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Changes in the Recruitment and Education of the Power Elites in Twentieth Century Western Democracies

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Abstract

The aim of this paper is to examine the evolution of recruitment of elites and to investigate the nature of the links between recruitment and training of elites and economic development. We show that there was a key shift at the turn of the nineteenth century in the way the Western world trained its elites, with a second shift taking place after World War II, when meritocracy became the basis for recruitment of elites. Although meritocratic selection should result in the best being chosen, we show that meritocratic recruitment leads to class stratification and auto-recruitment. We analyze whether stratification resulting from meritocratic selection is optimal for the development of a country, and show that it is dependent on the type of technological changes occurring in the country.

Keywords: elite; auto-recruitment; training; education; meritocracy; stratification; economic growth.

JEL classification: P2

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I. INTRODUCTION

The dawn of the twenty-first century witnessed an earthquake in the financial markets that was caused in part by a loss of confidence in the management of companies. A basic assumption underlying stock market activity had been that firms, especially big ones, choose the best people to lead them, and consequently enjoy higher profits and growth, since business leaders play a preponderant role in economic life.

Financial markets suddenly discovered that this was not the case; it became clear that capitalism at its best had a problem: the leaders of the big companies did not act in the best manner. This raised the question of how these elites are trained and recruited. The purpose of this paper is to study the effects of recruitment of the elites and their training on the economy, to explore the criteria by which they are chosen, and to examine how the methods of recruitment themselves affect the economy — an issue which has been ignored by most theorists of growth and development.

Over the centuries, there has been a key change in the way the Western world has recruited its elite. The first text on this subject is probably in the Bible, as Jethro, Moses' stepfather, suggests to Moses that he should find elite people by looking for "...distinguished men, fearing God, liking truth and enemies of luxury" (Exodus, 18:21). Later on, when the first king in the Bible was to be chosen, Prophet Samuel ordered that the king should be selected by lot, in a random way (Samuel I, 10:20).

Some centuries later, Plato and Aristotle emphasized that the recruitment of the elite is a crucial element in finding the optimal political structure. Aristotle stressed that a city should be *ruled by the best* ("aristoi" in Greek), and government should be in the hands of the most able members of society. These should be highly intelligent and educated (as well as brave and temperate) citizens.

Despite this enlightened view, over the centuries, recruitment of the elite was actually carried out via heredity, nepotism, and violence, and the word "aristocracy" came to describe the hereditary upper ruling class. Hereditary monarchy was for centuries considered the most legitimate means of the recruitment for rulers, based on the assumption that morality and intellectuality are hereditary, according to God's will. In this paper, we examine the evolution of the recruitment of elites and the effects of the different types of recruitment on the economy.

We first present a brief survey of the recruitment and education of the elite in part II. We show that there was a key shift at the turn of the nineteenth century in the way the Western world viewed its elite, with a second shift taking place in the second half of the twentieth century. After World War II, Western countries have seen an evolution in the criteria for recruitment: meritocracy became the basic factor for recruitment of elites, and education and success at exams have been used as prime criterion for recruitment.

The term “meritocracy”, a mixture of Latin and Greek, a kind of hybrid word meaning “*rule by those who deserve it*” was coined by British sociologist Michael Young in 1958, instead of the word aristocracy. Indeed, the word “aristocracy” had actually lost its literal Greek meaning of “rule by the best”; and instead had become pejorative; it had come to mean “rule by the rich” and to be equivalent to “plutocracy”.

Our main conclusion from this survey is that all countries, except Germany, are recruiting their elite through elite schools to which the entry is by meritocratic exams. In the UK, the US and France, the path to elite positions has required attendance at an exclusive school or university. It is not so in Germany, which has no comparable elite establishments, and where all universities have roughly the same status.

In part III, we analyze the effect of the recruitment through meritocratic exams. The model presented shows that meritocratic recruitment is not the panacea for choosing the best. Although it seems obvious that a meritocratic selection results in the best being chosen to enter the top ranks of public service or economic life, we show that elite schools have a tendency to recruit in a non-diversified way that results in certain classes being over-represented. Our model emphasizes that, despite meritocratic recruitment, elite training schools actually recruit from the “aristocracy”, and we get a “stratification” of recruitment. In consequence, the fact that over time, individuals from the same milieu are accepted to a school for elites is not due to cronyism, but to the system itself, despite being meritocratic.

The second part of the model will analyze the effects on the economy of the types of recruitment and training chosen for the elite. The recruitment of the elite is of crucial importance to the development and growth of the economy, since it affects the quality of the leaders; having the best citizens as the rulers enables efficient and

correct choices. The pivotal question is: which method of recruitment induces the choice of the best civil servants and business leaders, which in turn brings about a higher growth rate? We show that the optimal criterion of recruitment depends on the type of technological progress in the economy. Our conclusions are presented in part IV.

Before presenting a brief survey, we should first define the term “elite”. Having had various meanings at different times, the very term “elite” is often ambiguous and evades definition. As difficult as it is to pinpoint it, this paper is concerned solely with the upper or ruling elite, i.e., according to Mougél’s definition (1987, p. 20), “...a relatively small group of individuals, relatively coherent sociologically, who exercise a function of power, directly or indirectly (through influence), within a society”. The expression “power elite” is often applied to this group.¹

In Western countries today, the *power elite* can be roughly divided into three sub-groups that differ, yet share connections, interactions, and circulation among them. First, the ruling elite, which is itself made up of two groups: the *political elite*, which includes government members, legislators, leaders of political parties, and *senior civil servants*, i.e., the top personnel in states’ bureaucracies. Secondly, the economic and business elite, which includes business leaders such as CEOs and top executives in large firms.²

The third group is separate, as it does not control the levers of power, though it can have a good deal of influence upon the others, especially the political elite. It is also more diverse, as it includes top citizens in the professions, the media, the universities and the “intelligentsia”.³ In any event, this paper considers only the business elite and the civil servants, with an emphasis on their recruitment, education, and training.

¹ See Mills (1956). For various concepts of elites, see also Zannoni (1970), and Crew (1974).

² To Marxists, these make up the real ruling class, and members of the political elite are only the lackeys of capitalism. To conservatives, they are an oppressed class, persecuted and robbed by the state’s bureaucrats!

³ A special group is made up of trade union leaders; at least in Continental Europe, as in the US and the UK, trade union leaders’ influence is now negligible.

II. A SHORT SURVEY OF THE RECRUITMENT AND TRAINING OF THE ELITE

A. Before the twentieth century: General evidence

Despite some differences between countries, there are common elements throughout the Western world regarding recruitment and training of the elite. In traditional European societies — of which many characteristics survived well into the nineteenth century — membership in the elite was mainly hereditary; noble birth was the rule. Moreover, highly born people were also generally wealthy, even though their wealth was mainly landed. In consequence, the upper elite was made up of large landowners, an *état de fait* which was normal in agrarian societies.

Nevertheless, there were some channels through which new men, or upstarts, emerged regularly into the elite: the favor of the sovereign or of some great lord, military prowess and exploits, amassing wealth through trade or, frequently, involvement in government finance (such as tax farming), and purchase of public offices.⁴ Such upward channels involved some meritocratic elements; this was particularly pronounced within the Catholic Church, where some rose thanks to sheer intellectual prowess (Cardinal Mazarin, a low-born Italian who became Prime Minister of France, is a good example).

Appointments to various state positions (including the armed forces and the Church) were made either by patronage or by purchase.⁵ Patronage was a matter of family connections, favor, and intrigue. Despite appearing shocking today, such appointments allowed some bright young people to rise early to high office, such as the Younger Pitt, who became Prime Minister of Britain at 24.

The Industrial and the French Revolutions, economic growth, and the spread of representative, parliamentary, and eventually democratic systems of government brought about a number of changes, but more gradually than one might expect. Eventually in all advanced countries, the civil service was reformed during the

⁴ Such rises were generally crowned by ennoblement, thanks to which descendants of the “new men” were - after a time - fully integrated into the elite.

⁵ Including officers’ commissions in armies, a system which Britain was the last to abolish in 1871.

nineteenth century. Recruitment and promotion through patronage gave way gradually to entry by competitive exams and promotion by merit.

