Academic Inbreeding: An Evaluation[1]

Olivier Godechot
Alexandra Louvet

Is academic inbreeding an ethic of loyalty or perverse nepotism? In order to determine the extent of the favouritism shown towards a university's own 'inbred' candidates, Olivier Godechot and Alexandra Louvet established a benchmark based on an original source: the theses that were defended between 1972 and 1996. The results are enlightening.

> *"What do you treat here?"*
> *"Genetic disorders that affect the eyes in particular. Hereditary diseases that are passed down from generation to generation. It's a well-known phenomenon in remote valleys, especially here, with the university."*
> *"What do you mean, with the university?"*
> *"For years now the campus professors have been intermarrying. The blood is weakened and drained. Genetic disorders are increasing."*
> Mathieu Kassovitz, *The Crimson Rivers* (2000).

The 'endogamy' of the French academic world is often criticised[2]. Even in Mathieu Kassovitz's commercially successful thriller *The Crimson Rivers* (*Les rivières pourpres*), the metaphorical 'inbreeding' at the university becomes a real, pathogenic consanguinity, feeding an intrigue that is fantastic-

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[2] Cf. Judith Lazar, *Les secrets de famille de l'université,* Paris, Les empêcheurs de penser en rond, 2001; Yves Fréville, *La politique de recrutement et la gestion des universitaires et des chercheurs,* Rapport d'information n°54, Sénat, 2001.

al to say the least. In reality, academic nepotism in recruitment consists of showing favouritism for the closest candidates even when the applications of some more distant candidates would be considered superior according to the usual evaluation criteria used by the academic community. The term 'academic inbreeding' is used to refer to a situation where preference is shown for candidates from the same institution that is recruiting.

Academic inbreeding is therefore a selection process based on personal relationships rather than the standardised evaluation of applications or the thorough analysis of individual skills[3]. It can come about from a form of loyalty towards those who are almost like colleagues and who have been supported in earlier stages and often entrusted with scientific and pedagogical responsibilities. It is a way for a department to offer employment opportunities to doctors or, subsequently, to the assistant professors it produces, when external departments, themselves equally guilty of inbreeding, may well remain closed to them.

This form of recruitment, which may be the result of an ethic of loyalty, also reduces the cost of the selection process, particularly the time devoted to assessing the applications of unknown candidates. Yet it contradicts the elitist and universalistic values of the academic community: the impartial selection of the best teacher-researcher and an indifference towards the candidates' social characteristics or personal ties[4]. In the short term, inbreeding damages candidates' equal opportunities and, in the longer term, could also cause the quality of teaching and university research to deteriorate. Furthermore, there have been calls to condemn this phenomenon and promote measures that would put an end to it[5]. In an open editorial, one of the two authors of this article proposed "to ban universities from recruiting candidates who have defended a thesis in their institution in the last four years"[6]. There have been many debates over the so-called LRU law passed on 10 August 2007 – "relating to the freedoms and responsibilities of universities" – which changes recruitment methods by replacing specialist boards, who are mostly elected, with selection committees appointed by the president; these debates have provided an opportunity for an exchange of views on the phenomenon. For those who defended the government bill, inbreeding was an indication of failure on the part of the specialist boards and joint institutions and of the urgent need for reform. Those who opposed the bill argued that the new recruitment methods carried the risk of 'presidential nepotism'[7]. Some university professors, not defending academic inbreeding itself but rather the option to recruit locally, strongly underlined the real importance of 'inbreeding' and warned against the adverse consequences of a ban[8]

[3] Cf. François Eymard-Duvernet, Emmanuel Marchal, *Façons de recruter,* Métailié, Paris, 1997.

[4] Cf. Robert Merton, The Sociology of Science : Theoretical and Empirical Investigations, University of Chicago Press, 1973, p. 270-273.

[5] Cf. François Clément, "Université: la foire à l'embauche", *Le Monde,* 27 June 2007; Alain Trannoy, "Universités: quel mode de recrutement?", *Le Monde*, 23 July 2007.

[6] Cf. Olivier Godechot, "Recrutement, autonomie et clientélisme", *Le Monde,* 27 June 2007.

[7]Cf. Stéphane Bonnéry, Daniel Frandji, Sandrine Garcia, Mathias Millet and Philippe Vitale, "Pourquoi nous ne démissionnerons pas", Liens Socio, 2007.

[8] See, for example, several posts on this blog: http://legizmoblog.blogspot.com/2007/06/le-recrutement-des-universitaires-vici.html and http://obouba.over-blog.com/article-

which would run the risk of encouraging other forms of nepotism that would be equally harmful: networks of former students of a *grande école*, exchanging of courtesies, etc. 'Inbred' recruitment would thus enable a university to select a candidate who is already known, who has proved himself or herself, who will quickly become part of the teaching team and who lives locally. It avoids the phenomenon of so-called 'turbo-profs' – professors who commute between their hometown and the town where they are posted, and who reportedly become less involved in teaching and administrative activities and may even quickly try to change institution. Inbred recruitment would therefore enable a kind of inbred, academic efficiency.

All of these debates take place within a context in which evaluative studies of the importance of academic inbreeding are still rare and ways to measure it are little understood. It cannot simply be reduced to the proportion of inbred candidates out of those recruited. In order to determine the extent of the favouritism enjoyed by inbred candidates, one must at least compare the probability of success for an inbred candidate with that of an external candidate. We will try to establish an approximate benchmark for this differential for graduates who defended their thesis between the middle of the 1970s and the middle of the 1990s.

Such an indicator does not solve everything, however. Firstly, the success rate differential not only depends on the recruitment jury's decision but also on the choice candidates make between several available positions. The counterpart of inbred preferences shown by specialist committees is inbred partiality among candidates, even if it plays a less important role on account of the high number of applicants in relation to available positions. The second limitation of this indicator stems from the fact that the 'value' of the applications is not taken into account by the academic community (such a variable would be difficult to determine). A given inbred candidate can, of course, be 'better' than an external candidate. However, it seems unlikely that in each department the inbred candidates would be systematically better than the external candidates. The success rate differential of external and inbred candidates does not allow us to categorise a particular recruitment episode as either inbred or non-inbred. At aggregate level, on the other hand, it gives an overall view of those applications that are favoured or discriminated against.

First of all, we will show that the usual statistical data does not allow a full evaluation of the trend. Measuring the success rate differential is not easy and requires approximation hypotheses. We will try to give an approximate evaluation of academic inbreeding for doctoral students who defended their thesis between 1972 and 1996 using an original database: the database of theses defended in France. Once our approximation hypotheses are applied, inbred candidates appear to be clearly favoured in the French academic world.

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The challenges of measuring academic inbreeding

We should welcome the efforts made by the Ministry of Education over the last few years to statistically measure mobility and immobility in academic recruitment. Since 2002, it has published an annual study on the 'origin of recruited researchers'[9]. These studies demonstrate two kinds of inbred recruitment that are particularly well established: 30% of assistant professors who were recruited defended their thesis in the institution that went on to recruit them (Table 1); 58% of new professors had already held a position as assistant professor (Table 2) in the same institution.

