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**Endless Possibilities?
Historical alternatives to mass production fifteen
years on.¹**

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A review of:

C.F. Sabel and J. Zeitlin, eds., *World of Possibilities. Flexibility and Mass Production in Western Industrialisation* (Cambridge, 1997)

G. Herrigel, *Industrial Constructions. The sources of German industrial power* (Cambridge, 1996)

P. Scranton, *Endless Novelty. Specialty Production and American Industrialization 1865-1925* (Princeton, 1997)

For much of the twentieth century mass production appeared to carry all before it. It was a mode of production driven forward by a compulsive logic of efficiency first analysed by Adam Smith in his famous example of the pin factory and memorably satirized by Charlie Chaplin in *Modern Times*. Large homogeneous markets absorbed endless quantities of standardized goods, produced in large factories, characterized by a thorough division of labour, employing semi-skilled workers to service dedicated, special purpose machinery organized around that ultimate touch stone of mass production, the conveyor belt. In the early 20th century Henry Ford's Model T assembly line at Highland Park, Michigan replaced Manchester's 'dark satanic mills' as the ultimate symbol of industrialism. In the 1970s, however, manufacturing industry across Europe and North America entered abruptly into what appeared to be a terminal crisis, a crisis, which sparked a fundamental reevaluation both of the future and the past of industrial development. One of the most influential contributions to this debate was an article by Charles

¹ A shortened version of this review essay appeared in *Social History* in 2000.

Sabel and Jonathan Zeitlin entitled "Historical alternatives to mass production", which appeared in Past and Present in 1985.² Sabel and Zeitlin questioned the conventional view of industrialism as a process leading inexorably towards mass production. In their retelling of economic history, mass production appeared as a contingent historical constellation rather than a necessary or natural development. The current industrial crisis therefore signified nothing more than the exhaustion of the mass production paradigm. To grasp both the present and the past, economic historians needed to abandon their blinkered obsession with "efficiency through scale". They might then rediscover the many possible alternatives to mass production, the roads not taken, and might offer inspiration for actors in the present. Above all, they would reveal Europe's long-buried tradition of "flexible specialization" - a mode of production common in the early stages of industrialization, characterized by small batch production, involving highly skilled labour and the flexible employment of general-purpose machinery. This provided a model not only for a viable industrial future, but also a political vision, in which skilled and versatile labour was a subject of communal pride rather than irresolvable conflict and confrontation.

Sabel and Zeitlin's article was as problematic as it was provocative. To start with, its message was deeply ambiguous. It could be read either as a relatively conventional elaboration of economic history, or as a radical critique of the discipline's most basic assumptions. Under the conventional reading Sabel and Zeitlin were simply asserting that given certain conditions, for instance fragmented or unstable markets, the flexible mode of production was the most economical and technically efficient solution. In the production of fashionable textiles, for instance, it survived well into the 20th century alongside the development of mass production. In general, however, the decades after 1914 were not kind to flexible small-scale producers. Mass production ruled the roost until the 1970s, when amidst the crisis of "Fordism", flexible specialization began to make a comeback. This version of the flexible specialization argument, did not fundamentally question the parameters of orthodox economic history. The determining factors were still the same: technology, the relative availability of labour and capital, and the size and character of the market. The discovery of flexible specialization simply demonstrated that the interaction between these basic determinants of

² This provided the historical backdrop to the highly influential analysis of M. Piore and C. Sabel, *The Second Industrial Divide: Possibilities for Prosperity* (New York, 1984). Allied with the model of Fordism and Post-Fordism supplied by the French regulation school, this was to exercise an extraordinary influence on the economic and political debates of the 1980s and 1990s.

economic history was more complicated than had hitherto been understood. Amongst British historians some version of this thesis has now become common-place in the characterization, for instance, of Edwardian industry as an economy of workshops reliant on an abundant stock of skilled labour.³