In this paper we focus on the ruling and business elites. However, a brief comparison with the political elite is interesting. The political elite came to be “recruited” mainly by election. Yet, for a long time, big landowners and members of the upper middle class had an overwhelming majority in parliaments and cabinets, even though some prominent businessmen entered the political elite. This was especially notorious in nineteenth century Britain, but only somewhat less marked in France despite its revolutions. Only in the late nineteenth century did members of the *nouvelles couches* (the medium or even lower middle class) enter the French Parliament. At the same time, the rise of socialist parties did bring into parliaments (even the German Reichstag) — but not into power — some members of the working class. As for the training of nineteenth century politicians, it was similar to that of the other elites and of the upper class as a whole.

Indeed, for a long time, there was no specific education for the elite. Most sons of the nobility had private tutors; from the seventeenth century onwards, many of them — as well as many sons of the well-to-do bourgeois — were sent to “high schools” such as the English public schools, or in Catholic countries, colleges run by the Jesuits or the Oratorians. In these schools, the pupils received a purely classical education. Then a number of young men attended universities, but the latter only offered professional training for those who wanted to become clerics, lawyers, or doctors. For well-born young men, universities such as Oxford and Cambridge were merely finishing schools where they had a good time and made useful connections (what we now call “networking”). It is noteworthy, however, that in France, under the Third Republic, many politicians were lawyers, and that Parliament also included a sizeable number of doctors, as well as some teachers.

Changes in the recruitment and training of elites first took place in the late eighteenth century, arising from the needs of modern states, which were getting stronger and tried to become more efficient, particularly by adopting new technologies. States increasingly needed not only trained specialists and military officers, but also engineers, which traditional schools and universities did not generally produce. As defence and war were the major function of states in the eighteenth century, and the “art of war” was becoming more sophisticated, the earliest

move was the establishment, by many European states, of schools for training military officers. At first, it was in the so-called *armes savantes* (i.e., artillery and military engineering in which some scientific knowledge was necessary), and later also in schools for infantry and cavalry as well.⁶ Military schools and colleges have not only survived to our own days, but they have been imitated in various other institutions, and are the origin of the French *grandes écoles*.

Then, in the late nineteenth century, in Europe as well as in the USA, two major economic changes had a strong impact. First the “second Industrial Revolution”, i.e., the rise of new industries, like chemicals and industry, which were science based. Second, the “Managerial revolution”,⁷ which involved the rise of the “corporate economy” and of the Chandlerian managerial enterprise, where salaried senior management largely took over from capital owners and heirs of the founding families. Both engineers and managers needed specialized formal training, while the pioneers of industrialisation and their heirs only had had on the job training, i.e., learning by doing.

So there was a clear difference between the education of the leaders of the First and of the Second Industrial Revolutions (Kaelble, 1979, p.29). On the whole, the late nineteenth and early twentieth century saw major changes in the education of the elite, and institutions were reformed or created to provide such training. In most countries, the old “medieval” universities were reformed and expanded during the nineteenth century, and many new ones were established. Moreover, another change which occurred during the nineteenth century “age of Reform”, is that most Western countries reformed their civil service to which entrance by competitive exams became the norms.

After the beginning of these changes in the pre-1914 era, the troubled inter-war period is not marked by any important development. The scene shifted again only after World War II. In all countries, there was a desire on the part of politicians to “democratize” the elite, and there were significant reforms in the way the elite was recruited, as well as in its education.

⁶ The earliest ones were founded in Russia under Peter the Great. Austria and France followed, and Britain (Sandhurst, 1799) and the US (West Point, 1802) were no exception.

⁷ From the title of a forgotten book by Burnham (1941).

At the same time that a “democratization” of higher education took place, reflected by an enormous increase in the number of university students, there was a concurrent emergence of two channels of education: one for the elite and the other for the rest. Democratization did not mean meritocracy and opportunity for all. Despite this overall approach, each country achieved it in its own particular way, which will be analyzed in the subsequent sections in more detail for four countries of the Western world.

B. Britain

British business leaders, most of whom had not had any higher education, were wary of university graduates.⁸ This suspicion reflected the cult of the “practical man” who had been trained on the job from the age of 14, either as an engineer on the factory / workshop floor, or as a manager in the counting-house.⁹ Therefore, most of the British economic elite was recruited and trained via the traditional channels of family connections and patronage, the so-called “old boys’ networks” of those who had attended public schools.

In some respects this system survived into the twentieth century. A high, though decreasing, percentage of top British executives began their careers at the end of their secondary education; they were either “heirs”, i.e., members of the family which owned the firm and sons of others “good families”, who received at once a top job, or men from a more modest background, who had risen within a firm. However, it became increasingly frequent for upper- and upper-middle class young men to attend university before entering business. In consequence, the percentage of university-educated British executives was lower than in France and Germany, especially in the first half of the twentieth century, but increased over time (see Table 1). From the inter-war period, large firms increased their intake of university graduates, many of them from the older universities, especially Cambridge, which had developed the teaching of science and even engineering.

⁸ Actually, for a long time, neither the universities nor the many scientific institutions of Britain bothered with vocational training.

⁹ Rubinstein (1993, tables 3.4 and 3.5) has shown that before the end of the nineteenth century, only a small minority of industrialists and sons of industrialists attended public schools.

TABLE 1: *Educational level of business leaders.* (percent)

Education	1907			1953			1972			1989		
	GB	Fr.	G.	GB	Fr.	G.	GB	Fr.	G.	GB	Fr.	G.
Apprenticeship	18	7	31	11	0	11	3	0	12	0	0	10
Sec. school	47	21	7	33	2	11	28	4	2	17	3	0
Training college	0	0	5	12	2	3	10	6	4	19	2	2
univers./gr. ecoles	35	72	57	45	96	75	59	90	82	64	95	88

Notes: GB is for Great Britain, Fr. for France and G. for Germany; Sec. is secondary school.

Source: Cassis, 1997, p.133.

From the late nineteenth century, new or “red bricks” universities has also been established in provincial cities; they emphasized science and technology and also had schools of commerce. However, the percentage of business leaders who had graduated from universities others than Oxbridge was low for a long time. It then rose, but it is still lower than that from Oxbridge. So a majority of British business leaders who have attended university attended Oxford or Cambridge.

Moreover, a large majority of those leaders — especially in the City, but somewhat less in industry and commerce — had attended public schools before entering university; indeed education at a major public school was more important in terms of social prestige than a university degree. And on the whole, for a long time, general rather than specific education was favored at the highest level (see Table 2). For instance, in 1907, the percentage of business leaders who had studied humanities was almost three times higher than in France and six times higher than in Germany. Management and business studies were almost completely missing from executives’ training.

However, after World War II, this lack was compensated for by training provided by professional bodies like the Institute of Chartered Accountants, technical colleges and engineering schools that did not yet have university status, but offered quality education.¹⁰ More recently, a number of American type business schools have been established, the last ones being — *horribile dictu* for old-fashioned dons — at Oxford and Cambridge.

So, in the past few decades, a business-oriented type of education has been more common among British businessmen, though, only slightly less than a third of the

¹⁰ See Copeman (1955), and Stanworth and Giddens (1974).

business leaders of 1989 had received commercial training in British (or American) business schools or as accountants (who make up an increasing percentage at the top levels of large corporations).

TABLE 2: *Fields of Higher education of business leaders.* (percent)

	1907			1953			1972			1989		
	GB	France	Gm.	GB	France	Gm.	GB	F.	Gm.	GB	F.	Gm.
Dual training	0	0	4	0	8	0	3	4	2	6	11	6
Arts	26	10	4	8	3	0	3	0	0	10	12	0
Economics	0	5	0	11	3	9	19	4	10	27	15	31
Law, Politics	30	14	38	11	18	39	17	35	44	10	22	32
Science, Engin.	9	71	50	19	62	48	19	57	37	20	50	25
others	35	0	4	51	6	4	39	0	7	27	0	6

Notes: Dual training includes polyvalent training in arts, economics, or law and science and engineering.

Source: Cassis, 1997, p.135

As for the ruling elites, recruitment for the British civil service was reformed during the nineteenth century. Recruitment and promotion through patronage gave way gradually to entry by competitive exams and promotion by merit. The Northcote-Trevelyan report of 1854 was the main instrument of reform, though its proposals were implemented piecemeal. It is worth mentioning that the exams were of a literary type, on subjects studied at universities, introducing a strong bias in favor of individuals from the traditional upper classes, and consequently filling up government agencies with generalist, amateur gentlemen. Graduates of Oxford and Cambridge, and especially those who had also attended top public (i.e., private) schools, had built-in advantages at the start of their careers, particularly if they took the competitive exam for entrance into the higher levels of the civil service.

