Manufacturing in the Metropolis: the Dynamism and Dynamics of Parisian Industry at the Mid-Nineteenth Century

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I

"We are a City of Philosophers," Samuel Johnson wrote of London in 1776, "we work with our Heads, and make the Boobies of Birmingham work for us with their hands" [1]. Johnson has not been alone in underestimating the importance of industries in metropolitan economies. Since these industries apparently catered essentially to the local, and above all elite, market, historians have long treated manufacturing there less as a motor of growth than as a derivative of it. The kind of goods manufactured by many of the industries in nineteenth-century metropolises such as London or Paris is a further reason why, until very recently at least, industries there have not been treated as important. It may also be that scholars have been little inclined to examine such industries given their doubly discrete character: like hermit crabs they unobtrusively insert themselves in buildings and courtyards which previously served other purposes and, given the small size and high turnover of most enterprises, they leave but rare direct traces in archives. Their reluctance appeared all the more justified since the more heavily capitalized industries once found in city centres have always been subject to centripetal forces which pull them to the periphery and, eventually, beyond city walls, beyond the pale [2].

[1] Cited in P. J. Corfield, *The Impact of English Towns 1700-1800* (Oxford: Oxford University Press, 1982) p. 94.

[2] A number of students of nineteenth-century London, for example, have recently insisted that London's role in the British economy has been seriously underestimated but they also claim that its importance stemmed less from its manufacturing sector than from the exceptional wealth of its elites and the precocious development of its service

It is unlikely, though, that these are powerful enough reasons to explain why the historiography of metropolitan manufacturing is the poor relation of the rich work that continues to be done on nineteenth-century industrialization processes in general. It is unlikely because just a cursory glance at occupational censuses or even at some of the literature on large cities is enough to reveal some of the importance of metropolitan manufacturing in urban, regional and even national economies. Thus in the mid-nineteenth century half of New York's workforce was engaged in industrial work, as was just under half of London's [3]. A closer examination reveals that a vast gamut of products was made, that industrial structures were intricate, and that occupational pyramids, with entrepreneurs and merchants at the apex, skilled artisans below, and semi-skilled and unskilled at the base were becoming more rather than less complex. A more careful reading, indeed, reveals there were parallel patterns in both structures and the changes many industries were undergoing and especially in the increasing power of middlemen and product and process innovation. It also shows that in every large city there were two types of industry, interrelated but not always subject to the same locational forces. On the one hand, there were face-to-face industries [4], lightly capitalized, labour-intensive, producing goods generally small in bulk, little dependent on coal for fuel or power but subject to centrifugal forces and thus highly clustered in city centres.

industries, and especially banking, finance and the professions. See C.H. Lee, "Regional Growth and Structural Change in Victorian Britain," *Economic History Review* second series 34 (1981): 438-52; Gareth Stedman Jones, "L'importance de Londres dans l'histoire de la Grande-Bretagne contemporaine," *Genèses* 1(1990): 47-57 and L.D. Schwarz, *London in the Age of Industrialisation. Entrepreneurs, Labour Force and Living Conditions* (Cambridge: Cambridge University Press, 1992) pp. 11-14.

[3] Sean Wilentz, *Chants Democratic. New York City and the Rise of the American Working Class, 1788-1850* (New York: Oxford University Press, 1985) table X, p. 403 and François Bédarida, "Londres au milieu du XIXe siècle: une analyse de structure sociale," *Annales ESC* 23(1969): 268-95.

[4] For reasons that will become clear, we shall avoid using the normative terms "traditional" and "modern" industries. Our bipartite division does not mean, of course, that industries were independent of one another and still less that the sepration was always clear-cut.

On the other, large cities also sheltered more capital-intensive industries, especially engineering, shipbuilding, chemicals, and sugar refining, where firm size was often (though not always) large and production processes more mechanized and were more subject to centripetal forces as high urban rents and surface transport costs pushed them from the core to the periphery with its open spaces, lower costs and transport nodes [5].

There must be other reasons, then, why students of the city have too often failed to accord manufacturing the attention it deserves. One of these is undoubtedly the kind of problematics that have been predominant in urban studies and which have led scholars to pay more attention to residential and neighbourhood patterns, and immigrant and urban cultures, to emphasize, in short, as Manuel Castells pointed out nearly twenty years ago [6], lived space rather than production space in general and industrial space in particular. Studies of nineteenth-century Paris, for instance, undoubtedly influenced by the image of the city presented by Louis Chevalier, have given much greater attention to demographic than to structural urbanization and, when the changing use of space has been examined, it has generally been through the residential and investment patterns of property-owners or the public works policies of the city rather than through the ways in which industries colonized urban space.

[5] A reading of recent studies on New York, Philadelphia, London and Montreal in the first two-thirds of the nineteenth century serves to reveal these patterns. See Richard B. Stott, *Workers in the Metropolis. Class, Ethnicity and Youth in Antebellum New York* (Ithaca: Cornell University Press, 1990) pp. 10-33; Sean Wilentz, *Chants Democratic...* pp. 107-142; Peter Hall, *The Industries of London since 1861* (London: Hutchinson, 1961); L. D. Schwarz, *London in the Age of Industrialisation...*, especially pp. 179-207; Bruce Laurie and Mark Schmitz, "Manufacturing and Productivity: The Making of an Industrial Base, Philadelphia, 1850-1880," pp. 43-92 in Theodore Hershberg (ed.), *Philadelphia. Work, Space, Family and Group Experience in the Nineteenth Century* (New York: Oxford University Press, 1981); Philip Scranton, *Proprietary Capitalism. The Textile Manufacture at Philadelphia, 1800-1885* (Cambridge: Cambridge University Press, 1983), especially pp. 414-22; Diane Lindstrom, *Economic Development in the Philadelphia Region, 1810-1850* (New York: Columbia University Press, 1978); Paul-André Linteau and Jean-Claude Robert, "Montréal au XIXe siècle: bilan d'une recherche," *Urban History Review/Revue d'histoire urbaine* 13 (1985): 207-23.

[6] *Sociologie de l'espace industriel* (Paris: Anthropos, 1975) p. 7.

Similarly, relatively little attention has been accorded to the changing place of the capital in the spatial division of labour, be it national or international [7].

There is an even more compelling reason which may help explain and, in view of its importance, it may even justify why scholars have been reluctant to study metropolitan manufacturing: the source but, above all, the complex conceptual difficulties that arise in any attempt to determine the place these industries occupy in wider processes [8]. As work on protoindustrialization has reminded us, regional and urban economic processes can only be understood in the wider context of demographic and cultural processes and of the larger forces of capitalism. Unfortunately, studying cities, and regions in general, raises serious problems when scholars attempt to determine relationships with other cities in urban networks, or with other regions in national economies [9]. How, for instance, can we explain marked disparities in the spatial distribution of economic activity and wealth? Does the growth of manufacturing in one area have beneficial forward and backward linkages for other regions or does it reflect unequal political and economic power and take place to the detriment of other areas? While many scholars subscribe to the first alternative, others, and not only those who espouse some variant of dependency

[7] There are inevitably some exceptions to this general rule. In the context of studies dealing with wider problematics, two fine scholars of nineteenth-century Paris have already suggested that the changing industrial base was important and merits closer study: Adeline Daumard, *La bourgeoisie parisienne de 1815 à 1848* (Paris: SEVPEN, 1963) pp. 416-52 and, above all, Jeanne Gaillard, *Paris la ville, 1852-1870* (Paris: Honoré Champion, 1977) pp. 372-444.

[8] Paul Bairoch concludes his analysis of cities in economic development *(Cities and Economic Development* (Chicago: University of Chicago Press, 1988) pp. 330-16) thus: "while there are some certainties in this area, there are also some unknowns. In fact the unknowns outnumber the certainties. The uncertainty is explained by the complexity and multiplicity of the factors involved, coupled with the relative scarcity of studies devoted to the question."

[9] For a stimulating recent discussion of the problems posed in any analysis of regional industrialization, see Pat Hudson, "Introduction," pp. 5-38 in *idem* (ed.), *Regions and Industries. A Perspective on the Industrial Revolution in Britain* (Cambridge: Cambridge University Press, 1990).

theory, are critical of the impact of cities, and especially large ones, on the rest of the economy [10].

The case of Paris in the first half of the nineteenth century illustrates these methodological and historiographical problems. The study of manufacturing there is hindered, first of all, by the difficulty of determining the spatial limits to the capital's industries. Manufacturing did not stop at city gates. Already from the 1820s onwards an accelerating industrialization, that was linked to the needs of Paris, was taking place in the inner suburbs, especially those just to the north of city boundaries. At the same time, many Parisian manufacturers also employed outworkers in the provinces and, more importantly, manufacturing in the capital was part of a complex division of labour wherein Paris specialized in finishing processes that required the skills and flair which were one of the city's great strengths but upstream processes were usually carried out in the provinces [11]. In many industries, then, earlier processes were carried out either in the Paris basin [12] or in centres even further away [13]. Our understanding is hampered, secondly, by current orthodoxy on the

[10] Michael Lipton, for example, has argued that third-world urbanization is the root cause of continuing underdevelopment and that the most important struggle in the Third World is not that between workers and capitalists or even between national and foreign interests but between urban and rural classes. *Why Poor People Stay Poor: Urban Bias in World Development* (Cambridge (Mass.): Harvard University Press, 1977) and "Urban Bias Revisited," *Journal of Development Studies* 20(1984): 139-66. Another scholar, however, has gone to the other extreme and asserted that urban industries and economies are epiphenomena, mere reflections of wider capitalist processes. Peter Saunders, *Social Theory and the Urban Question* (New York: Holmes and Meier, 1981) p. 13.

[11] "La fabrique de Paris," wrote Augustin Cochin *(Paris, sa population, son industrie* (Paris: brochure, 1864) p. 78), "est pour ainsi dire divisée en deux ateliers, l'un en province où se font les gros travaux, l'autre à Paris où on ajuste, on achève, on donne le dernier fini." We still do not know enough about this spatial dispersion. The classic and best documented case of this spreading merchant control is that of Lyonnais silk merchants: by 1872 only a quarter of Jacquard looms in the south-eastern silk industry were actually in Lyon itself and the rest were scattered within a 200-kilometer radius of the city. Alain Beltran and Pascal Griset, *La croissance économique de la France 1815-1914* (Paris: Armand Colin, 1988). Some indication of the importance and character of industry in the Paris basin can be gleaned from the military reconnaissances made, with a view to preparing maps for the defence of the capital, from the 1820s onwards. Series RM, *Service historique de l'armée de terre* (Vincennes).

importance of industries in the capital at this time. Many of those who have discussed manufactures there have argued that the first half of the nineteenth century constitutes a hiatus, preceded by a period during the First Empire when "modern" industry, such as cotton spinning, was implanted only to wither after the fall of Napoleon [14], and succeeded by the Second Empire when, with the completion of the rail network and massive public works in the city, industries such as ready-made clothes and shoes and engineering again began to expand as they would do still more in the last decades of the century as the knowledge-centred Second Industrial Revolution reputedly called upon the kind of skills available in large cities such as Paris [15]. There are two principal reasons why many historians believe that in the first half of the nineteenth century Parisian industries marked time. One is that they have adopted what we will argue are inappropriate criteria — firm size, mechanization, use of mineral fuels and production for mass markets — to determine the progress of industry and treated face-to-face industries as the «traditional» or at least secondary element in a so-called dual industrial economy. The

[12] Thus, for example, a number of communes in the Oise department were locked in a complex division of labour with the capital. Fan-making employed only 565 workers in the capital in 1847 but a further 2,000 in half a dozen communes in the Oise, all of whom were engaged in making fan frames. Chambre de commerce de Paris, *Statistique de l'industrie à Paris, résultant de l'enquête faite par la Chambre de commerce pour les années 1847-1848* (Paris: Chambre de commerce, 1851) II p. 791-4). A similar division was found in staymaking and ivory carving, where preliminary processes were carried out in Paris, intermediary work in the Oise and finishing in the capital. Chambre de commerce de Paris, *Statistique de l'industrie à Paris en 1860* (Paris: Chambre de commerce, 1864) p. 936.

[13] While clocks were a major industry and export, very few articles were manufactured entirely in Paris because the principal elements in movements were made in French and Swiss centres such as Badevel, Beaucourt, Berne, Montbéliard and Saint-Nicolas d'Aliermont. The principal tasks executed in Paris were the assembly of the mechanisms and, above all, making the elaborate bronze cases. *Statistique de l'industrie... 1847-1848,* II pp. 809-12 and *Statistique de l'industrie...en 1860* p. 743. Similarly, the porcelain industry occupied nearly 3,000 Parisian workers but the only porcelain objects made in the city were small numbers of figurines. Porcelain was decorated in the capital but manufactured in the Seine, Allier, Cher, and Haute-Vienne. *Statistique de l'industrie... 1847-1848,* II, p. 535 and Statistique de l'industrie...en 1860, p. 659.

[14] This is the argument advanced, most notably, by Bertrand Gille (*Documents sur l'état de l'industrie et du commerce de Paris et du département de la Seine (1778-1810) publiés avec*

clearest instance of the use of such measures is in the well-known study of the industrial geography of Paris published under the direction of Maurice Daumas and Jacques Payen in 1976. To carry out their detailed industrial census they adopted criterion for inclusion of a minimum of fifty workers before 1850 and of a hundred thereafter, thereby excluding altogether the great bulk of firms and industries in the capital [16]. A further reason is that, influenced by the fact that in the nineteenth century «modern» industries grew up on or near coalfields or at transport hubs, scholars have emphasized physical resource endowment as a location factor rather than the kind of socially-produced comparative advantage that accrues from the economies of agglomeration, industrial diversity and division of labour in a large city [17].

We have rehearsed these historiographical and methodological problems in order not only to explain the relative poverty of work on metropolitan manufacturing but also to establish the limits to what any study of Parisian industries in the first half of the nineteenth century can do. Our problematic is nevertheless an overtly ambitious one. We propose, indeed, to attempt three things: first, to determine the weight and dynamism of manufacturing in the French capital, but only, for evident reasons of simplifying our task, those industries within the city itself; second, to establish at least something of their

une étude sur les essais d'industrialisation de Paris sous la Révolution et l'Empire (Paris: Imprimerie municipale, 1963), pp. 14 and 23-5) and Jean Tulard ("Napoléon et l'industrie parisienne," *Journal des savants* (April-June 1963): 117-24 and *idem, Paris et son administration (1800-1830)* (Paris: Ville de Paris, Commission des travaux historiques, 1976), pp. 231-242).

[15] The argument that the so-called Second Industrial Revolution brought renewed industrial growth to large cities has been put forward by, among others, Paul Hohenberg and Lynn Hollen Lees, *The Making of Urban Europe 1000-1950* (Cambridge: Cambridge University Press, 1985) pp. 205-6 and 317-8.

[16] *Evolution de la géographie industrielle de Paris et de sa proche banlieue au XIX siècle* (Paris: Centre de documentation d'histoire des techniques, 1976) 2 vols. plus atlas.

[17] As Jane Jacobs (*The Economy of Cities* (New York: Vintage Books, 1970) pp. 140-44) long ago pointed out: "cities simply cannot be 'explained' by their location or other given resources. Their existence as cities and the sources of their growth lie within themselves, in the processes and growth systems that go on within them. Cities are not ordained; they are wholly existential."

importance in wider processes and, finally, to uncover the dynamics of change within the sector. To do so we adopt a three-fold strategy. The first is to attempt a deconstruction of long-standing orthodoxies on metropolitan industries, an obvious first step in any research because historical discourse is always both an entry point to understanding and a barrier to other understandings by calling upon the results of recent work on contemporary metropolises and rethinking about the character of nineteenth-century industrialization processes. The second is to use industrial and occupational censuses, available for the mid-century but regrettably not before, as well as other less global sources, to establish the importance and the dynamism of Parisian manufactures. The third is to adopt a dual approach through supply and demand factors in order to determine the principal motors of change.

II

Over the past two decades developments both in contemporary Western economies and in research on the process of industrialization have led to a dismantling of older paradigms on face-to-face industries, their role in promoting growth, and their destiny in linear schemes of development. Two facets of this recent work encourage us to reassess the dynamism and dynamics of Parisian industries. On the one hand, rethinking by economists and geographers on the comparative advantages of face-to-face manufacturing in regions and cities incites us to believe Parisian industries may long have been more dynamic than has generally been conceded. On the other, the results of research and debates on nineteenth-century industrialization provide added reason for thinking that such dynamism may also have been important in wider processes than just urban growth and lived space in the city.

Face-to-face industries, small firms, subcontracting and outwork have long been regarded as anachronistic features of the industrial landscape, at worst regressive and exploitative of workers, at best

subordinate elements in dual economies whose dynamism stemmed from the "modern" sector. In both liberal and Marxist economic thinking on future patterns of growth these forms were condemned to eventual extinction as production was rationalized and centralized. As it turns out, however, they have not only steadfastly refused to heed economists' prophecies as to their withering away but have even gained strength in recent decades. Instead of being relegated to unprogressive or declining sectors, indeed, they are to be found in some of the most sophisticated industrial sectors and to be important in the most rapidly growing economies [18]. Rather than being merely archaic and vestigial, then, they have proved resilient and dynamic. Observers over the past century have periodically expressed surprise at the longevity of these forms. In the 1960s some even attempted to integrate them into models that ascribed them a secondary role in dual economies. Only in the past decade, though, have attempts been made to devise growth models in which face-to-face industries play a more independent and positive role in industrial economies past and present.