However, one could also construe Sabel and Zeitlin's article in far more radical terms, as a generalized attack on the limitations of conventional economic history. Technical choices could not be explained by a unitary economic logic. The dominance of mass production was not due to its superior technical efficiency. It was the result of a particular constellation of social interests and their associated ideologies. In place of economic and technical determinism, the *Past and Present* article offered its own none-too-subtle model of industrial development as a dingdong battle between two rival paradigms. Flexible specialization and mass production each had their promoters and propagandists. It was "power" which decided the issue, not economic and technical efficiency. Precisely what "power" meant was not spelled out in much detail. However, the examples given in the essay suggested that it was Politics with a capital "p" that was now to be *the* deciding factor in economic development. Indeed, Sabel and Zeitlin seemed willing to push this to absurd limits. In all seriousness, they speculated about the consequences for industrial development of a successful Spanish Armada! Here they relapsed into a new reductionism. Crude economism was replaced with an equally crude priority of the political. All the same, their critique was clearly important. And we can again find echoes in the literature on the Edwardian economy - the failure to introduce the capital-intensive "American system" of manufacture being attributed not so much to the sheer abundance of skilled labour as to the stand-off between industrial management and craft unions in British industry.⁴

Now, more than a decade on from their *Past and Present* intervention we have three volumes which substantially develop the revisionist interpretation of industrialization. The first of these, *World of Possibilities*, is a rich collection of essays edited by Sabel and Zeitlin. The quality of the individual contributions is high. It is disappointing, however, that the selection of case studies is not more wide-ranging. Yet again the major examples are Lyons silk weaving, Solingen cutlery, British and Italian engineering, the clichés of the literature. Given the confines of space, I will limit myself here to a discussion of the introductory essay, which by itself is

³ See P. Joyce, R. McKibben, the early influential statement by Raph Samuel.
⁴ Zeitlin's own articles.

enough to establish the importance of the collection (apologies to the other authors). Moving on from the agenda set in the *Past and Present* article Sabel and Zeitlin have produced what is surely one of the most thought-provoking manifestos to have appeared in recent years, at least as far as economic history is concerned. And yet this contribution, like its predecessor, is riven with tensions. Indeed, the ambiguities now seem to have shifted to a deeper, methodological level.

Sabel and Zeitlin clearly regret the fact that their earlier article was open to the first, more conventional reading suggested above. Their new introduction explicitly distances itself from the idea that flexible specialization was simply a product of conventional economic constraints. Their stress now is firmly on the question of how "complex political struggles" determine technological and economic choices. Thankfully, however, this does not mean a return to the simplistic political reductionism of the Spanish Armada variety. Instead, they engage in a searching examination of conventional models of economic decision-making or "agency". Their argument is above all with the kind of rational choice models that dominate mainstream economics and much economic history. Paradoxically, though orthodox economics is rigorously individualistic in approach and obsessively concerned with the problem of choice, its account of the individual economic actors and their decision-making is desperately impoverished. "Rational" economic agents are depicted as little more than calculating machines reflexively responding to the prevailing incentives and material conditions. The much-heralded extension offered by game theory simply adds the requirement that each calculating machine should take into account its interactions with other calculating machines. Sabel and Zeitlin set out to challenge this model. But like their earlier article, their Introduction does not speak with one voice. It, in fact, offers two rather different critiques of the rational choice paradigm. For sake of clarity I will attribute one of the two voices, the social scientific voice, to "Sabel", the other, the historical voice, to "Zeitlin".

The most straightforward critique of the rational choice paradigm is offered by "Sabel" in social scientific mode.⁵ Despite their announced intention of breaking with this mode of analysis he is drawn back to the conventional interpretation of the flexible specialization story: The "optimal" structure of economic organization will depend on conditions prevailing in

⁵ For an earlier version see C.F. Sabel, "Constitutional Ordering in Historical Context", in F.W. Scharpf, ed., *Games in Hierarchies and Networks. Analytical and Empirical Approaches to the Study of Governance Institutions* (Frankfurt, 1993), pp. 65-123. The Introductory essay under review, borrows this argument from page 20 onwards. For obvious reasons I will refer to this argument as Sabel's.