In the twentieth century, the Higher Civil Service (HCS) was quite small: 762 “secretaries” and “assistant secretaries” in 1925. It used to be recruited from the “administrative class” of the Civil Service, two thirds of which had been selected by competitive exams, and one-third by promotion from the lower “clerical” class. In 1968, a reform was adopted but it did not bring about serious changes and even restricted internal promotion. Exams’ tests continued to be of a general nature (all rounders are wanted) and favour candidates with a public school and Oxbridge

background; and a large majority of successful candidates are arts graduates.¹¹ Actually the recruiting of HCS members has become more elitist since World War II, with an increasing percentage of them having attended public schools and Oxbridge; the Foreign Service is the most elitist sector of the Civil Service. Some experts have concluded that the British System is not terribly different from the French one.¹²

The passage from the civil service to business, coined the “revolving door” or *pantouflage*, is not common in Britain, contrarily to France, as we will show below. Indeed, in Britain, only 5% of the leaders of the 200 largest companies come from the civil service. Some are former ambassadors, recruited after retiring after 60, from the Foreign Service. The other 95% are roughly divided equally between members of founders’ families and those who have risen in the business world, generally “imported” from another firm.

C. France

The most original character of the French system for recruiting and training elites is the role played by elite institutions — the *Grandes Ecoles* (GE). Moreover, in recent decades a super GE, the National School for Administration (*Ecole Nationale d’Administration*), best known by its abbreviation of ENA, has emerged as the instrument for selecting not only top civil servants (as it was its original goal), but most of the French power elites.

The Grandes Ecoles (GE)

The origins of the GE go back to the eighteenth century military schools (Napoleon Bonaparte was one of their alumni), and to the parallel creation of special schools to train engineers, whom the state needed: the *Ecole des Ponts et Chaussées* (for civil road engineers) was established in 1715, and the *Ecole des Mines* (for mining engineers) in 1783. During the French Revolution, the need for more civil and military engineers was felt. In 1794, the *Ecole Centrale des Travaux Publics* was established; its name was changed to *Ecole Polytechnique* in 1795 and it was

¹¹ The 1968 reforms included the creation of a Civil Service College, where new entrants would get professional training, but teaching at this college is not specialized.

¹² See Kelsall (1955), Mougél (1987) and Charlot (1989).

militarized in 1804.¹³ Actually for well over a century most *Polytechnique* graduates became artillery or *génie* officers, but those who did best at the exit exam became government engineers, specialized in public works, mining, powder-making etc... Over time, an increasing number of officers entered industry after resigning their commissions or retiring.

During the nineteenth and the twentieth centuries, a large number of other GE mainly for training engineers, were gradually established, either by the State or by private initiative, as *Ecole Centrale* in 1829, a school to which after 1840, a significant number of French industrialists sent their sons.¹⁴ The second Industrial Revolution brought about the foundation of new schools, which were more specialized than the old ones in new fields like electricity and aeronautics. Schools of commerce were also founded, particularly HEC (*Hautes Etudes Commerciales*) in 1881, which can be described as the first French business school.

This proliferation resulted partly from deficiencies in the French university system. The old universities had been destroyed by the Revolution; new ones (or rather a number of faculties) were created under Napoleon, but only the law and medicine faculties played a role in training elites during the nineteenth century. Arts faculties only produced high school teachers and sciences faculties only developed significantly in the late nineteenth century, when specialized institutes (f.i., for electricity and chemistry) were added to them, but they were not a channel to recruit business elites.

According to recent statistics, France presently has 302 engineering schools with 59,000 students and 226 commerce or business schools with 64,000 students. These figures may be compared with the million and a half of students in universities, which have no entry exam and admit anyone who has graduated from high school

¹³ Two other schools worth mentioning were created during the same period: The *Ecole Speciale Militaire* (generally known as *St-Cyr* from the place where it was sited) which was established for infantry and cavalry officers in 1802. It replaced the old regime's military schools. In 1795, or actually 1808, a civilian school for training high school teachers, the *Ecole Normale Supérieure* (ENS) was founded in Paris.

¹⁴ Polytechnique and other GE were imitated abroad, but France was the only country where they played a very large role in the recruitment and training of elites.

(*baccalaureat*). On the contrary, entry in any GE is by competitive exam (*concours*), with only a fixed number of candidates being accepted every year.¹⁵

Moreover, one does not go up for the *concours* just after high school; students first go to specialized schools (*classes préparatoires* – not to be confused with the English prep-schools) where they are only accepted if they have good grades in high school or at the *baccalaureat*. They study intensively at the *classes préparatoires* for one to four years, after which they take the entry exam to one or several of the *grandes écoles*. It is clear that this system is highly selective and elitist. Moreover, it is hierarchized and there is a wide gap in prestige and also in job opportunities for graduates between GE of the first rank — Polytechnique, Centrale, HEC, ENS, and provincial commerce schools.¹⁶ So on half a million people who succeed at the *baccalaureat* each year, 36,000 will be accepted in the *classes préparatoires* among whom 25,000 will eventually enter a GE (including the second and third rank schools).

The GE have over time become increasingly important to the recruitment of the French business elite. Table 3 shows this evolution during the twentieth century. In 1912 and 1973 over 50% of a sample among the leaders of French industry had graduated from engineering schools, and the percentage had reached 70% in 1939. According to Lévy-Leboyer (Table 6. pp. 160-1), in a cohort of business leaders over the period 1912-79, 29% of them had graduated from *Polytechnique*.

¹⁵ In all these schools, the number of entrants was (and is) not large: the students admitted per year in the five biggest engineers schools were 320 in 1860; 440 during 1872-91; 520 in 1919 and 1176 during 1919-1932 (see Lévy-Leboyer, 1979, p.152).

¹⁶ There is a hierarchy among GEs. The first rank schools are usually in Paris. There is also a hierarchy between *classes préparatoires* for the main GE. Actually those which are located in three or four big high schools on the Paris left bank supply a large majority of students who succeed at the exams for GE of the first rank. The fate of students who fail at the *concours* is to enter university, where they do well thanks to their intensive work in a *classe préparatoire*. Moreover, groups of engineers' schools have a common exam, and candidates who do not well enough to be accepted to the top GE can enter the less prestigious ones.

TABLE 3: *Education of a sample of 90 leaders of the business elite per year.*⁴
(percent)

	1912	1939	1973
Law, Political Science	21	23	46
Engineering school	54	71	51
Only primary and high school	25	7	3

Source: Levy-Leboyer, 1979, table 5, p.152.

Comparing France to England and Germany, it appears that French business executives have consistently received the highest level of education (see Table 1). It was higher as early as 1907 and remained so. Whether French executives were better prepared for their profession is a matter for debate, but it seems that they received an education more adapted to business than did the British elite (see Table 2). French education placed a stronger emphasis on science, though possibly in a way which was too abstract.

However, Table 3 also displays a decline after World War II in the share of engineering schools graduates to the benefit of people who had studied at other institutions: law faculties, political science institutes (IEP), business schools, which had earlier been negligible, and ENA.¹⁷ This brings us to the most significant development of the late twentieth century in the recruitment of the French power elite.

The Ecole Nationale d'Administration, ENA

While schools for training engineers had mushroomed, no *grande école* had been established for the French civil service, and especially for recruiting members of its elite — the Grand Corps.¹⁸ The *Grands Corps* are a typical French institution which goes back to the Old Regime, was abolished during the French Revolution and was revived by Napoleon. It is composed, in particular, of the Council of State, Inspection of Finances, the Audit Office and the Foreign Service; in other words, it is the top civil service. Before World War II, there was a separate competitive exam for each of the *Corps*, with few candidates and still fewer places every year. Candidates had

¹⁷ Lately quite a few business leaders have also attended American business schools.

¹⁸ There had been an aborted attempt under the Second Republic in 1848.

generally a law or an art degree (or both), and they often had taken courses in political science at the *Ecole Libre des Science Politiques* (Sciences-Po), a private college.¹⁹

However, at the end of World War II, General De Gaulle and the leaders of the Resistance considered that the traditional bureaucrats had failed in their duties in the 1930s, as well as under the Vichy regime, and that there was a need to change the recruitment and training of civil servants. It was therefore decided to create the ENA (planned by Michel Debré, who later became de Gaulle's Prime Minister) which would recruit top civil servants, and have three major goals.