Two M.I.T. economists, Michael J. Piore and Charles Sabel, have been in the forefront of these efforts. Especially significant for our purposes is their identification of what they term areas of flexible specialization [19]. The economies of such regions and cities, which

[18] For overviews see Suzanne Berger and Michael J. Piore, *Dualism and Discontinuity in Industrial Societies* (Cambridge: Cambridge University Press, 1980); Commission internationale d'histoire des mouvements sociaux et des structures sociales, *Petite entreprise et croissance industrielle dans le monde aux XIXe et XXe siècles* (Paris: Editions du CNRS, 1981), especially Stuart Bruchey's comments pp. 39-48; the work of Sebastiano Brusco on Emilia Romagna, as for instance "The Emilian Model: Productive Decentralisation and Social Integration," *Cambridge Journal of Economics* 6(1982): 167-84 and the overview of the Third Italy in Allen J. Scott, *New Industrial Spaces. Flexible Production Organization and Regional Development in North America and Western Europe* (London: Pion, 1988) pp. 43-59; the discussion of recent work on subcontracting in John Holmes, "The Organization and Locational Structure of Production and Subcontracting," pp. 80-106 in Allen J. Scott and Michael Storper (eds.), *Production, Work, Territory. The Geographical Anatomy of Industrial Capitalism* (London: Allen and Unwin, 1986).

[19] Michael J. Piore and Charles Sabel, *Les chemins de la prospérité. De la production de masse à la spécialisation souple* (Paris: Hachette, 1989) especially pp. 45-52 and Charles

emerged, they argue, in the late eighteenth century, were structured by face-to-face industry and by small enterprises whose numbers multiplied over time, as well as by larger firms. Such areas have long been dynamic and may thus be regarded as a successful alternative to the mass production and industrial centralization which are usually treated as the motors of industrial growth. They all share three related characteristics. One is that they produce a wide range of goods, usually in short runs, for highly volatile markets. The capacity of entrepreneurs and merchants to respond to and even anticipate demand changes is therefore one of the keys to understanding these areas' continuing success. A second characteristic is that industries in these regions are innovative not just in terms of products but also, and this is related, of course, to product changes, in terms of manufacturing processes themselves. Both large and small firms constantly introduce flexible labour-using techniques. The most telling example of such techniques which Piore and Sabel give is the highly adaptable Jacquard loom adopted in nineteenth-century silk-weaving. The final common feature is that these areas benefit not just from interrelations between firms but also, and especially, from a common industrial culture which promotes entrepreneurial renewal and permanent innovation[20]. Numerous instances of this kind of region can be cited: the Lyonnais silk industry; the textiles of Saint-Etienne and Alsace; the cutlery and related industries of Sheffield, Remscheid and Solingen; the brassware, buckles, buttons, jewellery and 'toy' trades of Birmingham.

Sabel and Jonathan Zeitlin, "Historical Alternatives to Mass Production: Politics, Markets and Technology in Nineteenth-Century Industrialisation," *Past and Present* 108(1985): 133-76. Piore and Sabel not only discern a renewed vitality in areas of flexible specialization but (*Les chemins de la prospérité...*, p. 22) a second industrial divide, a second Industrial Revolution, in which these regions are playing a crucial role. We should add that nearly a quarter of a century ago Jane Jacobs stressed not just the dynamic economic functions of cities but even insisted on the advantages conferred by flexible specialization in industry, which she termed "differentiated production". *The Economy of Cities...*, pp. 237-45.

[20] In their writings they lay somewhat greater emphasis on the creation of regional institutions which limit excessive competition and promote industrial harmony. This seems to us a less felicitous suggestion.

Rethinking the comparative advantages of manufacturing in large cities, though, has been carried furthest by another scholar, the geographer Allen J. Scott. He bases his analyses of metropolitan manufacturing on his drawing together of the scattered monographic literature of industries in different urban settings, on his own detailed research on the clothing trades in contemporary Los Angeles and the computer and electronics industries of Orange County in California, as well as on his willingness and ability to conceptualize metropolitan manufacturing within wider processes[21]. The departure point of the tightly argued synthesis he presents, which in many respects parallels the conclusions proposed by Piore and Sabel, is his refusal to accept location theory which explains marked disparities in the spatial distribution of economic activities and wealth only by the uneven dispersal of basic resources and transport facilities. He rightly insists that comparative advantage is also socially and historically induced.

As do others, he stresses that the most successful metropolitan industries produce consumer goods for uncertain and rapidly changing markets and that their competitive advantage stems from short production runs and flexibility. He also emphasizes that considerable benefits accrue from economies of agglomeration and especially the vertical disintegration, that is the social division of labour between firms, which facilitates the exchange of services and market intelligence, and the production of goods — clothing is one instance — which require numerous material inputs and proximity to potential buyers. He insists, finally, that features of urban face-to-face

[21] His most significant writings on metropolitan manufacturing are "Locational Patterns and Dynamics of Industrial Activity in the Modern Metropolis,» *Urban Studies* 19(1982): 111-41; "Industrial Organization and the Logic of Intra-Metropolitan Location: I. Theoretical Considerations," *Economic Geography* 59(1983): 233-50; "Industrial Organization and the Logic of Intra-Metropolitan Location: II. A Case Study of the Printed Circuits Industry in the Greater Los Angeles Region," *Economic Geography* 59(1983): 343-67; "Industrial Organization and the Logic of Intra-Metropolitan Location: III. A Case Study of the Women's Dress Industry in the Greater Los Angeles Region," *Economic Geography* 60(1984): 3-27; "Location Processes, Urbanization, and Territorial Development: An Exploratory Essay," *Environment and Planning* A 17(1985); 497-501; and, above all, *Metropolis: From the Division of Labor to Urban Form* (Berkeley: University of California Press, 1988).

industries which have long been regarded as the most regressive are really signs of vitality. Thus urban industries are labour intensive and resist capital deepening not because of inertia but because they involve intricate and delicate production processes. Similarly, while fragmentation of tasks and recourse to subcontracting may be exploitative, they are also effective entrepreneurial strategies since they enable manufacturers to counter the high rents and costs of living and upward pressures on wages which are the principal disadvantages of metropolitan sites. In this process subcontractors play crucial rather than marginal roles. Low profits and fierce competition among them serve to hold down wages and even labour militancy. Subcontracting also allows entrepreneurs to pool their risks in volatile markets[22], while at the same time offering them the flexibility to expand production in periods of buoyant demand. Most importantly, perhaps, by mobilizing labour which, for reasons of health, age or ascribed gender roles, would not normally be available, subcontractors expand the labour pool to include greater numbers of part-time and female workers. Scott applies his analysis to present-day metropolises. There is no reason, though, why his insights, like those of Piore and Sabel, cannot be applied to the similarly structured nineteenth-century metropolis and earlier industrialization processes.

The ways in which historians view past industrialization in Western Europe have also been influenced by the same forces that have encouraged economists and geographers to reassess face-to-face industries. They, too, have successfully challenged the interpretation which dominated writing in the 1960s and early 1970s. This stressed the relatively rapid pace of growth during short periods of accelerating industrialization and the importance of technological innovation, mass production and centralization in industry. It also treated the British model as paradigmatic and deviations from this

[22] For a discussion of this prodution-smoothing function, see Michael J. Piore, pp. 23-54 in Suzanne Berger and Michael J. Piore, *Dualism and Discontinuity*... The British historian, W.G. Rimmer, has written of subcontractors in Leeds in times of contraction that they "died like flies in the night." Cited in Clive Behagg, *Politics and Production in the Early Nineteenth Century* (London: Routledge and Kegan Paul, 1990), p. 56.

pattern as less than optimal, whether it be 'craft' industries, small firms, or economies that failed to follow along the same path as the British. Over the past twenty years, however, there has been a growing recognition that economic growth at this time was more complex and varied than was allowed in earlier writing. Two aspects of this new awareness are especially important for a reassessment of manufacturing in the Paris of the first half of the nineteenth century. One comes out of ongoing debates in what has always been the most dynamic of historiographies on industrialization processes, that on the British Industrial Revolution[23]. Three findings, in particular, have emerged from recent discussions and they all will help us put Parisian industries in a wider context. One is that the pace of change in the British economy was significantly more gradual than scholars used to believe. Econometric historians have revised downwards earlier estimates of growth rates and both demographic and economic historians have dated the onset of growth further back in the eighteenth century than those periods of industrialization spurts after 1750 which earlier scholars thought they discerned[24]. At the same time, these same macroeconomic analyses have been criticized, though less for their conclusions as to the pace of change than for their failure to reveal growth mechanisms which were more subtle and widely diffused across sectors and processes than used to be supposed or than can be revealed through national accounting methods[25]. The

[23] See David Cannadine, "The Present and the Past in the English Industrial Revolution 1880-1980," *Past and Present* 103(1984): 131-72; Joel Mokyr, "The Industrial Revolution and the New Economic History», pp. 1-26 in idem. (ed.), *The Economics of the Industrial Revolution,* Totowa: Rowman and Allanheld, 1985) and Pat Hudson, *The Industrial Revolution* (London: Edward Arnold, 1992), especially pp. 9-36.

[24] This has been done most notably by N.F.R. Crafts, *British Economic Growth during the Industrial Revolution* (Oxford: Oxford University Press, 1985); and by C. Knick Harley, "British Industrialization before 1841: Evidence of Slower Growth during the Industrial Revolution," *Journal of Economic History* 42(1982): 267-89 and by both authors together in "Output Growth and the British Industrial Revolution: A Restatement of the Crafts-Harley View," *Economic History Review,* second series 45(1992): 703-30.

[25] For a critical discussion of the dangers of using only macroeconomic indicators computed from patchy data to understand British industrialization, see Julian Hoppit, "Counting the Industrial Revolution," *Economic History Review* second series 43(1990): 173-93 and Maxine Berg and Pat Hudson, "Rehabilitating the Industrial Revolution,"

second conclusion that emerges from discussions, indeed, is that we need to disaggregate data and examine regions (and *eo ipso* large cities) whose varying roles and linkages to wider systems are hidden in global data. The third conclusion concerns the sources of productivity gains in industry. Major technological innovations, recent work shows, were somewhat less revolutionary in their impact than historians had previously assumed. When compared with later innovations, indeed, the productivity parameters of the new technologies of late eighteenth and early nineteenth centuries were more limited and the speed with which they were adopted slower than used to be claimed.[26] On the other hand, gains in productivity also resulted from what one scholar has termed "technological drift,"[27] anonymous, small but incremental improvements in processes. They came, too, from an increased division of labour[28], organizational changes and commercial innovations. If, as it increasingly appears was the case, growth during the British Industrial Revolution was both slower and change was occurring across a much broader spectrum of industries and processes than just the cotton, iron and steam engines that scholars used to stress, then it is possible

Economic History Review second series 45(1992): 24-50.

[26] As has been shown was the case, for intance, with the adoption of the steam engine by G.N. von Tunzelmann, *Steam Power and British Industrialisation to 1860* (Oxford: Oxford University Press, 1978). For a more general discussion of recent work on the impact of technological innovations, see Maxine Berg, "Revisions and Revolutions: Technology and Productivity Change in Manufacture in Eighteenth-Century England, pp. 43-64 in Peter Mathias and John A. Davis (eds.), *Innovation and Technology in Europe. From the Eighteenth Century to the Present Day* (Oxford: Blackwell, 1991).

[27] The term was coined by Eric Jones. Cited p. 12 in Joel Mokyr, *The Lever of Riches. Technological Creativity and Economic Progress* (Oxford: Oxford University Press, 1990).

[28] Raphael Samuel ("Workshop of the World: Steam Power and Hand Technology in Mid-Victorian Britain," *History Workshop* 3(1977): 6-72) has indicated some of the dynamism of small workshops and face-to-face industries in the middle of the nineteenth century. A number of scholars have also argued that factories and some technical innovations were actually first adopted for the purpose of disciplining labour and reducing its bargaining power. This argument has been put forward by Kristine Bruland, "Industrial Conflict as a Source of Technical Innovation: Three Cases," *Economy and Society* 11(1982): 91-121 and, more generally in "The Transformation of Work in European Industrialisation," pp. 154-70 in Peter Mathias and John A. Davis (eds.), *The First Industrial Revolutions* (Oxford: Blackwell, 1989).

that the kind of industries and changes found in a large city such as London or Paris in the first half of the nineteenth century were more significant than was once allowed.

A second aspect of recent work on early industrialization invites us to reconsider Parisian industries: rethinking about growth processes in France. It does so, first, because, as self-styled revisionist historians insist[29], there was no royal road to industrialization laid down by the British but different paths other countries could take. In part at least, then, French growth has to be understood on its own terms. It does so, secondly, because econometric analyses have taken thinking on industrialization in France in the opposite direction to those on Britain: they have revised upwards growth rates previously believed to be very modest. They have shown that French industrialization processes were more successful than used to be thought and that growth rates were especially high down to 1860, precisely in the period that concerns us here[30]. It does so, thirdly, by showing that down to the mid-century at least, consumer as opposed to capital goods were particularly important in industrial growth, just the sector in which Paris specialized, and that the comparative advantage France, again like Paris, enjoyed was in downstream rather than in the upstream processes in which Britain was most successful[31]. Research

[29] "La France," Jean Bouvier has written, "ne fut jamais inférieure ni supérieure à toute autre nation légitimement comparable par l'avancée du développement, les dimensions et niveaux relatifs de celui-ci, ses rythmes et vitesse... Car, à l'instar de toute nation et de tout Etat, la France fut naturellement *autre* que ses voisins. Telle est la conclusion essentielle de l'approche révisionniste," p. 13 in "Une démarche révisionniste" in Patrick Friedenson and André Strauss (eds.), *Le capitalisme français XIXe-XXe siècles. Blocages et dynamismes d'une croissance* (Paris: Fayard, 1987).

[30] The most recent attempt to measure growth is by Maurice Lévy-Leboyer and François Bourguignon, *L'économie française au XIXe siècle: analyse macro-économique* (Paris: Economica, 1986). The growth rates they compute differ slightly from rates earlier calculated by François Crouzet or T.J. Markovitch. All the series show, however, that the period from the 1820s to 1860 was the one with the fastest growth rates.

[31] Leading French economists found confirmation of their country's superiority in consumer goods that incorporated taste and flair at the 1851 Crystal Palace Exhibition, where six in ten French exhibitors were from Paris. See Adolphe Blanqui, *Lettres sur l'Exposition universelle de Londres* (Paris: Capelle, 1851) and Michel Chevalier, *Exposition universelle de Londres* (Paris: Mathias, 1851).

has even questioned whether other aspects of the French economy at this time, long regarded as cause and symptoms of less successful industrialization, were not more efficient than used to be claimed[32]. We must not take revision too far and go to the other extreme, as the dialectics of debate in history always tempt us to do, but there can be no doubt that recent growth processes and new research on past and present industrialization each invites us to reconsider manufacturing in nineteenth-century Paris.

III

Recent work suggests we should re-examine Parisian industries. The lacunar nature of surviving sources on the capital before 1871 and the particularly incomplete information available for manufacturing argue against our ever being able to do so as thoroughly, or as successfuliy, as we might wish. In our effort to get round these difflculties we adopted several strategies to interrogate what quantitative data have come down to us[33]. Only two of these proved useful. First, we have used the industrial censuses that were

[32] This is the case, for instance, with small family farms. John Vincent Nye ("Firm Size and Economic Backwardness: A New Look at the French Industrialization Debate," *Journal of Economic History* 47(1987): 649-69) analyzes statistics on textiles and flour-milling from the 1861-5 industrial census. Even the immobility of small farms has been questioned: Ronald Hubscher, "La petite exploitation en France: reproduction et compétitivité (fin XIXe siècle-début XXe siècle)," Annales E.S.C. 40(1985): 3-34.

[33] Other measures were also attempted in an effort to compensate for deficient data but all proved unhelpful. *Patente* data cover a range of activities and not just industries. *Octroi* statistics, available in manuscript files at the *Archives de Paris* and in published form, do not indicate variations in industrial activity since taxes were imposed on drinks (that on wines made up 40 percent of *octroi* revenues), some foodstuffs, fuels and building materials. In any case, rates were not constant through the period. (*Archives de Paris:* $VL^2 1_2$ and VL^2 15 "Tarif des droits d'entré et d'octroi de Paris (variations des taxes depuis 1789)," January 1887). Industrial exhibitions, held regularly from 1819, also seemed promising because it appeared possible to use jury reports to determine the success of Parisian industrialists as against rivals in the rest of France. Again though, results are skewed by the fact that exhibitions were held in the capital and provincial industrialists were disadvantaged since it was more expensive for them to exhibit their products.

carried out for the first time ever in France, or indeed elsewhere, in the 1840s, and then again in the 1860s, as one indicator of the importance of Parisian manufacturing in the spatial distribution of French industry by calculating location quotients for different sectors[34] and estimating the role of the capital's manufactures in rising national exports. Second, we have used occupational censuses, available for the first time in the 1850s, as a further measure of the weight of manufacturing in Paris and the capital's importance in national structures. Most importantly, though, we have used the rich occupational censuses taken in London in 1851 and in Paris in 1856 to compare two metropolises which, by their size, stand out from other large cities in nineteenth-century Europe and which are comparable in functions and professional structures[35]. As will be made clear when each of these two types of source is interrogated, both the industrial and population censuses taken at this time pose formidable problems for the researcher. Such problems prevent us from using these censuses as fully as we might have with the more reliable censuses that were only made after enumeration methods in France were tightened from 1896 onwards. However, one drawback in available sources should also be mentioned at the onset: data on industries and occupations are available only for the mid-century.

[34] This indicator of the degree of concentration of industries in a region was first put forward by P. Sargant Florence in 1948. It is usually determined by dividing numbers employed in an industry in a region, expressed as a percentage of the national total, by the number employed in all industries in the region, expressed as a percentage of the national total. The location quotient measure has already been used for London, most notably by Peter Hall *(The Industries of London since 1961)* and most recently by L.D. Schwarz, *(London in the Age of Industrialisation...)*.

[35] As the geographer Jean Robert ("Quel cadre géographique, quelle dynamique spatiale?: comparer Paris et Londres: un exercice délicat," *Cahiers du CREPIF* 26 (1989): 17-29) has reminded us: "la comparaison est une véritable fête de l'intelligence. D'une part elle satisfait notre esprit scientifique, en dégageant les règles ou les lois qui président aux ressemblances et aux différences; d'autre part elle nous rappelle en permanence qui rien n'est jamais tout à fait comparable en ce bas monde, nous contraignant ainsi aux remises en cause qui nous évitent la sclérose intellectuelle.

