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**MECHANIZING WRITING AND PHOTOGRAPHING THE WORD : UTOPIAS, OFFICE
WORK, AND HISTORIES OF GENDER AND TECHNOLOGY***

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This article deals with the history of the profession of shorthand typing and more generally, of the transformations which took place in offices from the end of the 19th century onwards, when the acceleration of writing production became a new economic imperative. A series of figures, projects, and practices are cited in order to analyze the conditions surrounding the emergence and the development of a profession as well as the reasons for, and consequences of its feminization in France. The joint development of a practice and a profession centered on the Remington typewriter and shorthand emerges as one outcome among other future or existing practices. Inventors, propagandists, manufacturers, amateurs, and professionals participated in this history, a history which shows how diverse the milieus involved in the mastery of specific techniques were, how relative the motives and criteria put forward to enhance and promote them were, and how different the meanings and values given to them could be.

Keywords : Typist ; Stenographer ; Feminization ; Mechanization

I would like to open with a familiar image : the typist, an indispensable collaborator in both the civil service and business management before the dawn of the information age. Indeed, from the beginning of the 20th century, the typist had become a popular figure through her portrayal in novels, plays, and films. Simultaneously in reality and myth, the typist represented not only a goal for women's ambition, but also—and early on—a limit to this ambition. Whatever interpretation one favors, the typist

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is clearly a central figure in the history of women's labor in the 20th century. In the background, we find the world of the office, which was itself undergoing a radical transformation at the end of the 19th century. With administrative activities becoming more important and industrial and commercial businesses organizing themselves on an ever-larger scale, jobs became more abundant at the same time as they became more diverse and more female-oriented. Furthermore, the administrative work that resulted was increasingly mediated through objects and artifacts. These changes were accompanied by new tools, both material (the telephone and telegraph, typewriters and calculators, filing systems and furniture) and intellectual (signs, procedures, graphs, plans, statistics, probabilities), which played an increasingly important role in the organization and control of social and economic life.¹ The typist also became an emblematic figure representing more structural transformations ; organizational changes in capitalism, the

evolution of the active salaried population, the growth of tertiary technologies, even the intangible phenomenon of modernity itself, characterized by speed and acceleration.

It was in America that a number of these changes were initiated at the end of the 19th century, with the introduction of new methods for doing administrative work in banks and insurance companies, as well as in other large businesses and industrial enterprises. Following the logic of Taylorian reforms from 1910, these companies planned and promoted the technical and organizational means for rationalizing the office. It was as part of this new office décor that enabled the Sholes typewriter—originally manufactured in 1874 as an administrative tool, this was the first typewriter—to assume its position as one of the key objects in this history. In fact, the Sholes typewriter is at the origin of the development of a market that would permanently change the conditions for the production of writing in administrative work. Nevertheless, it was the stenographers rather than the typewriter manufacturers, marketers or salesmen who would play the decisive role in the definition of the object and the establishment of its dominant form of use. This leads to a reorientation of the investigation around a singular moment, the moment when a tool (the typewriter), a social context (the stenographers), and a workplace in transition (the office) meet. This moment is crucial if one seeks to understand how a practice can emerge as a professional activity. Nevertheless, the

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encounter between the world of American stenographers and the Sholes typewriter, as well as its transplantation into a French context, can themselves be seen as merely particular moments in a longer temporal sequence. Two old and largely autonomous preoccupations lie at the root of the "administrative revolution," the desire to photograph the word and to mechanize writing.

In the present paper, I aim to avoid an overly determinist discourse. Indeed, the *classic* analysis of the professions (emergence, definition, affirmation, evolution) is too often presented in such a determinist form. Instead, we need to take into consideration the dead ends and the uses that were put aside in order to fully understand the practices that were abandoned along the way. We also need to understand the variety of organizational forms that are possible for the same professional practice. Thus, the nature and status of a profession vary considerably according to the social origins, educational level, and gender of the people who occupy it. This approach is not only useful from the viewpoint of writing the social history of a profession, but is also valuable as regards the classic questions in the history of technology, especially those concerning innovation. Instead of simply investigating the origins of an invention or the moment of take-off, this approach suggests that we should rather be concerned with recovering the diversity of relevant practices as well as the contexts into which the new technology is introduced. An object is not invented, then designed, and then used. It is dreamed and imagined, and in a sense, its uses are determined before it is conceived. Furthermore, when it is designed, it is immediately modified and located by an unpredictable series of factors. When used in different contexts, it is continually re-imagined and re-deployed according to its use ; certain projects are forgotten and certain potential uses disappear while others are reinforced and become the dominant practices. By recovering the variety of projects, practices, and contexts that existed around one or several technologies, we can more clearly recognize the incredible limitation of the meaning imposed by certain 1920s productivist regimes that were aimed at organizing typing work.

By way of summary, I want to present three histories in this paper : the history of a female figure the *typist*, the history of a male figure the *commercial stenographer* and the parallel history of a pair of central goals : the mechanization and contraction of writing.

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THE HISTORY OF A FEMALE FIGURE : THE TYPIST

Her Story, History

Ordinary, anonymous working women, typists are yet more *shadows*² of history in search of illumination and embodiment. Almost exclusively salaried women, they were heirs to male lineages in what had been liberal professions. Typing, stereotypically regarded as *women's work* was originally performed by male stenographers in a context where practically all the positions in an office would have been occupied by men. The narratives of Balzac and Melville remind us that in the 19th century the world of the office was exclusively male, and that this state of affairs was regarded as quite natural at this time.³ What was taken for granted yesterday has been supplanted by what is taken for granted today, but a mystery remains : how do contradictory phenomena come to seem equally self-evident each in their turn?⁴ What seems to be needed is an analysis of the way in which identities associated with gender and social roles are inter-definitional, as well as the way in which inversions come about and lead to new definitions of social relations between the sexes, which in turn congeal to form new unquestioned states of affairs. We have already posed this question, which makes just as much sense at the level of the history of a profession, in earlier work about office workers as a whole.⁵

Thus, starting from an exploration of the history of a female figure or a group of women workers, we can move on to a more relational history about gender roles. Even though it may be legitimate and even useful to pursue a separate women's history in order to underline the precocity with which a substantial number of women entered the salaried workforce⁶ it is equally necessary to examine the shaping of the social relations between the sexes.⁷ Not only the definition of a social group and the analysis of its historical context but also the definition of a profession and the analysis of its evolution depend upon the respective situation of the sexes that comprise them. Sociologists and historians of women's work have shown how much the symbolic, economic, and social recognition of work varies according to the gender of the workforce. Thus, the issue of the qualifications for men's or women's work-irrespective of whether it is technological or not-is always and already biased.⁸ From this perspective, any neutral (masculinist) labor or social history cannot fail to be blind and to miss the point.⁹

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Working Women, Heroines, and Falling in Love ; the 1920s

In the 1920s, the typists incarnated a new type of women-salaried and Parisian-who effectively replaced the *midinette*¹⁰ in anecdotes and stories. As one observer noted, "in popular literature, the typist threatens to take the place formerly occupied by the schoolmistress, the fashion model, the shopkeeper or the milliner."¹¹ The *woman of the moment*,¹² typists embodied a new femininity : they were young independent women who had chosen their profession, who could profit from city life and its associated leisure activities (theater, cinema), and who played sports to compensate for a sedentary working life. *Made for women* the profession of typist allowed the development of new forms of feminine behavior. During the 1920s, a number of journals were launched aimed specifically at typists with their dual identity as workers and women. Here we find career-related pointers side by side with strictly feminine advice, as "the typist is above all a woman, [and] she knows that she is pretty."¹³ Thus, this type of press alternates between the eternal femininity with its traditionally associated virtues (beauty, cooking) and the characteristics of an emancipated woman (work, sports, and leisure). Of course, the notion of emancipation through work was yet to be defined : women working in factories and other lower-class female workers were not portrayed in the same light, as this emerging construction referred instead to an image associated with women from a higher social class who were rarely if at all involved with the world of work.

Emancipated, pretty, and sporty, the typist was thereby not to be considered a *tomboy*.¹⁴ This image constituted a challenging problem for the professional reviews that aimed to defend the respectability of their colleagues by denouncing the inaccurate portrayals of typists by the press.

Although we do not wish to displease our colleagues who help to form public opinion, the tomboyish typist is the exception. Many, we can assure you, are hurt by the bad reputation imputed to them by an unjust generalization, which is contrary to the facts.¹⁵

Furthermore, at this time *La Revue du Bureau (The Office Review)* and a number of other professional journals were promoting a very different image of the typist. This alternative image bears witness, both to the banalization of the profession and to the fact that more and more positions were occupied by married women, including many mothers. The *Typist's Ball* organized by the journal *L'Intransigeant (The Intransigent)* on the occasion of the typewriter's 50th anniversary included a lottery with a prize

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of 2000 francs to fund "the typist's first crib".¹⁶ The perpetual young woman has ceded her place to the adult. Moreover, this maternal image seems to share in a certain modernity with its acceptance and valorization of the reconciliation between a chosen profession and the status of motherhood.

Girls, young women, young mothers, typists not only became mundane figures, they were also regularly depicted as heroines, sometimes in a positive and sometimes in a negative light. First, there were the authentic heroines like, for example, Mademoiselle Piau, the speed-typing champion who enjoyed a considerable vogue in the press of the 1920s.¹⁷ Beyond their professional abilities, typists also came to the public's attention as winners of beauty pageants or for their sporting exploits. Typists were everywhere, and symbolized a number of female successes in an extremely wide variety of domains.¹⁸ They were also the imaginary heroines of anecdotes or other fantasies. Always described as flirts, these young typists alternated between being brainless bimbos and nice girls who succeeded in making a good marriage at the office.

The theme of romance between the typist and her boss was also very prominent in the 1920s. The typist's crush on her boss and the figure of the jealous wife became classic themes in cartoons and American films.¹⁹ For some union activists, it was clear that these widely-repeated fairy tales, which were picked up and spread by the press, were at least partly responsible for the popularity of the typing profession among young women.