The first goal was social openness and diversification of intellectual origins. It was thought that since recruitment would be meritocratic, only the best would be selected. They would come from *all* classes, not only the Parisian bourgeoisie, in contrast to the previous system for recruiting members of the *Grands Corps* which was restrictive from a social point of view, and was condemned for being partial to young men (no women then!) from an upper-class background. Candidates for the Foreign Service were invited for tea in a drawing room and their social amenities in these surroundings were one of the criteria for success or failure at exam.

The second aim was to rapidly develop a new elite that would be chosen for their talent rather than their link with the elite in power. The third aim was that it would foster better coordination between the different administrations, via the existing contacts made at school.

The idea of selecting and training elites via special schools was not revolutionary in France; nonetheless the ENA has two major specificities, which make it a “super-*grande école*”.²⁰ First it has a quasi-monopoly on selecting the bureaucratic “ruling elite”,²¹ while none of the other GE has such a privilege in its field. Secondly its role is of selecting rather than training top civil servants and the selection is drastic:

¹⁹ This college had been founded after the Franco-Prussian War of 1870-71, by conservative politicians, bankers and intellectuals with the specific aim to educate individuals who would become elite members.

²⁰ One can add that its students are older than those of the other GE since, before entering, they have usually studied either at *Sciences-Po* or at other GE, as the ENS or *Polytechnique*.

²¹ However, governments have the right to appoint directly a limited number of top bureaucrats who are not ENA alumni.

students have to jump over two fences — an entry exam and a final exam, and the last one is decisive. The administration in which an alumnus (*énarque*) begins his employment, from the most prestigious (the *Grands Corps*) to the least attractive (Ministries of Education, Social Security Administration or Agriculture) depends on his ranking in the final competitive exam at the end of the second and last year.

As for the entrance exam, the early design to democratize recruitment was embodied in the creation of two separate entrance exams. One is for “students” i.e., graduates coming directly from university (generally from human and social science) or from an IEP (*institut d’études politiques*). The major IEP which is situated in Paris is *Sciences-Po* — the successor of the old *Ecole Libre*, which was nationalized after World War II and has gradually developed. It is half a GE, as entrance is by exam, but also half university, having many more students than any GE. The quality of teaching is high and *Sciences-Po* is really the main channel towards ENA. But, after graduating, would be candidates spend a year or two in special classes, where they are coached for the ENA exam and which is the equivalent of the *classes préparatoires* for the other GE. As for the written exam, it is largely a matter of broad general culture, though the writing of some papers on subjects like economics or international relations is requested. At the orals, the ability to speak brilliantly about a subject one knows nothing about is crucial!

The second exam is reserved to candidates who have spent some years (at least five) in the lower ranks of the civil service; but they must have a university degree, and generally they have been coached for one year in special classes (like the candidates to the first exam). This exam is separate but not very different from the first; it was intended to afford an opportunity for those with a more modest background than alumni from *Sciences-Po* to enter the ENA. As a matter of fact, and generally speaking, persons who entered the ENA through the bureaucrats’ exam were less successful in their later careers than the ones taking the students’ exam, because they did not do as well on the final comprehensive exam (which is the same for all students).²²

When comparing the recruitment of ENA with other *grandes écoles*, the ENA recruits approximately 100 students each year, while *Polytechnique* recruits almost

²² Presently 60 percent of entrants are “students,” and 40 percent “civil servants.”

500.²³ Although other *grandes écoles* have a specific technical curriculum, the ENA focuses more on recruitment than on training the elite. ENA students spend their first year working as interns in some public administrative agency (a regional administration or an embassy, for example). They then return to school for the second year, where the emphasis is again on the humanities plus some training in the social sciences (though in recent years the teaching at ENA has been mildly “technicized”).²⁴ An essential aspect of attending ENA is networking: Alumni will have acquaintances in all spheres of the civil service and politics.

ENA über alles

A crucial development in French history during the fifty years after the establishment of the ENA, is its success in almost monopolizing the recruitment of the rulers of France, and not only in the civil service. Actually, there has been a gradual perversion of the ENA role in two ways. First, a non-negligible number of its graduates left the civil service to go into politics, some of them rising to the top (e.g., Presidents Giscard d’Estaing and Chirac, Prime Ministers Laurent Fabius, Michel Rocard, Alain Juppé and Lionel Jospin). ENA graduates have participated in governments of all political leanings, as ministers, and members of ministers’ staffs (*cabinets*). In 1994-1995, 11 *énarques* were ministers, 11 were on the personal staff of the French president and 75 in the office of the Prime Minister. From 1980, around 60 percent of the directors of *cabinet* (actually vice-ministers), and 35 percent of ministers are from the ENA; and many *énarques* have sat in Parliament.²⁵

²³ The first *promotion*, in 1946, had 90 members; in 1995, 108 students were admitted. In the interval, enrollment has been smaller in some years. While ENA recruitment in the 1950s was mostly of students with rightist opinions, nowadays the ENA includes both rightists and leftists, with a possible leftist majority (see Gaillard, 1995).

²⁴ It is commonly remarked that the internship during the first year is very useful, while students do not learn much during their second year at the school itself.

²⁵ This was helped by the extraordinary privilege which French civil servants enjoy: they can get a leave of absence to go into politics and get back to their previous job if they are defeated.

Second, a number of alumni have become business leaders in both the public (state owned or nationalized) and the private sectors.²⁶ Forty-seven percent of the heads of the 200 largest French companies in 1993 came from the civil service (and from its “annexes” e.g., *cabinets* and Parliament), compared to 41 percent in 1985. Moreover, it should be noted that only 10 percent of the ENA alumni are working in the “competitive sector” of the economy.

Another study considers the origins of the leaders (CEOs, chairmen, directors) of the companies which have their shares’ quotations on the Paris stock exchange used for compiling the *CAC 40* (Baverez, 1998).²⁷ The main results are shown in Table 4.

TABLE 4: *Origins of the Leaders of French CAC 40 Companies.* (percent)

	1981	1991	1997
Members of owners’ families	43	23	20
Members of the <i>Grands Corps</i>	32	38	44
Civil servants who do not belong to the <i>Grands Corps</i>	5	11	11
Persons with a business background	20	28	25

Source: Baverez, 1998.

This table is striking; it shows the take-over of large French companies by the “state nobility” (a well-coined expression, which alludes to the privileges enjoyed by those members from the *Grands Corps*, all graduates of the ENA).²⁸ It also

²⁶ There are two ways for civil servants to enter the business sector. The first is the so-called “revolving door” or “pantouflage” i.e., directly from the civil service into business. However, a cooling off period exists obliging civil servants to “sit on the side” for five years before being allowed to enter the regulated sector; but they can enter a different private sector (see Brezis and Weiss, 1997). The second is indirect; after having spent some time either as a member of parliament or in the personal staff of a minister, one can be appointed by the government to direct a state-owned firm or be “imported” by a large private company (which has appreciated one’s talents) to which one’s connections in politics and in the bureaucracy can be useful.

²⁷ Includes the shares of the 40 most important firms in France, the French Dow-Jones.

²⁸ It was coined by the late sociologist Pierre Bourdieu. It alluded to the Old Regime nobility, which was divided into *noblesse d’épée* (of military origin) and *noblesse de robe* (top judges).

emphasizes how much their stranglehold has strengthened during the last two decades; the share of civil servants rose from 37 percent in 1981 to 55 percent in 1997. This has happened to the prejudice of business dynasties (through they remain present on the French business scene)²⁹, and also of graduates from traditional GE.³⁰

As for the democratization of recruitment, after World War II, the first few promotions were open to all classes and open to reform. At that time, the ENA was synonymous with innovation and new blood in the administration, and there was a feeling that only the best were chosen. Ten years later, however, it was apparent that the recruitment was sociologically and geographically narrow. The proportion of students in the ENA whose parents belonged to the *Grands Corps* was 44% in 1944, and rose to 63% in 1980.³¹ Starting in the 1970s, an auto-recruitment of the ruling class has taken place: 8% of the population supplies 63% of the ENA students, or the next generation of rulers.

Altogether, France has a system which is drastically selective, highly elitist and in which the selection becomes even more severe over time. Moreover, the number of GE students is very low compared to the total number of students in universities, and is stable while the number of students in universities increased each year (up to a recent date).