Parmi ces comparaisons, il en est qui sont de pur plaisir académique, il en est d'autres qui s'imposent et qui sont absolument nécessaires. La comparaison entre Paris et Londres est de celles-là...".

Census sources, then, cannot be called upon to show the full extent of structural change and, in particular, whether secondary or tertiary occupations were gaining in importance in the Paris of the first half of the century.

At first blush industrial censuses appear an invaluable if as yet little exploited source. They offer detailed quantitative information on every department based on the responses to detailed questionnaires submitted to individual entrepreneurs. Two periods are covered: 1840-1845 and 1861-1865 for France and 1847-1848 and 1860 for Paris [36]. Unfortunately, a closer inspection reveals that these are not the open sesame sources they promise to be since both inquiries suffer serious weaknesses [37]. The results of the inquiries into industry in the capital, carried out by the Chamber of Commerce, cannot easily be compared with the statistics gathered for France as a whole because neither the 1840-1845 nor the 1861-1865 national census included artisanal industries, while the first French inquiry also excluded most, though not all, enterprises with fewer than ten employees. It is also difficult to compare censuses across time not because different classifications were adopted which, in any case, can be adjusted but because the 1860 Paris inquiry applied not to the Paris of the first half of the century but to the capital after the annexation of the inner suburbs [38].

[36] *Statistique de la France. Industrie* (Paris: Imprimerie royale et Imprimerie nationale, 1847-52), 4 vols.; *Statistique de la France. Industrie* (Nancy: Veuve Berger-Levrault 1873); Chambre de commerce de Paris, *Statistique de l'industrie à Paris, résultant de l'enquête faite par la Chambre de commerce pour les années 1847-1848* (Paris: Chambre de commerce 1851) and Chambre de commerce de Paris, *Statistique de l'industrie à Paris en 1860* (Paris: Chambre de commerce de Paris, 1864).

[37] Joan Scott has also rightly warned scholars against any simple positivist use of statistics, reminding us yet again that statistics are never innocent and unproblematical. "The Statistical Representation of Work: The Politics of the Chamber of Commerce's statistique de l'industrie à Paris, 1847-48," pp. 335-363 in Lawrence Kaplan and Cynthia Koepp (eds.), *Work in France. Representations, Meaning, Organization, Practice* (Ithaca: Cornell University Press, 1986).

[38] These difficulties have not prevented Michelle Kergoat ("La localisation départementale de l'industrie selon les deux enquêtes de 1841-1845 et de 1861-1865," *Revue d'économie industrielle* 48(1989): 52-71) from using these censuses. Unfortunately, she does not mention these problems or say how she solved them, if she did so.

These difficulties notwithstanding, we can still call upon the censuses to estimate Paris's share in French manufacturing production and to calculate a modified form of location quotient based on production values rather than the spatial distribution of the labour force, the criterion normally adopted to determine this measure of the importance of a city's or region's economy. Our computations are based on the results of the 1847-1848 Parisian census and that for France in the 1840s[39]. Since the crude data are not entirely comparable, we have used the adjusted figures estimated by T.J. Markovitch in order to correct for the omission of small industries from the national census[40]. The first result of our endeavours is to show that Paris, with only three percent of France's population, was responsible for just under a quarter of total industrial production by value. The second result, the location quotients presented in Table I, reveals that as many as six of the seventeen sectors which Markovitch adapted from the industrial inquiries to classify industries were significantly concentrated in the capital and that these sectors were also important in the Parisian economy since together they were responsible for 62 percent of the total value of the city's manufacturing production[41].

[39] We have not been able to use the censuses for the 1860s because the Paris inquiry covers not just the Paris of the first half of the century but the inner suburbs integrated in 1859 and the national census results are based on sampling rather than a computation of full results.

[40] Markovitch attempted two types of adjustment to make the Paris and national censuses comparable. One was to correct for the omission of many small enterprises in the French inquiry and the other was to take out artisanal production from Parisian statistics altogether. The second adjustment is not acceptable, for obvious reasons, and we have used his first calculation. For an explanation of his estimates and his regrouping of industries, see his "Le revenu industriel et artisanal sous la Monarchie de Juillet et le Second Empire," *Economies et sociétés,* série A.F., 1967, pp. 20-23 and 39-43.

[41] Three other groups of industries also had location quoients of over one (leather, wood and lighting, that is gas and candles) but together they only contributed 5.0 percent to the total value of industrial production.

Table 1
LOCATION QUOTIENTS OF PARISIAN MANUFACTURES AT MID-CENTURY IN RANK ORDER
(values of over two)

Industry	Location quotient	Percentage share of total industrial production in the capital
Furniture	4.06	9.37
Luxury Industries (1)	3.97	9.06
Clothing	3.75	16.46
Building	3.12	10.12
Metals (2)	2.95	13.56
Transport (3)	2.71	3.58

Source: Calculations from data in T.J. Markovitch, "Le revenu industriel et artisanal sous la Monarchie de Juillet et le Second Empire", *Economies et sociétés*, série AF, 1967. Since in 1847 Parisian industries (including building) were responsible for 24.2 percent of French industrial production by value, the location quotients presented here are the result of dividing the percentage of the value of national production which a Parisian industry represented by 24.2.

Notes to Table I:
(1) Comprises gold, silverware, jewellery, and *articles de Paris*.
(2) Comprises machine-building and non-ferrous metals.
(3) Comprises carriage-making, saddle-making and equipment produced for the armed forces.

We can also use Chamber of Commerce statistics to gauge the importance of Parisian industries in French exports [42] and data from another source, the Paris customs office, to show that, while exports from the capital fluctuated from year to year [43], the curve was unmistakably rising during this period, as values increased two and a half times between 1827 and 1843 and doubled again by 1860 [44].

[42] The 1860 Chamber of Commerce inquiry presents statistics of exports and export markets for each industry. The 1847-1848 inquiry, however, did not include questions on exports in its questionnaire.
[43] In 1848, for instance, and despite government attempts to stimulate exports by increasing drawback rates, there was a 40 percent decline over 1847 in goods that did not benefit from drawbacks and an 11.4 percent decline in total Parisian exports. Chambre de commerce de Paris, *Statistique de l'industrie... 1847-1848* I p. 42.
[44] Exports rose from an annual average of 53.5 million francs in 1821-1827 (no data are

These further reveal that Parisian exports were also a motor of French export growth since, at least until mid-century, their value increased more rapidly than that of French exports as a whole. Thus in 1827 Parisian manufactures already made up 12.7 percent of total French exports and 18.4 percent of all manufactured goods exported. By the mid-1830s their share of all exports had risen to a fifth and by 1847 to 23.4 percent of the value of all exports and to 31.8 percent of manufactures. With French export values rising sharply in the 1850s, their share had fallen back slightly by 1860 but exports from the capital still represented 15.3 percent of all goods and 24.3 percent of manufactures sent abroad. The role of Parisian exports can be established in a further manner. In 1860 and with the important exception of Lyonnais silk goods, which made up a third of exports by value, Parisian goods dominated most leading manufactures on France's export list: clothing, shoes, leather goods, jewellery and silverware, as well as those typical Parisian products, *articles de Paris* and artificial flowers. Exporters in the capital also dominated some of France's markets: 85 percent of Russia's imports consisted of Parisian goods and more significantly, because the United States was a more important trading partner, nearly half American imports were from the French capital which sent nearly a quarter of its exports there [45].

available for 1825) to 168.2 millions in 1847 and to 347.3 millions in 1860. These and the following calculations of the importance of Parisian exports have been made from statistics presented in tables 98-132 in *Recherches statistiques sur la ville de Paris et le département de la Seine* III, (Paris: Imprimerie royale 1829): *Tableau décennal du commerce de la France avec ses colonies et les puissances étrangères* (Paris: Imprimerie royale, 1838) covers the 1827-1836 period and *idem* (Paris: Imprimerie nationale, 1848) and *idem* (Paris: Imprimerie impériale, 1858) the 1837-1846 and 1847-1856 periods respectively. Data for Parisian exports in 1860 are in Chambre de commerce de Paris, *Statistique de l'industrie... 1860.* Adeline Daumard (*La bourgeoisie parisienne de 1815 à 1848*, p. 425) presents a graph showing Parisian exports from 1820 to 1847. Frochot in his report on the Parisian economy in the year IX (reproduced in Bertrand Gille, *Documents sur l'état de l'industrie et du commerce de Paris...*, pp. 49-62) claimed that Paris exported 18 million francs' worth of goods in 1788 which made up under 5 percent of total French exports. If these figures are accurate they suggest that already by the 1820s Parisian exports had begun to play a more important role in French exports than they had done before the Revolution.

[45] Paris, however, sent only 10 percent of its exports to Great Britain, France's most important trading partner taking nearly a third of national exports by value. To

Occupational censuses, available for France as a whole from 1851 onwards and for Paris for 1856 [46], can be called upon to further reveal some of the importance of manufacturing in the capital and of Parisian industry in national structures. A comparison of the active population in industry in the capital with reconstituted occupational data for France as a whole seems to show that no less than three-quarters of the capital's active population were in building and manufacture, as against only 27 percent nationally and that Paris, with only 3.39 percent of France's active population, had 9.1 percent of all those engaged in manufacturing (including building) [47]. It is even possible to use statistics on the active population to calculate location quotients which, like data from the industrial censuses, seem to confirm that several industries were significantly localized in the capital [48]. Unfortunately, the results of such calculations are not as useful as they might appear. There are two principal reasons why. One is that the classifications adopted by the 1850s censuses, like those in the industrial inquiries made in the same period, do not sufficiently distinguish between production and service activities and

determine Paris's share in exports and foreign markets we have used data from the 1860 Chamber of Commerce inquiry in preference to the slightly lower figures for exports from the Paris customs office. The latter are lower because some Parisian exports were not declared in the capital but sent abroad from other shipping points.

[46] *Statistique générale, Résultats du dénombrement de la population en 1856* (Strasbourg: Veuve Berger-Levrault, 1859). Occupational tables for Paris were published in *Recherches statistiques sur la ville de Paris et le département de la Seine VI* (Paris: Dupont, 1860), pp. 625-54. There is every reason to believe that the Paris occupation census was accurate. The Prefect of the Seine's circular and instructions of 26 April 1856 (those sent to the mayor of the twelfth arrondissement are conserved in the Archives de Paris V bis 5 F[1] 2) laid down elaborate procedures and control mechanisms. The published tables were prepared directly from manuscript census returns. Since the 1856 census for France gives total numbers of people dependent on an occupation, we have used the most recent calculations of population by sector in Olivier Marchand and Claude Thélot, *Deux siècles de travail en France* (Paris: INSEE, 1991) table 3, pp. 170-75. For discussions of the problems posed by French occupational censuses before 1896, as well as earlier attempts to determine occupational structures, see Lucie Cahen, "Evolution de la population active en France depuis cent ans d'après les dénombrements quinquennaux," *Etudes et conjoncture* 8(1953): 230-88 and T. Deldycke, H. Gelders *et al., La population active et sa structure* (Brussels: Université libre de Bruxelles, 1968), pp. 167-79.

[47] These are calculated on the basis of figures in the Paris census of occupations. The

figures have to be reworked for them to be meaningful, a task possible for Paris for which we have detailed statistics but not feasible for the national economy. The other is even more serious: while data on Parisian occupations, derived directly from the manuscript census returns themselves are available, data for France suffer from serious underreporting, from having been processed by local authorities rather than by more expert professionals in Paris, and, finally, from presenting not the active population alone but all those dependent on an occupation including the domestic servants they employed.

Because these signal weaknesses in French data prevent us from properly measuring and inserting Parisian industry into wider national processes and, more importantly, because of the advantages that might accrue from a more thorough comparative analysis of the French capital with another metropolis, we have adjusted the thrust of our analysis and made a detailed examination of manufacturing occupations in Paris by reworking available statistics and by establishing parallels and contrasts with London. This comparison was possible because for the first time in 1851 British census returns

active population includes all those in industry, commerce, liberal professions and domestic service. Adjustments have been made for industrial occupations to include tobacco manufacture and to eliminate categories 14 (transport), 15 (professions) and 16 (miscellaneous professions) which are included under the general heading of 'industry and commerce' in the census results. Data on France are those presented in table III in Olivier Marchand and Claude Thélot, *Deux siècles...*

[48] Though Parisian statistics separate the active from the dependent population, national census returns only indicate numbers of people dependent on different occupations (*Résultats du dénombrement de la population en 1856...*, p. xxxiii-xli and 48-51). It is only possible then, to compare total numbers of people dependent on different industries. Because the classifications adopted for the Parisian tables differ from those in census returns, we have reworked data for the capital. The results indicate that 62.0 percent of the Parisian population were dependent on manufacturing, the highest of any department (the Rhône was second with 55.2 and the Nord third with 50.6), and that these constituted 6.78 percent of all those dependent on industry in France (the Rhône had 3.3 and the Nord 5.9 percent). This latter proportion can be used to calculate crude location quotients percentage of all those in France dependent on an industry divided by 6.78). Given age structures and the low dependency rates in the capital, these location quotients underestimate the degree of concentration of industries in the capital. Location quotients in rank order clearly indicate, however, where Paris enjoyed a comparative advantage: industries associated with science, letters and arts (paper, printing, theater, musical, surgical and precision instruments) 5.66; luxury and leisure

presented occupational tables and because data on London have recently been recalculated and reissued [49]. Such an endeavour could only yield valid results, however, if the different occupational classifications adopted in Britain and France were standardized [50]. Two different manners of doing this offered themselves. The first was to adopt French codings, either the socio-professional classifications which Adeline Daumard proposed thirty years ago [51] or the more recent categories published in 1973 which Michelle Kergoat recently adopted in her analysis of the mid-nineteenth-century industrial censuses [52]. The second was to use nineteenth-century British census classifications adapted first by Charles Booth in the 1880s and recently revised by W.A. Armstrong [53]. We chose the second alternative because Daumard's classifications were devised first and foremost for use with notarial records rather than with census returns and for analyzing social structures and hierarchies rather than occupations, while the 1973 French coding is intended for contemporary rather than industrializing economies. The Armstrong classifications, on the other hand, were established for precisely the purpose of

industries (gold and silverware, jewellery, bronzes, clock-making, toys, tobacco manufacture) 4.58; furniture (including carpets) 4.04; miscellaneous industries 2.55. Some, but not all individual industries, can be analyzed separately. The ten industries with the greatest degree of concentration in Paris in 1856 were: toys and playing cards (location quotient of 10.07); surgical and precision instruments (9.45); type-founding (8.,50); artificial flowers (7.57); wallpapers (7.77); musical instruments (7.33); precious metals, bronzes and clocks (6.51); medals and money (6.22); perfumes (5.85); daguerrotype (5.83). A major drawback of this order should be mentioned: because the various branches of the clothing industry, the single most important in the capital, are lumped together in the national returns, it has not proved possible to determine quotients for component trades.

[49] *Parliamentary Papers,* 1853 (88) I and II, "Ages, Civil Condition, Occupations and Birth-Places of the People," reprinted, Irish University Press in the series "Population" VIII. Part I, pp. pp. 1-37 presents the results for London. We have used these returns only to establish age structures by gender. For occupational structures we have used the detailed tables presented in L.D. Schwarz, *London in the Age of Industrialisation...* appendices 3 and 4, pp. 255-63.

[50] In a pioneering attempt to compare London and Paris, Lynn Hollen Lees made a preliminary analysis of occupations in the two capitals at the mid-century. Most of her figures differ radically from ours. The explanation for this is that she did not standardize classifications and therefore unwittingly compared occupations which were not comparable. "Metropolitan Types. London and Paris Compared" in H.J. Dyos and

determining professional structures from census returns and are inclusive enough to be relatively easy to use. Occupations in the 1856 Paris census tables were thus transferred to the nine occupational categories of British returns so as to establish the importance of manufacturing as against other activities in the French capital and the results then compared with those for London. More importantly, industrial occupations were redistributed among the thirty-one branches proposed for British census analysis [54].

Michael Wolff (eds.), *The Victorian City. Images and Realities* (London: Routledge and Kegan Paul, 1973) I, pp. 413-28.

[51] She adapted these from INSEE's *Code des catégories professionnelles* published in 1954. See her "Une référence pour l'étude des sociétés urbaines en France aux XVIIIe et XIXe siècles, *"Revue d'histoire moderne et contemporaine* 10(1963): 185-210.

[52] "La localisation départementale..."

[53] W.A. Armstrong, "The Use of Information about Occupation" in E.A. Wrigley (ed.), *Nineteenth-Century Society. Essays in the Use of Quantitative Methods for the Study of Social Data* (Cambridge: Cambridge University Press, 1972) pp. 191-310. In his presentation of occupation statistics, C.H. Lee *(British Regional Employment Statistics 1841-1971* (Cambridge: Cambridge University Press, 1979) p. 5) chose not to use the Armstrang classifications but only because his purpose was less to analyze structures in one region than to make general comparisons across space.