I don't want to be too harsh on the many young women who see this profession as the fulfillment of their dreams : light work, a little makeup, and maybe thanks to their fresh little faces –they have such romantic minds– a proposal from a wealthy boss .²⁰

Situated somewhere between innocence, romance, and vulgarity, these typist fantasies constantly convey the difficult co-existence of men and women in the office and the risks that it brought with it.²¹ The mocking or even depreciatory stereotypes applied to typists indicated the possibility of transgression and confusion associated with gender. Lipstick, powder, and silk stockings became the objects automatically associated with these young women. The discourses produced by the press, novelists, advertisers, professionals, and unionists were both abundant and varied, as they aimed to contain and give sense to the confusion that they observed. When I first started my research, I found myself disoriented by this proliferation of discourses, but it has since become clear to me just how important they

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are.²² They continually lay out different people's views on the limits that should be imposed on the transgression of the sexual and social orders that had come about. The sum of these statements says much about the formulae that were being imagined by the social prognosticators to best combine the possible with the desirable, or the permitted with the extreme. The different positions expressed –with the opposite extremes represented on one side by a kind of moralizing on the part of the office professionals and union

activists, and on the other by the immorality purveyed by gossip columnists— combine to form a kind of chain-link boundary that defined a social space for this new figure.

Needlework, the Piano, and Typing (1890-1910)

In order to understand better the process by which the identification of a profession with a gender is rendered natural, we now turn to a review of the history of feminization of the profession of stenography. We should first note that the feminization of this profession took place in the wider context of the feminization of numerous other administrative tasks and functions. Although the 19th century French office was overwhelmingly masculine, a number of women did work performing administrative writing tasks in the 18th and 19th centuries. A noteworthy development took place starting in the last third of the 19th century with the recruitment of women as salaried employees in banks, railway companies, and business offices.²³ Nevertheless the feminization of the office remained an essentially qualitative change in the 19th century, becoming quantitative only with the Great War. In general, even though it did not initiate the phenomenon, the 1914-1918 war accelerated the feminization of administrative roles in most of the European countries.²⁴ In North America, this basic shift happened earlier, with 1880-1890 being the key period in this case. Thus, the typewriter was not associated with the introduction of women into the office, as they already worked there as copyists, dispatchers, accountants, and cashiers, and it was only later that *typing* would become a metonym for the various functions performed by women in the office. Nevertheless, there is a sense in which the typewriter *definitively introduced women into the office*, in that the profession constructed around this object was going to be increasingly and exclusively associated with a single sex, the female sex. Here we see the mutual shaping of the professional use of a technological object and a

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new female figure, and it is the ultimate success of this reciprocal shaping process that makes sense of the previous claim.

Here, I want to pick up the elements of this history that lead to reflections on much wider issues.²⁵ Two processes are taking place, on one hand, the *gendering* of the typewriter as an object, and on the other, the construction of the femininity of the practice of typing.

A priori a gender-neutral object, the typewriter was gendered right from its initial commercialization in the United States. Certain accidental circumstances, albeit recycled and re-interpreted, led to this initial location of the typewriter under the sign of the feminine. The first Remington typewriters were assembled in the sewing-machine workshops, which influenced the functionality and design of the object. Thus, the fact that the original carriage-return mechanism for the typewriter was operated by a pedal, and the machine was initially mounted on a cast-iron table made them resemble sewing machines.²⁶ The typewriter's appearance was also very similar to the sewing machine's, repeating the cast-iron features, with black and arabesque paintwork. Indeed, the first typewriter catalogue distributed by Remington in 1876 dwelt on these similarities and the typewriter's *domestic* character. In this way, the technical elements themselves—having a similar appearance to the sewing machine, and a keyboard like a piano's—were constructed as feminine.

It is also interesting to note how often women were selected to perform the typewriter demonstrations organized by Remington. For this job, the company sought *"intelligent cultivated women seeking to pass their time agreeably while making money ; musicians preferred"*.²⁷ The comparison between typing technique and playing the piano was taken up over and over again both in the United States and in France, fulfilling an interesting social function in relation to the young middle class women who were to become the first typists. This technological type of comparison—one which relies on the design or the physical characteristics of the object—lent weight to the views that *"shorthand typing seems to have been invented for young women"*²⁸ or that the typewriter was a feminine tool. In the United States, we also

need to add to these considerations the presence of certain middle-class women as copyists, as well as an economic and moral climate that was favorable to young middle-class women joining the workforce. Very quickly, the work of a typist came to be considered feminine and interested an increasingly large number of women. The feminization of the profession was rapid in the United States with women representing 40% of the group

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by 1880.²⁹ Young American women essentially entered the office as shorthand typists, and it became the first office work to be entirely dominated by women.³⁰ Thus, the first typewriters that arrived in France in the mid 1880s were no longer gender-neutral, and carried the history of their prior use along with them. Nevertheless, in France the machines would be used and promoted in an almost exclusively male environment, requiring a second process of feminization. There had not been a great feminization of the profession during the 1880s, and the transformation only made itself felt on a massive scale after the First World War.³¹

Here, I do not want to dwell on the details of the changing nature of this work, but I want to concentrate instead on the contemporary discourse about it. Observers and journalists regularly enthused about how well typing suited women, and how the typewriter was a woman's machine. Besides the recurring theme of the piano, one comes across numerous lyrical vignettes presenting the transformations in progress in the office.

One morning, at the pealing of the telephone the typist appeared, brash, lively, and gay, an Easter breeze among the dusty green boxes. And this time it would be a revolution with a smile ... While the old clerk positioned the tracing paper and, like a good fencer, tested the point of his pen before drawing the first capital letter, with a pretty but diligent movement the copy appeared at his side clear, regular, pleasing, without errors, with the appearance of a printed page. That evening, under the sonorous varnished cover of her machine, the typist seemed to have imprisoned the soul of the last dispatcher.³²

Figures of modernity, typists are not yet presented as overthrowing the social and sexual order, but rather as replacements initiating a new modern era full of both interest and promise.

A number of discourses were aimed at justifying the entry of certain categories of women into the workforce. The theme of *life's hardships*³³ was ubiquitous until the 1910s, and indicates the first female public targeted for typing work. For example, it was used by the firm Oliver in 1914 ; their publicity film entitled *The Tale of the Poor Typist*, shows how Jeanine, a young woman whose family has fallen on hard times, learns how to type, obtains a typewriter, and finds a job, thereby saving her family from poverty.³⁴

These stories, which underline the fact that young women were obliged to work, helped to justify the attitude of those who turned away from the place assigned to them by both society and the value system of their social group. In fact, before 1914, workers in this profession were recruited from

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the petit bourgeois and middle class.³⁵ Desirable and decent, the profession of typist was attractive to young educated middle-class girls or women who hesitated between this kind of office work and being a grade school teacher. Thus, one could talk of the coincidence of certain female limitations as well as female plans and ambitions with a larger social definition of the acceptability of such ambitions.

In my opinion, the breadth of discourses and representations that developed around these themes fulfilled two functions. First, they permitted the introduction of a woman's machine into the masculine world of the office by naturalizing it, and second, by defining the rules of conduct that were to apply to the office, they permitted women to work who had not hitherto been destined to do so because of their social situation. Nevertheless, this process of naturalization very quickly became restrictive as is illustrated by the changes in the regime governing the production of administrative paperwork during the 1920s, when speed and profitability became the dominating priorities.

The Dictaphone, Centralization, and Output (1910-1930)

The original association of the practice of taking shorthand notes with typing characterized the work of the first generation of men and women known as *commercial stenographers*. This initial association was challenged starting at the beginning of the 20th century. First of all, one needs to recognize the administrative invention of the category of *women typists*. Begun in 1901 by the French Ministry of Commerce, the recruitment of women exclusively for typing tasks gave rise to a separate body of administrative workers without any prospects for promotion. This development created competition between men and women, as it was often a question of replacing the men employed for writing tasks with women typists. Employees without the possibility of promotion, these typists were nevertheless profitable ; these women worked at two or three times the rate of their male colleagues for just one third of their salaries.³⁶

At the same time that *women typists* were spreading to all the different administrative units of the civil service, the appearance of the Dictaphone-introduced by the specialist press in France at the beginning of the 1910s-provided the opportunity to re-define the functions of the stenographer.³⁷ Invented by Edison in 1888, the commercial phonograph

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used electricity to record words on a rotating cylinder of soft wax and then play them back.³⁸ The *commercial* use of this invention, that is to say its use in the office, seems to have been envisaged by its inventor from the very beginning. The descriptions of, and advertisements for, these machines that appeared in France were direct copies of the American ones. The commercial phonograph rendered the shorthand secretary obsolete, allowing the conception of new methods for dictating correspondence and having it produced, entailing a reconception of the profession and new definitions of the social relations between the sexes in the office.