Table 1: Origin of new assistant professors recruited between 2002 and 2007

Place where thesis was defended	Number of staff	Frequency
At the university which recruited them	3293	30.0%
At another university	7678	70.0%
Total number of new assistant professors	10,971	100.0%

Note: 3293 assistant professors (30.0% of the total number of new assistant professors in all disciplines) were recruited by the university from which they received their doctorate.
Source: Ministry of Education files orig2002.pdf to orig2007.pdf; ftp://trf.education.gouv.fr/pub/edutel/personnel/enssup/

Table 2: Origin of new professors recruited between 2002 and 2007

Professional position before obtaining current position	Number of staff	Frequency
Assistant professors in the university that recruits them	1879	57.7%
Other situation	1376	43.3%
Number of new professors recruited	3255	100.0%

Note: 1879 professors (57.7% of all new professors) had previously been assistant professors in the university that recruited them.
Source: Ministry of Education files orig2002.pdf to orig2007.pdf; ftp://trf.education.gouv.fr/pub/edutel/personnel/enssup/

These figures are supported by additional measures that allow us to refine and deepen our understanding of the meaning of inbreeding in the recruitment process[10]. 10.2% of the candidates for a position as assistant lecturer, despite having defended their thesis in another university, can also be considered 'inbred' insofar as they have held a position as an *attaché temporaire d'enseignement et de recherche (ATER)* – a temporary teaching and research assistant – or as a *moniteur d'initiation à l'enseignement supérieur* – a lower-grade teaching assistant – in the establishment that recruited them. Geographical proximity also counts: 15.7% of assistant professors who were recruited defended their thesis in a different university but within the same

[9] Cf. Origine des enseignants chercheurs recrutés lors de la campagne 2007.
[10] For a more in-depth discussion of this point, cf. Alain Quemin, "Qu'est-ce qu'un candidat local?", *La lettre de l'ASES*, n°26, March 1999, p. 22-30.

académie (regional education authority), particularly in Île-de-France.

Nevertheless, this useful data only allows us to measure the ratio of inbred recruitment and not academic inbreeding as a whole – that is, universities' preference for recruiting their own doctoral graduates. A quick glance at these figures gives the impression that inbred recruitment is not particularly important: it represents 'less than half', the recruitment process cannot be so 'closed' because 'external' candidates would succeed in surpassing or equalling 'inbred' candidates. The Fréville report, which is well informed on the academic world, contains statements of this kind:

> *"Survey responses do little to balance discourse on the importance of 'inbreeding' in the recruitment process. Indeed, out of 768 respondents, 53% of assistant professors state that they were recruited in the university where they defended their thesis; 47% state that they were not. These balanced responses do not therefore seem to confirm the existence of large-scale inbred recruitment"* [11]

With nothing to compare it with, the ratio of inbred candidates among those recruited does not serve to enlighten us, for we are unable to determine the point at which the favouritism began. In order to do so, it would be necessary to isolate those who were 'necessarily' recruited externally insofar as the institution that recruited them did not have any inbred candidates to select. In addition, the state of competition between inbred and external candidates would need to be recreated[12]. The same 30% rate of inbred recruitment does not have the same significance if there are three universities producing doctoral graduates in a given discipline as if there are 20. In the first case, if we accept that the universities are of a similar size, then there is no preference for inbred applicants. In the second case, however, that preference is very marked. Furthermore, among a given number of universities, a rate of 30% does not have the same significance in a small university producing very few inbred candidates as in a large establishment producing more. It reflects a higher level of favouritism in the small university. Finally, even in inbred-external competitions of identical size and structure, the rate of inbred recruitment cannot be interpreted in the same way at an elite university and a second-ranked university. A situation in which the number of candidates produced is well above the number of positions available could ensue from a higher quality of applicants in the first case, and a form of favouritism in the second case.

Let us take an example for which we know the precise application figures: the EHESS – Ecole des hautes études en sciences sociales – (Table 3) [13]. Between 1991 and 2005, 41 assistant professors that were recruited had defended their thesis at the EHESS whereas 25 others had defended theirs at another institution. Ultimately, the 60% rate of inbred recruitment says less about academic inbreeding than it does the success rate differential between

[11] Cf. Fréville, *op. cit.*, p. 75.

[12] Cf. Olivier Godechot, Nicolas Mariot, "Devenir des docteurs de science politique et 'localisme'. Premiers éléments d'enquête", *Système D*, n°14 – April 2003, p. 3-9.

[13] Cf. Isabelle Backouche, Christian Topalov (ed.), *Vingt ans d'élection à l'École des Hautes Études en Sciences Sociales*, EHESS Report, 2008.

inbred applicants (16% success rate) and external applicants (6%). Inbred candidates succeed three times more often than external candidates, according to the odds ratio[14].

Table 3: Success rates for inbred and external applications in the EHESS assistant professorship selection process (1991-2005)

	Success rate	Number
Thesis defended elsewhere	6%	420
Thesis defended at the EHESS	16%	255
Total	10%	675

Note: Between 1991 and 2005, 6% of the 420 'external' applications were accepted.
Source: Survey on the EHESS[15].

In order to assess academic inbreeding and obtain meaningful statistics, do we therefore need to know the applications made to each university over a long enough period? Such data would, of course, be of great value. Unfortunately, however, applications are not centralised during the recruitment process, and compiling lists of applications received by universities would most likely be tedious and risky. Moreover, working only with applications that have been taken into consideration by recruiters would introduce a bias. Signposting a vacancy upstream is a common way of limiting competition and favouring certain candidates. The selection process is costly for interviewees in terms of the time it takes, the documents that have to be sent and their travel expenses; doctoral students therefore decide to apply to a particular university according to the information they gather on how open or closed the selection process is likely to be. When the position has clearly been pre-assigned to a candidate, who is generally inbred, many potential applicants decide not to apply, even though they may meet the requirements, often based on the advice given by an inside source at the university in question[16]. On account of this upstream selection, the success differential between inbred and external candidates is underestimated. In order to avoid this selection bias, we should not limit ourselves to applications that were taken into consideration. On the contrary, we must try to recreate the total number of potential candidates, that is, those that would be taken into consideration if academic inbreeding were not an issue.

DOCTHESE: a database for measuring academic inbreeding

It may seem unusual to want to evaluate academic inbreeding on the basis of the DOCTHESE database, which focuses on the theses defended in

[14] The odds ratio is a statistical indicator used for comparing two ratios p and q. Its formula is [p/(1-p)]/[q/(1-q)].
[15] Cf. Backouche, Topalov, *op. cit.*
[16] Cf. Judith Lazar's personal account, *op. cit.,* p. 152-153.

France[17]. It does not contain any direct information on academic recruitment, whether that be the position subsequently obtained by doctoral graduates or even the position held by the thesis supervisors. It relates above all to the theses defended and therefore has very few variables. The only details given are the first names and surnames of the thesis writer and the supervisor, the university where the thesis was defended, the discipline, the title, a summary and the key words.

Nevertheless, it has an undeniable advantage. This almost exhaustive collection of 212,987 theses (defended mainly between 1972 and 2000) in the sciences and the human and social sciences – the theses relating to health practices were excluded from the evaluation – enabled us to make a fairly precise, longitudinal evaluation of the academic population. By matching surname, first name and discipline, we could trace the doctoral graduates who became thesis supervisors a few years later[18]. This gave us an indicator for academic recruitment – albeit delayed and somewhat imprecise – that focused on both an extended period of time and a large, if not exhaustive, number of cases. With regard to an individual's academic career, only the initial and final details are known: the thesis (or theses) defended at the start of the student's career and the theses supervised at the end. We are lacking the typical middle stages that the candidate may or may not have completed:

a) a career in the French academic world after completing the thesis

b) possible supply work or temporary position in higher education (substitute teacher, *ATER*, post-doctoral research fellow or even a teacher in a secondary school until a vacancy comes up)

c) qualification (in the years in which this stage was required[19])

d) a position as assistant professor

e) obtaining the *thèse d'État* qualification (State thesis) or the *habilitation à diriger des recherches* post-doctoral qualification (after 1984).