[54] This transfer proved easier to effect than we had anticipated, thanks largely to the detailed lists of trades Armstrong has drawn up. Only minor difficulties presented themselves. Some occupations were reported in one city but not in the other. Thus there were pawnbrokers in London but in Paris the *Mont-de-Piété* was subsumed not under retailing but under government service because it was operated by the City. No one confessed to living from prostitution in the British capital but some in Paris, presumably those in tolerated *maisons closes,* did so. Some trades were important enough in one economy to merit a separate category: this was the case in the French capital with perfumeurs and, of course, with *articles de Paris* and in London with shipbuilding. Some

Table II
Distribution of the Active Population of Paris (1856) and London (1851) Across Occupations (in percentages)

	Male	Female	Both sexes
PARIS			
Agriculture	0.30	0.16	0.25
Mining	0.05	0.004	0.03
Building	11.96	0.35	7.77
Manufacturing	46.79	50.78	48.23
Transport	3.62	0.16	2.37
Retailing	10.92	9.43	10.38
Banking and Insurance	0.73	0.02	0.47
Public Service and Professions	18.10	4.44	13.18
Domestic Service	7.53	34.66	17.31
LONDON			
Agriculture	3.23	0.37	2.20
Mining	0.59	0.02	0.38
Building	9.92	0.02	6.34
Manufacturing	33.86	32.83	33.48

trades which may have combined production tasks with retailing inevitably posed problems. Because they often carried out extensive cleaning and mending of old clothes, we kept *fripiers* in the textiles classification in which the French censuses put them but we transferred hardware to retailing, as we did many of those trades originally classed as food manufacturing but which were actually retailing. All the choices made, as well as which occupations are included in headings that cover more than one trade, are explained in the detailed notes to Appendices I and II. It should be noted, though, that we still cannot claim to have solved all problems. There is no indication in nineteenth-century censuses as to whether all those classed in an occupation were actually working. It is also probable that some women's labour went unreported. Besides, although censuses allow a person only one occupation, we know that, given seasonality, many workers exercised more than one trade in a year. Thus some women in Paris made dolls in winter, decorated straw hats in the spring and worked in the linen trade in the summer. Chambre de commerce de Paris, *Statistique de l'industrie... 1847-1848,* II, p. 764.

Transport	11.6	0.17	7.46
General labourer	7.06	0.10	4.45
Retailing	14.13	8.00	11.91
Banking and Insurance	2.56	0.00	1.63
Public Service and Professions	11.91	5.62	9.64
Domestic Service	5.16	52.82	22.42

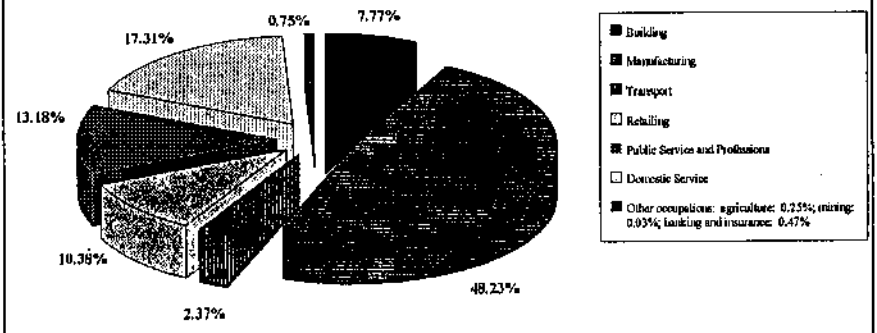
Source: See Appendix I and L.D. Schwarz, *London in the Age of Industrialisation...* Appendix 3, pp. 255-58. Only one major problem arose in comparing occupational structures. Enumerators in Paris did not use the 'general labourer' category adopted in the British census. These constituted 4.54 percent of London's active population.

The results of our endeavours, presented in detail in Appendix I and in schematic form in Table II, Pie Chart I and Graph I, are revealing in two ways. They permit us to confirm parallels and divergences in overall occupational structures in the two capitals. Just as importantly, the reclassifications we have made also allow us to determine with greater precision the weight of the various industrial occupations in Paris and to contrast these industrial structures with those in London. French censuses do not allow us to do this because they classified a series of activities under manufacturing which should more properly be regarded as services. In the 1856 occupational tables for Paris, for example, hairdressers and washerwomen, both of whom offer services, are included under industries, just as second-hand dealers *(brocanteurs)* are counted in the furniture trades. Similarly, the great bulk of those whom the French census classified as being in the foodstuff industries are more correctly treated as retailers. In consequence, though slightly lower numbers of people are recorded as being engaged in manufacturing in Paris in our tables than are indicated either in the 1856 census or in the two Chamber of Commerce inquiries[55], there is every reason to believe that our

[55] The Chamber of Commerce put the total of employers and workers at 407,346 in 1847 and, for the enlarged Paris of 1860, at 517,982. These figures, of course, are not adjusted to account for tertiary occupations wrongly counted as secondary and they also include the building industry which we have counted separately. Differences, then, are relatively minor.

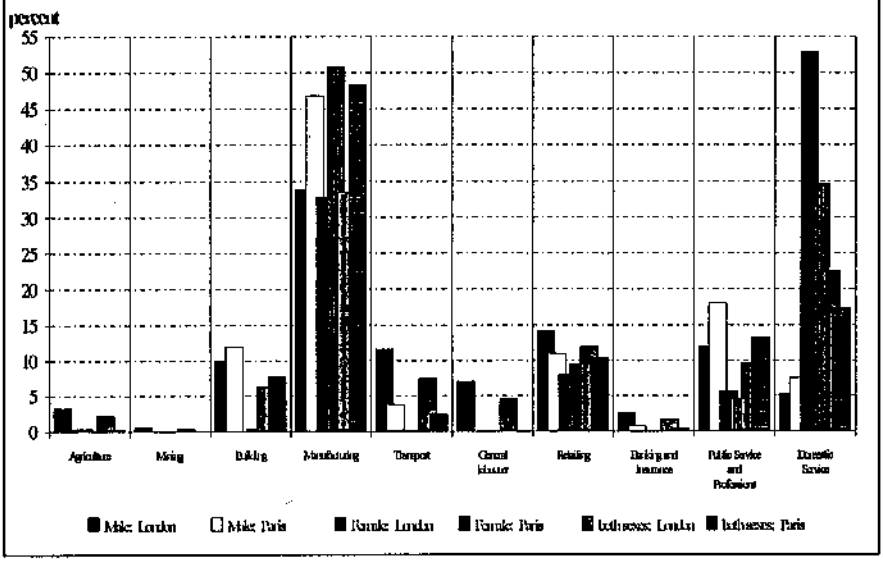
revised numbers not only allow us to compare Paris with London but are a more faithful mirror of the reality of manufacturing in the French capital.

PIE CHART I: Distribution of the Active Population of Paris Across Occupations (1856)



Source: Based on calculations made for Appendix I.

Graph I: Distribution of the Active Population at Mid-Century: Paris and London Compared



Percentages of active population in each city.
Source: Appendix I and L.D. Schwarz, *London in the Age of Industrialisation...*, Appendix 3, pp. 255-58.

An examination of Table II, Pie Chart I and Graph I reveals similarities in occupational structures in the two metropolises. Building and retailing, for example, are of comparable importance in each economy. It also shows differences. Domestic service was a more important occupation for Londoners, and particularly women, than it was for Parisians. It also indicates that banking and insurance, as well as transport (and especially, of course, dock workers), occupied a larger proportion of the active population in London than they did in Paris. Recent historians of the British capital are right, then, to stress that what set London apart within the British economy was the importance of its banking and insurance and domestic service sectors[56]. Paris, on the other hand, had a larger share of its active population in public service, obviously reflecting the more centralized French political system. But the most significant difference in occupational structures between the two capitals is the proportion of the active population in manufacturing: 15 percent more of the occupied population in Paris were in industry than was the case in London. Manufacturing, indeed, occupied half the active population there. The sheer weight of their numbers becomes even more evident if we point out that the number of industrial workers in Paris was roughly equal to the total of all the inhabitants of Lyon and Marseille, France's two most important cities after the capital. The disparity between Paris and London in this respect also becomes clearer if we measure the proportions of the total rather than just the active population in manufacturing in each city: nearly double the percentage (29.9 as opposed to 15.8) were in industrial occupations in the French capital. It is still greater in the case of women: four Parisian women in ten were in manufacturing as against only one woman in ten in London. There were actually more women in manufacturing in Paris despite the fact that London's population was twice as numerous.

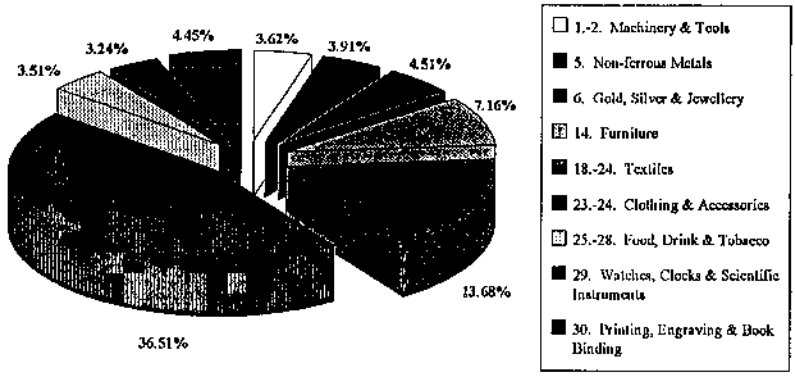
[56] Thanks to richer and more reliable national census data than are available for France, L.D. Schwarz, *London in the Age of Industrialisation...* pp. 11-14, 23 and 40, is able to show that it was for these occupations that London had the highest location quotients.

Though a comparison of the distribution of the occupied population across sectors in manufacturing (Appendix II and Pie Charts II and III) obviously cannot tell us anything about crucial facets of metropolitan manufacturing such as size of firms, production methods, products or their markets, it does reveal something of the patterns of production in each city. On the one hand, there are obvious, if not surprising, parallels: the clothing and textile industries were of comparable importance, with 54 per cent of the occupied population in manufacturing in London and 49 per cent in Paris. On the other, there are significant differences. Shipbuilding and the iron and steel industries occupied 7.6 per cent of those in manufacturing in London but only 0.8 per cent in Paris. The boot and shoe industry of London, which was to prove so vulnerable to provincial competition later in the century, was also more important than shoemaking in Paris, as was millinery. The French capital's strengths, however, clearly lay elsewhere: Paris had somewhat greater concentrations of its active population in luxury industries such as jewellery and furniture, and in skilled trades such as printing and publishing and clock-and scientific instrument-making.

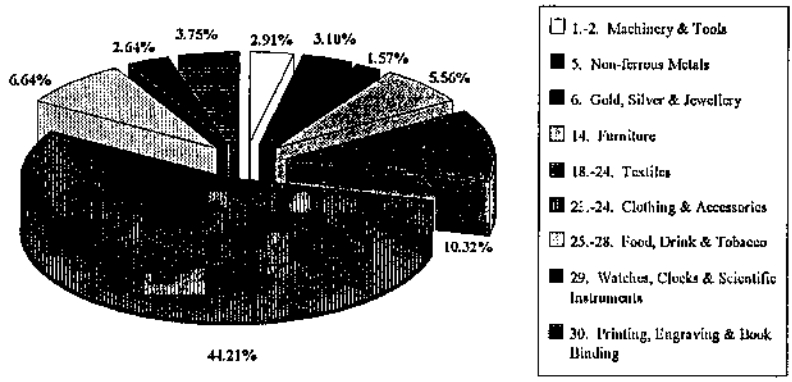
Statistics on occupations, industries and exports at the mid-century indicate the importance and nature of manufacturing in Paris and even suggest that changes were taking place across time. They cannot reveal much about the nature and extent of these changes. These and other more heterogeneous sources must be questioned to determine dynamism. Our interrogation shows, first of all, that change was not unidirectional: some industries in the capital were declining as the division of labour between Paris and its suburbs and the rest of France became more complex. As is well known, metropolitan manufactures have always been subject to two forces which push industries out of city centres: displacement, as some industrial processes move away from the city altogether, and decentralization, as some types of industry and enterprise move out from city centres to the urban periphery. Both of these forces were at work in Paris at this time.

As was the case with other large cities, Paris could not compete

PIE CHART II:
Leading Industries in Paris: Percentages of Occupied Population



PIE CHART III:
Leading Industries in London: Percentages of Occupied Population



Source: Prepared from data presented in Appendix II. Together these nine industries occupy just over 80% of the population in manufacturing in each city.

with other areas in products and processes which did not depend on the advantages economies of agglomeration conferred and which could profit from using cheaper labour and introducing machinery. Thus cutlery could prosper in the capital by producing speciality items, such as penknives and razors, and luxury ware that needed elaborate design and craft skills. Many of the other processes and the making of cheaper items, though, were increasingly located away from

Paris[57]. Hosiery, too, could survive in the capital by producing specialized and fashion items but could not meet provincial competition in ordinary articles, particularly after the introduction of the circular knitting frame[58]. The cut-crystal industry that had once been found only in Paris also declined in the first half of the century, as mechanical cutters were introduced in the works that supplied glassware to the capital[59]. The rich material for fancy waistcoats continued to be woven in Paris but by 1850 only export markets sustained a diminished production after fashion in France had dictated that waistcoats should consist of plain stuffs that could be made more cheaply elsewhere[60]. Even high-quality leather glove manufacture began to suffer from competition from the Dauphiné, and its labour force in Paris fell by a half in the 1850s[61]. The decline of industries such as these illustrates the competitive disadvantages which resulted from the high rents and cost of living in the capital.

Centripetal forces that pulled to the periphery nuisance industries which polluted the environment and, above all, capital-intensive and land-hungry enterprises also led to declines in some sectors. The impact these shifts had on the industrial geography of Paris at this time can be roughly determined by an analysis of the 1856 occupation census. This shows that the industries in the Seine department which were most heavily concentrated in Paris itself were those most dependent on the competitive advantages offered by city-centre locations, while those which did not were more heavily concentrated in the suburbs. Those with the highest degree of concentration in the

[57] Chambre de commerce de Paris, *Statistique de l'industrie ... 1860,* pp. 431-4.
[58] Chambre de commerce de Paris, *Statistique de l'industrie à Paris... 1847-1848,* II, p. 320. The inquiry found that wages and piece-rates had fallen by a half over the proceding ten years.
[59] Chambre de commerce de Paris, *Statistique de l'industrie à Paris... 1847-1848,* II, pp. 559-60.
[60] Chambre de commerce de Paris, *Statistique de l'industrie à Paris... 1847-1860,* pp. 399-400. There were similar developments in other industries, as in *tabletterie,* where less elaborate items were increasingly made in Saint-Claude (Jura).
[61] Jeanne Gaillard, *Paris la ville...,* p. 447. The decline was already perceptible in 1855. See "Note sur la situation actuelle des classes ouvrières dans Paris et dans la banlieue" (prepared as a result of a Chamber of Commerce study). Archives Nationales F[8]239.

suburbs, therefore, were chemicals, carriage- and saddle-making and building [62]. Other sources permit us to trace this decline across time. In 1821 Paris still had sixty-seven spinning mills and was a major French producer of spun cotton. But mechanized spinning is a classic case of an industry which cannot tolerate the high-cost urban environment and by 1847 there remained only twelve mills with a total workforce that was only a quarter of what the industry had employed at its zenith [63]. In chemicals, too, the more heavily capitalized enterprises increasingly abandoned the city and even peripheral quarters for the suburbs [64], as did sugar refining [65]. However, we should not exaggerate the speed of this process. The creation of a geographically segmented regional metropolitan economy was both more uneven and gradual at this time than it would be later [66]. Significant numbers of capital-intensive and nuisance industries not only remained firmly planted within the city but new ones continued to be established there. This was the case with printing, some of whose processes were increasingly mechanized. It was also true of the dynamic high-precision machine-tool industry: half those dependent

[62] The 1856 occupation census indicates only the total numbers of those dependent on different industries in the Saint-Denis and Sceaux *arrondissements*. While we cannot therefore reclassify industrial occupations, as we did for Paris and London, we do possess a measure of industrial concentration. The industries in the Seine which were most concentrated in Paris (percentage of people dependent on different industries; Paris contained 68 percent of the department's population in 1856) were: furniture (85.9); jewellery and precious metals (84.0); *articles de Paris* (81.2); printing and paper (80.7); textiles (76.7); clothing (70.7). Calculated from tables in *Recherches statistiques sur la ville de Paris et le département de la Seine...*, VI, pp. 625-54. What is especially striking in these figures is not the industries concentrated within Paris but the diversity of industries in the suburbs that is greater than might have been expected.

[63] *Recherches statistiques sur la ville de Paris et le département de la Seine...*, II, table 84; Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848*, II, p. 365. See also Louis Bergeron, *Banquiers, négociants et manufacturiers...*, pp. 205-22 and Maurice Lévy-Leboyer, *Les banques européennes et l'industrialisation internationale dans la première moitié du XIXe siècle* (Paris: Presses universitaires de France, 1964), pp. 23-181.

[64] By 1847 there were 41 industrialists in the sector, over half of whom produced chlorine bleach but only two of whom employed more than ten workers. However, only 30 percent of those dependent on chemical industries lived in the capital in 1856. Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848*, II, pp. 545-6; *Recherches statistiques sur la ville de Paris et le département de la Seine...*, VI, pp. 625-54.

[65] In 1821 there were 23 refineries in the Seine, 19 of which were in Paris. By 1847 there

on this sector in the Seine department still lived in the capital at the mid-century [67]. Firms in these and other industries remained in the city partly because of the inertia that results from solid implantation. More importantly, they remained there because they gained benefits from economies of agglomeration which compensated, at least for the moment, for the price they had to pay for an urban location. They stayed, too, because the powers of city government to evict nuisance industries were more limited than has often been supposed [68].

Proof of the dynamism of manufacturing, however, is not to be found in the changing industrial geography of the capital. It is to be found, instead, in three other kinds of change: the introduction of new products; technological innovation and, above all, organizational shifts. We have to confess that we cannot fully measure the extent and impact of these developments. The patchy nature of our information obliges us to proceed by example, when to do so is to risk not just failing to encompass all innovations but to insist only on the most evident at the expense of the more discrete. Besides, new products are often easier to identify than new processes and new processes than

were only 9 in Paris. In 1856 only 30 per cent of those who were dependent on sugar refining in the department lived in the capital. The 1860 inquiry revealed the decline had continued. *Recherches statistiques sur la ville de Paris et le département de la Seine...*, II, table 82.