the economic environment. But what "Sabel" now focuses our attention on, is one particular characteristic of this environment, its "stability". If economic conditions are stable it will pay to organize production of a large-scale even if this comes at the expense of rigidity. By contrast, in unstable environments flexibility is trump. This can be achieved by decentralizing production into districts of small firms, linked together in sub-contracting networks capable of rapidly varying their output. The risk to which such networks are exposed is that they have collective action problems. Opportunism on the part of self-seeking "rational actors" will make it difficult for the industrial district as a whole to sustain adequate levels of investment in human or physical capital. Everyone has an incentive to free-ride on the efforts made by other members of the district, so no one will invest. So, flexible decentralized industrial districts are only viable if they can resolve this problem of collective action. The novelty of "Sabel's" argument lies in his invocation of politics - this time with a small "p" - as the solution to this problem of trust. According to "Sabel", the essential flaw in the rational choice argument lies in the simple-minded pessimism that insists that all actors will cheat at every opportunity. As "Sabel" points out, this is strangely at odds with our historical experience. Though opportunistic free riding does occur, the historical case studies collected in *World of Possibilities* and elsewhere suggest that communities of small producers have a clear collective understanding of the long-term damage this can do. This allows "Sabel" to persuade himself that economic actors are not simple-minded opportunistic maximizers after all. They pursue their self-interest, but they also reflect on who they are and the nature of their interests. "Sabel" shoe-horns this basic insight into the model of rational choice by arguing that actors actually make "choices about who they are". The emphasis here is on the word "choice". Sabel's expanded rational choice model would seem to envision a hierarchical model of consciousness in which a "superior" calculating element in the "agent's" personality chooses not only how to allocate scarce resources so as to best satisfy a given set of preferences, but actually chooses the set of preferences to satisfy. With this in place, it then becomes conceivable at least that actors may chose to create institutions which foster solidarity and community thereby stabilizing cooperative, communitarian identities. Cheating will not be eliminated, but it will be contained and it will be possible to label it as a deviation from the norm.

As described by this model, the behaviour of economic actors engaged in institution-building blurs the lines between economics and politics. Indeed, "Sabel" goes as far as to describe the self-organising activity of industrial

districts as a form of "constitutional ordering". "Sabel" thus offers a reconciliation of the two conflicting lines of argument in the original *Past and Present* article. If the "political" processes within industrial districts result in stable "constitutions", then the decentralized producers will be able to avoid the fatal downward spiral into chronic opportunism and cheating. Investment will remain high and the decentralized mode of production will flourish in those market niches to which it is best suited. In periods of general economic instability these districts will do especially well. Indeed, the flexible mode of production may even replace mass production as the dominant mode of organization. This synthesis makes sense in its own terms. However, one is left wondering whether the continuity between the two arguments, which hinges on the word "politics", is in fact more apparent than real. The version of politics offered by the first article was crude but it at least featured actors recognizable to historians: states, well-known propagandists such as Proudhon and class actors. By contrast, politics in "Sabel's" new model is depicted in the highly abstract terms of liberal political theory, as a process of deliberation between undifferentiated individuals. If the earlier argument was a wood cut, this is a water colour in the palest tones. "Sabel's" discussion may go a long way to satisfying the aficionados of rational choice, but the rest of us will surely be left wondering why one should even consider a model like this. Why should one begin to analyse social behaviour and the emergence of institutions by positing abstract individuals making "choices" between well-known alternatives, including, "rational choices about who they are"?

And the contortions of "Sabel's" argument are all the more incongruous when set alongside the first twenty pages of the introduction.⁶ Here we seemed to be promised a version of economic history that makes a clean break with the rational choice model. The first half of the introduction, which for ease of reference I will attribute to 'Zeitlin', the historical side of this partnership, explains eloquently why this is a grossly reductionist way to describe the activities of communities of traders, industrialists, engineers, craftsmen, workers, and the whole range of other agents involved in the process of industrialization. These are all, intelligent self-conscious actors who conduct their affairs in a reflexive way. They do not simply respond in a mechanical fashion to a given environment. Instead, as 'Zeitlin' shows, they

⁶ By contrast with the sections I have attributed to "Sabel", authorship in this case is harded to pin down. On the basis of circumstantial evidence I attribute these to "the historian Zeitlin". I have no privileged information as to the inner working of this authorial partnership so this "Zeitlin" should be treated as no more than a heuristic device. Obviously such personifications do not do justice to the complexities of collaboration. They are used here merely as heuristic labels.

struggle through a reciprocal process to make sense of themselves and their contexts. And, in acting, they have to consider the implications for themselves, as well as for the other agents and institutions in their environment. They are thus constantly involved in making worlds and do so under the premise that there is in fact more than one alternative at every moment. There is, in fact, a whole spectrum of possible outcomes, which ramify in many directions. And even the standards against which outcomes are judged are themselves subject to interpretation, implying as they do judgements about self and context.