[17] DOCTHESE is a CD-Rom register of theses. It was brought to an end in 2003 and replaced by the online database SUDOC, which continues to register theses but which does not, unfortunately, enable statistics to be produced so easily.

[18] We will not give full details here of all the complex data manipulation that was needed to identify the doctoral students who became thesis directors. To avoid problems of homonymy, we first carried out fairly strict matching: the same surname, the same first name, the same discipline = the same person. This type of matching was then extended to connected disciplines based on a notion of proximity established according to the disciplinary mobility of the thesis supervisors in a single establishment. In order to better follow the careers of women who changed their name, the matching process was carried out on part of a double-barrelled name and enabled us to reconstruct the careers of a certain number of women. We also matched cases of surnames and first names that had been spelled in a similar way, thus avoiding the problem of spelling mistakes.

[19] *Qualification* was the first stage of the selection process of assistant professors, held at national level. During this stage, sections of the National University Council examined applications and decided which candidates would be allowed through to the 'local' selection process for assistant professors and professors. Since 1998, those who qualify remain so for four years.

f) qualifying as a candidate for a position as professor (in the years in which this stage was required)

g) obtaining a position as a professor

h) supervising one or more doctoral students

i) attending the defence of their first doctoral student's thesis

j) registering the thesis of their first doctoral graduate in the database, if successfully defended

Every thesis supervisor did not necessarily go through each of these stages, given particularities such as the *agrégation* – the competitive examination for teacher recruitment – required in certain disciplines (law, management, economic science, political science), and amendments to legislation in place (between 1988 and 1992, and between 1995 and 1997, the national qualification stage came after the thesis defence instead of preceding it[20]). Teacher-researchers could supervise theses and oversee a thesis defence without actually being a professor; that was the case for research directors at the National Centre for Scientific Research (CNRS) or, more unusually, for assistant professors. Nevertheless, professors are better integrated into the graduate and postgraduate educational framework; they are therefore in a better position to attract doctoral students and are more numerous. They thus make up the majority of thesis directors.

The bias of the data processing that follows lies in the fact that the transition from doctoral student to supervisor enables us to see the transitional recruitment processes and to recreate the structure of the competition between inbred and external candidates. To establish this structure, however, our approximation hypotheses need to be accepted.

Approximation 1 – from transition to mobility: *mobility, both institutional and disciplinary, is measured on the basis of the difference for one individual between the place and the discipline of the first thesis defended and the place and the discipline of the first thesis supervised.*

Before continuing with the list of approximations, we will present the career paths we are going to use in our evaluation (Table 4). In a database of 212,987 theses, we identified 205,631 different doctoral graduates (some students defended several theses) and 35,564 different thesis supervisors[21]. We managed to find 13,462 different doctoral graduates who became thesis supervisors an average of 12.24 years after defending their own thesis (standard deviation 5.64). On the other hand, we were unable to find 22,102 supervisors for a number of possible reasons: they completed their thesis be-

[20] Cf. Christine Musselin, *Le marché des universitaires, France, Allemagne, États-Unis,* Puf, 2005.

[21] Let us highlight some important gaps in our database. Thesis supervisors are only rarely included in the sciences before 1984, whereas they were systematically included in the human and social sciences. In addition, in 1983 or 1984, science disciplines are generally missing. In order to avoid problems of homonymy, we have identified as the same person those thesis supervisors with the same surname and first name in the same discipline or in the same university.

fore the database was set up; their thesis is missing from the database (information is often missing for State theses); they were from another country; they do not have a thesis (this group may include research assistants and assistant professors who, in 1984, became part of the body of assistant professors, directors of studies at the EHESS or research supervisors at the CNRS); or, finally, the names could not be matched (the first name or surname changed, there are spelling mistakes, or the discipline is not closely related enough)[22].

Is it problematic to limit our evaluation to French doctoral graduates alone? It could be if, for example, the French academic world recruited preferentially in two different groups: inbred candidates who had defended their thesis locally and those who had defended their thesis abroad. In that case, by only focusing on French doctoral graduates we might run the risk of underestimating the degree of openness. However, the ratio of foreign doctoral graduates recruited was still low in 2002 (2.9% of new assistant professors recruited) [23]. This proportion would have been even lower in the 1970s and 1980s. Limiting our evaluation to French graduates does not, therefore, introduce any significant bias.

Table 4: Career trajectories of doctoral graduates – thesis supervisors identified in the database of theses defended between 1961 and 2002.

Category	Number
1. Total number of thesis supervisors identified	35,564
2. Thesis supervisors who could not be found as doctoral students	22,102
3. Supervisors overseeing their first thesis in a different university and discipline from those of their own thesis	2145
4. Supervisors overseeing their first thesis in the same university but in a different discipline from that of their own thesis	1550
5. Supervisors recruited externally in their thesis discipline	5150
6. Supervisors overseeing their first thesis in the same discipline and the same university as those of their thesis	4617
7. Total number of supervisors whose thesis could be found	13,462
8. Doctoral graduates who could not be found as supervisors	192,169
9. Total number of doctoral graduates identified	205,631
10. Total number of doctoral theses identified.	212,987

Note: The data reveals 4617 thesis supervisors who both defended then supervised their first thesis in the same university and the same discipline.
Source: Reprocessed data from the DOCTHESE database.

Overall, the number of career trajectories taking place within the same institution is high, but does not make up the majority: 46% of doctoral graduates who were 'recruited' supervised a thesis in the university where they had begun their career. The rate of inbred recruitment is higher within

[22] Even for the new supervisors overseeing theses for the first time between 1997 and 2002, the identification rate (47%) is still less than half.

[23] Cf. *Origine des enseignants chercheurs*…, 2002 and 2007.

the same discipline (47% as opposed to a 41% rate of recruitment outside the discipline). Does the relatively high rate of inbred recruitment indicate a high rate of academic inbreeding? In order to determine this, we must also recreate the respective ratios of inbred and external applications. We aim to make such a comparison with the approximations that follow.

Approximation 2 – inbred recruitment: *inbred recruitment is measured according to a strict definition, such as the fact of having defended and then supervised one's first thesis in the same university department, that is, in both the same university and the same discipline.*

This limitation is intended to circumscribe the relational phenomenon that underlies institutional 'inbreeding', that is, peer recruitment of a doctoral graduate whom one has supervised, supported and worked alongside. When a doctoral student changes discipline in a particular university (switching, for example, from law to political science, or from mathematics to physics), he/she will only have very limited connections with the members of the department that is recruiting him/her. What is more, the trajectory followed during a change of discipline is ambiguous: it is not known whether the change of discipline occurs at the time of the first recruitment or at a later time.

The quality of an evaluation of academic inbreeding thus depends on the balance between the disciplines we use and the institutional definitions of the disciplines that structure academic competition: university departments, sections of the National University Council (CNU) and the CNRS, and specialist committees. The ideal solution would be to copy the exact list of disciplines as given by the CNU. However, the sub-disciplinary titles of doctoral theses are often ambiguous and do not always allow it, particularly in the sciences. The 26 disciplines (cf. Table 7) listed on the basis of the titles of the DOCTHESE database are fairly large groupings and correspond to the major disciplinary categories.