Finally, the manual taking of notes could be dispensed with, and it became clear that the typing should be done by women. All the advertisements laid their emphasis on the liberty that the boss could rediscover by being able to deliver his words to a machine at whatever rhythm, and whenever he wished ; a machine, which *always understands you, never disturbs you, and isn't irritable*.³⁹ But the cost of the boss's rediscovered autonomy was the typist being condemned to transcription work. The special one-to-one relationship between the boss and his shorthand secretary was now under threat from the promising organization of centralized typing pools, with the Dictaphone lying at the origin of the impressive organization of vast typing pools in the United States. This was the case, for example, at Sears, Roebuck and Company where, from the beginning of the century, the department responsible for correspondence had between 150 and 200 typists, some of whom were responsible for transcribing what was on wax cylinders. These women who worked *by the mile* were subjected to strict discipline and productivity standards. Their work was organized according to the principles that guided the rationalization of industrial labor ; a precocious application of these principles to administrative work that led to the invention of a typing proletariat .⁴⁰

These forms of organization related to the introduction of the Dictaphone were early instances of an approach promoted between the two wars by the partisans of Taylorism for the office. Once again, the inspiration for this movement came essentially from the United States, with William Henry Leffingwell playing a prominent role in this history. In 1917, he published his first complete and systematic guide to the organization of administrative work, which was soon followed by several voluminous manuals on the subject.⁴¹ Following Leffingwell's example, other proponents of Taylorization took an interest in the question of the centralization of

typing work, with Lee Galloway writing a whole book on the subject in 1924.⁴² These trans-Atlantic influences were relayed through the French specialist press by Gaston Ravise, an agent for *System* who translated a number of articles for his own review *Mon Bureau*, which he had founded in 1909.⁴³

Essentially, the French reproduced the arguments and principles developed in the United States. The consolidation of typing work was aimed at combating the system of *individual secretaries*, which was judged to be unprofitable.⁴⁴ The typists were collected together and closely supervised, and their tasks were standardized and judged by strict criteria relating to productivity. Thus, a standard of 70 lines an hour was established, not only with bonuses for productivity, but also with penalties : a spelling error in a proper name or a piece of nonsense would cost the clumsy typist two francs, a spelling mistake would cost 25 centimes, and a typing error or the omission of a word 10 centimes.⁴⁵ The grouping of women into typing pools was accompanied by their permanent or quasi-permanent occupation with typing work, and their output was quantified, timed, and quality-controlled. These productivist forms of organization were inevitably accompanied by a salary system based on output. This process of allocating tasks also bears witness to the interpretation and use of the object that came to dominate. The new prescribed practice for typing was based on a new relationship between the women and their machines, as well as a constellation of related materials and furnishings. The equipment in the typist's workplace tells us much about the wider trends toward the allocation of tasks and the increasingly sedentary nature of this work that affected the women who filled a number of positions in the office.⁴⁶ Indeed, it was because women formed an overwhelming majority of typists that their freedom could be limited to their machines. Furthermore, the Taylorian analysis of the stenographer's work conveniently agreed with widespread views on women's dexterity as well as their aptness for repetitive tasks.⁴⁷ This more standardized work led to an effect of de-qualification, exhibited not only by the loss of polyvalence and variety of activity, but also by the fact that large numbers of women who had become simple *typists* were no longer considered to be office workers, but laborers. This loss of status was also reflected in the mode of payment. Being paid by the month or the week rather than by the hour or the task had for a long time constituted a criterion that distinguished office workers from other salaried employees.⁴⁸

There is, however, a gap between the discourses on these themes and the reality they purport to be about. Although the centralization of typing work was a ubiquitous theme in the specialist literature, it was less frequent in France than in the United States during the 1920s and 1930s, and essentially affected only the large industrial, commercial, and banking establishments. Furthermore, despite its presentation and promotion as being in strict conformity with Taylorian principles, it was rarely implemented with the same rigor. Nevertheless, it seems that these representations and the experiments with typing pools did have long-term consequences for the image of the profession. The *proletarianization* of certain typists took place in a particular context : enjoying a period of rapid expansion, the profession was recruiting women from more humble backgrounds, and with a lower level of education.⁴⁹ The stenography community talked in terms of a *crisis* in the profession. The ever greater number of recriminatory and misogynistic commentaries concerning the falling social class of these *ladies* bear witness to the fears of a whole generation of employees, who saw in the phenomenon a direct threat to both their social status and their level of pay.⁵⁰

The response to this situation can be seen in two developments. First, the progressive and definitive disengagement of men from these careers, a phenomenon that deserves to be studied in its own right, in particular by seeing what administrative and non-administrative work these office workers found instead. Second, the reconstitution of certain careers for women office workers that followed the introduction of the promising function of *secretary* during the 1930s. Formerly masculine, both in terms of grammar and function, it was during this period that the *secretary* started to feminize, and came to designate the elite of the stenography profession. Beyond their technical skills (typing and shorthand), secretarial staff, who were expected to exercise a considerable amount of initiative and responsibility, needed to have good

general knowledge as well as a solid education guaranteed by studies at the secondary level or higher. Thus, it was clear that this profession was for ladies from a particular social milieu.⁵¹ The *collaboration*, the secretary's characteristic function, appeared to be a golden opportunity, or the ultimate promotion prospect for suitably capable women. Defined in masculine terms, "collaboration" was an opportunity for social mobility. During the 1930s, the secretarial position was conceived of as an achievement for women, or better still as an accomplishment. "*Attached*

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to a special individual who holds the reins of power, the secretary remains first and foremost attached to her 'femininity', which functions not only as a source of knowledge or know-how, but also as a limit to her ambitions."⁵²

THE HISTORY OF A MASCULINE FIGURE : THE COMMERCIAL STENOGRAPHER

Professions, Knowledges, Technologies

Prior to the emergence of the feminine figure discussed above, there was the commercial stenographer, a man with a double technical competence ; shorthand and typing. In his turn, this figure had emerged in a particular set of circumstances determined by the confluence of an object (the typewriter), a context of amateurs and professionals (stenography), and a space (the office).

The sociology of professions, in its Anglo-Saxon incarnation, is most commonly concerned with the fact that professions form around the acquisition and advancement of technical knowledge and take the basis of *professionalism*⁵³ to be the acquisition of this knowledge by means of a protracted education. This approach has been strongly influenced by the specificities of the professions studied (usually, lawyers or doctors).⁵⁴ Thus, for example, in examining the world of accounting, the most interesting figures for sociologists and historians have been the various types of formally qualified accountants (effectively the profession's elite) precisely because it is these members of the profession that fulfill all the definitional elements found in the theory : an academic education, acquisition of a skill, offer of services, collegial responsibility, and the existence of a body that regulates qualification. Less prestigious professionals or those who work in the more mundane world of the salaried office worker are therefore excluded from these analyses.⁵⁵ The analysis of the exact content of the practices and knowledge that are mobilized, as well as the ways in which these are constituted as *practical* knowledge-knowledge that is convertible into cash-have so far been put to one side. All this despite the fact that this last issue is directly relevant to the process of *qualification*, as applied to both people and products, and

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relates to their exchangeability on the labor market in both its abstract and concrete forms.⁵⁶

In order for a new profession to form around the mastery of a particular practical technique, there needs to be some kind of social demand. Thus, it is because industrialists and businessmen in the United States and later on in France demanded a new regime for the production of administrative texts that the stenographers were able to sell their services. Although it is important to note how the external conditions shaped the possible definitions for this new social actor (the commercial stenographer), we should not forget that these conditions were themselves already resources that could be defined and mobilized by these very actors. From this perspective, we can understand a profession as a social and cultural formation resulting from *an active process, as a class that is present at its own making*, and forms through a movement of autodefinition.⁵⁷ On this view, the common interests of a group of individuals are not regarded as natural or objective but rather as constructed and objectified. As is the case with other

categories, the discourses that the group generates concerning itself are determinant.⁵⁸ In this respect, the prolific works of memory, history, and auto-proclamation produced by the stenographers around their practices at the end of the 19th century fulfilled an important function of legitimation. By continually saying that they were in the process of becoming a profession, they truly invented it, creating their own identity.⁵⁹ The notion of construction also relates to the analyses used in *the social construction of technology*.⁶⁰ Thus, adopting the perspective of a particular sociology of technology, we need to see how new technological usages were elaborated concurrently with the formation of a new social figure (in this case, a professional).

The Typewriter and America : the 1880s

According to the work of American historians,⁶¹ two processes were at work during the 1880s : the typewriter, commercialized by the American company Remington came progressively to be considered as both a tool for the office, and a technology for administrative work, while the stenographers were defining a new professional application of their art : the commercial stenographer. Thus, the long history of the uses of mechanized forms of writing did not predestine the typewriter for

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administrative work. As the inventors and builders of the original typewriter had not really envisaged its commercial potential, it was not immediately introduced onto the office equipment market.⁶²

Nor was shorthand note-taking destined for office work either. Indulged in as a hobby by a number of amateurs, stenography was exercised on a professional basis by freelance stenographers in courts and in parliament. By proposing their techniques for shorthand note-taking to officials in the civil service, businesses, banks, and industries, stenographers were defining a new branch of their professional activity in the form of commercial stenography. Thus, during the 1880s, a number of stenographers were recruited to replace copyists in the office. When the stenographer first entered the various administrations, he took the dictation of letters, notes, and reports, and then transcribed them with a pen.⁶³ The stenographers were recruited for this work because they were quicker than those normally employed for such writing tasks. Joanne Yates has brought these variations in the means of communication to light while investigating the organization and economy of American business at the end of the 19th century.⁶⁴ The speeding up of dictation also suggested the utility of the faster transcription of texts and the possible uses of the new instrument called the typewriter. Having started out as simply a curiosity, the typewriter ultimately took the form of a technological response to the rising tide of administrative work. Indeed, the first competitions and public demonstrations were aimed precisely at convincing the first buyers of the value of the typewriter in this area.