[66] Evidence on New York at this time also indicates that the process there only accelerated after mid-century. Richard B. Stott, *Workers in the Metropolis..*, pp. 10-33.

[67] The 1856 census enumerated 9,256 people in Paris who were dependent on machine-building, 51.5 percent of all those in the Seine department. In 1847 Paris had 242 machine-builders but 353 in the enlarged capital of 1860.

[68] Elites and administrators frequently talked of the need to control industries in and around Paris and the *Conseil de salubrité* seems to have had the power to force nuisance industries out of the capital. However, it could not oblige industrial establishments to move once they were set up and could not refuse permission to new enterprises unless there was opposition from residents of the area. The *Conseil de salubrité* thus continued to authorize nuisance industries: from July 1854 to the end of 1855, for instance, 343 firms covered by the 1810 insalubrious industries law, with a total of 7,703 workers, were authorized in Paris as against 345, with a workforce of 10,129 in the rest of the department. "Etablissements de 1ère, 2e et 3e classes autorisés du 1er juillet 1854 au 31 décembre 1855." *Archives Nationales* F[8]176. Marchand, who chaired a commission set up in 1856 to determine whether nuisance industries should be prohibited in Paris, pointed to the dilemma administrators faced: "Gêner l'industrie par des prohibitions même partielles, c'est apporter un grand obstacle à sa prospérité et en prenant de

organizational change. What is clear, however, is that the pressure to innovate and restructure was endemic to the system in Paris as in other giant cities, both during boom periods and downswings. Just as importantly, change enabled Parisian industrialists to retain and extend markets and it did so in two ways. On the one hand, innovation, along with the falling cost of inputs made outside the capital, led to lower prices for finished products. On the other, by greatly expanding the range of imitations of goods previously available only in smaller quantities and at much higher cost, innovation enabled manufacturers to appeal to new customers at home and abroad. This period, then, was marked by an important extension of the culture of appearances and it affected goods that ranged from jewellery and clothing to furniture and home furnishings [69].

Balzac's César Birotteau made his new *huile merveilleuse,* and his fortune, in the back of his perfume shop. Some of the success of real-life Parisian manufacturers was also due to their ability to change their products and either invent new ones or manufacture those introduced elsewhere. These product changes were made across the vast range of manufactures, whether it be the introduction of iron bed frames or spring mattresses [70], mechanically-produced envelopes and fancy papers and cardboard [71], or new leather goods, such as money purses and wallets, or cigar and cigarette cases [72]. The most obvious

semblables mesures, on ne froissirait pas seulement les intérêts de la population ouvrière, on aurait à compter aussi avec la population aisée et riche; car aujourd'hui il est peu de fortunes qui se soient accrues sans que cet accroissement soit dû directement ou indirectement à l'industrie." *Archives Nationales* F[8]176.

[69] Claudia Kidwell and Margaret Christman (*Suiting Everyone: The Democratization of Clothing in America* (Washington: The Smithsonian Institution Press, 1974), p. 7) describe the advent of ready-made as the change from clothing made for somebody to clothing made for anybody. The spread of a culture of appearances was taking place, then, long before the Parisian journalist, Georges d'Avenel (*Le mécanisme de la vie moderne* (Paris: Colin, 1896), announced its arrival.

[70] Chambre de commerce de Paris, *Statistique de l'industrie à Paris... 1847-1848,* II, pp. 167 and 603.

[71] Machine-made envelopes introduced in 1838 were being produced at the rate of 1.2 million a day by the late 1850s. Chambre de commerce de Paris, *Statistique de l'industrie... 1860,* p. 718.

[72] Chambre de commerce de Paris, *Statistique de l'industrie... 1860,* pp. 931-4.

example, however, is ready-made clothes. Though the beginnings of ready-made are difficult to date [73], the industry took off in Paris in the 1820s and by mid-century was already responsible for over two-fifths of production in tailoring alone [74]. It is also clear that it began with the production of articles that were easiest to standardize — underwear, shirts and work clothes, dressing-gowns and overcoats for men and silk and velvet cloaks and coats for women [75] — and that it soon extended to a wide range of other accessories such as shoes, gloves, and hats [76]. It thus conquered not only working-class but, for some items at least, elite markets and, especially from the late 1840s, export markets too.

During the first half of the nineteenth century the Seine was far ahead of any other department in the number of patents granted [77]. This is but one indication of the importance of technical innovation, the second kind of change taking place. There are others. There were those visible hardware innovations: machinery in printing [78], in wallpaper [79] and tobacco [80] manufacture. There was also a series of new processes which were introduced and perfected at this time and which enabled industrialists to extend their markets. In cutlery and

[73] Beverly Lemire ("Developing Consumerism and the Ready-Made Clothing Trade in Britain, 1750-1800,"*Textile History* 15(1984: 21-44), for instance, traces the beginnings in Britain to the second half of the eighteenth century.

[74] See Christopher H. Johnson, "Economic Change and Artisan Discontent: The Tailors' History, 1800-48,"pp. 87-114 in Roger Price (ed.), *Revolution and Reaction. 1848 and the Second French Republic* (London: Croom Helm, 1975).

[75] Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848,* II, pp. 109-10, 223-5, 273-4; Chambre de commerce de Paris, *Statistique de l'industrie... 1860,* pp. 295-6.

[76] Chambre de commerce de Paris, *Statistique de l'industrie...1860,* p. 307.

[77] Philippe Vigier, *Nouvelle Histoire de Paris. La Monarchie de Juillet* (Paris: Hachette, 1991), p. 280. Since many if not most process improvements were the result of serendipity, tinkering or of the division of labour, they cannot be measured by numbers of patents taken out.

[78] Maurice Daumas and Jacques Payen (eds.), *Evolution de la géographie...* II, p. 42.

[79] Chambre de commerce de Paris, *Statistique de l'industrie. .. 1860,* p. 200. Workers early attacked the new rollers in wallpaper manufacture. "Rapport du chef de la 1ère légion de la gendarmerie," 10 October 1832. *Archives Nationales* F^{7}4161.

[80] These were already being introduced in the 1820s. See the daily police bulletin for 22 January 1828. *Archives Nationales* F^7 3882.

kitchen- and dinner-ware, for instance, the introduction of nickelsilver, zinc and tin and, in the 1840s, of electrolytic metal plating, which meant that Christofle and his rivals could produce cheaper but still elegant imitations of fine silverware, all extended the range of lower-cost products [81]. But change resulted less from such major breakthroughs than from small innovations across the board. Thus umbrella-making certainly profited from the invention of folding and self-opening umbrellas but it gained much more from a series of improvements in the frames, in the materials used for covering, and in the production of more elegant and varied handles [82]. Shawl-making greatly benefitted from the introduction of the Jacquard loom, but just as much from improvements in dyeing and from the rise of industrial designers in the capital [83]. Similary, corset making in the capital grew because of a series of minor improvements — there were only two patents taken out between 1791 and 1828 but sixty-four in the following two decades — in materials, in stays and in fasteners [84].

The most important facet of change in Paris, as in other metropolitan economies, is also the most elusive in surviving documents. This consists of organizational shifts. Three interrelated changes were taking place. One was the role of middlemen which continued to increase in this period but whose mechanisms, such as use of credit and the control of markets, still await their historian. Another was vertical disintegration, the multiplication of the number of small enterprises, and particularly subcontractors, which, despite, and in part because of, their high mortality rates, fulfilled important functions in the dynamics of metropolitan industrial economies. The third organizational change was increasing recourse to the division of

[81] Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848,* II, pp. 129 and 707-8.
[82] Chambre de commerce de Paris, *Statistique de l'industrie... 1860,* p. 918.
[83] Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848,* II, pp. 335-8. There were 159 industrial design firms in Paris in 1847; by 1860 there were 253. Chambre de commerce de Paris. *Statistique de l'industrie... 1860,* pp. 357-60.
[84] Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848,* II, pp. 243-5; Chambre de commerce de Paris, *Statistique de l'industrie...1860,* p. 269.

labour. An industrialist declared in 1860 that, because of the division of labour, the prices of Parisian precision instruments were one-third those asked by foreign competitors [85]. The Chamber of Commerce inquiries, for their part, singled out two industries, doll-making [86] and artificial flowers [87], as instances of the advantages that came to both workers and employers from the spread of these practices. But we should not be dupes of this discourse. This hidden face of change in Paris was less benign than these examples indicate: it involved deskilling in some processes and the sweated outwork of workers and particularly women in others. These methods permitted employers to hire and fire cheap labour, and take advantage of the all-too-prevalent seasonality in different trades [88]. The remarkable expansion in ready-made clothes and clothing accessories, for instance, was made possible, not by the introduction of the sewing machine, which was only successfully adopted after the mid-century [89], but by recourse to seasonal labour-the slack periods in bespoke and ready-made were complementary [90]-and to cheap labour that could be hired and let go as variations in production demanded. We must now determine what were the forces

[85] Witness before the commission to look into the 1860 trade treaty with Great Britain. Conseil supérieur de l'Agriculture, du Commerce et de l'Industrie, *Enquête. Traité de commerce avec l'Angleterre* (Paris: Imprimerie impériale, 1860-2), 6 vols, II, pp. 340-5. The witness did not add, though we should, that precision-instrument makers also benefitted from the world leadership of Parisian surgeons and astronomers.

[86] Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848,* II, pp. 761-2 and Chambre de commerce de Paris, *Statistique de l'industrie...1860,* pp. 880-4. See also P. Maroussem, *La question ouvrière* (Paris: Rousseau, 1891-1896), 4 vols., III, pp. 42-3 and 115-132.

[87] The division of labour spread from 1826 onwards. Chambre de commerce de Paris, *Statistique de l'industrie à Paris...1847-1848,* II, pp. 797-800 and Chambre de commerce de Paris, *Statistique de l'industrie...1860,* pp. 905-9.

[88] Evidence of the extent of deskilling is in the invention at this time of terms of derision to describe the less skilled workers who were hired. Thus in tailoring the names *'boeufs'* and *'hirondelles'* were applied to these workers. An industrialist himself coined the phase *'demi-ouvrier'*. Cited in Lenard R. Berlanstein, *The Working People of Paris, 1871-1914* (Baltimore: The Johns Hopkins University Press, 1984), p. 15. One historian has written of the London labour market in the later nineteenth century that it "contained some of the best- and worst-paid labour in Britain." (E.H. Hunt, *Regional Wage Variations in Britain, 1850-1914* (Oxford: Oxford University Press, 1973), p. 13). The same was true of nineteenth-century Paris.

[89] Earlier machines were not successful. Chambre de commerce de Paris, *Statistique de*

which prompted and permitted Parisian industries to undertake changes such as these and to reinforce their role in wider processes.

IV

The explanation for the dynamism of Parisian industry is to be found, on the one hand, in the comparative advantages conferred on all large cities by economies of agglomeration, as exploited and reinforced by the market and labour strategies of metropolitan merchants and manufacturers, and, on the other, in the specific circumstances of the first half of the nineteenth century. Since we have already rehearsed the structural advantages enjoyed by large cities, we need emphasize here only conjunctural conditions. We should do so by examining not just evident supply factors but also less obvious changes in demand.

On the supply side, Paris enjoyed one advantage above all others, its human capital. In terms of entrepreneurship, the extent and diversity of the industrial base created the critical mass necessary to generate a culture of innovation [91] and enterprise [92]. This culture was

l'industrie...1860, pp. 449-50. However, some 54,000 sewing machines were sold in the Seine department in the 1860s alone, an indication of their success once they had been perfected. Chambre de commerce de Paris, *Enquête sur les conditions du travail en France, pendant l'année 1872, département de la Seine* (Paris: Chambre de commerce, 1875) p. 42.

[90] Half the employers in tailoring in 1860 still said they suffered a *morte saison,* as against an average of 36 percent for all industrialists. These slack periods lasted from four to as many as six months. Chambre de commerce de Paris, *Statistique de l'industrie... 1860,* p. XL.

[91] That perspicacious contempotary André Cochut best described this industrial culture: "Le moteur tout-puissant de l'industrie parisienne, celui qui suit aux prodiges, n'est pas de l'ordre matériel. Paris est un foyer sans cesse enflammé où viennent se fondre, s'épurer et prendre forme, comme l'ardente coulée dans la moule, les sentiments, les idées, les opinions, les fantaisies, les illusions du monde entier. Tout cela est incessamment agité et ressassé dans les réunions officielles ou privées, les livres, les journaux, les exhibitions, les théatres, les conférences, les cours publics, les musées et bibliothèques accessibles à tous. De cette chimie intellectuelle sort on ne sait quelle émanation subtile, on ne sait quel excitant pour les esprits. Le Parisien en reste imprégné plus ou moins, à quelque degré qu'il soit placé dans l'échelle sociale. Da là un instinct de chercheur, la poursuite fièvreuse du nouveau et du mieux," p. 1766, "Paris industriel" in *Paris Guide* (Paris: Baillière, 1867).

the result, of course, not just of site and the density of exchanges it facilitated, but of historical and social forces. In terms of labour inputs and productivity, we have recently come to realize how significant these were not only in giant cities but in industrialization processes in general at this time. Research has revealed how modest were capital investments and how much growth depended on workers' know-how and labour management. Evidence of the responsiveness of the labour market in Paris at this time is to be found in general wage levels: despite industrial growth, these remained relatively stable through the first half of the century. We can find part of the explanation for this responsiveness in the large pool of literate [93] craftsmen who acquired their skills chiefly through on-the-job training and who were always able to exchange technical ideas and information with others in their own and related crafts in the city [94]. Part of the explanation is also to be found in entrepreneurs' recruitment of skilled labour from outside the capital and in their labour retention practices, and especially keeping on workers with scarce skills during slack seasons. However, by far the most important explanations as to why Parisian industria-

[92] The constant renewal of enterprise from below was a symptom and symbol of this entrepreneurial culture. Joan W. Scott ("Statistical Representations of Work...") has claimed that the Paris Chamber of Commerce's insistence on the large number of firms in the capital was a weapon used to combat socialist theories at a moment of acute crisis. This is only partly true; it also reflected a reality and a culture.

[93] Military records on conscripts' ability to read and write reveal that already in the late 1820s and early 1830s under 20 per cent of young male Parisians could neither read nor write as against a national average of just under 50 per cent. Jean-Paul Aron, Paul Dumont and Emmanuel Le Roy Ladurie, *Anthropologie du conscrit français* (Paris: Mouton, 1972) pp. 176-9 and Adolphe d'Angeville, *Essai sur la statisique de la population française* (Bourg: Dufour, 1836) pp. 330-331. The Chamber of Commerce inquiries allow us to determine not only that literacy levels were extremely high among industrial workers (87 per cent of men and 83 of women in 1847 and 87 per cent of workers of each gender in 1860 were literate) compared with the national average (59.4 per cent of conscripts knew how to read and write in 1847, "Résumé rétrospectif", *Annuaire statistique* 34(1914-1915), p. 18*) but also that the proportions of literate workers varied across trades in the capital, with those in the most skilled crafts having markedly higher literacy levels. Even in building, the industry with by far the lowest proportion of literate workers (mainly because of the presence of migrants from the Massif central), they still made up only 27 per cent of the labour force. Even more striking than high general literacy levels in the capital are those for women workers. The first census to attempt to measure literacy, that of 1866, found that nationally 61.3 per cent of males were literate

lists were able to secure greater labour inputs and to divide labour tasks are to be found, on the one part, in migration flows to the capital and, on the other, in an "industrial reserve army" composed not of what British scholars term casual labour but of women.

By their numbers, age structure, and the skills they brought with them, immigrants were unquestionably a major reason for the dynamism of manufacturing in the French capital and a much more important one for Paris, where newcomers made up two-thirds of the population, than for London, only two in five of whose inhabitants had not been born there[95]. Economists have long insisted that immigrants confer three major advantages on urban economies: a more flexible labour supply, particularly important when elasticity of demand for labour is high, significant savings in child-rearing costs[96] and, though these do not appear to have been important for nineteenth-century cities, higher urban savings rates and lower relief burdens. The work that has been done on other cities also suggests that such transfers of human capital may have had positive effects on urban industries through the skills immigrants brought, as by their

but only 49.9 per cent of females. Statistique générale, *Résultats généraux du dénombrement de 1866* (Strasbourg: Veuve Berger-Levrault) p. XXVIII and table 10.

[94] For the importance of this transmission of skills through apprenticeships and interchange in machine-building in Paris, see Maurice Daumas, "Les mécaniciens autodidactes français et l'acquisition des techniques britanniques", pp. 301-34 in *L'acquisition des techniques par les pays non-initiateurs* (Colloques internationaux du CNRS) Paris: CNRS, 1970) and James M. Edmonson, *From Mécanicien to Ingénieur. Technical Education and the Machine-Building Industry in Nineteenth-Century France* (New York: Garland, 1987), pp. 95-208.

[95] We can show the singularity of the French capital in a further manner. While only 35 per cent of the Seine department's population had been born there, the national average for all departments was 86.7 per cent. The proportion of immigrants in the capital region was neary twice as high as in the department with the next highest per centage of immigrants (the Rhône, with 68.1 per cent of whose population had been born there). The Rhône, Bouches-du-Rhône (73.1 per cent) and Seine-et-Oise (73.6 per cent) were the only other departments where less than three-quarters of the inhabitants were native-born. Calculations based on the 1866 census (*Résultats généraux du dénombrement de 1866...).*

[96] Melvin Reder long ago pointed out that "it is cheaper to import workers than to grow them." ("The Economic Consequences of Increased Immigration", *The Review of Economics and Statistics* 45(1963): 221-230). Others have attempted to calculate the advantages that immigrants conferred on the United States economy, British cities in the

impact on the semi-skilled and unskilled labour market where some of them clustered [97].

Unfortunately, the poverty of the sources on Paris prevents us from being able to determine immigrants' distribution across occupations [98] and thus from fully measuring their impact on the labour market. Sources do allow us, though, to draw up Table III which shows the changing age structure of the Parisian population and suggests how immigration affected dependancy and participation rates.