D. Germany

The basic fact about Germany as regards the recruitment of elites is that it had in the nineteenth century many good universities, which were far ahead in research and in training top scientists and engineers. The changes in technical training that occurred both in Britain and France in the late nineteenth century were actually stimulated by competition from Germany and its example.

²⁹ Their members – and also founders of firms – have generally degrees but from law schools or provincial business schools and not from rank GE.

³⁰ This take-over has been helped by the double and inverse process of large-scale nationalization by the Socialist governments after their election in 1981, and of privatization by right-wing governments in 1986-1988 and 1995-1997.

³¹ See Gaillard (1995, pp. 105-108). However, each graduating class includes a few graduates from modest backgrounds, some of whom go on to brilliant careers.

German universities were not much hierarchized so that the country had nothing like Oxbridge and had no need for special *grandes écoles*. Elite recruitment has therefore been less selective than in Britain or France. However, as early as the nineteenth century, top civil servants and many business leaders had attended universities. The recruitment of the bureaucratic elite was, and still is, carried out by competitive exams among persons who had university degrees, generally in law.³² Regarding the training of business elite, the German percentage of university-educated executives was (and still is) lower than in France, but much higher than in the UK, and it has even increased. Their education was primarily in law or engineering (see Table 2). But in the last decades, the percentage of graduates in science and technology has decreased (from 50% in 1907 to 25% in the 1990s), and is now much lower than in France. The share of law graduates has slightly decreased and that of economics graduates has markedly risen.

About the recruitment of the business elite, two thirds of the 200 top business leaders of Germany come from the business world, half of whom rose within the firm they head, and one quarter from owners' families.³³ The role played by on-the-job training through an apprenticeship is striking, since Germany when compared to France and the UK is the only country to still have 10% of its elite rising through this channel (see Table 1). Moreover, some large companies have their "corporate universities", i.e., training centers for managers.

A German specificity was the *technische hochschule* (technical colleges), which were first established in the 1860s and gained university status by 1900; they have produced large numbers of well-trained engineers, whose education included practical experience. However, few of their graduates became business leaders. Germany also had early high-level teaching in business management and accounting, particularly in specialized colleges, the *handelshochschulen*, which from 1898 on were awarded university status. But few top business leaders prior to the 1980s had graduated from these colleges. Business degrees in Germany are quite different from MBAs; they are

³² In the nineteenth century, most top civil servants belonged to the nobility.

³³ See Bauer and Bertin-Mouro, 1996. As in other countries, salaried professionals managers are better educated than heirs of founder's families.

based on economic theory rather than case studies, and the American model of business schools has not taken root in Germany

Elite recruitment is thus less “aristocratic” than in Britain and France, since there are no elite universities or elite schools, rendering recruitment non-elitist. But one must mention that job hunting graduates get help from the corporations (students union) or rather from former members of the latter, so that one speaks of corporations’ nepotism and some auto-recruitment of the elite.

E. The USA

At the end of the nineteenth century in the US civil service, the spoils system, corruption, and patronage prevailed and educated experts were distrusted; reforms started with the Pendleton Act of 1889. This act created the Civil Service Commission, and eventually federal civil servants were recruited by competitive exams; several states established similar systems for their own civil service.

As for the economic elite, it expanded enormously in number and in wealth at the end of the nineteenth century. Its members were either heirs, children of rich men who inherited the family firm, or newcomers to the business world who made their fortunes through their own exertions. But as in other countries, few of these “self-made men” were of truly proletarian origin, and most came from the lower middle class and the labor aristocracy. In any case, such men, *ipso facto*, had had very little formal education.

Most of the “heirs” had attended high school, had entered the family firm at about age 16, and learned on the job. It was widely believed that further studies — especially at a university or college — would be a waste of time and even bad for business, and that direct contact with the latter was desirable as early as possible. Therefore, higher education seemed irrelevant to most professional callings. Until the 1870s, young men who were to follow a business career did not attend universities.

From the turn of the 20th century, there was a gradual change in the recruitment and training of elites.³⁴ An increasing number of large companies started to hire people who had received academic education. In the 1890s, the need for managers

³⁴ The change was gradual and clerkship still long remained the usual form of apprenticeship for a business career.

who had undergone serious and thorough training was felt, and graduates from the new business colleges, which had been recently established, were hired in large numbers.³⁵ The founding in 1908 of the Harvard School of Business Management and the creation of the MBA sanctioned this development. During the same period, graduate schools of law and medicine were established in the major American universities.

After World War II, dramatic changes took place in the system, not regarding the education and training of the elite, but regarding its recruitment. In fact, at the time that the De Gaulle administration decided to reform its elite, James Conant, President of Harvard University, was for the same reasons, looking for a new way to recruit the students who would be the elite after the war. There was a widespread desire to replace the “aristocratic” and non-democratic elite with a “brainy” one that would lead the country.

Education at an Ivy League university was the entry ticket to the elites of all kinds (except the political elite, which was more a melting pot), and before 1936, recruitment to universities was based on family and geography. There was a group of people who constituted the Establishment at the time: they were all male, white, and Protestant (mostly Episcopalian), and some were also descended from the Puritans who came and settled America. They were the elite, their children attended the elite universities, and few others could attain any power.³⁶

Conant wished to break the hold of this old elite and replace it with a new elite that would be made up of people from a broad range of backgrounds from all over the country, selected on the basis of pure intelligence and not of background. Influenced by a letter from Thomas Jefferson to John Adams in 1813 (“I agree with you that there is a natural aristocracy among men. The grounds of this are virtue and

³⁵ As early as the 1870s, an amazing increase took place in the number of colleges and students. The number of undergraduates rose from 52,000 in 1870 to 238,000 in 1900, and that of graduate students in doctoral programs from 50 to 6,000. Since 1920, the proportion of people graduating has increased from 2% to 32%.

³⁶ See Miller (1949, 1950). Taussig and Joslyn (1932, p. 240) have shown that in 1930, 80% of the business leaders came from the top 7% of the population.

talents...while the artificial aristocracy is founded on wealth and birth”)³⁷, Conant wanted to unseat the elite and replace them by Jefferson’s “natural aristocracy”. His goal was for America to be run by the natural aristocracy. In his view, there should be a way to discover the new American meritocracy, to select the “brainy” people in order to recruit the best public servants, and let them run the country.³⁸

At that time, Carl Brigham, a psychologist at Princeton University, developed a sort of IQ test for use in college admissions called the SAT, or Scholastic Aptitude Test (itself an adaptation of the army intelligence test called the Army Alpha).³⁹ The SAT placed the emphasis for university admissions on aptitude instead of achievement. It is engineered somehow differently from an IQ test, but particularly the verbal portion is essentially an IQ test. It was created and administered by the ETS, the Educational Testing Service, a privately funded, non-profit organization.⁴⁰

Conant, who was trying to select his university elite from all classes, felt that achievement tests or tests of mastery of the high school curriculum were unfair to poor children because most had not attended good high schools. Therefore, he called for a system for choosing the meritocracy that is not based on achievement. In consequence, Henry Chauncey, Assistant Dean to President Conant, decided to adopt the SAT for use as a Harvard scholarship test during the 1930s; its use then spread as a scholarship test for all Ivy League schools. It took 20 years for the SAT to become a requirement for all applicants to the University of California, and soon to all universities. Standardized testing provided the selection to elite universities.⁴¹

³⁷ See Cappon, 1959.

³⁸ The term “American meritocracy” has until recently been used with its literal meaning of recruiting the best people to rule. However, lately, the term has come to be related to reward and not anymore to ruling: “Meritocracy is just an extension of a general system of rewarding merit” (Sen, 2000, p.8).

³⁹ See Brigham, 1923.

⁴⁰ For more details on the history of SAT, see Lemann, 1999.

⁴¹ There was a fierce debate about the success of tests of ability to be the basis for meritocracy. Against these tests, see Hoffman (1962), and also Nairn and Nader (1980), while Gardner (1995) presented a plea on behalf of these tests. See also Jensen, 1989.

University of California President Clark Kerr, in his master plan for education, set the stage for university for all, and elite university for the best. Kerr wanted UC-Berkeley to become a highly selective, world-class university with a star faculty that would train the elite of California, which would be selected by testing, while the other colleges would accept all other applicants.