A more decisive reason for the typewriter's attractiveness was its potential to offer a double acceleration in the rhythm of producing administrative paperwork. The manufacturers succeeded in demonstrating not only that mechanical writing was faster than manual writing, but also that it was possible by means of carbon paper to produce multiple identical copies of the document being typed, rather than relying on having each copy produced individually. Although carbon paper had been invented as early as the beginning of the 19th century, it was not widely used for the reproduction of hand-written manuscripts. For a long time, carbon paper had been poorly made and fragile, and the duplication of a manuscript by using a sharp point required time, attentiveness, and consistency.⁶⁵ Thus, the confluence of these two technologies proved to be decisive : while the promotional campaign for the typewriter, begun in 1873, stressed the argument of increased speed, it also played on the possibility of duplication right from the beginning.⁶⁶

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Typewriters and Bicycles, Speed and Progress (1883-1890)

As far as French stenographers are concerned, the idea of using shorthand notes to facilitate writing tasks arose from the commercial use of the typewriter in the United States. Thus, the French stenographic press was able to publish the following in 1886 :

Side by side with stenography one finds the typewriter, about which we have often spoken. This instrument, the indispensable companion to every American stenographer, is beginning to spread in France, and the time is not far away when every stenographer will have to learn how to write using this machine .⁶⁷

The American case constituted a precedent for French stenographers obliging them immediately to adopt both the typewriter and the practice of typing as natural extensions of their activities. The stenographers' passion for this invention is but one example of the wider influence of American modernity on Europe. Furthermore, the arguments and practices of these pioneers attest to the importance assumed by the new possibilities for duplication. In a context where the majority of administrative work consisted in producing manuscripts and making multiple copies by hand, the possibility of duplicating a document while producing the original was a considerable argument in its favor.⁶⁸ In 1888, Louis Viaud, one of the doyens of typing in France who had first discovered the Remington in 1884 at the manufacturer's Paris agent, in partnership with his friend and competitor Victor Bluet, a demonstrator for The Calligraph, set up the first shop to offer a typewriter copy service.⁶⁹

The promotion of the typewriter was undertaken in France, just as it had been in the United States, by means of demonstrations, exhibitions, and competitions. French stenographers worked side by side with the manufacturers' representatives to organize the first typewriter competitions.⁷⁰ The promotion of speed-typing competitions drew just as much on the American model of the commercialization of the typewriter as on the French tradition of shorthand competitions. Indeed, international, national, local, and free-style stenography competitions were very common between 1890 and 1910. The typing competitions were grafted on to this infrastructure, drawing on accumulated experience. A competition in 1901 drew 1400 competitors, and that same year, the union of stenographers and typists organized a large stenography and typing competition. *Le Sténographe illustré* also ran typing competitions at the end of the 19th century .⁷¹ Between 1890 and 1900, the stenography associations not only

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organized competitions, but also arranged commercial exhibitions in different French cities, trained the first typists, introduced typewriters into the state schools, and created the first typing courses.

Starting in the 1860s, the characteristic elements of the French stenography community –emulation, propaganda, and sociability– served as a springboard for the introduction of typing. The huge effort made by the stenographers progressively rendered these new technologies indispensable to those laboring under the constraints of office work.⁷² The conviction of these precursors had proved to be decisive. They were united in their profound commitment in promoting these tools of progress in the same way as other major technical inventions : "The typewriter is to the pen what the bicycle is to walking, and what the automobile is to the horse-drawn carriage. It is an instrument of speed, in other words an instrument of progress."⁷³

Offices, Parliament, Newspapers, and Courts (1880-1890)

One of the principal characteristics of the new profession as it formed was the modification of the way in which stenographers had hitherto valorized and offered their skills. With the development of shorthand typing, the stenographers's work became salaried, where it had previously been essentially freelance, a

liberal profession. Moreover, the commercial stenographer marked out a new domain of specialization with respect to the traditional professional occupations, viz. political, journalistic or legal stenography. Thus in the 1880s, most professional stenographers still worked for the newspapers, a line of work that had historically been associated with the taking of the minutes of parliamentary debates.⁷⁴ Subsequently the branches of journalistic and parliamentary stenography had separated following the diffusion of shorthand techniques among journalists and the creation of specialized stenography services in the various parliaments. The first true parliamentary stenography service in France was created in 1845 in the House of Lords (Chambre des Pairs) under the direction of Hippolyte Prévost, meaning that the stenographers became civil servants. It was not until 1875 that the House of Commons (Chambre des députés) and the Senate, each had their own distinct, properly organized services.⁷⁵ This initial position occupied by the stenographer determined the profile of the first commercial shorthand

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typists. The men who exercised the trade of stenographer in the 1880s were generally well educated and enjoyed a high social status. When they entered the ranks of the office workers, the commercial shorthand typist was at the top of the scale of administrative workers. The stenographer was generally presented in the same light as a secretary, directly, or even personally useful to the boss in the measure that he could get through his work more quickly thanks to the taking of shorthand notes.

Thus the merchant who keeps up with progress and knows the true value of his time will not hesitate to take on a stenographer whom he will keep abreast of all his business affairs, thereby making a second version of himself.⁷⁶

The shorthand typist was thus considered to be a veritable collaborator, in the tradition of a definition of the office secretary as a partner or even a potential successor to the boss.⁷⁷ Nevertheless, the commercial shorthand typist was still considered inferior to the parliamentary or legal stenographer. While a good level of primary education was sufficient for the former, the latter required a secondary education and should also know "political history, parliamentary procedure, and law."⁷⁸ Although undeniably among the highest-ranking office workers, the commercial shorthand typist remained at the lowest level of the professions associated with the mastery of shorthand. All the same, the historical roots of parliamentary stenography, and the perpetuation of its highly elitist method of recruitment maintained the prestige of the profession for a long time. In order to become a Senate stenographer, a candidate needed to have a baccalaureate and pass a test involving taking notes of a professor's course at the Sorbonne for an hour. For the assembly, the same qualifications applied, but the test was different : the candidates had to sit for three eliminatory dictations, before taking the "lectern test".⁷⁹ These branches of the profession existed, and continued to exist independently of the commercial use of stenography, although the fact that commercial stenography ultimately became the dominant role no doubt contributed, along with other factors, to the progressive erosion of the profession's prestige.

Keyboards, Dexterity, and Posture : the 1910s

The typewriter's success shifted stenography's pattern of use. While mastery of the instrument had started out by being accessory and

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secondary, with the passage of time, it came increasingly to the fore. Stenographers turned shorthand typists became much more concerned with defining, improving, and transmitting ways of using the typewriter than they were with continuing to explore the subtleties of shorthand systems, which remained stable from this point on. The positions of the body, the hands, and the fingers on the keyboard, the

mobilization of a specific set of tools, and the development of teaching methods, all these testify to a desire to render the uses and practices associated with the typewriter uniform. There was considerable experimentation around these questions and new methods abounded at the end of the 19th century, which although mainly the work of the shorthand typing community also involved a variety of labor specialists, such as rationalizers, and physiologists (e.g. Jean-Maurice Lahy), who often worked on the same problem. In this area, the American model profoundly influenced ideas about how the object should be used. Thus, in the course of the 1910s, we can see the rise to prominence of the *10 finger method* in France, a technique first developed by an American champion that was theorized and taught as early as the 1880s in the United States. This new, dexterous technique was also based on the perceived need for the typists to free up their vision by memorizing the layout of the keyboards.⁸⁰ The professionalization of typing occurred around the 1910s, a time when not only the number of machines and their operators, but also the number of typist-training centers were growing at a considerable rate. It seems reasonable to suppose that the leaders in the shorthand typing community were seeking to establish uniform practices in the profession. The universal keyboard, which was becoming increasingly dominant, not only made such standardization possible, but also provided a focus for efforts in this direction. Thus, the diversity that had characterized the earlier period was now giving way to a new definition of the practice of typing. From now on, the typist was expected to use all his fingers, to be *pandactyl*, to assign one or several keys to each finger, and to memorize the keyboard. These requirements demanded a strict discipline of the body supported by appropriate office furniture : specifically designed copy stands, chairs, and tables. This new regime governing the use of the object would provide the means to train ever-greater numbers of typists for employers who demanded specific typing speeds. This development meant that the profession could focus on establishing typing qualifications, a feature that set the typists apart from other producers of paperwork, such as copyists or dispatchers. To facilitate education, typing no longer covered

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the full range of skills of the *stenographer secretary* whose polyvalence was an essential characteristic of the job at the beginning of the century.

Thus, the stenographer secretary remained a calligrapher for quite some time, retaining the ability to produce official handwritten texts. In brief, we can see that a new regime of typewriter use was succeeding the initial form of appropriation of this machine by French stenographers, and this at the same time as the progressive feminization of the profession.

THE TWIN GOALS : MECHANIZATION AND THE CONTRACTION OF WRITING

The Tachigraph, the Typograph, or the Type Writer : Print, Spell, See (1820-1880)

We should not allow the success of the Remington typewriter to obscure the wide variety of 19th century projects aimed at mechanizing the writing process. The goal that guided most of the inventors in this area was to surpass the speed of handwriting. Thus in 1823, the Italian Conti dubbed his invention the tachigraph (*tachos* : speed and *graphein* : to write), and the term *tachigraphy* was used throughout the 19th century to describe all mechanical means of writing. Research into this area was often presented as a means of participating in the larger modernization movement, and under this rubric *typewriters* were associated with other technological inventions such as the telegraph. The features all these objects were seen to have in common were speed, acceleration, modernity, and progress.⁸¹

There were, of course, other motivations as well : the mechanization of writing could provide a means for anyone to produce characters that looked like a printer's. Indeed, most of the early typewriters, generally featuring a dial rather than a keyboard, did allow the operator to produce these characters, but not with the benefit of economies in time. This was the case for the machine produced by Thurber, an

American, in 1843, and for the model produced by Hansen, one of the first to be mass-produced. What is more, this research was motivated by the specific needs of the blind. Thus, the typograph, a small machine with a round index that embossed characters, which had been invented in 1850 by the American Hughes, was used in institutions for the blind starting in 1851.⁸² Pierre Foucault, a blind teacher at the Paris Institute for the Blind came up with another typewriter

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in 1850, which he called the *keyboard printer*. Having been displayed at the Great Exhibition in Hyde Park, this machine was bought by institutes for the blind all over Europe. Both Hughes and Foucault subsequently developed ordinary models aimed at the sighted population with these versions of their machines producing the classic printer's characters.

The pioneers of mechanical writing had a wide conception of potential users for their inventions, such as schoolchildren who could use them to learn to read, or anyone whose job required a lot of writing : magistrates, doctors, priests, etc. The targeting of education was quite evident, with typewriters such as Jones's mechanical typograph of 1852 being promoted as capable of teaching composition and punctuation to children.⁸³ Although it would be interesting to examine how the projected uses of the machines (those proposed by the inventors and manufacturers) were adjusted in response to their actual uses, any such investigation is rendered difficult by the limited diffusion of most of these objects. Nevertheless, we can say that throughout the 19th century there existed a wide variety of conceptions, realizations, functions, intentions, and actual uses of the objects that fell under the problematic heading of *typewriters*.