This much richer description of economic activity makes the conventional rational choice description deeply unconvincing. And it allows 'Zeitlin' to unfold a fascinating discussion of the dialogic relationship between historians and their subjects. Narrative is the medium in which economic actors, like other historical actors, engage in the process of making sense of themselves. Narrative is also the medium of history. In the original *Past and Present* article, intellectuals and interpreters of the economic world were included in the discussion in their role as propagandists serving the interest groups struggling to shape the mode of production. In the new Introduction the tone is chastened. "Intellectuals", "economists" and "historians" are faulted not for their role in serving particular interests, but for their generic tendency to impose simplistic models on the sophistication of actors' self-understanding. The proper relation between historians and their subject is now dialogic. Self-reflexive economic historians should struggle as best they can to engage with the full complexity of the narratives produced by their subjects. Many of the most interesting contributions to the volume can indeed be read as *Bildungsromane*. They are emplotted not as timeless demonstrations of social scientific laws, but as novels in which characters, in this case industrial districts, "experiment with their energies and resources ... lose their illusions through adventures that test their powers and make them prey to cynicism, and in the end, victorious or beaten, ... are left reconciled to a world which is different for their successes and disappointments."⁷ This very accurately describes the study of the Lyons silk district by Cotterau, which lovingly details the struggle to assert the decentralized, highly-skilled process of manufacture against the seductive simplicity of mass production as exemplified by the cotton industry. It also describes Boch's exploration of the Solingen cutlery trade, which over the space of a century and a half, lost, regained and then lost again its methods of collective self-regulation.

⁷ p. 18.

This version of Sabel and Zeitlin's project thus seem to hold out the prospect of an economic history reunited with the mainstream of historiography, an economic history self-consciously working on the narratives produced by historical actors to produce narratives of its own. But what about the common accusation that acknowledging the narrative construction of history implies the acceptance that "anything goes"? This does follow if like Hayden White and others, one posits a radical separation between meaningful narratives and the world which they describe. By contrast, the sections of the introduction I am attributing to "Zeitlin" choose to follow the argumentative line suggested by phenomenology.⁸ This rejects the idea that "the world beyond the text" is merely a meaningless jumble of one thing after another. On the contrary, human perception even at the most basic level is constructed in time. And narratives produced by self-conscious human agents play a crucial role in organizing all complex actions and social interactions. Fundamentally, there is thus a continuity of form between the world that is real to us as humans and the narratives about the world produced by historians and social scientists. Clearly, there is a philosophical choice to be made here with profound methodological implications. "Zeitlin" is to be congratulated for facing it with such honesty and clarity.

Are the arguments offered by the 'social scientist Sabel' and 'the historian Zeitlin' actually contradictory? Perhaps, not. It might be fairer to say that they are talking about the same thing in different languages that are ultimately untranslatable. Sabel, as we have seen, envisions abstract egos rationally 'choosing who to be', in an effort to stabilize cooperative arrangements in the face of an unstable economic environment. This formulation reifies the calculating element in the individual's personality, the option between opportunistic and a cooperative preference sets, and most fundamentally the distinction between the agent and the environment in which it acts. By way of contrast one might cite an earlier passage from the introduction in which "Zeitlin" discusses the need to recognize the capacity of economic actors for "self-reflection, and the resulting interplay between the constitution of their interests and identity on the one hand and the context within which they operate on the other.' Now, 'Sabel' and 'Zeitlin' are clearly talking about the same thing. However, the differences in language and the underlying conception of the problem are immense. Is the process of 'self-reflection' adequately captured by Sabel's imaginary moment in which actors

⁸ Their guide through the complexities of the philosophical literature is D. Carr, "Narrative and the Real World: An Argument for Continuity", *History and Theory* Vol. XXV, 2 (1986), pp. 117-131.

consider a 'choice' between alternative sets of preferences, alternative versions of themselves? Is 'constituting' interests - interpreting the world, performatively invoking a subject and identifying that subject with an interest - is all this reducible to the act of making 'Sabel's' choice?