Approximation 3 – the year in which competition was evaluated: *As a rule, the year of reference for evaluating the competition between inbred and external candidates is the year in which the thesis was defended.*

The transition from graduate to supervisor and its often lengthy duration were the product of several different stages, some of which involved recruitment drives while others depended on the professor's appeal and the celerity of the supervised doctoral graduates. Focusing on the start of the career process, using the date of the thesis defence as a yardstick for the various transitions, we can formulate the hypothesis that the level of mobility observed reflects, above all, the transition between the status of doctoral student and the first position with tenure in a university (for example, as *maître-assistant*, a position which changed to *maître de conférences* – assistant professor – in 1984), a transition that took place in the two or three years following the defence thesis. Indeed, recruitment for the transition from assistant professor to professor is more inbred (60% of professors appointed between 2002 and 2007 were already assistant professors in the university) than the transition from doctoral graduate to assistant professor (30% of assistant

professors between 2002 and 2007 defended their thesis in the same university). Potential mobility is more a result of the first transition than of the second, even though counter-mobility phenomena (or 'silver-cording') are certainly important (defending one's thesis in department A, being appointed assistant professor or professor in department B, then returning to department A as a professor).

Furthermore, it would be problematic to focus on another year, particularly the year in which the first thesis was supervised, when recreating the structure of the forces at work in the academic selection process.

Approximation 4 – positions open for recruitment: a) *Let us consider that there is a 'position to fill' in the department where a new thesis supervisor oversaw his first thesis. The position is 'filled' by the supervisor in question. b) Let us consider that the position is 'open' to those people who obtained their first doctorate in the same year and the same discipline as the person 'recruited'. c) Let us say that the position is 'open' 'within the discipline' if the first thesis defended was in the same discipline as the first thesis supervised. It is open 'outside the discipline' in the opposite case.*

Proposal 4b may seem restrictive. We will assume that the doctoral students of year *n* are not in competition with the students of year *n + 1*. This is, of course, inexact: in 2007, 40% of new assistant professors defended their thesis in 2006, 24% in 2005, 13% in 2004, etc.[24] Nevertheless, the delimitation by year should not be evaluated according to historical accuracy but rather according to its capacity to represent the forces at work during the recruitment process. From that point of view, delimiting the competition in this way is not a bad thing. In addition, it would have been even more difficult and arbitrary to quantify the competition represented by the other years.

Approximation 5 – disciplinary limits of the selection process: *The study is limited to the positions 'open' 'within the discipline'. This also means that inbred or external doctoral graduates of a related discipline do not compete for a position.*

Although it is true that, for many positions, candidates from related disciplines can apply, it would have been very difficult to quantify the proportion of related disciplines involved for each position.

Approximation 6 – spectrum of applications: *a) 'Inbred' doctoral graduates always apply within their own department if a position is 'open'. b) Doctoral graduates who 'fail' go on to apply to all the external departments where a position is advertised. c) To simplify, we assumed that doctoral graduates who obtained a position within their discipline only applied externally to the department where they obtained their position.*

The aim of approximation 6c is to avoid having to establish complex hypotheses regarding the preferences of candidates who might be accepted in several establishments. The only preference we propose is that candidates would always choose to obtain a position in their own university rather than externally – approximation a. It should be noted that hypotheses 6a and 6c

[24] Cf. Origine des enseignants chercheurs…, 2007, p. 31.

tend to diminish the importance of academic inbreeding. On the other hand, hypothesis 6b, concerning applications made to all available positions, inflates the number of external candidates and therefore increases the success differential between inbred candidates and external candidates accordingly. For the 1972-1996 period, this hypothesis thus led us to consider that the (unrecruited) doctoral graduates were candidates, on average, in 11 departments in which positions were open in their discipline (minimum 0, maximum 35 – cf. Table 5).

Approximation 7 – focusing on instances of inbred-external selection processes: *Only positions for which both inbred and external candidates can apply have been included*

The aim of this last hypothesis is to avoid the success rate of external candidates being artificially inflated by instances in which they are not in competition with inbred applicants.

Let us take an example in order to illustrate our approximation hypotheses. In 1986, an individual defended a thesis in law at the University of Paris 1. In 1999, that same individual supervised his first thesis, which was defended in the same university and the same discipline. He was not the only graduate to have defended his thesis in 1986 and to have been 'recruited' within the department of that same university. In 1986, a doctoral graduate who defended his thesis in the University of Paris 2 then went on to supervise his first thesis in 1997 at Paris 1. We therefore believe that two positions were advertised in this department to the doctoral graduates of 1986. 362 students defended a thesis in law that year: 41 in Paris 1 and 321 in other universities (of which 11 found positions in other institutions and therefore did not apply, according to our hypotheses). The success rate for inbred candidates is thus 1/41 and 1/310 for external candidates. To equalise the success rates, it would have been necessary to recruit one quarter inbred candidates and three-quarters external candidates, which is not easy. On the other hand, it is possible to gauge all of the forces at work, the candidates – both inbred and external – and recruited applicants that were observed, as well as the 'expected' instances of inbred and external recruitment that would occur in an impartial recruitment process, so as to be able to evaluate the success differential according to major groupings: time period, discipline, university.

Extensive academic inbreeding

The extent of inbreeding observed in a recruitment process in a given year and a given department is difficult to determine on account of the low numbers of applicants recruited. On the other hand, if we look at a larger group we can see whether the inevitable tendency towards recruiting inbred or external candidates balances out, since 'whole' individuals, and not 'slices' of individuals, have to be recruited.

To do so, firstly one must isolate the situations in which recruitment is

open to competition. First result, a large part of external recruitment (24%) occurs in situations where there are no inbred candidates (Table 5). The rate of inbred recruitment is thus markedly higher when we limit ourselves to situations involving competition. It increases from 48% to 55%.

Table 5. Inbred recruitment among doctoral graduates who defended their thesis between 1972 and 1996.

All departments	Candidates (overall)	157,821
	Places in which competitions were held: department-year	7138
	Overall number of doctoral graduates recruited	13,082
	External candidates recruited from another discipline	2052
	Inbred candidates recruited from another discipline	1516
	Total number of candidates recruited	9514
	External doctoral graduates recruited in a discipline within departments where there are no inbred candidates	1185
Departments in the years in which recruitment took place in a given discipline and in which the competition between inbred and external candidates can be measured.	Candidates (individual)	143,593
	Applications	1,618,443
	Average number of applications per individual	11.27
	Places in which competitions were held: department-year	4491
	Doctoral graduates recruited	8329
	Inbred doctoral graduates recruited	4549
	Inbred applications	72,257
	External doctoral graduates recruited	3780
	External applications	1,546,186
	External candidates (individual)	138,342
	Total number of inbred candidates that would be recruited-following the independence hypothesis	653,57
	Total number of external candidates that would be recruited following the independence hypothesis	7677.43
	Success rate for inbred applications	6.30%
	Success rate for external applications	0.24%
	Mantel-Haenszel odds ratio: for inbred candidates in relation to external candidates, with structural differences corrected	18.02
	Proportion of inbred candidates out of doctoral graduates recruited	55%
	Proportion of inbred candidates expected	8%

Note: In order to work with more solid data, we limited ourselves to the period from 1972 to 1996. Before 1972, the data is very incomplete. After 1996, doctoral graduates had very little time in which to become a supervisor and very few transitions were recorded.
Source: Reprocessed data from the DOCTHESE database.