This context of diversity was still very evident when the Remington typewriter was introduced.⁸⁴ This machine distinguished itself from most of its predecessors by its reasonable size (Foucault's piano-like machine or that of Dujardin [1838] were a lot larger) and its novel user/object interface, the characteristic keyboard. Although the keyboard was not invented by Latham Sholes-Guiseppe Ravizza receiving *official* credit for the idea-it did set the typewriter apart from machines that used a cursor, an index or a card that were often smaller than the typewriter, but were not very rapid. The typewriter built, tested, and improved between 1867 and 1873 in the context of several collaborations was the first machine to prove sufficiently practical and reliable for the arms manufacturer Remington to agree to manufacture it starting in 1873.⁸⁵ Nevertheless, we find the same uncertainty concerning the possible uses of Sholes's typewriter as with the others. Overall, the Remington typewriter found itself in the same situation as the machines that went before it, being offered to legal stenographers to transcribe their shorthand notes, to lawyers, editors, authors, priests, copyists, the blind, schoolchildren, telegraph operators, and businessmen. The sales of the Remington typewriter, slow at first but picking up with time, flowed from an intense promotional campaign. The first customers were convinced of the merits of this strange and expensive machine due to

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its promotion through public demonstrations, usually centering on displays of speed. Thus, to convince people of its potential, the manufacturer deliberately placed the machine in particular artificial contexts, with the first typists being specifically trained for these public demonstrations. The early history of the Remington typewriter as well as the subsequent development of the market depended on the regular organization of contests between different makes of typewriter that survived for years and were regarded at the time as being comparable to motor-racing events.⁸⁶ The feelings of curiosity and wonder expressed by the first customers bear witness to the radical strangeness of the typewriter as an object when it was first put on the market. One of the first French owners, the publicist Louis Vallot-Duval, gave the following account of his *encounter* with the typewriter.

In October 1886, on my first trip to New York, I stopped [. . .] in front of the window of a large gunsmith wherein were displayed those beautiful rifles made by the house of Remington, known throughout the entire world. To one side of the store entrance just in front of the door-there was a small display case that contained a

sort of miniscule piano with a letter for each note. I gave in to my curiosity, entered, and assisted at a demonstration while examining the instrument. The experience made me enthusiastic. Amazed, I asked for some prospectuses and the catalogue, and then returned to my room to study the practical side of this novelty.⁸⁷

The typewriter remained a curiosity in the United States right up until the end of the 1870s, a position it still occupied in France at the end of the 1880s.⁸⁸ Despite being a strange object, the typewriter permitted innovation in its uses while fulfilling established functions. Nevertheless, this should not obscure the existence of parallel objects and alternative uses. Even while the office-machine market was growing, there also existed a rich and varied market for such objects aimed at children, amateurs, and collectors; indeed a whole group of individual customers who would never use these objects professionally. This *second* market for the typewriter, which was highly developed during the Belle Époque, was autonomous and was not governed by the new professional norms that were being put in place (one could argue that henceforth they were not the same objects).⁸⁹ Furthermore, journalists and writers were among the first typists, but they did not have the same relationship to the object as the professionals either.⁹⁰ A journalist of the 1890s who displayed excessive skill at typing would have appeared quite ridiculous.⁹¹ The same display of competence that could be a sign of professionalism in one context, could risk disqualification from another area if it seemed too professional.

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Writers, Proselytes, and Teachers (1800-1880)

Stenography, from *stenos* (condensed, packed) and *graphein* (to write) was defined *as rapid writing or the art of writing as fast as the spoken word* and had been a preoccupation for a very long time.⁹² In France at the end of the 18th century, there had been a profusion of authors who created stenographic systems or else interpreted or re-interpreted old ones, with new methods being published at an intense rhythm. Thus, the world of stenography was characterized by the rivalries that drove these authors, who aligned themselves with one or other of the schools based on their method, as they sought to demonstrate its superiority. These discussions involved a small group of people in France drawn from a wide variety of professional backgrounds who shared the dream of creating the most efficient system possible for condensing writing. It was during this period that the founding principles were put in place for the systems that would enjoy later success: simplification of the alphabet, geometrization of writing, and "the introduction to the abbreviational art of a scientific means of reduction, called phonographism, which consists in not writing the words but only the sounds, and the rules of which have been determined by grammarians"⁹³ This phonographism was adopted by John Byrom in his *universal stenography* of 1767, which was later revived by Isaac Pitman in his famous treatise *Phonography of Writing by Sound*, the basis for a major school of English stenography.⁹⁴ Dispensing with the alphabet distinguishes stenographic writing from other *technological writing* systems that emerged during the 19th century such as the Morse code or the Braille system. Although they were presented as being more primitive than alphabetic languages, these stenographic systems were the fruits of "men imbued with a scientific culture who wished to extend the range of application for writing by modifying the conditions of its material realization."⁹⁵ These systems were explicitly considered to constitute *scientific writing* both by their inventors and successors who sought to situate their discoveries in relation to rational principles, submitting them to scientific institutions for approval. Coulon de Thévenot, a Frenchman and author of *Tachygraphie*, proposed his phonetic stenographic system to d'Alembert in 1776, and presented it before the Paris Academy of Science in 1781. He explicitly characterized his invention as governed by three principles, the "principles of language, grammar, and geometry."⁹⁶

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Stenography was, therefore, more concerned with research than with practice, even though the first stenographers had very precise ideas concerning the potential uses of their methods. Advocated as a

means for transcribing the speeches of the learned, as well as taking notes on scientific voyages,⁹⁷ the different methods for condensing writing were first and foremost tried out on the speeches of the great political and legal orators. The various practitioners of Bertin's method, such as his son T. Bertin or Jean Baptiste Breton, used their skill for the benefit of journals like the *Gazette des tribunaux* or *Débats* that were mainly dedicated to publishing the minutes of legal and parliamentary debates.⁹⁸ The first truly professional stenographers during the 1820s and 1830s were a handful of men permanently assigned by the newspapers to cover the chambers of government. Although the first readers of stenography methods often noted their impracticality, the conviction that stenography could be socially useful began to establish itself, thanks to the professionalism of a small group. One determinant criterion in evaluating the different systems was the possibility of being able to teach the method in question. Thus, Prévost acknowledged the interest of the Taylor-Bertin system because of Auguste Grosselin's competence in it, and similarly, Célestin Lagache was termed a skillful adept in the Conen de Prépéan method.

Starting in the 1830s, a new project grew up around stenography, which was to diffuse the writings on these methods to a wider public. Augustin Grosselin and Aimé Paris worked at simplifying their systems with the aim of widening its use and diversifying its applications. The main goal was to facilitate the learning of language by getting rid of spelling.⁹⁹ Increasingly, inventors and practitioners of stenography became the teachers and popularizers of their own techniques, and the work of the contemporary rivals Duployé and Delaunay illustrates this trend. Born in 1828, Albert Delaunay trained as a lawyer before becoming an auditor-stenographer for the Senate in 1861 under Hippolyte Prévost, where he conceived the idea of popularizing his system. Émile Duployé (1833-1912) was a young priest who was introduced to Aimé Paris's stenography while at his seminary. He became an aficionado of speed writing, publishing his own method in 1860, and, while gradually building up a vast network of disciples, he dedicated himself to active propaganda.¹⁰⁰ The motto of the *Institut Sténographique des Deux Mondes* that he founded in 1872 summarizes the aims of the movement nicely : "To popularize stenography in order to render both the acquisition of elementary learning and intellectual work

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easier."¹⁰¹ Condensed writing, a form of writing without spelling, was considered easier to learn and to practice and hence was presumed to be a means for making writing accessible to the largest number of people possible. Thus, Duployé's method was aimed at using stenography to aid in the intellectual and moral education of the working classes. On Duployé's tombstone, the following is engraved in stenographic signs : "Thank you Mary cause of all our joy. Teach and instill morals to the masses using Duployé's stenography, an ultra-easy method of writing." This vulgarizing and later democratic vocation of stenography would continue to be championed by his successors : "The very essence of democratic government requires that stenography be introduced into primary schools."¹⁰² Duployé's project functioned well at the utopian level : one *universal*, simplified language, which, having been learnt since childhood would be accessible to the greatest number of people. Stenography appeared to be both a mode of access to writing, and a way to facilitate intellectual work whether professional or non-professional. The educational and socially inclusive nature of this project not only mirrors that of the Englishman Isaac Pitman, the stenographic inventor and propagandist who was also a partisan of a vast project to reform and simplify spelling in English, but also partly reflects the projects for an international artificial language which were popular during the period 1880-1914. They were also considered to be democratic languages because they were "easily accessible to the greatest number of people."¹⁰³

Duployé and Delaunay lie at the origin of the two main stenographic movements between 1869 and 1890 that would shape both professional and amateur French stenography over the longer term. They built on the base of popularization societies, stenography magazines, and rings of propagandists, with these groups also contributing to the unification and standardization of the actual techniques.¹⁰⁴ Stenography was learnt in local associations before being tested and improved with the aid of locally distributed brochures that contained exercises, dictations, and stenographic games. Membership in these groups attests to a form of sociability that was both inclusive and exclusive, with the groups providing a venue for exchange, role models, the handing on of skills, and the raising of each individual's skill level.

Whichever system one adopted, by definition, one became a potential propagandist for that system against the other ones, and starting in the 1880s, the introduction of stenographic speed competitions served only to accentuate the rivalries. The goals of simplification,

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unification, and popularization shared by the two major competing movements bore fruit in the period 1860-1889 when there seems to have been a real craze for anything to do with speed and acceleration.

