron's model pivots upon the occurrence (or not) of a 'great spurt' of industrial growth, but the mechanisms of this great spurt are never properly explicated. It is all, to be frank, exceedingly vague. The essential origin of the growth surge seems to be the developing 'creative tension' between the actual state of the backward country's economy and the potential of what it could be if it industrialized. The situation in a backward country, he writes, 'may be conceived of as a state of tension between its actualities and potentialities. For, *pari passu* with the increase in a country's backwardness, there is an increase potential advantages that can be reaped by a sustained effort to overcome that backwardness As the tension mounts, it becomes more and more likely that a point will be reached at which the advantages implied in rapid development will more than offset those obstacles to progress which are inherent in the state of economic backwardness.'¹ The challenge of industrialization in country A evokes a response in country B. But the mechanism of this response is never

¹ *Ibid.*, p. 155.

properly explained. How, exactly, is industrialization provoked in an admittedly backward country? From Gerschenkron's writings it appears that the response is not something that arises endogenously through economic processes; rather it is a conscious, voluntaristic, act on the part of key decision takers – especially governmental leaders. 'A big spurt', he says, 'requires a big effort: either the state or some financial institutions or both must be willing to make it.'¹ As such the ultimate origins of each 'great spurt' are psychological and subjective. A 'great spurt' is an act of will. Of course, it may be. But to rest a theory of economic development upon the contingent perceptions and objectives of kings, politicians, and bureaucrats is not satisfying. It implies that while Britain's Industrial Revolution was an economic phenomenon, all subsequent industrializations have been engineered according to some vision of the future by policy makers. Again, this may be true: yet it sits ill with Gerschenkron's claim to have developed a coherent economic model with predictable 'operational' relationships, and implies that an economist can essentially only say: a country will industrialize when strategic elites wish it to.

3. The second crucial mechanism in Gerschenkron's model, the process of substituting for lacking conditions of development, is equally poorly specified. We are told that a backward country will substitute one factor for another to promote its development. But how or why does this substitution occur? Who makes the decision and how do they know which factors are lacking, which are present, and which can be substituted for? Conventional economic analysis suggests that the relative abundance of factors is signalled by relative factor prices. This, however, is not explicitly stated by Gerschenkron and fits uncomfortably with his largely voluntaristic model of growth. For example, large scale plants are said to represent a substitute for a deficiency in the supply of suitably skilled entrepreneurs and managers. But who makes his calculation? How is the deficiency or high cost of indigenous entrepreneurship ascertained? How significant must the shortage of entrepreneurs be before the state or banks step in? How is it that financial or governmental entrepreneurship is so much more available than industrial? And if entrepreneurship as a skill or mind-set is so deficient, why build large, sophisticated, plants where entrepreneurial skills need to be at their most developed? This reads much more as a *rationalisation* for an observed propensity for governments to promote large-scale plants – for which there are numerous other explanations. Similarly for labour. Gerschenkron argues that in backward countries there is a lack of a suitably proficient wage labour force and so machines are substituted for workers to offset this deficiency. To say that labour is scarce in developing countries and capital more plentiful is obviously counter-intuitive. While there is some plausibility in the argument (low wages do not always mean low labour costs), it is not entirely convincing. Low wages in early nineteenth century France were one factor inhibiting the utilisation of machines developed in Britain, while historians such as Robert

¹ *Ibid.*, p. 116.

Allen have shown that it was the high cost of labour in Britain (that is to say, the scarcity of industrial labour) that prompted the search for labour-saving mechanisation.¹ So, the penchant of late-industrializers for large scale plants is not obviously a response to high labour costs and no real evidence for this is provided.

4. We now come to what is, I think, the chief weakness of Gerschenkron's entire approach. Gerschenkron's model pivots around the case of the British Industrial Revolution. 'The general approach as presented here', he writes, 'can be considered as an attempt to systematise the deviations from the English paradigm by relying on the degree of backwardness as the organising concept.'² It was Britain that pioneered the industrialization process of the 'great spurt' and this spurt is held to have arisen out of a set of facilitating factors or preconditions. This is important because Gerschenkron's whole concept of backwardness is defined in terms of a country lacking the developmental conditions present in Britain. It is this *lack* which causes them to substitute other factors to offset this deficiency. It is no exaggeration to say that Gerschenkron's entire model depends upon the presence or absence of conditions for industrialization which can or cannot be substituted for. The problem here is that Gerschenkron wrote very little about the Industrial Revolution in Britain. In his published work there is no systematic analysis of the British experience at all. This is a fatal lacuna, because unless Gerschenkron *knows* the preconditions for development in the British case, which he acknowledges to be the 'paradigm', he cannot decide which factors are missing in backward countries – indeed he cannot really categorise 'degrees of backwardness' at all. For Gerschenkron a country is 'backward' insofar as it lacks the developmental factors that generated the Industrial Revolution in Britain. But he does not know what these developmental factors in the British case were! He didn't know personally in the sense that he had hardly studied the British case. The factors he lists – capital, education, labour supply, productive agriculture and so forth – are simply taken from conventional accounts of the British Industrial Revolution available at the time. They were, largely, impressionistic descriptions and did not amount to any seriously persuasive explanation of *why* Britain entered upon the Industrial Revolution when it did. If Gerschenkron really wished to analyse development in terms of substitutions for preconditions crucial to the British experience he really ought to have come to a judgement as to what those conditions actually were. Even then he would have faced a problem. As anyone who has studied the British Industrial Revolution will be aware, there is a considerable and unresolved controversy as to what *were* the reasons for Britain's industrial breakthrough. All sorts of explanations for the Industrial Revolution have been ventured and they are often contradictory: abundance of labour or scarcity of labour; an original accumulation of capital versus self-funding through invested profits; a

¹ R.C. Allen, *The British Industrial Revolution in Global Perspective* (Cambridge University Press, 2009).

² Gerschenkron, *Economic Backwardness*, p. 360.

rich endowment of natural resources or the scarcity of wood; the importance of a Protestant ethic or a disparaging of this factor; the relevance or irrelevance of technical knowledge and education; the stimulating effect of the Napoleonic wars versus the damaging effects of the conflict; trade and Empire as leading or dependent variables, and so on. Quite simply, we cannot with confidence say what were the preconditions for Britain's Industrial Revolution, and in the absence of this knowledge we cannot say what are the factors whose presence or absence define 'backwardness', and we cannot say of x that it is a substitute for y if we do not know the impact or role of y in the first place. Unless Gerschenkron can specify the determining factors of the British experience he cannot then use these as the explanatory engine of his model of substitutes within a context of backwardness, and this he never seriously sought to do at all.

In effect, what Gerschenkron provides is a useful descriptive guide through a handful of European industrializations – those of Germany, Austria, Russia, Italy, and France. He is a wise and amiable guide and makes the industrial landscape of nineteenth century Europe a far more engaging place to visit. But he does not provide us with a coherent, specified, or empirically grounded model of industrialization in the way that he often convinced himself that he had.