If we limit ourselves to the departments in which the competition between inbred and external candidates can be assessed, we obtain a success rate of 6.3% for inbred applications as opposed to 0.24% for external applications. This differential is very high. Measured with a classic odds ratio, inbred applications have 27 times more chance of being successful than external applications. Nevertheless, part of this differential is linked to departmental size: the number of positions available and, consequently, the success rate are higher in larger departments. Yet these also produce a higher

number of doctoral graduates, which in turn increases the ratio of inbred applications[25]. In order to correct this structural effect, we used the Mantel-Haenszel odds ratio[26] which takes into account variations in structure and the staff numbers each year in the different departments: by that measure, inbred candidates have 18 times more chance of being recruited than external candidates. As a result, we will use this corrected odds ratio as an indicator of the extent of academic inbreeding.

One might think that this considerable difference depends largely on our hypothesis stating that doctoral graduates apply for all available positions[27]. By way of comparison, let us consider a much more restrictive hypothesis. Let us assume that doctoral graduates always apply to *only one* external department and that they systematically apply to their own department if a position becomes available. On account of this low number of applications, the success rate of external candidates increases significantly, rising to 2.7%. However, even with this restrictive hypothesis, academic inbreeding is still high. The chance of success for inbred candidates is twice as high (Mantel-Haenszel odds ratio).

A growing phenomenon

Table 6. Academic inbreeding in the recruitment of doctoral graduates who defended their thesis between 1972 and 1996, as observed in four-year periods

Period of thesis defence	Inbred candidates recruited	'Expected' inbred candidates recruited	Inbred applications	External candidates recruited	External applications	Proportion of inbred candidates out of those recruited	Mantel-Haenszel odds ratio
1972-1976	944	191.04	11,692	854	177,410	52.50%	12.49
1977-1981	1525	233.95	19,243	1254	376,652	54.88%	17.50
1982-1986	914	111.99	14,202	713	301,682	56.18%	20.83
1987-1991	945	94.95	18,226	776	479,248	54.91%	24.49
1992-1996	221	21.65	8894	183	211,194	54.70%	24.49

Note: 944 doctoral graduates who defended their thesis between 1972 and 1976 were inbred 'recruits', while 854 were recruited externally. 11,692 inbred applications and 177,410 external applications are observed overall. If the chances of success for inbred and external candidates had been balanced out each year in each department, a total of 191.04 inbred candidates would have been recruited (and 1606.04 external candidates). Inbred candidates have 12.5 times more chance of being recruited than external candidates.
Source: Reprocessed data from the DOCTHESE database.

[25] The sum of two tables crossed 2x2 independently does not generally produce a table crossed independently (unless they have a common marginal structure).

[26] It is measured in the following way:

$$OR_{MH} = [\ \Sigma_i\ (n_{i11} * n_{i22}/n_i)\ ]\ /\ [\ \Sigma_i\ (n_{i12} * n_{i21}/n_i)\ ]$$

where, in the department-year i, n_{i11} represents the number of recruited inbred candidates and n_{i22} represents the number of external candidates not recruited, n_{i12} the number of inbred candidates not recruited, n_{i21} the number of external candidates recruited and n_i the overall number of candidates.

[27] Between 1984 and 1987, therefore, one could only apply to a maximum of 4 establishments (Decree of 6 June 1984, art. 25 and 46, repealed by the Decree of 17 July 1987).

The delay of our recruitment indicator means that we are unable to measure academic inbreeding correctly for recent years. For the most part, our tool examines recruitment practices carried out at the start of people's academic careers in the 1970s and 1980s (Table 6). It does, however, allow us to trace certain developments. Academic inbreeding rose sharply up until the end of the 1980s. The success odds ratio thus rises from 12.5 for the 1972-1976 period to 24.5 for the 1987-1991 period. Yet, at the same time, the proportion of inbred students among those recruited remains fairly stable at around 54%. This rise in academic inbreeding is due in particular to the increase of establishments producing doctoral graduates in each discipline and to the subsequent rise in the number of external candidates. 17.4 establishments produced doctoral graduates in each discipline during the first period, as opposed to 29 in the 1987-1991 period. The stabilisation of academic inbreeding over the 1992-1996 period and, indeed, its inflection over the 1994-1996 period, is difficult to interpret. We do not yet have enough hindsight with which to be able to determine the transitions made from doctoral graduates to thesis supervisors. The doctoral graduates who made a particularly swift transition to the position of supervisor may have had special careers that distinguish them from other supervisors. Even though we should remain cautious, we can presume that we are witnessing an inflexion in academic inbreeding from the middle of the 1990s. At that time, this subject became a major issue in the debate on recruitment. It was frequently condemned by doctoral associations and by teacher-researchers[28]. Doctoral associations on the one hand and teachers on the other have established a set of procedures to monitor recruitment practices in order to increase transparency, and these have apparently slightly lessened the intensity of the phenomenon[29]. According to the Ministry's figures, the rate of inbred recruitment over the last six years, while still high, has therefore fallen. The ratio of inbred candidates recruited as new assistant professors has thus dropped from 32% in 2002 to 28% in 2007.

In the sciences and in the human and social sciences

In contrast to what is sometimes claimed, academic inbreeding is not restricted to the disciplines that are scientifically 'less advanced', within which the particularities of social relations would have more of an influence than the universalism of scientific value (Table 7). On the contrary, the tendency towards academic inbreeding is observed in all disciplines. Even in philosophy, the discipline that is least inclined to show signs of academic inbreeding according to our data processing, an inbred candidate has six times more chance of being recruited than an external candidate. The odds ratio is often far higher in the sciences (where we find an overall odds ratio of 20)

[28] Cf. Collectif de sociologues candidats à l'Université, "Le recrutement des maîtres de conférences en sociologie à l'Université. Chronique d'une procédure opaque et bâclée", *Genèses*, n°25, 1996, 156-165.

[29] Each year, the Association Nationale des Candidats aux Métiers de la Science Politique (National Association of Candidates for Political Science Professions) publishes the results of its recruitment campaign in its bulletin, *Système D*. Mathematicians have established an electronic system that displays the candidates who have been interviewed and ranked. In his blog http://www.coulmont.com, Baptiste Coulmont has developed a similar system for sociology.

than in the human and social sciences (odds ratio of 14). In computer science, chemistry and engineering sciences, it is particularly high with odds ratios ranging from 34 to 51.

Some of our disciplinary groupings may be rather broad, increasing the level of academic inbreeding in the sciences. This is true of the engineering sciences, which group together all the various sub-disciplines gathered under the DOCTHESE label 'Science and technology' (with the exception of computer science): electronics, building technology, control systems engineering, mechanical engineering, etc. We can presume that a university with a mechanical engineering department would recruit more within that special field rather than create positions in non-existent related sub-disciplines. If we consider that candidates from all the other sub-disciplines can apply for those positions then we inflate the number of external candidates. This inadequate division of competition can apply to very heterogeneous groups, comprising a large number of sub-disciplines, such as biology (whose sub-disciplines range from biochemistry to ethology). It is less likely to apply to more homogeneous groups such as chemistry or computer science, where very high levels of academic inbreeding are observed. In addition, the human sciences also comprise very heterogeneous groups such as the study of languages and civilisations, which group together different cultural regions (Anglophone, Hispanophone, Germanic, Slavic, East Asian, etc.) and which have a lower level of academic inbreeding.

Table 7. Academic inbreeding in recruitment according to discipline, for doctoral graduates who defended their thesis between 1972 and 1996.