Thus the stenographic world into which the typewriter was introduced in the 1880s was characterized both by a high degree of structure and by the diversity of projects and utopian visions that motivated the protagonists. Stenography was a leisure activity, an auxiliary technique in the professional armory available for those who chose to use it, and proved to be essential only in a few specific areas. It was also a social, scientific, and moral project, with the aim of developing and propagating a language without spelling, a universal, rational language. In this context, commercial stenography must have seemed a minor application. Until this time, stenography had been reserved for transcribing the words of politicians, lawyers, and scientists, but now it would be placed at the service of the bosses. This transformation bears witness to the extension of an ambition for exactitude and precision—the new requirements of democratic regimes—into the commercial and other economic spheres of activity. This suggests yet another way to think about the advantages of the typewriter, which is also a tool that performs well in terms of the exhaustiveness and accuracy of its writing.

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NOTES

1. For an initial attempt at writing this history see Delphine Gardey (1995). *Un Monde de Mutation les Employés de Bureau en France, Féminisation, Mécanisation, Rationalisation, 1890-1930*. Diss., University of Paris VII, pp. 200-321. A book based on this dissertation is now in press: Delphine Gardey (2001). "La dactylographe et l'expéditionnaire, histoire des employés de bureau," Paris : Belin ; Delphine Gardey "Employés de bureau" in Monique Peyrière (Ed.) "Machines à Écrire", *Autrement*, June 1994, pp. 45-64 ; Delphine Gardey "Sténodactylographe : de la naissance d'une profession à sa féminisation" *Les Cahiers du Marge* No. 1, January 1995, pp. 53-61. Also see Georges Ribeill (1980). "Aperçu historique sur le travail dactylographique," *La Machine à Écrire Actes du colloque des 23 et 24 octobre 1980*, Paris : Solin.

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2. Michelle Perrot (1998). "Pratiques de la mémoire féminine," *Les Femmes ou les Silences de l'Histoire*, Paris : Flammarion, p. 11. On the importance of recollection in women's history projects, see Françoise Thébaud (1998). *Ecrire l'Histoire des Femmes*, Fontenay/Saint-Cloud : ENS Editions, p. 56 ff.

3. Honoré de Balzac, *Les Employés* (1838) Paris : Gallimard, (first edition 1838), Herman Melville, *Bartleby, the Scrivener*, Pittsburgh : Pittsburgh Bibliophiles, 1977, (first edition 1855).

4. On the capacity of women's history to challenge what is taken for granted, including the usual dichotomies and chronologies, see, Gisela Bock (1991). "Challenging dichotomies : perspectives on

women's history," in Karen Offen et al. (Eds) *Writing Women's History : International Perspectives*, London : Macmillan, pp. 1-25.

5. Delphine Gardey, *Un Monde de Mutation...*, *op. cit.*, and "Du veston au bas de soie : identité et évolution du groupe des employés de bureau (1890-1930)," *Le Mouvement Social*, No. 175, April-June 1996, p. 55-77.

6. For more on the question of the visibility of women's work, and the need to restore women's positions as *economic agents*, see Sylvie Zerner (1985). *Travail Domestique et Force de Travail : Ouvrières et Employées Entre la Première Guerre Mondiale et la Grande Crise*, Thèse D'histoire, Université Paris X, pp. 2-22, Delphine Gardey *Un monde de mutation...*, *op. cit.*, pp. 14-20, and Delphine Gardey (2000). "Time and women's work : historical periodisations", in Jane Jenson, Jacqueline Jaufer and Margaret Maruani (Eds), *The Gendering of Inequalities : Women, Men and Work*, Ahsgate : Aldershot, pp. 63-79.

7. Today, gender is a familiar term for most international historians and sociologists, but it is rarely used in France. Indeed, I like using the terms developed by French women historians : the notion of "social relations of sex" proposed by sociologists of work to designate social and work relations (Michèle Ferrand and Nicky Lefevre, "L'émergence et l'évolution des récente de la sociologie des rapports sociaux de sexe en France" (1992). *Actes du Groupe de Travail Sociologie et Rapports de Sexe au XIVe Congrès de l'AISLF*, Lyon, 1992, pp. 6-15), or the dynamic notion of the "difference of the sexes" used by Geneviève Fraisse to introduce an alternative conception of history : "historicity does not simply send us back to a history of representations, but rather to a representation of the historical being shot through with the difference of the sexes," Geneviève Fraisse, *Les Femmes et Leur Histoire*, Paris : Gallimard, 1998, p. 31.

8. Ava Baron, "Contested terrain revisited : technology and gender definitions of work in the printing industry, 1850-1920" (1987) in Wright (Ed.), *Women, Work and Technology : Transformations*, Ann Arbor, Michigan : The University of Michigan Press as well as her introduction to the collected volume Ava Baron (Ed.), *Work Engendered, Toward a New History of American Labor*, Ithaca : Cornell University Press, 1991.

9. The absence of research on the history of masculinity in France leads to short-sightedness in many analyses (Françoise Thebaud, *Ecrire l'Histoire des Femmes...*, *op. cit.*, p. 121). We need more reflections on the masculinity of professional and union idenunes, as well as the masculinity of technological practices, along the lines of the following work : Eric Hobsbawm (1978), "Sexe, symbole et politique", *Actes de la Recherche en Sciences Sociales* ; Cynthia Cockburn (1983). *Brothers : Male Dominance and Technological Change*, London : Pluto Press ; Carroll Pursell (1993). "The construction of masculinity and technology", *Polhem*, 11, pp. 206-219.

10. (Transl.) From *midi* and *dinette*-this word was used to describe young working-class women usually employed in the textile industry, with the stereotypical characteristics of being pretty but empty-headed.

11. From *L'Avenir*, 16 March 1922, as reprinted in the *Revue du Bureau*, no. 134, April 1922, p. 174.

12. *La dactylo*, *Journal Corporatif et D'intérêt Professionnel*, no. 1, February 1924, p. 1.

13. *Ibid.* and *Journal des Dactylos*, no. 5, 25 May 1926, p. 1 ; *La Dactylo Parisienne*, *Bulletin de l'Union Dactylographique Parisienne*, no. 1, 6 July 1925.

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14. (Transl.) *garçonne*. On the *garçonne*, a mischievous tomboy type, see Anne-Marie Sohn, "La garçonne face à l'opinion publique : type littéraire ou type social des années 1920?", *Le Mouvement Social*, no. 80, September 1972, pp. 3-27. On the broader issue of the reconstruction of feminine idenunes after the First World War, see Anne-Marie Sohn, "Entre deux guerres, les rôles féminins en France et en Angleterre" (1991). Michelle Perrot, George Duby (Eds), *Histoire des Femmes*, vol. 5, Paris : Plon ; Marie-Louise, Roberts (1994). *Civilization Without Sexes, Reconstructing Gender in Postwar France, 1917-1927*, Chicago : The University of Chicago Press and "Prêt à déchiffrer : la mode de l'après guerre

et la `nouvelle histoire culturelle", *Le Mouvement Social*, no. 174, pp. 57-73 ; Christine Bard (1995). *Les Filles de Marianne, Histoire des Féminismes, 1914-1940*, Paris : Fayard.

15. *Revue du Bureau*, no. 157, March 1924, p. 120.

16. "Le berceau de la dactylo," *Revue du Bureau*, no. 157, March 1924, pp. 124-125.

17. *Mon Bureau*, September 1925, p. 669 and December 1930, p. 573.

18. From the *Petit Parisien*, reprinted in the *Revue du Bureau* no. 133, March 1922, p. 127 and no. 143, January 1923, p. 24.

19. Pierre Couperie (1984). "L'image de la secrétaire dans l'histoire en images et la bande dessinée", in "Femmes au Bureau", *Pénélope*, no. 10, printemps, p. 108.

20. Bibliothèque Historique de la Ville de Paris (BHVP), Fonds Bouglé, boîte no. 4 : dactylographe, Germaine Jouhaux, "La situation des dactylographes", *Le Peuple*, 24 August 1924.

21. On the beginning of the coexistence of the two sexes in the office, see Delphine Gardey (1998). "Männliche raume-weibliche raume : die entwicklung der büroarbeit 1850-1940", Herbert Lachmayer and Eleonora Louis (Eds), *Work and Culture, Büro. Inseznierung von Arbeit*, Klagenfurt : Ritter Verlag, pp. 51-56. For the American case, see Angel Kwolek-Folland (1994). *Engendering Business, Men and Women in the Corporate Office, 1870-1930*, Baltimore : The Johns Hopkins University Press.

22. Here, I am following the lead of Joan Scott who, in writing a history of the woman factory worker, emphasized not only the emergence of a new type of woman, who was "visible and troubling", and the power of the discourses and representations, but also the structural transformations in the economy. Joan Scott (1987). "L'ouvrière! mot impie, sordide..., women workers in the discourse of French political economy, 1840-1860", in Patrick Joyce Ed., *The Historical Meaning of Work*, Cambridge University Press, pp. 119-142, and "La travailleuse", in Georges Duby, Michelle Perrot (Dir.), *Histoire des Femmes...*, *op. cit.*, vol. IV. For a summary of the debates triggered by the positions of these gender historians, see Françoise Thebaud, *Ecrire l'Histoire des Femmes...*, *op. cit.*, p. 121 ; Laura Frader, "La division sexuelle du travail à la lumière des recherches historiques", *Les Cahiers du Mage*, 3-4/95, pp. 143-156, and also the interview with Joan Scott (1998). *Mouvements. Sociétés, Politique, Culture*, no. 2, pp. 101-112.

23. Delphine Gardey, *Un Monde en Mutation ... op. cit.*, pp. 155-196.

24. For a discussion of the role attributed to the 1914-18 War, see, Françoise Thebaud (1986). *La Femme au Temps de la Guerre de 1914*, Paris : Stock, p. 291 ff, and Sylvie Zemer, "De la couture aux presses : l'emploi féminin entre les deux guerres" in Michelle Perrot (Ed.), *Métiers de Femmes...*, *op. cit.*, p. 12.