Similarly, the relationship between actor and environment is described in fundamentally different terms. 'Zeitlin' chooses the deliberately open-ended term "interplay" to describe the relationship between self-conscious subject and context. By contrast, in 'Sabel's' model, agents confront either a stable or an unstable "economic environment" and make their choices appropriately, an imaginary scene which starts by reifying the distinction between actor and context that 'Zeitlin' seems to want to undo. These differences are subtle, but they are at least as profound and perplexing as the ambiguities in the original *Past and Present* article.

There is, however, at least one point of agreement in the Introduction to *World of Possibilities*. But this is negative. In concentrating their efforts on an exploration of agency both Sabel and Zeitlin have marginalised any serious discussion of their more basic claim, that technology and economic constraints are profoundly malleable. In 'Sabel's' discussion of rational choice what is at issue are the general volatility of economic conditions and the "political" problem of constructing stable constitutions for industrial districts. The technical feasibility of organizing production on either a large or small scale is taken for granted. Similarly, in the section I have attributed to "Zeitlin", the discussion revolves around the interpretation of economic agency. One is left with an almost entirely voluntaristic account, with little sense of how to understand the constraints that act on agents in constructing their senses of self, the meaning of their actions and the institutional context in which they conduct business. As the authors state "nothing that we have learned ... leads us to believe that technology or the economy is less malleable than we originally thought." The revision of the 1985 argument lies entirely in the reassessment of agency. Since actors are self-reflexive they are supposedly aware of the infinite malleability of industrial technology. Only in exceptional cases will they therefore opt for either extreme of mass production or flexible specialization. In most cases they will tend to hedge their bets by combining elements of both types of production. The constraints that actually inhere in processes of production are no longer at the centre of attention. And a searching discussion of the two poles of their opposition between mass production and flexible specialization is thus avoided.

* p. 8.

It might also be remarked that in the transition from the *Past and Present* article to *World of Possibilities*, Sabel and Zeitlin's argument has lost its critical edge. The 1985 article described the destruction of flexible specialization with a real sense of loss. By contrast, the present volume is suffused with a panglossian tone. For all the sensitive rendition of creative agency there is little sense of the dislocation and pain that must have been involved in the process of adjustment. Perhaps the cases discussed in this volume justify this rather optimistic perspective on the process of industrialization. The examples are drawn from Western Europe and the United States. The impact of Fascism and Nazism, or even the truly wrenching modernization of the Western European economies after 1945 are not central topics of discussion. And yet, the methodological remarks on agency and its role in industrialization could clearly be applied to the study of grimmer places and periods. Indeed, it is very much of the moment to recast Stalin's collectivization drive and Soviet industrialization, long defended as a response to iron necessity, as acts of creative, if misguided and destructive agency.¹⁰ The issue is not the method, so much as the mode of emplotment. The form of the *Bildungsroman* chosen by 'Zeitlin' as his model, produces almost by definition a narrative of reconciliation. By contrast, the more grotesque industrial monuments of the 20th century - one thinks of Magnetogorsk, the White Sea Canal or the synthetic rubber facilities at Auschwitz - surely demand a darker emplotment in the tragic or nihilistic mode.

The ambiguities and tensions in the Sabel and Zeitlin project are worth exploring at such length because they help us to understand the enormous gulf that separates the two other books under discussion in this essay. Both have been influenced by the development of Sabel and Zeitlin's project since the 1980s. Scranton was a member of the working group on Historical Alternatives to Mass Production chaired by Sabel and Zeitlin in Paris and was prompted by his contacts there to expand his research from Philadelphia to an overview of flexible modes of production in the United States. Herrigel, for his part, claims Sabel and Zeitlin as prominent members of his "inner circle of friends and friendly critics". However, despite their common intellectual affiliation, these books are radically different. And the discrepancy in content and quality is too great simply to be explained by Scranton's much greater experience as a scholar.