Two things are immediately obvious in these figures. One is that between 1817 and 1856 there was a marked increase in the proportion of the population in the active age group. The other is that the increase was more important for men than for women, reflecting a stronger male presence in migration flows to the capital. When we compare the dependency rates (those under fifteen and over sixty-four) for France as a whole in 1856 with those in the capital, we find that the national rate was over twelve points higher for men, ten for women and over twelve for the population as a whole. It should

nineteenth century, or the great boom in Western Germany in the 1960s. See Larry Neal and Paul Uselding, "Immigration: A Neglected Source of American Economic Growth, 1790-1917," *Oxford Economic Papers* 24(1972): 66-88; Jeffrey G. Williamson, "Migrant Selectivity, Urbanization and the Industrial Revolution", *Population and Development Review* 14(1988): 287-314; *idem., Coping with City Growth during the British Industrial Revolution* (Cambridge: Cambridge University Press, 1990) and Rudolph C. Blitz, "A Benefit-Cost Analysis of Foreign Workers in West Germany, 1957-1973", *Kyklos* 30(1977): 479-502.

[97] Thus Sean Wilentz, who had the rich 1855 industrial census at his disposal, has been able to show the unequal distribution of immigrants across trades in New York *(Chants Democratic...*, pp. 118-9 and table 16, p. 407). Louise Tilly has also used rich census sources to reveal that native-born Milanese were more heavily represented in manufacturing than in the primary and tertiary sectors of late nineteenth-century Milan's economy and that immigrants predominated only in the least attractive low- and semi-skilled tasks. *Politics and Class in Milan 1881-1901* (New York: Oxford University Press, 1992). Louis Chevalier in *La formation de la population parisienne au XIXe siècle* (Paris: Presses universitaires de France, 1950), reached similar conclusions for immigrants on the Paris labour market in the late nineteenth century.

[98] Scattered evidence does suggest, though, that provincial and foreign immigrants were significant in a number of skilled trades like cloth printing, cabinet-making and tailoring. See, for instance, commentary in the Chambre de commerce de Paris, *Statistique de l'industrie à Paris... 1847-1848,* I, p. 116 and II, pp. 159 and 379-80. Jacques Rougerie,

Table III: Age Structure of the Parisian Population in 1817 and 1856 (in percentages)

	males			females			total population		
Year	under 15	15-59	60+	under 15	15-59	60+	under 15	15-59	60+
1817	21.7	68.1	10.2	19.8	70.6	9.16	20.7	69.5	9.8
1856	18.8	76.9	6.3	17.4	74.3	8.3	17.1	75.8	7.1
Change	minus 4.9	plus 8.8	minus 3.9	minus 2.4	plus 3.7	minus 1.3	minus 3.6	plus 6.3	minus 2.7

	proportion of Parisian population aged 20-39		
Year	males	females	total population
1817	33.3	37.1	35.4
1856	43.7	43.3	43.7
Change	plus 10.4	plus 6.2	plus 8.3

Source: Data from censuses presented in Toussaint Loua, *Statistique de la population de Paris* (Paris: Imprimerie de l'Ecole centrale, 1873), pp. 18-21.

also be pointed out, for it further indicates the advantage Paris enjoyed, that the dependency rate in Paris was also significantly lower (by 13 percent) than it was in London at this time [99]. Our analysis can be further refined to reveal just how much the French capital was a city not just of adults but of young adults. As Table III indicates, the proportion of the population in the twenty to thirty-nine age group, the most adaptable on the labour market, increased even more markedly in the first half of the century than did the population of working age as a whole. At mid-century Paris had 12 per cent more of its population in this age group than did France and over 8 per cent

using incomplete evidence, has also found that, while workers' wages levels remained stable in the first half of the century, wages of the unskilled may actually have risen slightly. If this was so, the argument that the labour maket had a surfeit of casual labourers, mostly immigrants, must also be reassessed. See Jacques Rougerie, "Remarques sur l'histoire des salaires à Paris au XIXe siècle", *Mouvement social* 63(1968): 71-108.

[99] Dependency rates in Paris in 1851 were 21.3 per cent for men, 23.8 for women, 22.5 for the population as a whole. For France at the same date they were 34.1, 33.7 and 34.9. For London the rate for the population as a whole was 35.5 per cent. Rates for Paris are calculated from data from the 1851 census in *Recherches statistiques...* VI, pp. 625-54. Rates for France are from Olivier Marchand and Claude Thélot, *Deux siècles...* table I, pp. 166-8. London's is taken from Jeffrey G. Williamson, "Migrant Selectivity..." It should be noted, however, that the practice of sending infants to wet-nurses outside Paris meant that the under-fifteens in Paris are under-reported. We cannot determine by how much.

more than did London [100]. Such favourable structures are a major, but not the only, reason why labour participation rates in the capital were ten points higher than in France or in London and as much as twelve points higher in the case of women [101].

Parisian industrialists enjoyed a further advantage: the possibility they had of tapping another reservoir of low-paid, though not unskilled-labour, that of women. Until recently historians had generally underestimated the role of female labour in nineteenth-century industrialization. However, research on both proto-industry and the Industrial Revolution has begun to reveal the importance of women's paid labour both for working-class family economies and for industry itself [102]. Studies are also starting to show how women were increasingly integrated into the industrial labour force in nineteenth-century metropolitan economies [103]. It has recently been calculated, for instance, that women made up 36 per cent of workers in manufacturing in New York at the mid-century [104].
There is every reason to believe that industrialists should have had ever greater recourse to women's labour in nineteenth-century Paris.

[100] In 1856 the national average was 30 per cent (30.63 for men and 31.34 for women). Olivier Marchand and Claude Thélot, *Deux siècles de travail en France* (Paris: I.N.S.E.E., 1991) table I, pp. 168-170. The proportion in London was 33.69. Calculated by Jeffrey G. Williamson, "Migrant Selectivity..." Attempting to reveal the advantages British cities enjoyed over rural areas during the Industrial Revolution, Williamson succeeds only in showing a five-point difference in favour of cities.

[101]

Active Population (in percentages)			
	male	female	total population
Paris (1856)	70.79	44.38	57.65
France (1856)	62.70	31.90	47.20
London (1851)	64.36	32.14	47.20

Calculations for London and Paris are based on data in Appendices I and II. French participation rates are taken from Olivier Marchand and Claude Thélot, *Deux siècles...*, table 5, pp. 178-80.

[102] In a pioneering quantitative study, for instance, Claudia Goldin and K. Sokoloff have shown that between 1812 and the 1830s the proportion of women and children in the industrial labour force in the northwestern United States rose from 10 to 40 percent ("Women, Children and Industrialization in the Early Republic: Evidence from the Manufacturing Censuses", *Journal of Economic History* 42 (1982): 741-74). For a review

Age structures of the female population (Table III), along with low dependency rates, reflected the growing number of female immigrants [105], the relatively low birth rates and the practice of sending infants to wet nurses outside the city. High costs of living, and the seasonality of most trades also elbowed women into seeking paid employment as part of a working-class family's survival strategy. Domestic service, for its part, absorbed large numbers of young women, especially immigrants, but left those who quit the profession to marry ill-prepared for any trade other than low-paid industrial work. The tasks and the remuneration industry accorded women was a final advantage for industrialists: the market was not neutral in its treatment of them since it reflected female subordination within families and in society.

Despite all these predisposing factors, however, it is easier to suggest the potential value of women's labour in some face-to-face industries and to show the importance of female workers by the mid-century than it is to demonstrate the full extent of increasing recourse to it. We do have some sparse indications that even before

of recent work on women in the British Industrial Revolution, see Maxine Berg, "Women's Work, Mechanization and the Early Phases of Industrialisation in England", pp. 64-98 in Patrick Joyce (ed.), *The Historical Meanings of Work* (Cambridge: Cambridge University Press, 1987).

[103] Sally Alexander, *Women's Work in Nineteenth-Century London: A Study of the Years 1820-1850* (London: Journeyman Press, 1993); Bettina Bradbury, *Working Families. Age, Gender and Daily Survival in Industrializing Montreal* (Toronto: McClelland and Stewart, 1993) and Suzanne Gross, "The Neglected Majority: The Changing Role of Women in Nineteenth-Century Montreal" in Susan Mann-Trofimenkoff and Alison Prentice (eds.), *The Neglected Majority: Essays in Canadian Women's History* (Toronto: McClelland and Stewart, 1977) I, pp. 66-86. Judith Ann Degroat, "The Working Lives of Women in the Parisian Manufacturing Trades, 1830-1848"-(unpublished Ph. D. thesis, University of Rochester, 1991) is disappointing for its analysis of the insertion of women into the Parisian labour market is based only on an uncritical use of the first part of the 1847-8 Chamber of Commerce inquiry.

[104] Richard B. Stott, *Workers in the Metropolis...* pp. 102-8 and Christine Stansell, *City of Women. Sex and Class in New York, 1789-1860* (Urbana: University of Illinois Press, 1982) pp. 105-29.

[105] In the first half of the nineteenth century numbers of female immigrants coming to Paris increased more rapidly than those of men. See Christine Piette and Barrie M. Ratcliffe, "Les migrants et la ville: un nouveau regard sur le Paris de la première moitié du XIXe siècle", *Annales de démographie historique* 18(1993): 1-45.

the Revolution women's labour was already important in some sectors [106], some not very trustworthy estimates of numbers of women workers in the capital at the turn of the century [107], and, of course, indirect evidence in discourse during the July Monarchy, especially the complaints of male workers who felt threatened by competition from female wage-earners [108]. We can go further, though, and show the importance of female labour in Paris and London by analyzing mid-century occupational censuses. First, as Appendix II reveals, women made up 38 per cent of the workforce in manufacturing in Paris and 35.5 per cent in London. In each city this was a significantly larger proportion than in manufacturing in their respective countries [109]. Second, an analysis of the distribution of women across industries in the two capitals shows a similar pattern of ghettoization: eight out of ten women workers in Paris were in clothing or in textiles, nine out of ten in London. At the same time, there were sectors, such as machine-building and metallurgy, where women were almost entirely absent. It also reveals differences: Parisian women were less concentrated in clothing and greater proportions of them were in

[106] Several studies have suggested that by the late eighteenth century women were already important in sectors of Parisian industry where they would still be concentrated in the 1850s. See Daniel Roche, *La culture des apparences. Une histoire du vêtement (XVIIe-XVIIIe siècle)* (Paris: Fayard, 1989) pp. 277-278; Michael Sonenscher, *The Hatters of Eighteenth-Century France* (Berkeley: University of California Press, 1987) pp. 23-26; Dominique Godineau, *Citoyennes tricoteuses. Les femmes du peuple à Paris pendant la Révolution française* (Paris: Alinéa, 1988) pp. 70-84. Symptomatic of the general difficulty of determining women's particiption rates at this time is the debate as to whether or not the first half of the nineteenth century witnessed a contraction of the range of women's employment opportunities in Britain. See Keith Snell, *Annals of the Labouring Poor. Social Change and Agrarian England, 1660-1900* (Cambridge: Cambridge University Press, 1985) pp. 270-319 and L.D. Schwarz, *London in the Age of Industrialisation...*, pp. 14-22.

[107] Raymonde Monnier ("L'évolution de l'industrie et le travail des femmes à Paris sous l'Empire," *Bulletin d'histoire économique et sociale de la Révolution française* (1976): 47-60) estimates there were 40-45,000 women workers during the First Empire who thus represented about a fifth of all Parisian women. If this is accurate it would indicate a massive increase in women's participation in the labour market took place during the following half-century. Unfortunately, her statistics, as she admits, undoubtedly underestimate numbers of workers though not as much as does the 1807 report used by G. Vauthier ("Les ouvriers de Paris sous l'Empire," *Revue des études napoléoniennes* 4(1913): 426-51).

textiles, the jewellery trades, furniture and in tobacco manufacturing. An examination of Parisian working women in individual trades, rather than all active women in broad categories, serves to confirm the highly segmented nature of the female workforce. Seven out of ten women workers are found in just eight trades: needlework (32,956); linen goods (17,892); shoes (8,885); artificial flowers (7,546); tailoring (6,994); millinery (4,419); furnishings and trimmings *(passementerie)* (3,659) and embroidery (3,306). In all but three of these [110], women made up nine-tenths of the workforce and they made up similar proportions in six other trades of lesser importance [111]. Altogether, six Parisian working women in ten were in sectors where they constituted over 90 per cent of all those employed [112]. All of these were trades where the division of labour and cost-cutting were significant factors in market success and which could profit from women's skills, homework and lower piece-rates. Evidence of the value of women's labour can also be gleaned from the industrial inquiries which present data on wage structures and modes of payment as well as on workplaces. These show that in 1847 99 per cent of women in Parisian industry earned under three francs a day; only 14 per cent of men did so [113]. In that year six out of ten women

[108] Some of which is discussed, for instance, in Joan W. Scott, *Gender and the Politics of History*...

[109] Women workers made up just under 25 per cent of the labour force in French industry (including building). Table III in Olivier Marchand and Claude Thélot, *Deux siècles*... In Paris they made up 32.9 per cent of the work force in industry (including building).

[110] These were: lace-making (63.6 per cent of the workforce); shoemaking (39.4 per cent); tailoring (38.4 per cent).

[111] In order of importance these were: hosiery-lace and staymaking, map and print colourers, women's ready-made clothes, and breeches-making. All calculations are made from data in Chambre de commerce de Paris, *Statistique de l'industrie à Paris... 1847-1848*.

[112] Altogether, the above-mentioned trades, which were over 90 per cent female, employed 74,883 women. We calculate the number of women workers (all those employed less those who were ranked as employers) to have been 123,792. These trades therefore employed 60.5 per cent of all women in manufacturing.

[113] It is not easy to use the data on earnings in the Chamber of Commerce inquiry to estimate average earnings. It might be added that it appears that sex differentials in wages were increasing. The Chamber of Commerce's 1872 inquiry asserted that while

were paid on a piecework basis but six out of ten men received wages. While only 16 per cent of men were homeworkers, 43 per cent of women worked at home, making them more vulnerable to rate-cutting and lay-offs and more attractive to employers faced by growing but volatile markets. We must add, though, that since the 1847-8 inquiry subsumes under manufacturing a series of retailing and service activities that are not properly industrial and not carried out at home, this global figure understates the importance of outwork which, in any case, varied significantly between trades [114].

Giant cities have always benefitted from supply-side advantages. Of these human capital is one of the hardest to measure but one of the most important. In the first half of the nineteenth century Parisian industry profited from the city's rich craft heritage and from the pools of new labour it could tap. More discrete demand side factors, though, also stimulated growth.

V

It is not easy to determine the role of these market forces because demand is complex and difficult to grasp and economists have generally underplayed its role in economic growth. The historiography of nineteenth-century industrialization, for example, has long been dominated by supply-side approaches [115], and, despite

men's wages had increased by 31 per cent in the preceding ten years, women's had improved by only 23 per cent. (*Enquête sur les conditions du travail en France...*, p. 15).

[114] 62.9 per cent of women receiving remuneration were paid by piecework but, as in other ways, the criteria used by the 1847-8 inquiry skew the results. Under 5 per cent of women in food industries, the vast majority of whom were actually retailers, were paid piece rates. 43.2 per cent of women whom the 1847-8 inquiry deemed industrial workers were homeworkers but only 15.9 per cent of men. Not surprisingly, the largest proportions of female homeworkers were in leather, textiles and clothing. In all of these, over six in ten women worked at home.

[115] "Economic history is a supply-side subject," Eric Jones has rightly written, "The Fashion Manipulators: Consumer Tastes and British Industries, 1600-1800," p. 50 in L. P. Cain and P. Uselding (eds.), *Textile History and Economic History* (Manchester: Manchester University Press, 1973).

some recent and tentative efforts to give greater weight to demand, there are still leading students of industrialization who would deny it any autonomous or significant role [116]. Given these predispositions and the paucity of statistics, it is not surprising that the few historians who have written on the Parisian economy in the first half of the nineteenth century have generally emphasized only the importance of the local market and given short shrift to changing regional, national or export demand [117].

Some recent work on other aspects of industrialization, however, points to possible ways in which demand might have been important and suggests avenues that research on Paris might take. Four principal points have been made. The first is that there are some circumstances in which demand can change independently of production processes. One is through rising export demand [118] and the other is improving home demand that is fuelled by rising agricultural productivity. Both of these, it might be noted, were occurring in the France of the first half of the nineteenth century. Second, scholars have laid new stress on cultural and social factors in the extension of markets. British historians Neil McKendrick and Harold Perkin [119],

[116] For a convincing critique of the assertion that demand merits the rank of equal partner with supply in explanations of growth, see Joel Mokyr, "Demand versus Supply in the Industrial Revolution," *Journal of Economic History* 37(1977): 981-1008.

[117] Already in the first industrial census it carried out, the Paris Chamber of Commerce (*Statistique de l'industrie à Paris... 1847-1848...* I, pp. 38-9) claimed that the local market was more important than those outside the capital. Louis Chevalier (*La formation de la population parisienne au XIXe siècle* (Paris: Presses universitaires de France, 1950) pp. 104-9) also insisted that outside markets were of little importance. However, both Adeline Daumard (*La bourgeoisie parisienne...*, p. 425) and Jeanne Gaillard (*Paris la ville...*, pp. 380-85) have already, suggested the significance of exports.

[118] Export demand, of course, may only be partly independent. This was certainly the case in France in the period from the 1820s down to 1870, when rising exports to France, and elsewhere, improved the capacity of trading partners to buy French goods and when the prices of manufactures were falling.