25. See Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, pp. 200-321, and "Sténodactylographe : de la naissance...", *op. cit.* On the more general question of the relationship between gender and technology, see Danielle Chabaud-Rychter (1997). "Genre et techniques domestiques", *Cahiers du Gedisst*, no. 20 ; Judy Wajcman (1991). *Feminism Confronts Technology*, Cambridge : Polity Press ; and *Technology and Culture*, January 1997, vol. 38 no. 1, and Danielle Chabaud-Rychter and Delphine Gardey (ed.) (2002). *L'engendement des choses - des hommes, des femmes et des techniques*, Paris, Editions des Archives Contemporaines.

26. This was the idea of William Kenne, the director of Remington's sewing-machine workshop, who hoped it would increase the speed of typing. "Le cinquantenaire de la machine à écrire," *Mon Bureau*, 1923, p. 528.

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27. On this question, see Margery Davies (1982). *Woman's Place is at the Typewriter : Office Work and Office Workers, 1870-1930*, Philadelphia : Temple University Press, and Lisa Fine (1990). *The Souls of the Skyscraper. Female Clerical Workers in Chicago, 1870-1930*, Philadelphia : Temple University Press, p. 21. Lisa Fine emphasizes this aspect of the issue in her article "Un genre venu d'ailleurs", *Autrement*, no. 146, June 1994, p. 35. See also Sharon Hartman Strom (1992). *Beyond the Typewriter, Gender, Class, and the Origins of Modern American Office Work, 1900-1930*, Urbana : University Illinois Press.

28. The speech of the representative of the Ministry of Commerce at the Institut Sténographique de France, *Le Sténographe Illustré, Organe des Comités Sténographiques Parisiens*, no. 47, January 1902, p. 2.
29. Margery Davies, *Woman's Place...*, *op. cit.*, p. 52.
30. Lisa Fine, *The Souls of the Skyscraper...* *op. cit.*, p. 20.
31. On the first women shorthand typists (sténodactylographes) in France, see Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, p. 250-252.
32. Léon Lafage, "L'air du bureau", *Le Foyer*, no. 3, 30 January 1914, p. 1.
33. *Le Sténographe Illustré, Organe des Comités Sténographiques Parisiens*, no. 95, January 1904, p. 9.
34. *Mon Bureau*, June 1914, p. 363.
35. In particular, see Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, pp. 255-258 for the profiles of the women typists at the Ministry for the Interior at the beginning of the 20th century that were compiled from the personnel files.
36. *Revue Dactylographique et Mécanique*, no. 8, November 1907, p. 252.
37. "Le phonographe commercial Edison," *Revue Dactylographique et Mécanique* no. 49, April 1911, pp. 112-118 ; *Mon Bureau*, June 1910, pp. 150-151.
38. Delphine Gardey, "Les femmes, le bureau et l'électricité dans la première moitié du vingtième siècle", *Bulletin d'histoire de l'électricité*, no. 19-20, June-December 1992, pp. 87-98. Other manufacturers, such as Pathé offered similar kinds of objects.
39. *Mon Bureau*, June 1910, pp. 150-151.
40. Lisa Fine, *The Souls of the Skyscraper...* *op. cit.*, pp. 86-87, and Richard Herbert Howe (1984). "Early office proletariat, a reconstruction of Sear's order processing," *Studies in Symbolic Interaction*, vol. 5, pp. 155-170.
41. William Leffingwell, *Scientific Office Management, a Report of Application of the Taylor System of Scientific Management to Offices*, Chicago : A. Shaw Company, 1917 ; *Textbook of Office Management*, New York : McGraw-Hill, 1925 ; *The Office Appliance*, Chicago, A. Shaw Company, 1926 ; *Office Management, Principles and Practice*, Chicago : A. Shaw Company, 1925.
42. Lee Galloway, *Organizing the Stenographic Department*, New York : Ronald Press, 1924, and *Office Management : its Principle and Practice*, New York : Ronald Press, 1918. For a preliminary analysis of this American literature on the office, see : Margaret L. Hedstrom (1989). "Beyond feminisation : clerical workers in the United States from the 1920s through the 1960s", in Anderson Gregory (Ed.), *The White Blouse Revolution, Female Office Workers since 1870*, Manchester : Manchester University Press, p. 158 ; Harry Braverman (1976). *Travail et Capitalisme Monopolistique, la Dégradation du Travail au XXe Siècle*, Paris : Maspero, p. 253 ; Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, pp. 823-836.
43. Gaston Ravisce produced a series of publications concerned with administrative work, its modernization, mechanization, and rationalization. He set up *Mon Bureau*, "Magazine mensuel illustré d'organisation commerciale et de l'outillage du bureau moderne", which merged with *L'Organisation Industrielle et Commerciale* in 1932 to form *L'Organisation*, "Revue officielle de la Chambre syndicale de l'organisation commerciale (1932-1950)." Furthermore, his son Jacques Ravisce founded *Méthodes*, "Pour la direction des entreprises et de l'organisation du travail de bureau" (1933-1939). For a detailed analysis of these reviews, as well as the French movement to rationalize administrative work, see Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, pp. 747-837.

44. Philippe Danville, "Faut-il grouper les secrétaires sténographes?", *Mon Bureau* April 1921, pp. 260-261.

45. Capitaine Robineau, "Un exemple de bonne organisation", *Mon Bureau* January 1922, pp. 29-30. On the issue of typing pools, see : René Berthier, "Le bureau des expéditions de la STCRP", *Mon Bureau*, February 1928, pp. 63-66 ; *Mon Bureau*, April 1928, p. 161 ; Clark Wallace, "Comment obtenir le

maximum de rendement dans le travail de bureau", translated by Serge Heranger, *Mon Bureau*, July 1926, pp. 453-455 ; A. Mousty, "L'organisation rationnelle du travail de dactylographie", *Méthodes*, no. 4, May 1933, pp. 177-179 ; L'Organisation, no. 36, March 1935, p. 118 ; *Méthodes*, no. 42-43, July-August 1934, pp. 246-252.

46. Here it is worthwhile considering the division of labor between male and female office employees at Renault during the 1920s. See Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, pp. 569-617. For a synthesis of these findings, see "Les cols blancs chez Renault (1898-1930), *Renault-Histoire*, no. 9, June 1997, pp. 51-64. Concerning the transformations in work practices brought about by the rising numbers of women, see Delphine Gardey (1997). "Pour une histoire technique du métier de comptable : évolution des conditions pratiques du travail de comptabilité du début du XIXe siècle à la veille de la Seconde guerre mondiale," *Hommes, Savoirs et Pratiques de la Comptabilité*, Nantes : AFC, , pp. 3-36.

47. For more on the repetition and naturalization of these stereotypes, see Michelle Perrot, *Femmes et Machinismes...*, *op. cit.*

48. For an exploration into what historically had constituted the specificity of these employees' status, see Delphine Gardey, "Du veston au bas de soie...", *op. cit.*, pp. 55-77.

49. Jacques Beaumont, "Etude d'une crise", *Mon Bureau*, April 1919, p. 20 ; Jacques Beaumont, "La crise de la machine à écrire", *Mon Bureau*, May 1919, p. 106 ; *Le Sténodactylographe Moderne*, no. 18, 15 June 1918, pp. 4-5 ; "On manque actuellement de sténodactylographes", *Revue du Bureau*, April 1920, p. 150.

50. *Sténo journal, Organe Mensuel de la Chambre Syndicale des Sténographes, Dactylographes et Mécaniciens Dactylographes*, no. 9, December 1911, p. 3 ; An article in *Le Midi*, 3 August 1922, reprinted in *Mon Bureau*, October 1922, p. 764. For more on the sense of crisis experienced by the union leaders, see : BHVP, Fonds Bouglé, Box no. 4, dactylographie, Germaine Jouhaux, "La situation des dactylographes", *Le Peuple*, 24 August 1924 ; Germaine Fauchere, "La profession des sténo-dactylos est encombrée", unidentified journal, 26 October 1928 ; Henriette Brunot, "Ma fille gagne ta vie... Bas de soie, minois mutins, les dactylographes sont charmantes mais gagnent-elles de quoi vivre?," *Le Quotidien*, nd.

51. Suzanne Cordelier (1935). *Femmes au Travail, Étude Pratique sur Dix Sept Carrières Féminines*, Paris : Plon.

52. Josiane Pinto, "Une relation enchantée...", *op. cit.*, p. 39.

53. Marc Maurice "Propos sur la sociologie des professions", *Sociologie Du Travail*, no. 2, April-June 1972, p. 215. Carr Saunders (1933). *The Professions*, Oxford : Oxford University Press.

54. For a critical analysis of this tradition, as well as some new theoretical claims, see : Michael Burrage and Rolf Torstendahl (1990). *Professions in Theory and History, Rethinking the Study of Professions*, London, London : Sage, and Lucien Karpik (1995). *Les Avocats. Entre l'Etat, la Public et le Marché, XIIIe-XXe siècle*, Paris : Gallimard.

55. Michael Burrage emphasizes this point, as well as pointing out that the history of professions in France focuses on the *Ancien Régime*, referring the definition of the professions to the elites and the civil service. Thus, there is a question of whether this notion of *profession* can be adapted to the specialties as they came to exist at the end of the 19th century, see Michael Burrage and Rolf Torstendahl, *Professions in Theory...*, *op. cit.*

56. Robert Salais and Laurent Thevenot (1986). *Le Travail, Marchés, Règles, Conventions*, Paris : Economica.

57. Edward Thompson (1963). *The Making of the English Working Class* London :

V. Gollancz, p. 9 ; Luc Boltanski (1982). *Les Cadres. La Formation d'un Groupe Social*,

Paris : Minuit ; Alain Desrosieres and Laurent Thevenot (1988). *Les Catégories Socio-professionnelles*, Paris : La Découverte ; Philippe Corcuff (1991). *Construction du Mouvement Ouvrier, Activités Cognitives, Pratiques Unificatrices et Confits Dans un Syndicat de Cheminots*, Diss., EHESS.