Discipline	Inbred candidates recruited	'Expected' inbred candidates recruited	Inbred applications	External candidates recruited	External applications	Proportion of inbred candidates out of those recruited	Mantel-Haenszel Odds Ratio
Philosophy	42	15.1	1215	63	8199	40.00%	6.04
Ethnology; Religious science	37	13	492	27	2512	57.81%	7.08
Literature	63	13.7	1960	192	37,952	24.71%	7.74
Sociology	45	9.9	1101	77	15,347	36.89%	7.90
Art and archeology; Film studies; Theatre Musicology	48	12.6	844	56	7351	46.15%	8.42
Linguistics	82	14.8	1429	125	21,455	39.61%	9.18
Study of languages and civilisations	147	31.7	3661	310	68,141	32.17%	9.61
History	102	19.7	2406	178	40,315	36.43%	10.66
Education sciences	24	5.3	306	21	2699	53.33%	12.60
Psychology	119	20.3	1533	105	21,211	53.13%	13.32
Biology	986	149.1	15,220	822	381,988	54.54%	14.77
Physics	733	112.1	9683	516	246,366	58.69%	17.21
Mathematics	186	31.9	2148	137	29,106	57.59%	17.32
Total	**4549**	**653.6**	**72,257**	**3780**	**1,546,186**	**54.62%**	**18.02**
Earth, Oceans, Geology	213	29.3	3433	186	59,804	5.38%	18.13
Geography	96	10.7	1218	101	23,617	48.73%	19.98
Management	68	15.5	851	28	6420	70.83%	20.91
Medical sciences	87	10.3	1216	41	15,453	67.97%	26.64
Political science	32	4.4	248	13	2689	71.11%	32.37
Computer science	255	30	3002	133	54,817	65.72%	34.37

Law	191	15.5	3369	160	79,056	54.42%	37.04
Economics	181	18	3255	95	58,691	65.58%	38.40
Chemistry	286	27.2	3846	103	70,703	73.52%	40.47
Engineering sciences	513	40.4	9697	287	291,586	64.13%	51.15

Note: See Table 6. The table is ordered according to the corrected success odds ratio. We have eliminated three disciplines (sports science and technology (*STAPS*), pharmaceutical sciences, and information and communication sciences) on account of the very low number of positions open for competition (fewer than 10).
Source: Reprocessed data from the DOCTHESE database.

In the sciences, the fact that research is dependent on rare, heavy equipment that can be found in very few laboratories (such as a particle accelerator) can also lead to situations of immobility or counter-mobility (that is, an employee returning to the same establishment after initially moving). It may contribute to academic inbreeding in physics, but is less influential in the other sciences with less specific scientific infrastructures, such as mathematics. The nature of certain applied sciences such as the engineering sciences and chemistry is conducive to developing local partnerships with industries in order to obtain funding, carry out research or renew contracts. This may contribute to further immobility[30].

In short, the speed and means with which individuals begin their career are not the same in the sciences and the human sciences. In 2002, the average academic obtained a position as assistant professor at the age of 31 in the sciences, while in the arts and the human sciences the average was 36. The average transition to professor was made at the age of 41 as opposed to 47[31]. Assistant professors not only begin working in the sciences earlier but also often precede their recruitment with post-doctoral research carried out abroad. 27% of doctoral graduates recruited in the sciences in 2002 held a post-doctoral research position abroad before being recruited, as opposed to 4% in the arts[32]. Depending on a university's views on 'post-docs' carried out abroad, we may consider that a subsequent appointment to a position in the establishment that awarded the doctorate will either be 'inbred' or else constitute a form of counter-mobility. Even though we are lacking data on the extent – no doubt minor – to which post-doctorate research positions were undertaken in the 1970s and 1980s, these elements affect the size of the academic inbreeding differential between the sciences and the human sciences.

Within the human and social sciences, we can detect a division between disciplines of the former arts faculties and those of the former law faculties (law, economics, management, political science). These subjects, with an odds ratio of 34 as opposed to 10 for arts subjects, clearly tend more towards academic inbreeding. The phenomenon is even more surprising when we consider that, when recruiting most of their professors, the faculties organise a national, centralised competitive selection process (*agrégation du*

[30] Cf. Georges Benguigui, "Les physiciens sont-ils de gauche et les chimistes de droite?", *Social Science Information*, vol. 25, n°3, 1986, p. 725 - 741.
[31] Cf. Origine des enseignants chercheurs…, *op. cit.*, 2002.
[32] The number of individuals holding 'post-doc' qualifications has risen sharply since 2002, both abroad (the ratio of post-doc holders recruited in the sciences rose to 39% in 2007) and especially in France, with the creation of the CNRS post-docs (the ratio of post-doc holders rose from 16% in 2002 to 31% in 2007).

supérieur), at the end of which the successful candidates state their preference according to the positions available and their own ranking. In this process, it is not the university that selects its candidate, but rather the ranked candidate who selects his/her university. The fact that inbred matching is overrepresented is perhaps, here more than elsewhere, due more to a candidate's reluctance to change university. However, the institution's role in inbreeding is not entirely absent in the recruitment of both assistant professors and professors. The logic governing the competition ranking sometimes goes against the logic governing the preferential matching of candidates with universities. Universities, particularly in Paris, often recruit their professor by means of a 'transfer' and bring back their former 'products' after they have worked in another establishment for a few years. According to Pierre Bourdieu, these are temporal disciplines; they are more frequently linked to forms of power, particularly inbred power – relationships with the political and economic authorities in a region, holding a concurrent advisory role, etc.[33] – thereby contributing to the fact that those who became specialised there then go on to establish themselves within the same university.

The least inbred disciplines are not necessarily so on account of a greater attachment to the universal rule of science, but often because of pre-selection mechanisms that put candidates and universities in contact with one another and facilitate the selection process. In philosophy, a discipline whose identity is traditionally based on the *baccalauréat-Ecole Normale Supérieur-agrégation* trio[34], we observe the preferential recruitment of individuals who have previously succeeded in national, elitist, centralised competitions: the Ecole Normale Supérieur and the *agrégation* competition for secondary school teaching. This selection method is based on both the abilities displayed in the competition – which are not, however, defined in terms of what is needed for higher education teaching – but also on the camaraderie that exists between former students who have followed the same course of study and which may then replace the solidarity existing between a department and inbred doctoral graduates. The course of study followed by ENS students who have passed the *agrégation* competition also plays a role in other disciplines such as history or literature. In arts or human sciences subjects such as geography or psychology, within which the course of study of those ENS students who have passed the *agrégation* competition plays little or no role, recruitment is noticeably more inbred.

In newer universities in particular

The universal nature of academic inbreeding according to discipline can also be observed when we approach the phenomenon according to the place

[33] Cf. Pierre Bourdieu, *Homo Academicus,* Minuit, 1984; Jean-Michel Berthelot, Sophie Ponthieux, *Les Enseignants-chercheurs de l'enseignement supérieur: revenus professionnels et conditions d'activité*, La Documentation française, 1992.