¹⁰ Kotkin, *Magnetic Mountain* (1995)

Herrigel's book stands as a monument to social scientific hubris. This is a first book that attempts nothing less than a revision of the entire history of German industrialization since the mid 18th century. Along the way Herrigel has collected a useful bibliography and has many sharp things to say about the conventional historiography of German industrialization. However, the central historical argument of his book is crude and unsubstantiated. An enormous simplification is introduced at the start when Herrigel states blandly that the vast bulk of German industrial production can be treated as flexible and specialized at least until the mid 20th century. This relieves him of any need to seriously consider the development of productive processes as such, a tendency that we have observed also in Sabel and Zeitlin's more recent work. Instead, Herrigel follows Sabel in focussing on problems of industrial organization. His target is the literature on German industrialization, which has tended to focus on the interaction between giant industrial corporations, the universal banks that emerged in Germany in the second half of the 19th century and the nation state. The mass of small- and medium-sized firms, long ignored by this historiography, has tended to be dismissed either as doomed to extinction or as a peripheral dependents of the industrial and technical core. By contrast, Herrigel joins the growing band of historian who stress that, in fact, German industrialization has been characterized not simply by the dominance of size and power, but by a peculiar coexistence of industrial and financial giants with a dense undergrowth of industrial workshops and regional financial and commercial institutions.¹¹

This empirical observation will hardly be controversial, nor will Herrigel's critique of the rather old-fashioned historiography. What is harder to swallow is the reinterpretation he proposes. He starts by imposing on German industrial history a dualistic map dividing the country into regions supposedly dominated either by large-scale, highly integrated ("autarchic") firms or, on the other hand, by decentralized networks of industrial production. There then follows an extraordinary exercise in ultra-determinism. A conventional economic historian looking at the distribution of firm size across industries and regions might start by asking about the technical nature of production processes. Regions that due to the availability of raw materials or sources of energy favoured heavy industrial processes would be home to corporate giants. Areas with dense consumer markets and

¹¹ For a brilliant study in this vein see H. Berghoff *Zwischen Kleinstadt und Weltmarkt. Hohner und die Mundharmonika Unternehmensgeschichte als Gesellschaftsgeschichte (1857-1961)* (1997).

less coal might be expected to favour light manufacturing at smaller scale and with smaller firms. An account, which stressed the importance of contingent social and political institutions, might focus on networks of cooperation and craft tradition of the kind so dear to Sabel and Zeitlin. But Herrigel rejects both these interpretive possibilities. Unsurprisingly, given his influences, he allows technology to play no independent role. More surprising is the way in which his argument diminishes the importance of the self-organising capacities of economic actors. Ultimately, for Herrigel, there is a single common factor which decides the nature of economic governance in every area of the German economy right through the 19th century and well into the 20th: the legal structure of land holding in the 18th century. It is this single variable that decides whether or not a region exhibits an abundance of proto-industrial activity and traditional crafts. And it is this in turn which by the mid 19th century decides the nature of industrial development. Areas of land partition favoured proto-industrial activity, which led to decentralized networks of production. Areas characterized by large land holding and landless labour become the preferred location for large-scale, autarchic enterprises.

This is a bold claim. Why should the pattern of 18th century economic development have been so dominant for so long? Labour was highly mobile. Furthermore, the creative entrepreneurs invoked by Sabel and Zeitlin were surely capable of assembling pools of industrial resources, even in areas where none previously existed. To sustain his hypothesis Herrigel would therefore need to engage in an extensive comparative study of German regional economic development. If he had done this, even if his initial hypothesis had not stood the test, he would have performed a great service. However, Herrigel offers nothing of the sort. The historical sections of this book are not based on original research and there is not even a sustained effort to exploit the published statistics of the 19th century, to make the case. The tables and figures, which are provided, are lifted with minimal modification from well-known secondary literature. And the quality of the narrative argument does not compensate for this lack of quantitative support. One might expect Herrigel to concentrate his argumentative effort on the 'exceptional' instances that might bear out his hypothesis. In regions he has labelled autarchic, Herrigel must surely hope to show that industrial activity such as light manufacturing, which was elsewhere carried on in a decentralized fashion, was actually organized in exceptionally large units. Conversely, in regions he has labelled decentralized he surely needs to

account for the appearance of some exceptionally large corporations, such as the constituent elements of the IG Farben chemicals corporation. Unfortunately, neither case is explored in a convincing fashion.