58. Philippe Corcuff, "Le catégoriel, le professionnel et la classe : usages contemporains de formes historiques," *Genèses*, 3, March 1991, pp. 55-72.
59. Albert Navarre (1909). *Histoire Générale de la Sténographie et de l'Écriture à Travers Les Âges*, Paris : Institut Sténographique de France.
60. See the issue of *Annales* dedicated to the history of technology : *Annales, Histoire, Sciences Sociales*, no. 4-5, July-October 1998, in particular the contributions by Donald Mackenzie, "Histoire des techniques et sociologie de la connaissance" and David Edgerton, "De l'innovation aux usages. Dix thèses éclectiques sur l'histoire des techniques". Also see Donald Mackenzie (1985). Judy Wajcman (Eds), *The Social Shaping of Technology*, Buckingham : Open University Press, reprinted 2000.
61. Apart from the works already cited, see : Bruce Bliven (1954). *The Wonderful Writing Machine*, New York : Random House ; Richard Current (1954). *The Typewriter and the Man who Made it*, University of Illinois ; Wilfred Beeching (1974). *Century of the Typewriter*, London : Heinemann ; Michael Adler (1973). *The Writing Machine*, London : Allen and Unwin ; Donald Hoke, "Typewriter manufacturing 1853-1924" in *Ingenious Yankees, the Rise of the American System of Manufacture in the Private Sector*, pp. 132-178.
62. "Les premiers typewriters n'avaient pas pensé à son utilisation commerciale," *Revue du Bureau*, no. 126, August 1921, p. 397.
63. Margery Davies, *Woman's Place...*, *op. cit.*, pp. 30-31.
64. JoAnne Yates (1989). *Control through Communication : the Rise of American Management*, Baltimore : The Johns Hopkins University Press, pp. xvi-xvii.
65. Heller, L.R., "Hommage au carbone, la majeure partie des améliorations apportées dans la technique du travail de bureau est due à l'usage du papier carbone," *Mon Bureau*, October 1927, pp. 612-614.
66. JoAnne Yates, *Control through Communication...*, *op. cit.*, p. 48.
67. *Le Journal des Sténographes*, *op. cit.*, no. 52, 4 July 1886, p. 206.
68. "Les premiers dactylographes français", *Revue du Bureau*, no. 129, November 1921, p. 526.
69. "The calligraph", invented by F. Wagner and manufactured in 1885 by the Yost American Writing Machine Company was the first typewriter to compete with the Remington model invented by C.L. Sholes and his associate C. Glidden, manufactured by Remington in 1874, and commercialized by Densmore and Yost. On the history of the typewriter pioneers in France, see Delphine Gardey, *Un Monde en Mutation*, *op. cit.*, pp. 218-229. Much of the information presented here is drawn from reader's contributions to the 1920 *Revue du Bureau* around the question : "Who were the first French typists?"
70. *Revue Dactylographique et Mécanique*, no. 1, April 1907, p. 6.
71. *Le Sténographe Illustré, Organe des Comités Sténographiques*, no. 26, 15 February 1901, p. 17 ; no. 29, 15 March 1901, p. 31 ; no. 32, 15 May 1901, p. 57.
72. On the introduction of typewriters into the French civil service, as well as the impact of the mechanization of writing more generally, see : Bruno Delmas, "La mécanisation de l'écriture, une innovation dans l'administration française", *La Revue*, Musée des arts et métiers, June 1994, pp. 15-23 and "Révolution industrielle et mutation administrative : l'innovation dans l'administration française au XIXe siècle", *Histoire Economie Société*, no. 2, 1985, pp. 217-232.
73. *Revue Dactylographique et Mécanique*, no. 1, April 1907, p. 4.
74. Albert Delaunay, *Conférence sur l'Utilité et les Diverses Applications de la Sténographie*, Paris : Picard, 1878 and *Le Journal des Sténographes*, no. 97, 12 December 1886.
75. Albert Navarre, *Histoire Générale...*, *op. cit.*, p. 409.
76. "Les sténodactylographes," *Mon Bureau*, no. 1, July 1909, p. II.
77. For more on the relative social position and the mobility of office workers in the 19th century, see : Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, pp. 32-46 ; 91-92 and

workers for social ascension in the context of American business, see : Olivier Zunz (1991). *L'Amérique en Col Blanc. L'invention du Tertiaire, 1870-1920*, Paris : Belin.

78. *Le Sténographe Illustré, Organe des Comités Sténographiques*, no. 56, 15 May 1902, p. 73.

79. A test that simulated taking notes in the parliament, *ibid*.

80. Delphine Gardey, "La standardisation d'une pratique technique : la dactylographie (1883-1930)," *Réseaux*, no. 87, January-February 1998, pp. 75-104, which discusses Lahy's work. This special issue of *Réseaux* deals with the standardization of typewriters, keyboards, and techniques, with both historians and economists writing on the subject of typewriter keyboards. This article has been published in English as "The standardization of a technical practice : typing (1883-1930)," *History and Technology*, 1999, vol. 15, pp. 1-31.

81. For more on the question of speed, see : Christophe Studeny (1995). *L'invention de la Vitesse, France, XVIIIe-XXe Siècle*, Paris : Gallimard.

82. On the history of the typewriter in the US, see : Wilfred A. Beeching, *Century. ... op. cit.* ; Bruce Bliven Jr, *The Wonderful ... op. cit.* ; Richard N. Current, *The Typewriter... op. cit.* For the French history, see : Delphine Gardey, *Un Monde en Mutation...*, *op. cit.* p. 242 ff.

83. This was also a machine with a dial.

84. After a long period of development by the inventor, C. Latham Sholes's first machine was manufactured by Remington on 30 April 1874, and was called the "Sholes and Glidden Type Writer."

85. Richard Current's book dwells on the *adventure* of Latham Sholes.

86. On these speed-typing contests, see : Delphine Gardey, *Un Monde en Mutation...*, *op. cit.*, p. 242 ff.

87. "Quels sont les plus anciens dactylographes français?," *Revue du Bureau* no. 120, February 1921, p. 54.

88. During the first four years that the machine was produced, only 400 were built and sold. In 1881, 1200 machines were sold.

89. Gerd Krumeich, "Les oubliées du progrès," in Monique Peyriere (Ed.), "Machines à écrire", *Autrement*, no. 146, June 1994, pp. 78-90.

90. While it is difficult to build up an accurate picture of the circulation of typewriters from the small number of contemporary authors on the subject, it seems as though the press was an important early customer for both the machines and typing skills.

91. Joli Jensen (1988). "Using the typewriter. Secretaries, reporters and authors, 1880-1930," *Technology in Society*, vol. 10, pp. 255-266.

92. Masson, A., "Les conférences sur la sténographie", *Le Sténographe Illustré*, no. 41, October 1901, pp. 121-123.

93. James Fevrier (1959). *Histoire de l'Écriture*, Paris : Payot, (New edition 1984), p. 542.

94. For the gripping story of the five Pitman brothers and the success of this technique that was known by 90% of English stenographers at the beginning of the 20th century, see : Albert Navarre, *Histoire Générale...*, *op. cit.*, pp. 145-154, as well as Sir Isaac Pitman, *History of Shorthand*, London, 1865, and *The Life and Work of Sir Isaac Pitman*, London, 1894.

95. James G. Fevrier (1959). *Histoire de l'Écriture*, Paris : Payot, (New edition, 1984), p. 539. On the more general question of the relationship between science and language, see : Roger Chartier and Pietro Corsi (Eds), *Sciences et Langues en Europe*, Paris : EHESS, 1996 in particular the article by Anne Rasmussen, "A la recherche d'une langue internationale de la science 1880-1914", pp. 139-159.

96. Jean-Félix Coulon de Thevenot (1802). *Tachygraphie Fondée sur les Principes du Langage, de la Grammaire et de la Géométrie*, Paris : Coulon de Thevenot. Bertin and Conen de Prépean offer quite similar arguments : Th. Pierre Bertin, *Système Universel...*, *op. cit.*, p. 26 ; Louis-Félix Conen de Prepean (1813). *Sténographie Exacte ou l'Art d'Ecrire aussi Vite qu'on Parle*, Paris : Dondy-Dupré, p. 3.

97. Albert Delaunay, *Conférence sur l'Utilité...*, *op. cit.*, p. 23.

99. Auguste Grosselin (1877). *Système de Sténographie, Méthode Facile pour Apprendre Soi-même et dans l'Espace de Quelques Heures les Principes de l'Art d'Écrire aussi Vite que l'on Parle*, Grosselin, n.d. ; *Manuel de Phononimie : Sténographie Appliquée à l'Étude de l'Orthographe*, Paris. L. P. Guenin (1893). *Histoire de la Sténographie Aimé Paris et de ses Imitations*, Paris, p. 65 ; Albert Navarre, *Histoire Générale..* , *op. cit.*, pp. 145-154 and p. 266.

100. Abbés E. and Duployé, A. (1860). *Méthode Pratique de Sténographie ou Art de Suivre avec l'Écriture la Parole la Plus Rapide*, Notre Dame de Liesse, and François Canet, "A Emile duployé, hommage de reconnaissance", *Les Annales Sténographiques et Dactylographiques*, no. 24, September 1933, pp. 351-353. For background to Émile Duployé and the *duployens*, see : Albert Navarre, *Histoire Générale...*, *op. cit.*, pp. 279-290.

101. François Canet, *op. cit.*

102. Speech by Depoin, M., *Le Journal des Sténographes, Revue Scientifique, Littéraire, Artistique et Pédagogique*, no. 56, 22 July 1886, p. 225.

103. Anne Rasmussen, "A la recherche d'une langue..." *op. cit.*, p. 148.

104. "Note sur l'origine et le but de l'association sténographique unitaire", *L'unité Sténographique*, no. 1, January 1877 ; Albert Navarre, *Histoire Générale...*, *op. cit.*, p. 242 ; "Le cinquantenaire de l'Institut sténographique de France", *Mon Bureau*, October 1922, p. 781.