[34] Cf. Jean-Louis Fabiani, *Les philosophes de la république,* Minuit, 1988; Charles Soulié, *La fabrique des philosophes, ou des usages sociaux de l'U.F.R de philosophie de Paris I,* Doctorate in sociology, EHESS, 1994; Olivier Godechot, "Le marché du livre philosophique"*, Actes de la recherche en Sciences Sociales,* n°130, 1999, p. 11-28.

in which a thesis was defended (Table 8). This applies to every one of the universities and *écoles* that recruit more than 10 candidates for a discipline in which inbred and external candidates are in competition. The establishments that seem to favour the latter are those that recruit candidates in the years when they have not produced any doctoral graduates, such as Cergy-Pontoise, Bordeaux 4, the ENS Cachan and the ENS Lyon. Here, the variations of our academic inbreeding indicator are even higher than by discipline. The odds ratio varies from 3 to 542. The least 'inbred' establishments in the table are the Parisian universities. Their staff may well include a considerable number of inbred candidates, as is the case at Paris 1 and Paris 6. However, on account of the position they hold in terms of the number of doctoral graduates produced, this high level of inbred recruitment does not favour inbred candidates as much as in small universities that produce very few doctoral graduates, such as Pau, Reims, Mulhouse, etc. The relative openness shown by Parisian universities in comparison with universities in the provinces should, however, be put in perspective. It is particularly high for those doctoral graduates who defended their theses between 1972 and 1984. It is possible that the 1968 Faure Law, which made cutbacks in Parisian faculties, caused students to move between universities whose reputations were still not fully established in the 1970s. However, the highest level of relative openness observed in Parisian universities decreased after 1984. Between 1984 and 1996, Lyon 2 became the least inbred institution, followed by Paris 9, Paris 3, Paris 6 and the *EHESS* [35]; Strasbourg 2 comes in sixth place, Grenoble 3 in seventh place, Montpellier 3 in tenth place, while Paris 1 occupies nineteenth place with an odds ratio similar to that of all institutions combined for that period. For the second period, the major universities in the provinces, often very long-standing or else established or re-established at the end of the 19th century, come in between the major Parisian institutions.

Table 8. Academic inbreeding in recruitment according to university, for doctoral graduates who defended their thesis between 1972 and 1996.

University	Inbred candidates recruited	'Expected' inbred candidates recruited	Inbred applications	External candidates recruited	External applications	Proportion of inbred candidates out of those recruited	Mantel-Haenszel Odds Ratio
EHESS	20	8.67	850	54	8541	27%	2.98
Paris 3	46	19.48	1831	47	8043	49%	4.07
Paris 5	42	17.57	1161	44	11,809	49%	4.76
Paris 9	22	12.24	692	19	5596	54%	5.52
Paris 6	425	165.78	11,001	272	45,772	61%	5.52
Paris 10	53	12.56	1585	105	19,654	34%	6.33
Paris 4	65	22.09	2205	36	8630	64%	7.78

[35] Before 1975, the EHESS could not award doctorates. The doctoral students who were preparing doctorates (third year only) had to defend their thesis in a Parisian university. It is therefore difficult to evaluate academic inbreeding in the EHESS before 1980. Furthermore, the method of recruitment – a plenary, interdisciplinary assembly of professors – differs vastly from that used by the specialist committees in other establishments. Cf. I. Backouche and C. Topalov, *op. cit.*

University	Inbred candidates recruited	'Expected' inbred candidates recruited	Inbred applications	External candidates recruited	External applications	Proportion of inbred candidates out of those recruited	Mantel-Haenszel Odds Ratio
Paris 1	107	37	3843	52	14,870	67%	8.13
Paris 11	334	86.81	6490	256	54,388	57%	8.39
Grenoble 3	12	1.58	207	32	6787	27%	10.96
Paris 8	43	7.54	689	61	12,023	41%	10.98
Strasbourg 2	39	10.31	553	58	9427	40%	11.43
Paris 7	212	36.06	3899	241	51,139	47%	11.76
Paris 2	13	3.07	682	8	4510	62%	12.76
Lille 3	13	1.41	193	43	8353	23%	13.26
Montpellier 3	29	3.35	440	58	11,124	33%	13.74
Lyon 2	42	4.18	589	69	15,100	38%	16.61
Tours	16	1.08	208	63	20,481	20%	17.14
Bordeaux 3	38	5.25	467	49	8966	44%	18.00
Total	**4549**	**653.57**	**72,257**	**3780**	**1,546,186**	**55%**	**18.02**
Paris 12	11	0.86	171	37	14,040	23%	19.08
Montpellier 2	148	17.01	2372	119	39,106	55%	20.36
Aix Marseille 1	80	6.94	997	106	34,079	43%	21.75
Grenoble 1	100	8.34	1652	126	48,862	44%	22.93
École centrale de Lyon	3	0.16	93	13	8388	19%	23.83
Rennes 2	16	1.03	155	35	7795	31%	26.93
Toulouse 2	76	6.64	739	55	13,955	58%	30.76
Grenoble 2	46	5.28	605	27	9419	63%	32.13
Institut polytechnique de Grenoble	97	11.13	1709	43	27,391	69%	35.41
Rennes 1	243	26.19	3136	93	52,418	72%	39.30
Lyon 1	142	13.61	2041	60	36,845	70%	41.81
Paris 13	16	0.57	156	37	17,134	30%	43.33
Lyon 3	24	1.5	278	20	8007	55%	44.60
Nancy 2	19	0.88	164	33	9723	37%	45.12
École centrale de Paris	4	0.16	114	10	8710	29%	46.60
Toulouse 3	126	7.41	1440	89	44,094	59%	49.32
Bordeaux 2	22	1.02	188	15	7543	59%	53.27
Toulouse 1	82	4.44	756	70	28,989	54%	53.29
Bordeaux 1	132	12.25	1687	53	36,721	71%	53.37
Nancy 1	84	5.09	1169	58	31,838	59%	53.63
Aix Marseille 2	35	2.26	433	14	8027	71%	54.17
Nantes	62	2.53	624	82	37,183	43%	54.68
Montpellier 1	33	3.03	467	9	6101	79%	54.99
Nice	105	5,45	950	86	41,447	55%	55.67
École nationale des ponts et chausses Paris	4	0.1	57	11	8170	27%	55.90
Clermont Ferrand 2	83	4.91	998	63	36,446	57%	57.83
Caen	52	1.97	437	70	35,568	43%	58.21
Strasbourg 1	132	8.84	1545	58	36,072	69%	62.47
Aix Marseille 3	55	2.11	586	58	29,527	49%	63.70
Besançon	53	1.96	428	58	31,818	48%	63.87
Institut national des sciences appliquées Toulouse	17	0.43	259	23	22,873	43%	64.50
Institut d'Études Politiques Paris	13	1.17	81	4	1931	76%	67.53

University	Inbred candidates recruited	'Expected' inbred candidates recruited	Inbred applications	External candidates recruited	External applications	Proportion of inbred candidates out of those recruited	Mantel-Haenszel Odds Ratio
Ecole Nationale Supérieure des Mines Paris	28	1.21	315	19	13,074	60%	69.01
Institut national polytechnique Lorraine	21	0.71	293	21	14,740	50%	76.19
Dijon	76	2.99	718	68	36,450	53%	76.76
Lille 2	16	0.65	95	9	3469	64%	87.34
Orléans	31	0.74	199	42	22,614	42%	87.94
Institut national des sciences appliquées Lyon	61	3.04	771	30	25,588	67%	88.55
Metz	13	0.23	92	18	12,585	42%	94.57
Brest	26	0.61	164	24	14,950	52%	97.13
Institut national polytechnique Toulouse	63	3.4	924	26	26,673	71%	101.06
Compiègne	34	0.9	338	19	19,310	64%	117.35
Poitiers	109	4.01	979	54	43,706	67%	121.50
Ecole nationale supérieure des télécommunic-ations	10	0.21	133	9	12,845	53%	121.58
Lille 1	177	9.22	1796	49	48,099	78%	124.04
Rouen	57	1.33	331	38	26,628	60%	136.18
Reims	22	0.34	102	23	14,956	49%	141.72
Limoges	30	0.65	232	21	19,302	59%	152.43
Strasbourg 3	14	0,53	127	3	3 734	82%	165,77
Pau	14	0,23	67	12	8 076	54%	205,48
Saint-Étienne	6	0,06	23	8	6 176	43%	235,70
Mulhouse	9	0,16	71	4	6 304	69%	272,15
Valenciennes	13	0,17	65	5	7 591	72%	377,71
Le Mans	10	0,12	43	4	4 973	71%	534,35
Angers	5	0,04	18	6	4 631	45%	542,08

Note: See Table 7. We have eliminated 40 establishments from this list on account of their having recruited fewer than 10 individuals in the discipline.
Sources : Reprocessed data from the DOCTHESE database.