[119] The most sustained analysis that McKendrick has made is in his lengthy contributions to Neil McKendrick, John Brewer and J. H. Plumb, *The Birth of a Consumer Society: The Commercialisation of Eighteenth-Century England* (London: Europa, 1982). See also Harold Perkin, *The Origins of Modern English Society, 1780-1880* (London: Routledge and Kegan Paul, 1969) and "The Social Causes of the Industrial Revolution" in *idem, The Structured Crowd. Essays in Social History* (Brighton: Harvester, 1981) pp. 28-46.

for instance, have long insisted on the role these phenomena played in the Industrial Revolution, the former going so far as to talk of a consumer revolution which he supposes took place in the eighteenth century. They both claim that social emulation in consumption patterns, which they say was the result of a narrowing of social distance in the relatively open British society of the time, widened markets and each uncovers mechanisms whereby elite spending habits were imitated by other social groups. The capital, they argue, acted as a shopwindow for conspicuous consumption, ever more numerous domestic servants acted as vectors of elite tastes, and there was a downward extension of demand as a result of what they assert to be rising real wages among the working classes. More recently, other scholars have stressed the role of changing bourgeois values and taste in shifting consumption patterns for artisanal and mass-produced goods in the nineteenth century[120]. All these approaches are suggestive for an analysis of Parisian manufactures and their markets but, as critics of these attempts by some British historians to emphasize demand factors have indicated[121], they all come up against the difficulty of proof since the consumption patterns of different groups in past societies remain quicksilver elusive, even if to determine some of these we can call upon probate and notarial archives. Historians have also begun to study the tactics[122]

[120] Colin Campbell, *The Romantic Ethic and the Spirit of Modern Consumerism* (Oxford: Oxford University Press, 1987) and Whitney Walton, *France at the Crystal Palace. Bourgeois Taste and Artisan Manufacture in the Nineteenth Century* (Berkeley: University of California Press, 1992).

[121] Ben Fine and Ellen Leopold, "Consumerism and the Industrial Revolution," *Social History* 15(1990): 151-80, who also criticize the ideological bias in McKendrick's writing on demand.

[122] Neil McKendrick ("Josiah Wedgwood: An Eighteenth-Century Entrepreneur in Salesmanship and Marketing Techniques," *Economic History Review* second series, 12(1960): 408-33) early showed the importance of aggressive marketing techniques in pottery, while Eric Robinson ("Eighteenth-Century Commerce and Fashion: Matthew Boulton's Marketing Techniques," *Economic History Review*, second series 16(1963): 39-60) and Maxine Berg, "Commerce and Creativity in Eighteenth-Century Birmingham," pp. 173-204 in *idem* (ed.) *Markets and Manufactures in Early Industrial Europe* (London: Routledge, 1991) has done the same for the so-called toy trade of Birmingham.

— commercial innovations, advertising and the advent of taste professionals [123] which entrepreneurs and middlemen were able to call upon to spread fashions and conquer markets. This is a third possible approach which we might adopt in order better to understand how markets acted as a motor of growth. Fourthly and finally, a number of students of industrial structures similar to those found in the French capital at this time have stressed the critical importance of the capacity of such structures to adapt to rapidly changing markets [124], as well as stressing that one of the fundamental reasons for the increasing power of merchants in face-to-face industry was precisely their ability to control and conquer markets at home and abroad [125].

We can best demonstrate the usefulness of these insights for Parisian manufactures by treating the internal and export markets separately. It should be said at the outset, however, that since customs statistics are available to provide a measure of exports while data are sparce on Parisian and provincial markets or shifts in income distribution and patterns of consumption, it will be easier to show the changing importance of foreign trade. This should not lead us to believe that domestic demand was a less significant motor of change. The contrary was undoubtedly the case.

Parisian industry obviously benefitted from the wealth of the city's elites, which research on estate values shows increased markedly in this period [126], as well as from the tastes and styles in clothing and

[123] Two studies, for instance, have recently analyzed the rise of taste professionals in the furniture industries of London and Paris: Pat Kirkham, "Furniture Making in London, c. 1700-1870: Craft Design, Business and Labour," Ph. D. thesis, University of London, 1982 and Leora Auslander, "The Creation of Value and the Production of Good Taste," Ph. D. thesis, Brown University, 1988. The latter study deals with the period after 1860.

[124] This, as we have noted, is emphasized in the work of Allen J. Scott, Michael J. Piore and Charles Sabel.

[125] See, for example, Alain Faure, "Petit atelier et modernisme économique: la production en miettes au XIXe siècle," *Histoire, économie et société* 5(1986): 531-555. Richard B. Stott (*Workers in the Metropolis*... pp. 35 and 55-60) is one of the rare historians to attempt to determine the importance of markets for a metropolitan economy, in this case New York in the first half of the nineteenth century.

[126] The disproportionate wealth enjoyed by Parisian elites is evidenced in the share of the national tax burden they bore. (See André-Jean Tudesq, *Les grands notables en France (1840-1849): étude historique d'une psychologie sociale* (Paris: Presses universitaires

house furnishings which the bourgeoisie increasingly succeeded in imposing on other groups. It also seems, though again further work needs to be done, that other groups in the capital, civil servants and at least some shopkeepers [127], were sufficiently well off to be able to imitate upper-class life styles. What is less clear, and in the present state of knowledge it appears unlikely to have been important, is whether there was any significant trickle-down of demand to parts of the working classes in the capital [128].

In the absence of data on internal trade we can suggest but we cannot fully demonstrate that the provinces took a growing share of Parisian manufactures [129]. Several arguments can be invoked, however, in support of the assertion. One is that between 1820 and 1870 the agricultural sector of the French economy was undergoing a long period of accelerating growth at an annual average rate of 1.2 per cent, which was very possibly higher than growth rates in the British agriculture at this time. Many of the areas that underwent the most rapid growth were those in, or adjoining, the Paris basin and the most dynamic sectors were those market-oriented holdings of forty

de France, 1964) pp. 336-7. Adeline Daumard (*Les fortunes françaises* (Paris: Mouton, 1973) pp. 188-92) has shown that the average value of the estates of those who died in the capital doubled between 1820 and 1847.

[127] An 1846 report revealed that the average income of Parisian butchers was 3,500 francs, considerably more than even the most skilled artisan could earn. Patrick Verley, *Nouvelle histoire économique de la France* (Paris: Editions la Découverte, 1989) II, p. 54.

[128] It is generally assumed that working-class demand for manufactured goods was limited and stagnant during this period. Jacques Rougerie ("Remarques sur l'histoire des salaires à Paris au XIXe siècle," *Mouvement social* 63(1968): 71-108) has argued, on the basis of only patchy evidence, that real wage levels were generally stable in this period. We might remember, though, that labour participation rates were relatively high in Paris, and that one historian has argued, though not convincingly, that the spread of paid work of women and children in Britain in this same period may have added significantly to family incomes and may thus have made a difference in effective demand among the working classes (Neil McKendrick, "Home Demand and Economic Growth: A New View of the Role of Women and Children in the Industrial Revolution," pp. 152-210 in *Idem* (ed.), *Historical Perspectives. Studies in English Thought and Society in Honour of J.H. Plumb* (London: Europa, 1974). What is clear is that more work needs to be done on working-class budgets and survival strategies.

[129] We do have a good deal of scattered evidence of rising demand in the provinces for Parisian manufactures. One entrepreneur in the ready-made trade, who passed as an expert on the industry as a whole, asserted that provincial markets were the key to the

hectares and more which made up nearly half of agricultural land [130]. There can be no doubt that exports of Parisian manufactures to the provinces were stimulated by increasing demand from these prosperous farmers [131], as well as by intensifying exchanges between the capital and its widening supply basin, by some cheapening of transport costs for goods and passengers, by increasing information flows, and by the reinforcement of Paris's control of internal commerce [132].

It is evident, secondly, that commercial innovations in Paris further stimulated demand not just within but also outside the capital. Three developments, in particular, seem to have been important but, once more, further research will need to be done before their impact can be fully determined. One is the growing power of middlemen, of merchants and commission agents. Another is the influence of those who would later be called the taste professionals, such as the writers of etiquette books or of fashion magazines, the *Journal des dames et des modes,* for example, dates from the late eighteenth century. The final and most visible innovation, however, was in commerce. Scholars working on Parisian retailing have laid greatest stress on the advent of the department store after the mid-century. There are, though,

rise of ready-made clothes. Lémann, confectionneur, *De l'industrie des vêtements confectionnés en France, réponse aux questions de la commission permanente des valeurs, relatives à cette industrie* (Paris: Dupont, 1857) pp. 14-16. The Chamber of Commerce inquiries contain several references to provincial markets. Wallpaper manufacturers, for instance, sent half their production there (*Statistique de l'industrie... 1847-1848,* I p. 182).

[130] George Grantham, "The Diffusion of the New Husbandry in Northern France, 1815-1840," *Journal of Economic History* 38(1978): 311-37 and Colin Heywood, "The Role of the Peasantry in French Industrialisation, 1815-88," *Economic History Review* second series 34(1981): 359-76.

[131] The 1847-1848 Paris industrial census (*Statistique de l'industrie... 1847-1848* II, pp. 698-9) describes one consequence of the prosperity enjoyed by owners of larger farms (and of their savings practices), the increased sales of Parisian silverware: "l'usage... est devenu, avec celui de la timbale d'argent, une sorte de nécessité pour l'habitant aisé de la compagne; ...les fermiers riches mettent leur luxe à avoir des couverts d'un bon poids, faits exprès pour eux, et une masse considérable d'argent oeuvré se trouve ainsi casée en réserve dans le pays."

[132] Increasing Parisian control over internal exchange at the beginning of the nineteenth century has been analyed, above all, by Louis Bergeron. See his *Banquiers, négociants et manufacturiers parisiens...*

numerous indications well before that date of a spreading culture of consumption and of the techniques used to promote it: increasing recourse to different forms of publicity [133] and visual display, as in the shopping galleries from the 1820s, new practices in retailing of offering fixed and low prices based on increased turnovers, and the advent of fancy goods stores *(magasins de nouveautés)* and bazaars in the 1820s [134].

That export demand was also a motor of growth is not immediately obvious in available statistics. The capital's export list was heterogeneous and no one item made up even seven per cent of the total by value (see Appendix III). In any case, Paris exported only 11.5 per cent of total production by value in 1847 and even a slightly lower proportion of 10.3 per cent in 1860 [135]. However, the classifications adopted by the Chamber of Commerce inquiries, from whose censuses these calculations are made, lead to counting as manufacturing both building, which served the local market, and foodstuffs, which was mainly a service rather than manufacturing activity. When these activities are taken out of the calculation, we find that 15 per cent of production was sent abroad. When we examine the export mix — presented in Appendix III — we gain two rather more convincing measures of the importance of exports for some of the most dynamic sectors of manufacturing. On the one hand, and despite the apparent heterogeneity of the export list, we discover that four items — fine jewellery, machinery, leather goods and shoes — made up nearly a quarter of the value of all goods sold abroad and that the following twenty items represented another third of total

[133] Thanks to Edouard Petit's monograph (*Etudes, souvenirs et considérations sur la fabrication de l'éventail* (Versailles: Beau jeume, 1889), we know something about how fan-makers used publicity, as well as reducing costs through the division of labour, to promote sales.

[134] We should not exaggerate the speed with which the fancy goods stores spread, for even Pierre Parissot's *Belle Jardinière*, founded in 1824, had a slow start in its first decade. See François Faraut, *Histoire de la Belle Jardinière* (Paris: Bélin, 1987) chapter II.

[135] Calculated from figures in the 1847-1848 and 1860 industrial censuses. The slight decline in 1860 must be explained by the integration of the inner suburbs whose industries were less oriented to export markets.

values. Other breakdowns that serve to further indicate the importance of export demand are also possible. A study of the list of leading exports presented in Appendix III makes clear the kind of competitive advantages enjoyed by industries in the capital: articles of clothing, including umbrellas and fans, make up 17.2 per cent, while jewellery of different kinds and silverware make up another 11.7 per cent and clocks and precision instruments a further 3.2 per cent. The second measure is that many industries exported a significant proportion of their production: those that sent half or more of their manufactures abroad were responsible for only 14 per cent of total exports but those which exported at least a quarter made up nearly a half by value. If we had a breakdown of markets by firms, and unfortunately the Chamber of Commerce destroyed the questionnaires that each industrialist completed for the two inquiries which might have allowed us to make this calculation, we would certainly have discovered that some firms specialized much more heavily in export markets than we are able to show from an analysis of aggregate data. However, we can use another approach to determine the role of export demand in promoting change: a comparison of the export mix in the early 1820s with that of 1860 [136]. This shows that though there were items, such as silks, shawls and porcelain, whose share in export values declined, there were others which underwent remarkable growth. Ready-made clothes and machinery were important in 1860 but had not been present in the early 1820s. Exports of other leading items also grew much faster than the 650 per cent increase in global values: exports of precision instruments grew nine times faster than the increase in total exports, leather goods and perfumes each increased six times faster; fine jewellery four times; artificial flowers and umbrellas three and shoes two.

Export demand, then, was more important for the dynamism of

[136] As we did for our earlier estimates of growth of total exports, we took an annual average of the value of leading items on the export list for 1821 to 1827 (six years because data for 1825 are not available) published in the *Recherches statistiques sur la ville de Paris...* II, tables 78-91 and III, tables 98-132 and compared the results with our calculations based on figures given by sector in the 1860 Chamber of Commerce inquiry.

Parisian manufacturing than is at first apparent. There are two explanations for the rising importance of foreign markets. One is that exporters were able to profit from a favourable international situation. Despite the protectionist tariff policies which remained in place during much of the period, world trade expanded rapidly and France's share of it increased from ten to 13 per cent between 1830 and 1860 [137]. The second is that they had the advantage of the economies of agglomeration, style and flair in products for luxury markets and product and process innovations which also allowed them to conquer wider markets for semi-luxuries [138].

VI

We have advanced a series of arguments in order to establish the dynamism and dynamics of manufacturing in Paris in the first half of the nineteenth century. We have argued, first, that what previous work has been done on Paris was mainly, but by no means entirely, imprisoned in global interpretations of industrialization processes and the role urban manufacturing played in them which prevented scholars from according Parisian industries their full importance. We have not argued, of course, that our attempt to do so is not influenced by other paradigms on growth processes, still less that these are not themselves destined to be superseded.

We have argued, second, that recent research and renewed debates on metropolitan economies present and past, as on

[137] Paul Bairoch, *Commerce extérieur et développement économique de l'Europe au XIXe siècle* (Paris: Mouton, 1976) pp. 22-25 and *idem.*, «La place de la France sur les marchés internationaux,» pp. 37-52 in Maurice Levy-Leboyer (ed.), *La position internationale de la France. Aspects économiques et financiers XIXe-XXe siècles* (Paris: Editions de l'Ecole des hautes études en sciences sociales, 1977).

[138] Indicative of the confidence of Parisian exporters is the testimony they gave before the 1860 inquiry into the free-trade treaty with Britain. The only ones to voice any fears about competition on international markets were machine-builders and makers of imitation bronzes. Conseil supérieur de l'Agriculture, du Commerce et de l'Industrie, *Enquête. Traité de Commerce avec l'Angleterre* ....

nineteenth-century growth processes in general, suggest we need to reassess Parisian industries. It has not been suggested, of course, that new paradigms provide all the conceptual apparatus that will enable scholars to fully understand complex metropolitan industrial structures in the past. "History," Lenin once said, "possesses infinitely more imagination than we do."

We have argued, third, that despite the paucity of surviving sources we can still persuade those which are available to reveal the comparative advantages enjoyed by industries in the capital and something of their importance in urban, regional and national economies. The most dynamic sectors were those face-to-face industries — clothing, leather, precision engineering, furniture, jewellery, printing and publishing, specialized metals — many of which would continue to flourish in this as in other metropolitan centres. We cannot claim, however, that we have been able fully to determine how the capital's industries inserted into wider processes and still less that change in Parisian manufacturing was an autonomous process. The capital's industries grew in part because they benefitted from the lower cost of many of the semi-processed inputs they needed and which themselves resulted from increased productivity in other sectors of the economy. They profited, too, from agricultural growth, from increasing internal and international trade, as from the choices individuals made to respond positively to signals from the capital by migrating there. Industrial growth in Paris, then, possessed a dynamism of its own but it also depended on wider forces. All the difficulty, as in every effort to understand urbanization processes, is to establish the relative weight of each.

We have suggested, fourth, that there was development rather than just expansion of the industrial base and that change across a broad front, and including product, process and organization innovations, was accelerating in the first half of the nineteenth century. There was no hiatus at this time, then, as some scholars have suggested. We have not claimed that the 1820s constituted a departure point and still less that the 1850s marked a new watershed. We still know too little about industries before the

Revolution but we know enough to realize that changes were already taking place before the nineteenth century. We know even better that the kinds of innovation and adjustment we have found in our period would continue to be features of manufacturing in this and other metropolitan economies in later periods [139].

We have argued, finally, that the explanation for the dynamism of Parisian industries at this time is to be found in changes taking place in the city and in wider processes and that these can best be understood if we take into account not only supply factors, such as product and process innovation, changing labour inputs and productivity, but also demand. Given the sort of goods produced in the city and their expanding but volatile markets, Adam Smith's 1776 adage remains apposite: "the division of labour is limited by the extent of the market." We have not asserted, of course, that demand is wholly autonomous, still less that it merits equal treatment with supply in explanations of the success of Parisian manufacturing.