What Herrigel is above all concerned with are questions of 'industrial governance'. The term 'governance' is chosen to indicate the blurring of lines between politics and economics as suggested by Sabel. This is clearly a good idea. It is crucial to recognize the role played by supposedly non-political actors in the production and reproduction of social and economic order. However, we have already seen how slippery this argument can become, tending on the one hand to simplistic determinism, or on the other towards a concept of politics so generalized as to be almost without meaning. And Herrigel's usage exemplifies all of these dangers. The connections between the governance needs of industry and the broader political sphere are constantly invoked but never carefully analysed. The classic questions about the relative autonomy of politics and economic interests are dodged. In some sections Herrigel's interpretation is almost functionalist. The Bismarckian constitution of 1871, for instance, was constructed, in Herrigel's words, to balance "political and industrial autonomy with greater national standardization". The blurring of the line here obscures the fact that economic interests played no significant role in the drafting of the German constitutional settlement. As far as local business communities were concerned the federalist nature of the constitution was therefore a coincidental outcome of an autonomous political processes. The correlation between economic interests and political outcomes is spurious. In any case, Herrigel's economism is not consistent. The chapters of the book and their sub-sections are neatly divided along political rather than economic lines: 1871-1914, 1918-1933 etc. And particularly in the interwar period the causal flow of Herrigel's argument is reversed, now it is the abrupt centralization of political power accomplished by the Weimar Republic that apparently disrupted local structures of economic governance. More obvious economic problems take second place. Understanding the shifting and blurry boundary between 'the economic' and 'the political' is an important project. However, as Herrigel demonstrates, it is a risky business fraught with the dangers of imprecision, sloppy argument, or one or other form of determinism.

By contrast, Scranton's book is a splendid vindication of many facets of the flexible specialization research programme. This study of American industrial history in the period 1865-1925 is surely the first truly satisfying demonstration of the new approach to industrial history. And what an

enormous difference it makes! The United States, has, of course, always served as the exemplar of mass production. There is the archetype of Ford, but also the narrative of US economic history produced by Alfred Chandler and his school, which centers on the triumphant rise of giant firms capable of managing the exploitation of economies of scale. Scranton sets out to revise fundamentally this influential image of the U.S. industrial economy. And he succeeds admirably. In doing so he draws both on his intimate knowledge of specialty manufacturing in Philadelphia and a decade spent in pursuit of case studies across the manufacturing regions of the East Coast and the Mid West. To supplement these marvellously detailed vignettes he draws on America's unrivalled repertoire of industrial statistics. This quantitative component is crucial because it allows Scranton to overcome two of the perennial weaknesses of the flexible specialization literature: its reliance on a surprisingly limited range of illustrative examples; and its failure to specify in quantitative terms the shifting balance between specialized and mass production. In describing industrial districts Sabel, Zeitlin and Herrigel are too fond of such evocative but vague terms as 'vital', 'viable' and 'flourishing'. Scranton for the first time gives us a quantified overview of an entire industrial economy, allowing us to weigh the importance of individual case studies and their trajectory over time. Clearly the classification and interpretation of such data is no simple matter. However, what emerges is that, even on a conservative estimate, specialized and small-batch production accounted for almost half of the value produced by American industry in 1907. By the early 1920s the share of bulk producers had increased, but largely at the expense of branches of industry employing a mixture of productive methods.²² Dedicated specialist sectors continued to hold their own with value added growing in line with that of the bulk producers. The success of Ford did lead to a staggering surge in productivity in the motor vehicles industry. But this stands out as a singular exception.

This is a fundamental result, which should change the way in which we understand the process of industrialization. Indeed, given the easy availability of America's remarkable industrial statistics it is a point that should have been made long ago. In this regard Scranton deserves the credit that goes to a prospector. Where he demonstrates his ability to "add value" as a historian is in his handling of the case studies. Here, he has beautifully realized the narrativist agenda for economic history. In a series of captivating

²² It is interesting that Scranton prefers the more general term "bulk production" to contrast with specialization, rather than the misleadingly specific mass production.

studies Scranton traces the activities of furniture makers in Grand Rapids, carpet weavers in Philadelphia, jewellers in Providence, printers in New York and mechanical engineers in Cincinnati, amongst others. In each case idiosyncratic individuals are presented in their context, building integrated firms or labouring to develop a vibrant industrial district. Their activities are related also to the vicissitudes of the business cycle, the ebb and flow of trade union organization and the increasingly intrusive activities of state and federal politics. Furthermore, at every moment the broader quantitative significance of their activities is kept in view. The censuses of industrial production collected in America since the 1850s allow the value of output, total costs, wage bill, employment figures and even profits to be calculated down to the level of individual cities.