In fact, SAT scores were correlated with family education and wealth.⁴² So the meritocratic system, based on test scores that was supposed to lead to a classless elite and opportunity for all, ended up providing even less opportunity than before, because on average, African-Americans (for example) tend to get lower test scores. The fundamental irony of the American meritocracy is that finally the system favored the elite's children. The wish that America would become a classless society through the use of aptitude tests did not come true: meritocracy led to aristocracy.⁴³

In consequence, in order to reduce stratification, the US has an elaborate selection system for minorities, trying to get the best shot under an affirmative action system that can be seen as a "patch" on meritocracy to make it run better. Meritocracy is a sort of particular system of picking people for the elite based on one set of abilities, while affirmative action is trying to twist the dials a bit to get more minority representation into the meritocratic elite.

This evolution was described by Temin: "I was able to identify the colleges attended by 454 CEOs of the Fortune 500 companies. All current business leaders on whom I could find information attended college..and almost one-fifth graduated from the Ivy League" (Temin, 1999a, p.32). By the early 1960s, those who had not attended college were precluded from becoming part of the business elite.⁴⁴ The training of the

⁴² Research on the variables affecting SAT results is numerous. See in particular Bouchard and McGue (1981), Neal and Johnson (1996), and also Herrnstein and Murray (1994).

⁴³ As noted by Temin (1999a, p.32) and Kingston and Lewis (1990, p.111): "Approximately one quarter of 1986 college freshmen at highly selective universities come from families with incomes over \$100,000, that is, from the extreme upper tail of the income distribution."

⁴⁴ On the other hand, in a recent development, the Information Technology Revolution (ITR) has offered opportunities to new entrepreneurs such as Bill Gates to rise quickly in the business world without graduating (but also for some, to fall fast in the past two years). Yet unlike the tinkerers of the Industrial Revolution, such entrepreneurs need a strong scientific education.

business elite now takes place mainly in top business or law schools, and not in engineering departments, as it does in Europe. Recruitment for MBAs courses is booming and 40 of the 100 largest US companies are now run by holders of MBA.

The unrealized dream of the virtue of meritocracy as opposed to aristocracy has been emphasized by Temin. The US economic elite (the CEOs of the 500 largest companies) is still overwhelmingly made up of white Protestant males, a significant number of whom were educated at Ivy League institutions. The picture has not changed significantly from that c. 1900, while the makeup of the political elite has markedly changed in a century: “The American business elite comes from elite families” (ibid., p.33), just like in France or Britain.⁴⁵

A striking contrast with France regarding the recruitment of the business elite is, however, that there is no “pantouflage” i.e., passage from the civil service to business. In the US, “businessmen consistently distrust the State,”⁴⁶ and rarely give top business jobs to civil servants or politicians, with the exception of arms manufacturers, who hire retired admirals and generals.

F. Summary

The differences in recruiting between these four countries reflect their different traditions. In all of them, meritocracy is defined by glorifying learning and study, and common to all countries, except Germany, is the will to establish an elite based on meritocracy.

In all countries, the education and training of the bureaucratic and business elite until recently had little relevance to their future working career. Education at the French *grandes écoles* and at English public schools or Oxbridge imbued a strong feeling of belonging to the elite and laid the foundations for vast networks of relationships.

In the UK, the US and France, the path to elite positions has required attendance at an exclusive school or university. It is not so in Germany, which had no comparable elite establishments, and where all universities had roughly the same status.

⁴⁵ Although the percent of workers entering the elite class in the 1960s was double in the US compared to Britain, France and Germany (Blau and Duncan, 1967).

⁴⁶ Zunz (1996, p. 209).

Thus how awkward for a country like the US, where its very soul seems to stand for equal opportunity, and where in fact the system of recruitment is in a sense not too distinct from the French one.

The two main differences between the French and American recruitment systems lay in the method of selection chosen. The first difference is in the type of exam: achievements tests (France) vs. aptitude tests (the US). The second difference is in the number of times selections are made, and the relative number of recruits.⁴⁷

In the US, university applicants take the SATs, and those earning the highest scores are admitted to the elite universities no matter which secondary school they attended. So of 2,000 colleges, 50 are considered elite colleges (including the “Ivy League”). In contrast, in France, of 450,000 students who obtain the *Baccalaureat*, only 36,000 enter the *classes préparatoires*, from which less than 25,000 are accepted, and 10,000 in the first rank of *grandes écoles*. So in the US, the relative numbers of such “favorites of fortune” are higher than the graduates of the ENA and the *grandes écoles*.

However, both systems ultimately lead to a very narrow recruitment process. Both countries tried to react to this narrowing and stratification. The American reaction to its recruitment system was affirmative action, whereas the French reaction to its system was the “second entry exam” for admission to the ENA, and open access to universities.

In the next section, we show that recruitment by meritocratic exams is the reason why the elites are auto-recruited. Temin (1999b) has proposed three causes for auto-recruitment, which he terms “the stability of the elite”: discrimination, signalling, and education. Temin rejects the first two,⁴⁸ and concludes that unequal access to

⁴⁷ Another main difference is the tuition paid. While in the US, tuition at elite universities can run around \$100,000, in France, not only the universities and *grandes écoles* are all free, but in the *grandes écoles* at vocation of serving the state (*Polytechnique*, ENS and ENA), students are paid! As we saw, many of them serve the state for a few years and afterwards enter the business world.

⁴⁸ Temin also rejects the possibility raised by Taussig and Joslyn (1932) of a fundamental inequality of native endowments.

education might explain the demographic stability of the elite.⁴⁹

In the next section, we will develop a model explaining why meritocratic entry to elite colleges might be the cause of the narrowing of recruitment. We will also analyze the effects of these different recruitment methods on economic growth; in addition, we will examine whether these recruitment methods achieve their aims. There is no doubt, at least regarding the US, that the meritocratic system produces highly trained professionals who are the best in their fields: professors, doctors, and scientists. However, as we will show in the next section, every meritocracy in existence inevitably deteriorates into an aristocracy, with its undeniable consequences for growth.

III. THE EFFECTS OF RECRUITMENT AND TRAINING ON THE ECONOMY

The purpose of this section is to analyze whether establishing meritocratic exams is optimal. We will show that a school that recruits by a meritocratic method on the basis of entrance exams does not lead to an enrollment from all classes of society according to their distribution of ability, nor does it lead necessarily to the acceptance of the more talented.⁵⁰ Recruitment by entrance exam still contains a bias toward candidates coming from the elite, because this type of exam requires a pattern of aptitude and thinking that favors candidates from this milieu.⁵¹ Therefore the resulting

⁴⁹ Indeed, primary and secondary education, especially in public or state schools, has fallen into crisis in all Western countries, perhaps due to ill-conceived reforms, the breakdown of discipline, and the low quality of many teachers (see Temin, 2002). This restricts markedly opportunities for bright young people from modest backgrounds to excel in their studies, win scholarships, and attend university. In France today, only children from the middle class, or even upper middle class families can obtain a good high school education. A career like that of the late President Pompidou, son of a village schoolmaster, would be presently impossible.

⁵⁰ The opposite choice, like the method applied by former Communist countries, where the children of *bourgeois* background were prevented from entering universities (while the scions of *apparatchiks* were “privileged”) is, of course, also not optimal.

⁵¹ In other words, in this model, class stratification is the consequence of a cultural bias, which can be included in the typology of environmental factors, and is not due to heritability as in Herrnstein and Murray, 1994.

student body is mostly based on a homogeneous group and is not as open as it should be to the non-elite public, despite the school's meritocratic selection method. In other words, we show that elite schooling leads to a "non-circulation of elites"⁵² — to a stratification effect. Moreover, we analyze the difference in stratification between recruitment of the American and the French types. We will show that the differences are not uni-directional.

We then examine the consequences of this non-circulation of elites on economic growth, which we term the "stratification effect" on growth. We analyze whether this stratification resulting from meritocratic selection is optimal for the development of a country, and show that it is dependent on the type of technological changes occurring in the country. During times of innovation, i.e., minor changes in technology, the elite schools optimally fulfill their purpose, since the aptitude acquired at home by the children of the existing elite is an advantage regarding the given type of technology used. These students therefore perform better, on average, than students recruited from the non-elite population. Thus, the non-circulation of elites does not hamper growth.