We might also suggest that our preliminary findings should serve to stimulate further research on the complex forward and backward linkages that Parisian manufacturing had with regional and national economies, and, as Louis Bergeron has suggested, on the growing control exercised by Parisian merchants and industrialists over markets and industries outside the capital. It should also encourage much-needed work on industry's changing occupation of urban space. Though manufacturing was certainly not the only factor modelling and remodelling space, too much attention has so far been given to the ways in which urban planners and elites, as property

[139] Catherine Babut and Bruno Daly, in *La petite et moyenne entreprise en région d'Ile-de-France* (Paris: Institut d'aménagement et d'urbanisme de la région d'Ile-de-France, 1982), have shown that 30 per cent of France's small and medium-sized firms (now defined as those with under 500 employees) were in the Paris region and that, with a quarter of employees accounted for a third of the added value of all such firms in France. Such firms continued to dominate the Parisian business landscape and to occupy similar sectors (printing and publishing, metalworking, clothing precision engineering), though by this time leather, shoes, furniture and woodworking had left the region. They also continued to specialize in short production runs and to export a higher proportion of their manufactures than did other small firms.

owners and speculators, moulded urban forms. Too little has yet been accorded to more discrete but still powerful forces. The plea is an old one but no less true for that. The importance and changing nature of industrial employment should also encourage renewed research on the Parisian working class. As is well known, too much attention has been given to the working class at public moments, in political and union movements and confrontations with the forces of order, but still too little to survival strategies, or to cultures on the shop floor, in neighbourhoods and in families. We are beginning to realize, for instance, that immigrants were less innocents flooding the city and risking to have their virtue defiled and to become "dangerous classes" than workers bringing labour and skills in response to signals emitted from the capital and that rising population densities in central areas were symptoms less of urban pathology, as Chevalier suggested [140], than of the residential patterns of labour drawn to the employment nodes of industries which were growing and changing. We still need to know more about how these changes affected the working class and gender relations and how, and with what success, workers responded to the challenges of seasonality, fluctuations, and change in the industrial process. Our research already suggests, though, that the Paris of the first half of the nineteenth century was undergoing not just the demographic change which other scholars have already stressed but structural change and that manufacturing was one of its principal motors.

[140] We are tempted to suggest that, as in the Stouffer model of the dynamics of internal migration, immigration into Paris at this, as at other times, was proportionate to the availability of employment.

APPENDICES

Appendix I: 1856 Census: Occupations in Paris

	Number		
	Male	Female	Total
Agriculture (1)	1,410	422	1,832
Mining (2)	221	11	232
Building	55,666	912	56,578
Manufacturing (3)	217,848	133,209	351,057
Transport (4)	16,847	420	17,267
Retailing (Dealing)			
Coal and firewood	2,683	1,258	3,941
Raw materials (5)	508	195	703
Foodstuffs	10,574	5,846	16,420
Tobacco	356	532	888
Wines, spirits, hotels (6)	10,097	4,524	14,621
Lodging and coffee houses (7)	8,247	2,830	11,077
Stationery and publications (8)	3,802	1,117	4,919
Household utensils and ornaments (9)	3,507	1,022	4,529
General dealers (10)	8,083	7,311	15,394
Unspecified (11)	2,990	96	3,086
Retailing Total	50,847	24,731	75,578
Banking, insurance, accounting	3,394	42	3,436
Public service and professions			
Government service (12)	18,265	925	19,190
Sanitation (13)	1,280	336	1,616
Armed forces	47,885	2,993	50,878
Police and prisons (14)			
Law (15)	4,204	13	4,217
Medicine (16)	2,309	581	2,890
Art, amusement, literature, science (17)	5,063	1,722	6,785
Education	2,612	2,057	4,669
Religion (18)	1,660	2,961	4,621
Other liberal professions (19)	977	62	1,039
Total Public service and professions	84,255	11,650	95,905
Domestic service			
Indoor and outdoor (20)	19,070	64,756	83,826
Extra service (21)	15,982	26,154	42,136
Total Domestic service	35,052	90,910	125,962
Total Occupied Population (22)	**465,540**	**262,307**	**727,847**

Source: "Population générale de Paris et des arrondissements de Saint-Denis et de Sceaux par séries de professions," *Recherches statistiques sur la ville de Paris et le département de la Seine*, VI (Paris: Dupont, 1860) pp. 625-54 reworked following classifications proposed by W.A. Armstrong, "The Use of Information about Occupation" in E.A. Wrigley (ed.), *Nineteenth-Century Society* (Cambridge: Cambridge University Press, 1972) pp. 255-310.

Notes to Appendix I:

(1) Also includes bird-sellers and veterinarians.

(2) Comprises mining and quarrying.

(3) Detailed analysis of sector in Table II.

(4) Comprises those in haulage, railways, removals, horse transport, port workers, and porters *(commissionnaires)*.

(5) Comprises grain, flour and seed merchants.

(6) Also includes *hôtels garnis*.

(7) Comprises innkeepers, coffee-shopkeepers, lemonade sellers and restaurateurs.

(8) Bill-stickers, booksellers, stationers, music publishers and newspaper vendors.

(9) Comprises hardware and dealers in second-hand goods *(brocanteurs)*.

(10) Comprises rag-and-bone merchants, flower and fruit sellers, street vendors (who make up half the total for the category), water carriers and salt merchants.

(11) Factors, brokers and auctioneers *(commissaires-priseurs)*.

(12) Comprises central and local government.

(13) Made up of those in street-cleaning and nightmen.

(14) Not enumerated separately in the 1856 census.

(15) Comprises lawyers, *avoués, huissiers,* notaires and magistrates.

(16) Comprises dentists, oculists, midwives (who make up 92 percent of the women in this category), and employees of mental homes as well as medical practitioners and surgeons.

(17) Made up of artists and sculptors, actors and theatre employees, musicians, street entertainers, interpreters and men of letters.

(18) Also includes seven cemetery attendants.

(19) Indicated without further elucidation in the 1856 tables.

(20) Those in domestic service.

(21) Comprises bath attendants, charwomen, *concierges* and doormen, hairdressers and washerwomen. Have also been added, for the sake of accounting and logic, those (1126) persons who admitted to censustakers that they made a living from prostitution. This number, of course, falls far short of those who actually did so.

(22) Students boarding at *lycées* and students at colleges and universities, included in 1856 tables, have been taken out of this category.

Appendix II: Occupied Population in Manufacturing in Paris and London in the Mid-Nineteenth Century

A: PARIS	numbers			percentage of occupied population		
	male	female	total	male %	female %	total %
1. Machinery (1)	8,377	117	8,494	3.84	0.09	2.42
2. Tools (2)	2,615	178	2,793	1.20	0.13	0.80
3. Shipbuilding	6	1	7	0	0	0
4. Iron and steel (3)	2,665	134	2,799	1.22	0.10	0.80
5. Non-ferrous metals (4)	12,883	847	13,730	5.91	0.64	3.91
6. Gold, silver, jewellery (5)	11,340	4,593	15,933	5.20	3.45	4.54
7. Earthenware (6)	1,677	341	2,018	0.77	0.26	0.57
8. Coal and gas	469	12	481	0.21	0.01	0.14
9. Chemicals (7)	1,574	273	1,847	0.72	0.20	0.53
10. Furs and leather	5,087	552	5,639	2.34	0.41	1.61
11. Glue and tallow (8)	411	90	501	0.19	0.07	0.14
12. Hair brushes, etc. (9)	1,653	1,035	2,688	0.76	0.78	0.77
13. Woodworking, etc. (10)	6,690	998	7,688	3.07	0.75	2.19
14. Furniture (11)	20,922	4,229	25,151	9.60	3.17	7.16
15. Carriagemaking and harnesses (12)	7,400	650	8,050	3.40	0.49	2.29
16. Paper (13)	1,660	1,543	3,203	0.76	1.16	0.91
17. Floorcloths (14)	258	159	417	0.12	0.12	0.12
18.-21. Textiles (15)	24,097	23,915	48,012	11.06	17.95	13.68
22. Dyeing	1,409	610	2,019	0.65	0.46	0.58
23. Clothing						
(a) boot and shoemaking (16)	16,089	9,010	25,099	7.39	6.76	7.15
(b) hatting (16)	2,880	1,688	4,568	1.32	1.27	1.30
(c) bonnet and capmaking	1,886	2,433	4,319	0.87	1.83	1.23
(d) millinery	197	5,404	5,601	0.09	4.06	1.60
(e) seamstresses	54	34,643	34,697	0.02	26.01	9.88
(f) staymaking	152	1,854	2,006	0.07	1.39	0.57
(g) linen goods	471	19,101	19,572	0.22	14.34	5.58
(h) tailoring (17)	13,695	7,065	20,760	6.29	5.30	5.91
(i) other	2,868	4,070	6,938	1.32	3.06	1.98
Total clothing	38,292	85,268	123,560	17.58	64.01	35.20
24. Sundries connected with clothing (18)	2,697	1,915	4,612	1.24	1.44	1.31
25. Food preparation (19)	1,549	587	2,136	0.71	0.44	0.61
26. Baking and confectionery	5,151	1,487	6,638	2.36	1.12	1.89
27. Drink preparation	1,533	399	1,932	0.70	0.30	0.55
28. Tobacco products	365	1,266	1,631	0.17	0.95	0.46
29. Watches, instruments, etc.						
(a) toys	905	608	1,513	0.42	0.46	0.43
(b) watches and clocks (20)	2,909	227	3,136	1.34	0.17	0.89
(c) musical instruments	1,418	73	1,491	0.65	0.05	0.42
(d) scientific instruments (21)	2,032	394	2,426	0.93	0.30	0.69
(e) perfumes	583	396	979	0.27	0.30	0.28
(f) articles de Paris	1,186	509	1,695	0.54	0.38	0.48
(g) hunting and fishing equipment	96	35	131	0.04	0.03	0.04
Total watches, instruments, etc.	9,129	2,242	11,371	4.19	1.68	3.24
30. Printing, engraving and bookbinding	12,029	3,598	15,627	5.52	2.70	4.45
31. Unspecified (22)	22,187	9,893	32,080	10.18	7.43	9.14
Total for manufacturing	217,848	133,209	351,057	100	100	100

B: LONDON	numbers			percentage of occupied population		
	male	female	total	male %	female %	total %
1. Machinery (1)	8,321		8,321	3.45		2.23
2. Tools (2)	2,557		2,557	1.06		0.68
3. Shipbuilding	8,342		8,342	3.46		2.23
4. Iron and steel (3)	19,486	176	19,662	8.09	0.13	5.27
5. Non-ferrous metals (4)	11,274	292	11,566	4.68	0.22	3.10
6. Gold, silver, jewellery (5)	5,706	144	5,850	2.37	0.11	1.57
7. Earthenware (6)	1,372	160	1,532	0.57	0.12	0.41
8. Coal and gas	1,702		1,702	0.71		0.46
9. Chemicals (7)	2,630	376	3,006	1.09	0.28	0.80
10. Furs and leather	6,283	1,600	7,883	2.60	1.21	2.11
11. Glue and tallow (8)	4,311	332	4,643	1.79	0.25	1.24
12. Hair brushes, etc. (9)	3,055	1,712	4,767	1.27	1.29	1.28
13. Woodworking, etc. (10)	14,202	27	14,229	5.89	0.02	3.81
14. Furniture (11)	18,658	2,431	21,089	7.74	1.84	5.65
15. Carriagemaking and harnesses (12)	9,605	175	9,780	3.99	0.13	2.62
16. Paper (13)	2,648	1,267	3,915	1.10	0.96	1.05
17. Floorcloths (14)						
18.-21. Textiles (15)	21,625	16,894	38,519	8.98	12.75	10.32
22. Dyeing	1,735		1,735	0.72		0.46
23. Clothing						
(a) boot and shoemaking	30,865	19,774	50,639	12.81	14.92	13.56
(b) hatting (16)	2,781	2,132	4,913	1.03	1.61	1.32
(c) cutting and dressmaking		3,046	3,046		2.3	0.82
(d) millinery		43,926	43,926		33.16	11.76
(e) dressmaking		21,210	21,210		16.01	5.68
(f) staymaking		2,466	2,466		1.86	0.66
(g) linen wood						
(h) tailoring (17)	22,479	8,292	30,771	9.33	6.26	8.24
(i) cutlery						
Total clothing	59,181	103,835	163,016	24.56	78.37	43.66
24. Sundries connected with clothing (18)	841	1,221	2,062	0.35	0.92	0.55
25. Food preparation (19)	1,200	3	1,203	0.50		0.32
26. Baking and confectionery	13,762	1,150	14,912	5.71	0.87	3.99
27. Drink preparation	7,604		7,604	3.16		2.04
28. Tobacco products	901	193	1,094	0.37	0.15	0.29
29. Watches, instruments, etc.						
(a) toys						
(b) watches and clocks (20)	4,847		4,847	2.01		1.30
(c) musical instruments	2,929		2,929	1.22		0.78
(d) scientific instruments (21)	1,578	93	1671	0.65	0.07	0.45
(e) perfumes						
(f) articles de Paris						
(g) hunting and fishing equipment						
Total watches, instruments, etc.	9,354	517	9,871	3.88	0.39	2.64
30. Printing, engraving and bookbinding	14,002		14,002	5.81		3.75
31. Unspecified (22)	1,662		1,662	0.69		0.44
Total for manufacturing	240,919	132,486	373,405	100	100	100

Source: *Recherches statistiques sur la ville de Paris et le département de la Seine*, VI (Paris: 1860) pp. 625-54, reworked following W.A. Armstrong's classifications and tables in appendices 3 and 4 pp. 255-63 in L.D. Schwarz, *London in the Age of Industrialisation*... Occupations for Paris are for 1856, those for London 1851. Our occupational categories for Paris include all sub-categories. Schwarz's tables do not. Because of rounding, his sub-categories do not always add up to the precise total in that classification.

Note to Appendix II

(1) Machine-building also includes scale and pump making.

(2) Comprises makers of edge-tools, cutlers, armourers, medal and coin makers, pen makers and typefounders.

(3) Also includes blacksmiths.

(4) Manufacturing of copper, brass, tin and lead objects.

(5) Comprises jewellery (fine and costume) and gold and silverware.

(6) Includes porcelain, crystal and glassware.

(7) Includes matchmaking, fireworks, colour and ink manufacturing, as well as chemical products.

(8) Also includes wax and soap.

(9) Comprises brushes and combs.

(10) Also includes cork and basket making.

(11) Along with furniture, this sector includes dressing-case making, inlaid work, upholstering and wallpaper manufacturing.

(12) Included are wheelwrights and makers of carriages, military equipment and luggage.

(13) Comprises paper, cardboard and playing cards.

(14) Includes floorcloths and rubberized cloths.

(15) Also included are ropemaking and artificial flowers. The latter occupied 8424 persons in Paris (94 percent of them women).

(16) Straw hat making has been added to hats.

(17) The 'others' category comprises gloves (not leather), clogs, ready-made clothes for women and breeches making.

(18) Comprises umbrellas, walking sticks, buttons and fans.

(19) Conserves, noodles, jams, sugar refining, vinegar and mustard and chocolate making.

(20) Paris did not manufacture significant quantities of watches.

(21) Trussmakers have been included with surgical and scientific instrument makers.

(22) 'Unspecified' is a more significant category for Paris than for London not just because it includes a larger group of industrial occupations which the compilers of the 1856 census lumped together as 'unclassified' but also because we have included here the *commissionnaires-négociants* (5,006 persons) who were of increasing significance in many branches of Parisian industry, who were all grouped together in the census.

Appendix III: Parisian Exports at the Mid-Century

A: Leading Articles on the Export List in Rank Order

Export Item	Value of Exports in francs	Percentage of Parisian exports by value
jewellery	23,255,600	6.69
machinery	21,254,180	6.12
leather goods	18,636,000	5.36
shoes	17,542,000	5.05
costume jewellery	9,571,840	2.75
artificial flowers	9,327,980	2.68
lace	8,581,000	2.47
men's clothing	8,555,000	2.46
leather gloves	7,925,500	2.28
brassware	7,650,000	2.20
hats	7,183,500	2.07
perfumes	7,073,200	2.04
linen goods	6,074,500	1.75
precision instruments	5,951,635	1.71
clocks	5,262,170	1.51
gold and silver chains	4,733,000	1.36
women's ready-made clothes	4,656,000	1.34
furniture	4,393,184	1.27
carriages	4,292,100	1.24
wallpapers	4,218,000	1.21
fans	4,162,500	1.20
dyes and chemicals	3,976,000	1.14
umbrellas, walking sticks	3,403,450	1.02
silverware	3,195,000	0.92

B. Parisian Industries Exporting the Largest Proportions of their Production in Rank Order

Industries exporting at least half their production	Percentage of production	Value of exports in francs
fans	87.40	4,162,500
gut and cat-gut	63.30	656,000
pearls	61.80	315,500
lighthouse equipment	60.80	2,350,000
imitation brassware	59.10	1,653,500
costume jewellery	53.10	9,571,840
leather gloves	52.90	7,925,500
organs	52.00	2,813,000
leather goods	51.90	18,636,000
embroidered articles for churches	50.00	979,000

Percentage of total exports: 14.12%

Industries exporting over a quarter of their production	Percentage of production	Value of Exports
musical instruments	46.6	320,700
metal fasteners	46.4	2,108,200
artificial pearls, stones and enamel ware	44.2	717,000
machinery	43.6	21,254,180
accordions	42.6	547,500
rubberized goods	42.3	1,767,500
goods in alabaster	37.5	5,951,635
precision instruments	38.4	228,000
felt for hats	36.3	2,900,000
musical instruments (metal)	35.6	1,137,000
small silverware	34.3	1,432,500
jewellery	33.6	23,255,600
artificial flowers	33.2	9,327,980
fancy paper	32.8	3,133,500
brassware	32.1	7,653,000
gold and silver chains	31.9	4,733,000
patent leather goods	31.5	1,775,000
perfumes	31.4	7,073,200
combs	30.5	2,154,045
stays	29.8	2,283,000
tinware	28.9	1,657,000
buttons (bone and horn)	28.4	1,351,000
enamelled jewellery	28.3	396,850
shawls	28.1	3,100,000
clocks	27.9	5,262,170
fashion feathers	25.7	1,428,000
engravings and prints	25.7	1,084,000

Percentage of total exports: 32.83%

Percentage of total exports for goods representing at least 25% of production of each article: 46.95%

Source: Calculated on the basis of a total value for Parisian exports of 347,349,098 francs in 1860 from data presented for each Parisian industry in Chambre de commerce de Paris, *Statistique de l'industrie à Paris en 1860* (Paris: Chambre de commerce, 1864).