In broader terms Scranton's study is, of course, a triumphant vindication of Sabel and Zeitlin's argument. Even in the United States alternatives to mass production survived profitably into the 20th century and Scranton gives good reasons for believing that they continued to do so even after 1945. The results of the case studies, however, give one pause for thought. The over-excited description of industrial self-governance as "constitutional ordering" is supported by only a minority of Scranton's cases. In most industrial districts, attempts to create institutions to provide common services were modest and prone to break down. This fragility was due less to concerted cheating than to a simple lack of interest. The failure to sustain institutions for training skilled labour was a particularly weak point, even in the more prosperous areas. The sense of connection to national politics was tenuous at best. And the response to labour organization, in almost all cases, was one of straight-forward resistance. The pattern of prosperity and survival also becomes somewhat clearer from Scranton's book. Flexible producers of consumer goods had a harder time than those that catered to the needs of other producers. And producers of durables did better than producers of non-durable goods. The really spectacular success stories were the producers of specialized capital goods who combined a flexible, skill-based approach to production with substantial corporate organization: the machine tool firms of Cincinnati and Providence, the giant electrical engineering corporations such as General Electric and Westinghouse, or in our present day the Boeing corporation. Collective political action did matter, but hardly deserves the absolute centrality accorded it by Sabel and Zeitlin.

What *did* matter was technology. Scranton refuses to follow Sabel, Zeitlin and Co. in their increasingly cavalier approach to technical constraints.

It was technology not politics that was the obsessive concern of most of Scranton's engineers and business-men. Even in the relatively low-tech consumer goods industries it was minute issues of style and production technique that made all the difference. There were, in fact, few things that communities of specialist manufacturers and their workers could agree on other than the value of technology, technique and style. As they well appreciated, it was the minute differences of product or production process that decided their commercial and technical fate. And these were the things on which solidarity and community could be built, provided of course that originality was acknowledged and rewarded. Of course, technology was to some degree malleable. But it was understanding and mastering both the potential and the limits of this malleability that made all the difference. Not surprisingly, technology thus regularly and rightfully features in Scranton's account as a causal factor in its own right. What, for instance, saved furniture manufacturers from the degeneration into exploitation and sweat-shopping suffered by the jewellery trade? As Scranton shows, it was the fact that the reproduction of furniture fashions took months rather than days, that allowed Grand Rapids to prosper and condemned Providence jewellers to penury. Of course it took "political" organization not to mention commercial savvy as well, but it was the physical properties of materials – wood versus silver - and the important differences in techniques - in this case the time taken to cure wood and to produce quality lacquering and carving - that allowed producers to mount an effective defence against ruinous competition.

This resistance of the material world and the technologies for transforming it are not absolute determinants of industrial production. Materials such as wood can be modified through the use of veneers or the creation of 'processed' wood materials. Alternatively, customers can be persuaded to purchase furniture made of less delicate materials, such as metal or plastic. But, since the medium of history is time and overcoming such constraints - manipulating the "malleable" technology - will, at least, take time, technology simply cannot be ignored.¹³ Technical constraints are very real. But, what we have learned is that efforts to overcome these constraints do not point to mass production as a single solution. Surely it was this teleological assumption that was most objectionable in the conventional view of industrial development. It was this which provoked Sabel and Zeitlin into formulating a vision of industrial history which now seems in danger of

¹³ It may in fact be a constraint in a more ultimate sense, though we may not have time to find out.

excising technology altogether. And yet, once we have cured ourselves of the delusion that technology is simpler than the social world and that it provides the key to unlocking the entire complexity of industrial development, we can surely allow ourselves to readmit the material as a profoundly real constraint.