But during times of invention, i.e. totally new technologies, the aptitude acquired by family education is useless, and so lack of circulation of elites is detrimental to the adoption of new technologies. Therefore, in an era of invention, the recruitment of the elite from elite schools actually leads to a lower growth rate.⁵³

⁵² "Circulation of the elite" is an expression coined by economist Vilfredo Pareto in 1902, who claimed that the elite, in recruiting itself, chose subjects of increasingly mediocre calibre: "Merely a slowing down of this circulation may have the effect of considerably increasing the number of degenerate elements within the classes still possessing power, and — by contrast — of increasing the number of elements of superior quality within the subject classes... The decadence originates from the fact that the elite, in recruiting itself, chose subjects of increasingly mediocre calibre" (Vol. 1, Introduction).

⁵³ The effects of the different types of technology on the economy were already analyzed in other models (see Brezis et al., 1993; and Galor and Tsiddon, 1997). However they were not incorporated in an analysis of the recruitment of elites.

A. Assumptions of the model

We incorporate in our model some elements specific to recruitment in the US and France, which can be summarized by some assumptions:

1. For France, there is an entrance exam to the super-elite school, based on very broad subjects rather than on specific technical knowledge.
2. In the US, entrance exams are tests of ability and not achievement.
3. In France, there are two stages of recruitment tests.

B. Recruitment of students

Since the quality of the elite has a positive influence on output (human capital of the rulers affects output), we would like to have the most competent people in power positions in order to obtain higher productivity and output.⁵⁴ This is the *raison d'être* of elite schools that recruit by meritocratic selection.

If information were perfect, the exact value of a given applicant would be known, and elite schools would then choose the best candidates. However, since the information available is imperfect, the best approximation is performance in the entrance exams.⁵⁵ We will show that this way of recruiting leads to class stratification.

Let us denote PC, the students population that have finished high school and would like to enter elite universities (or *classes préparatoires* in France), and EC, the students population that belongs to the elite milieu (“children of”) wishing to enter the elite schools. We denote ES, as the students population belonging to the elite milieu who entered the elite schools, and PS the whole students population who entered the elite schools. In consequence the ratio of potential students from elite milieu to the potential student population, PEP is:

$$PEP = EC/PC \tag{1}$$

and the ratio of students belonging to the elite milieu who entered the elite schools to the total student population, denoted PES is:

⁵⁴ For simplicity, we have assumed that the value of the elite influences the level of output, but we could have instead assumed that it influences the *growth rate* of output.

⁵⁵ Moreover, tests also display a reliability problem, i.e., that there is similarity in a given subject’s exam scores on different runs of the exam. We discuss this problem below.

$$PES = ES/PS . \quad (1')$$

Denoting as β the ratio of the percentage of the elite children in the elite school over the percentage of elite in the total population, then:

$$\beta = PES/PEP \quad (2)$$

β is in fact the parameter which measures the amount of auto-recruitment and stratification in the economy. When β is 1, then the percent of children from the milieu in these elite schools is equal to the percentage of the elite in the population, which means that there is no auto-recruitment and the system is totally democratic. When β is greater than 1, that is PES is greater than PEP, there is auto-recruitment; and the bigger β , the greater the stratification effect in this economy. We will now show, how meritocratic exams affect β .

We define $I \in [0,1]$ as the minimum grade necessary to be accepted to the school. If the grade a_i of student i is greater than I he is accepted to the elite school:

$$a_i > I. \quad (3)$$

The performance of a student on the test is based on two elements. The first is his ability; more able students get better grades at their exams. We assume that the ability a_i for all students is uniformly distributed on $[0,1]$, i.e., whatever the social class, the ability is distributed uniformly.⁵⁶

The second element takes into consideration that tests are not perfectly objective, but reflect a culture related to the milieu of the elite with which the examiners for a school are associated. Therefore, students with an equivalent ability, but who are born to the elite and raised in this milieu, will perform better on tests.

The grade of student i who is not part of the “elite milieu” corresponds to his inherent ability, while the grade of a student from a family in the elite incorporates not

⁵⁶ As mentioned above, the bias is only due to cultural background. We are aware that some empirical results show that ability is not uniformly distributed (Herrnstein and Murray, 1994), and some theoretical models explaining why effort, and therefore ability, would be different in the different social classes (see Durlauf, 1999, and Arrow et al., 2000). However, the assumption that ability is uniformly distributed is often adopted in models on mobility; see, for instance, Galor and Tsiddon (1997).

only his ability, but also the cultural background from his family — the inside knowledge specific to the elite milieu, which we define as f .⁵⁷ Without loss of generality, we assume that the relation is linear, the grade the student receives is therefore:

$$\begin{aligned} \mathbf{a}_i &= a_i && \text{for student } i \text{ outside the elite system,} \\ &a_i + f && \text{for student } i \text{ being raised in the milieu.} \end{aligned} \quad (4)$$

Since for the whole population, the success is only due to ability, then the percentage of accepted students from the entire population denoted γ_p is $1-I$:

$$\gamma_p = PS/PC = 1 - I = \lambda \quad (5)$$

where λ is defined as $\lambda = 1 - I$.

For the students of elites milieu, f affects the percentage of accepted students, γ_E , which is equal to $1-I+f$:

$$\gamma_E = ES/EC = 1 - I + f = \lambda + f \quad (6)$$

Recall that β is the ratio of the percentage of the elite children in the elite school over the percentage of elite in the total population, then:

$$\beta = PES/PEP = (ES/PS)/(EC/PC) = (ES/EC)/(PS/PC) = \gamma_E / \gamma_p \quad (7)$$

Therefore:

$$\beta = (1 - I + f)/(1 - I) = 1 + \frac{f}{\lambda} \quad (7')$$

Equation (7') shows that β is a function of f and λ . As explained earlier, β is the parameter which measures the amount of auto-recruitment and stratification in the economy; when β is greater than 1, we get a decrease in diversity of elites and an auto-recruitment. This leads us to the first proposition of this model:

⁵⁷ The problem of reliability of exams can be incorporated in the parameter f . Exams such as those in France are subject to reliability problems higher than the SAT, due to subjectivity problems. Moreover, students who are not “great” but on this particular day felt well would be accepted, while some more brilliant were not, because it was not the subject in which they were good at, or it was not the right day. This problem is less acute in the US.

Proposition 1

(i) *A school of elites based on meritocracy leads to homogeneity of groups and class stratification. Children born in the elite are represented by higher percentages than their ratio to the population. Schools of elites restrain diversity of the elite.*

(ii) *Assuming that ability tests are less prone to subjectivity than achievement tests, the system of recruitment by ability tests leads to less stratification than achievements tests.*

(iii) *Countries with tighter recruitment level (I higher) will have more stratification.*

(iv) *Having two levels of recruitment tests lead to less stratification than one test.*

Proof

Homogeneity and stratification is measured by β ; the bigger β , the greater the stratification effect in this economy. Since f/λ is greater than 0, therefore β is greater than 1 — that is, PEP and PES will not be equal, and despite meritocratic exams, stratification exists.

Moreover, from equation (7'), the higher f , the greater β . On the other hand the higher I , the lower λ and therefore β is bigger.

Part (iv) is somehow counter-intuitive. In the case of two levels of exams as in France, equation (7') becomes:

$$\beta = (\lambda_1 + f)(\lambda_2 + f) / \lambda_1 \lambda_2 = 1 + \frac{f(\lambda_1 + \lambda_2 + f)}{\lambda_1 \lambda_2} \quad (8)$$

Comparing equations (7') and (8) by taking as equal the level of recruitment (i.e. assuming that the percentage of students recruited is the same ($\lambda_1 \lambda_2 = \lambda$)) then β of equation (8) is smaller than that of equation (7') since the sum $(\lambda_1 + \lambda_2 + f)$ is smaller than one (λ_1, λ_2, f of the order of .02, 0.4 and 0.1 respectively). QED

The intuition underlying proposition 1 is that stratification is a consequence of the advantage to the students raised in the elite milieu due to their cultural background, f . To give a sense of magnitude to our parameters: for f of 0.07 — the milieu gives an advantage of 7% (which does not seem a large number, since it seems very reasonable

to assume that children raised in the elite get an advantage of around 10%), this will lead to $\beta = 8$ (by assuming that $I = 0.99$, which is the case in France). $\beta = 8$ means that the percentage of children from the milieu who are accepted is 8 times higher than the percentage of children from the total population. It is the data that was presented for France. Indeed, we have shown in part II, section C that 8% of the population (PEP) supplies 63% of the ENA students (PES), which corresponds exactly to a β of 8. So a small advantage for the elite milieu of 7% leads to a serious auto-recruitment.