These long-standing establishments, which produce many doctoral graduates, contrast with small universities that were generally established or re-established after the 1960s, such as Rouen (re-established in 1966), Nantes, Valenciennes or, even more recently, Mans (established in 1977). These universities are still modest in size, producing very few doctoral graduates and recruiting on an irregular basis. Their former students often market themselves badly compared with those from the large universities. As it is unlikely that there will be a position to fill in the years in which doctoral graduates are produced in that same discipline, these new universities are therefore often forced to recruit externally. When they can recruit their own doctoral graduates, they certainly do so, but not necessarily to a larger extent than the major universities: the proportion of inbred graduates out of those recruited is 43% in Saint-Etienne and 45% in Angers. However, given

that these universities produce very few doctoral graduates, this causes a huge increase in the success rate differential between inbred candidates and external candidates. Doctoral graduates from Angers in the successful years (when they *do* recruit within the discipline) thus have a 28% chance of success compared with 0.13% for external candidates. In order to maintain equal opportunities for both groups, it would have been necessary to recruit almost no inbred candidates.

Given the weight of our approximation hypotheses, this kind of hierarchy is not devoid of bias. Let us imagine some examples that could distort it. We have been presuming that doctoral students always write a thesis with the primary aim of beginning a career as a teacher-researcher in France. This, of course, is not always the case. However, if *x*% of doctoral students carry out their doctorate with professional aims that do not include an academic career in France, then that should reduce the number of both inbred applications and external applications by approximately the same amount. The degree of bias is higher if *x* proportion of candidates varies according to university. For example, the best-known, larger universities are more likely than smaller ones to attract foreign students, some of whom then return to their home country to begin their academic career. This artificially inflates the number of inbred candidates who apply to the major universities, as well as the number of external candidates who apply to the small institutions. The doctoral graduates' nationalities are not known, but we can see the approximate number of doctoral graduates whose first name did not appear on the official state register of first names around their year of birth. The ratio correlates slightly with the size of the university and with our academic inbreeding index. It thus rises to 20% for Paris 3, 15% on average, and 10% for Valenciennes. Nevertheless, if we remove the foreign graduates from the list, this only changes the hierarchy at local level and hardly alters the major opposition described above.

Conclusion

The aim of this evaluation of academic inbreeding is not to establish a winners' list or to cast opprobrium on certain disciplines or certain establishments. Above all, it is intended to evaluate the extent of the phenomenon in different contexts. Our estimations lack precision and suffer on account of the fragility of some of our hypotheses with regard to the structuring of the competition and the identification of the different types of recruitment. We would like to highlight three important limitations.

Firstly, we are unable to measure the extent of academic mobility between the first thesis defended and the first thesis supervised. Therefore, we cannot distinguish real immobility from counter-mobility.

Secondly, we are limited to those careers that resulted in an individual supervising a thesis. However, it is likely that the power struggle between inbred and external candidates is not the same for people who have never supervised a thesis, particularly those who conduct their entire career as a *maître-assistant* or assistant professor.

Thirdly, we have not taken into account the quality of the candidate, when in fact, in order to measure academic inbreeding more accurately, we would need to know the different ratios of inbred and external candidates of equal calibre that were recruited. This is difficult to assess fully. The number and quality of publications (requiring a tedious and risky process of data collection) could be useful at first, but we would be lacking certain important dimensions of academic life, such as an individual's capacity to both teach and administrate[36]. In order to clarify things, let us imagine two worlds based on two opposite, extreme hypotheses. In the first, universities have no hierarchy at all; the recruited candidates are the 'best' and the low level of mobility would therefore reflect candidates' preference for immobility. In the second, universities follow a strict hierarchy, to the degree that any doctoral graduate from a high-ranking university is 'better' than any doctoral graduate from a lower-ranked university. In the latter world, the only form of academic inbreeding that is justified from an elitist point of view would be that found at the top of the hierarchy. Lower down, it is not justified if doctoral graduates from superior establishments remain unemployed. The real situation no doubt lies somewhere between the two. It is likely that for every inbred recruit in an inferior university, there exists a doctoral graduate from a top-ranked university who has not found a position and who is 'better'. This probability is, however, difficult to evaluate.

Despite the obvious limitations of the exercise, we believe that the broad outline of the phenomenon, evaluating principally the 1970s and 1980s, is still relevant to the 21st century. The 8% 'expected' level of inbred recruitment, as estimated from our data, is probably not very different from the level we could calculate if we had information on the applications and recruitment for the position of assistant professor over the last six years. It can compared with the 30% level recorded between 2002 and 2005, which is five times higher (according to the odds ratio) [37].

The high levels of differential opportunity between inbred and external candidates, as well as its recurrence and persistence, suggest that this issue needs to be debated by the academic community and the Ministry of Education. Publishing lists of applications that are submitted, judged, ranked and retained would lead to an improvement in the transparency and monitoring of recruitment, both by the Ministry and the entire academic community[38]. At a time when the public authorities are establishing schemes to guide and evaluate universities, monitoring the success rate differential between inbred and external applicants in recruitment processes could provide an interesting indicator. The method we have used here would benefit greatly from being applied to the more precise data held by the Ministry, comparing recruitment according to department and to establishment over the past ten years with

[36] Cf. C. Musselin, *op. cit.*

[37] It should also be mentioned that episodes of recruitment in a discipline are not isolated in the years in which both inbred and external candidates could apply. Comparing the same parameters, with our data we obtained an odds ratio of 10 (46% of inbred recruitment as opposed to the 8% expected).

[38] It is therefore peculiar that the *Journal Officiel* publishes the list of ranked candidates (*qualifiés*) but not that of recruited candidates.

the lists of candidates who were accepted according to department and to the place in which they defended their thesis (which represent potential applications more accurately). As these indices only become robust in the medium term and only bring about changes to practices at an even slower rate, we need a proper debate on the administrative regulation of inbred recruitment by establishing quotas – a more flexible, yet more complex solution – or else by banning the practice – a solution that is easier to implement but perhaps more rigid in certain cases[39].

Translated from French by **Susannah DALE**

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Olivier GODECHOT, a sociologist, is a CNRS researcher at the Centre Maurice Halbwachs and the Laboratoire de Sociologie Quantitative (Crest-Insee).

Alexandra LOUVET, a sociologist, is a doctoral student at the Laboratoire de sociologie quantitative (Crest-Insee) and the Centre Maurice Halbwachs.

[39] Cf. O. Godechot, 2007, *op. cit.*