This simple model shows that the fact that, over time, individuals from the same milieu are accepted to a school for elites is not due to cronyism, but to the system itself, even if it is meritocratic. Elite schools freeze the circulation of elites. Auto-recruitment and stratification are not due to some favoritism, but to imperfect information on the true value of students.

No system can be perfect when there is imperfect information on the genuine talent of people. Recruitment by education and exams automatically advances those who are educated inside the system. Thus, under imperfect information, selection of students through tests leads to a bias, i.e., for the same objective ability, students who are not part of the elite milieu will not be accepted, while a student of the milieu will be.

Parts (ii) to (iv) of proposition 1 permits us to compare the levels of stratification in France and the US. Indeed, the exams in France are based on achievements and knowledge tests vs. SAT tests in the US. It means that in France f is higher than in the US. Moreover λ is higher in the US, since in France recruitment levels are tighter. However, the two levels of recruitment that exist in France lead to an opposite effect. So, the difference between these two countries is not unidirectional, but the two first effects seem more important and we can therefore conclude that the system chosen in the US leads to a lower β , i.e., to lower auto-recruitment than in France.

Is this type of meritocratic school optimal for the development of a country? In order to analyze its effect on development one has to focus on the production function. In the next section, we analyze the consequence of proposition 1 (i.e., that elite schools do not lead to circulation of elites) on productivity.

C. Elite schools and the production function

We assume that output is a function of the factors of production: capital, K , and labor, L ; of the technology level, A , and the average quality (that we term “value”) of the elites, \bar{V} , as displayed in equation (9).⁵⁸

$$Y = A\bar{V}F(K, L) . \quad (9)$$

So the productivity level is a function of the value of the elites, \bar{V} , and of technological progress, A . Technological progress can be due to a change in techniques strictly speaking, but it also includes changes in processes of production, business culture and methods of management. The evolution over time of technological progress takes two different forms: innovation and invention. Innovation occurs in the context of a given technology; it leads to an increase in productivity based on the current technology and infrastructure (bureaucratic, technocratic). In this type of progress (built on the same structure), the value of students that come from the milieu has a value added, f , since they already are familiar with this structure. We can therefore write that the value of a student i in time of innovations, V_i^n , is a function of its ability as well as the education received in its family environment, and without loss of generality, we assume that the influence of the milieu, f , enters V_i^n linearly.

$$\begin{aligned} V_i^n &= a_i && \text{for } i \text{ outside the elite system,} \\ &a_i + f && \text{for } i \text{ being raised in the milieu.} \end{aligned} \quad (10)$$

The other type of progress is inventions. While innovations are based on previous technology, major breakthroughs that change the nature of technology fundamentally require that one starts anew and all previous learning is lost. This means that the culture the elite has assimilated in his home is no longer useful (in some cases it could even be counterproductive, but not in this model). So the value of a student i in periods of inventions, V_i^v is a function only of its ability (and not of its family environment), so that:

$$V_i^v = a_i \text{ for all } i. \quad (11)$$

⁵⁸ This part is based on Brezis and Crouzet, 1999.

Thus, in periods of innovation the students' value is distributed on $[I, 1+f]$, while in periods of invention it is distributed on $[I-f, 1]$. (Since the students' ability is, in all cases, distributed on $[I-f, 1]$.) The average value of elites in periods of invention⁵⁹ and innovation is respectively:

$$\begin{aligned}\bar{V}^n &= (1+f+I)/2 \quad \text{for innovation,} \\ \bar{V}^v &= (1-f+I)/2 \quad \text{for invention.}\end{aligned}\tag{12}$$

The interpretation of equation (12) is that during periods of innovation, but not of technological revolution, the students from the milieu contribute an average value of $(1+f+I)/2$, which is a higher value than the average population accepted in the school $(1+I)/2$. Those from the milieu increase the average value of the elite in times of innovations, and this results in a higher output (or growth rate). By contrast, during periods of inventions, i.e., of technological revolutions, the home culture is not useful, and only pure ability has an effect on output. The students from the milieu reduce the average ability and therefore reduce the average value of the elites. We summarize this effect in proposition 2.

Proposition 2

When the world faces innovations, the best elite is the one coming from the elites' school; but, when the world faces inventions and big changes, diversity of elites is optimal. Homogeneity is, therefore, bad for growth, and elites schools are not optimal. Non-circulation of elites resulting from elite schools hampers growth during periods of invention, while it enhances it in times of innovation.

IV. CONCLUSION

The recruitment and training of the elite in the Western world has seen two main changes. In the nineteenth century, the business elite started to become educated. Instead of receiving their training on the production floor, they began attending universities.

⁵⁹ In equation (12), the average value of elites is given only for students belonging to the elite milieu, and we did not take into consideration the other students, since their average value, during periods of inventions or innovations, is always $(1+I)/2$.

This change was not rapid, and it was stronger in France and Germany than in England. Some have viewed this difference as a kind of Gerschenkronian thesis claiming that, in backward countries, the state must make a special effort to establish and develop the teaching of science and technology, an effort which is unnecessary in more advanced countries.

Another possible explanation for the differences in recruitment is the differing types of companies in the respective countries. In countries where firms were usually not family-owned, but rather state-owned, or financed by stocks and run by CEOs, recruits will have gone through more training than in countries where most firms are family-owned enterprises.

Recruitment saw its main changes after World War II. At that time, the elite started to be recruited through elite schools that selected their students using meritocratic exams. The idea of meritocracy made inroads, and new blood entered elite universities in the US, Oxbridge in the UK, and the *grandes écoles* and the ENA in France. Consequently, the first post-change elite was recruited in a diverse way by successful performance in exams. For the first generation after these changes in recruitment, elite schools not only enabled choosing the best, but also provided an opportunity for some who did not belong to the elite milieu to enter the best schools.

In succeeding generations, however, exams do not permit opportunity for all, as shown by our model. In the second post-change generation, the children of the elite enter the elite schools in greater proportions due to a cultural bias. In other words, whenever a new system is introduced, the nascent class system is destroyed, yielding to a fluid, mobile society. However, from the second post-change generation on, the children of the elite again have an advantage. Meritocratic choice is therefore not equivalent to equal opportunity. Our model has shown that this led to an auto-recruitment of elites, resulting in a stratification effect.

This stratification effect exists in France but also in the US. We have shown that the stratification effect will be greater in France due to achievement and knowledge-based tests vs. the American SATs, and also due to the fact that in France, recruitment levels are narrower. However, the two levels of recruitment that exist in France lead to an opposite effect. Indeed, as counter-intuitive as it appears, the double system of

the *baccalaureat* and two years later (or more), the ENA or *grandes écoles* entry exams is actually a superior system of recruitment.

Our conclusion was that elite recruitment systems do not differ much throughout the various countries of the Western world. Indeed, over the years, there has occurred some convergence in the way the Western world recruits and educates its elite; with the exception of Germany, the elites are recruited through elite schools and from elite families.

However, regarding civil servants, the differences between countries are wider. From the time of the French Revolution and Napoleon, France has had a tradition of intervention that may explain why France is the only country to have a specific school for the recruitment and training of its elite — the ENA. No other country in Europe or America has a unique school that has a monopoly on recruiting all top civil servants, i.e., the bureaucratic elite. Moreover, in no other Western country have so many top managers come from the civil service, and in no other advanced country have graduates of a single institution secured such a stranglehold over the recruitment of the bureaucratic, political, and economic elite.

The second part of our paper has checked the effect of this type of recruitment on economic growth. We show that these systems work very well in times of minor changes in technology, and they do allow for economic growth. However, during times of major technological change, the system of elite recruitment can actually cause a slowdown in the adoption of new technologies. Presumably, the best situation would entail periodic changes in the types of exams, causing the circulation of the elite to widen. However, for the French system to accept recruitment to the *grandes écoles* by exams such as the SAT would surely demand another revolution!

In conclusion, the policies which were adopted after World War II to widen the recruitment of elites were at first a success, but over time there was a perverse stratification effect and the circulation of elites receded, with obvious consequences for the economy. This does not mean, however, that *grandes écoles*, British public schools, Ivy League colleges, and other elitist institutions ought to be abolished, as some might conclude. This paper shows that it is necessary to reduce the cultural bias among the classes, which has been widened. Actually, the “education crisis,” which has affected all Western countries may have played a major role in this bias, thus resulting in restricted upward social mobility.

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