



HAL
open science

Job board toolkits: Internet matchmaking and changes in job advertisements

Emmanuelle Marchal, Kevin Mellet, Géraldine Rieucan

► **To cite this version:**

Emmanuelle Marchal, Kevin Mellet, Géraldine Rieucan. Job board toolkits: Internet matchmaking and changes in job advertisements. *Human Relations*, 2007, 60 (7), pp.1091-1113. halshs-00825168

HAL Id: halshs-00825168

<https://shs.hal.science/halshs-00825168>

Submitted on 23 May 2013

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Submission to Human Relations

April 2007

**Job board toolkits: Internet matchmaking
and changes in job advertisements**

Emmanuelle Marchal,
Kevin Mellet,
Géraldine Rieucan

Word Count : 7678 (Abstract and Tables not included)

Job board toolkits: Internet matchmaking and changes in job advertisements

Abstract

This article examines the role of Internet based labour market intermediaries in coordinating job seeker/employee interactions. A twofold analysis examines on the one hand the matchmaking tools determining applicants' access to job ads, and on the other, the content of ads posted on the web. Observations reveal that the information available to applicants is subject to a high degree of filtering achieved through the use of pre-defined lists, keywords or more frequently, input fields. A comparative analysis of job offers posted on the Internet with those posted in newspapers shows that search engine toolkits have a considerable impact on ad content which is generally more standardized and quantified in the former than in the latter. Furthermore, a comparison between French and British ads demonstrates that the institutional context influences the actions taken by job boards. In contrast to Great Britain, France more frequently uses matching markers aimed at selecting applicants than those providing detailed information on the job offer. Today, French job boards thus contribute in weakening applicants' position on labour markets.

Introduction

Since the mid 1990s, the extension of the Internet into virtually all branches of economic activity has led to the development of a new interactive medium used by workers to search for jobs and by employers to locate applicants. Web-based platforms provide instant access to important information and promise to increase the number of possible matches between firms and applicants. As Kuhn and Skuterud (2004) remarked, it is not surprising that economists have speculated about the potential effects of such a technology on the labour markets. Autor (2001) and Freeman (2002) were amongst the first to suggest that the Internet was dramatically changing the functioning of labour markets. Theoretically, shifting job search and recruitment activities to the Internet reduces frictional unemployment and improves the quality of job matching by reducing search costs, increasing contact opportunities and rationalizing the screening process of job applicants. In this context, Internet intermediaries, like job boards, have rapidly become an economic success being equally profitable to both sides of the market. Their main function is to post job advertisements, build-up curriculum vitae (CV) databases, and bring together job seekers and job vacancies. These intermediaries are primarily considered as being “neutral information transmitters” (Rubinstein and Wolinski, 1987) who reap a profit from their activities. Theoretically, their aim is to satisfy both suppliers and demanders by organizing a bilateral search process (Yavas, 1994).

Our aim is to provide empirical evidence that job boards distort the information flow on labour markets by influencing job ad format and content. On the one hand, we examine the job-board matchmaking tools providing access to job offers and on the other, we compare job advertisements posted on the Web with those published in the press. The paper is structured as follows. Section one presents our theoretical framework and the bodies of literature that assesses the role played by the intermediaries in structuring and circulating information. Section two exposes our data sources and methodology. Section three describes how job

boards develop tools to filter information and measures the consequences on ad content; the analysis shows that information is more standardized and quantified on the web than in the press. Section four demonstrates that information filtering can be more or less favourable to job seekers: either they are well-informed on the job characteristics and companies or they are simply selected on profile after screening. We compare English and French ads in order to highlight the role played by institutional contexts in the balance of relationships between job seekers and recruiters. Finally, we provide a summary and conclusions.

Section 1: Theoretical framework

Since George Stigler's seminal papers (1961, 1962), it is admitted that the dispersion of firms and job seekers, and the information cost such dispersion entails, reduces market efficiency. A considerable amount of time needs to be invested in order to acquire information and although the returns on this investment can be rationally anticipated, it nevertheless remains uncertain at the time of investment. With its long history of model refinement and empirical testing (see Devine & Kiefer, 1991, Mortensen, 1986, Mortensen and Pissarides, 1999 for exhaustive surveys), the job search theory has provided a major contribution to the understanding of how labour markets function. The standard search approach does not, however, examine the different methods used by agents to gather labour market information. At micro-economic level, the job offer arrival rate, which is the outcome of the search process, is either exogenous and random or, endogenous and greatly related to the intensity of the agent's search. At macro-economic level, the 'aggregate matching function' constitutes a black box enclosing the entire set of interactions between workers and vacancies (Petrongolo and Pissarides, 2001). Nevertheless, at least two bodies of literature (also inspired by Stigler's fundamental intuition) explore the variety of labour market information channels.

The first introduces a third party named ‘middleman’ or ‘intermediary’ whose activity consists in matching sellers and suppliers¹. Rubinstein and Wolinsky (1987) develop a model where two types of search method coexist on the same market: direct search and indirect (intermediated) search. The presence of intermediaries is explained by their ability to reap the profits generated by reducing buyers' and sellers' search costs. The Rubinstein and Wolinsky model, however, does not permit buyers and sellers to intentionally select one or other of the described search methods. In Gehrig (1993) and Yavas (1994) models, the direct or indirect search method becomes a variable choice for the agents. The emergence and the size of intermediaries finally results from a trade-off between the direct and indirect search methods. This trade-off is affected by intermediaries' ability to: i) lower search costs; ii) centralise information and thus produce positive network externalities (Yavas, 1994); iii) incite agents to reveal their quality through expertise and reputation (Spulber, 1999). Finally, in this body of literature, the intermediary is systematically described as an encounters facilitator delivering commensurate services to both sides of the market.

The second body of literature distinguishes job search/hiring channels according to the format and content of the information favoured. Rees (1966) shows that standard search theory, and to this we shall add the preceding literature on intermediaries, is only concerned with the extensive margin of information. Yet, “the search for information in any market has both an extensive and an intensive margin. A buyer can search at the extensive margin by getting a quotation from one more seller. He can search at the intensive margin by getting additional information concerning an offer already received” (Rees, 1966: 560). Rees shows that the effectiveness of information channels in conveying information varies according to whether the search is ruled by the intensive or extensive margin. Formal channels are more suited to

¹ Yavas (1992) differentiates two types of middlemen: market makers and matchmakers. The market maker sets an ask price and a bid price, and buys and sells for her own account. The matchmaker does not trade; it simply connects the two sides. Only the second type is studied in this article.

highly standardized goods and services markets where the extensive margin is more important. On the contrary, informal channels (personal networks and referrals) will be favoured when there is a considerable variation in quality because of their ability to convey information at the intensive margin. Following Rees's early work, many studies have shown the importance of informal information channels in labour markets (Granovetter, 1974; see Ioannides and Datcher-Lourey, 2004, for a recent survey). However, the oppositions between formal and informal channels and between the two search margins are not entirely counterbalanced. Rees points out that the private placement agencies develop specific screening devices such as tests or interviews. Bessy and Larquier (2001) compare British and French labour market intermediaries and show that 'formal' intermediaries can be differentiated according to whether they primarily operate at the extensive margin of information (British agencies) or at the intensive margin (French hiring offices). Not only is the search margin affected by the intermediaries' activity, but also by the benchmarks that operate as matching markers between job vacancies and applicants: wage rate, diploma, experience, etc. As a result, intermediaries have an impact on the information format (Thévenot, 2001).

Our study focuses on formal intermediaries which proliferate on the Internet (Author B, 2006). It is therefore of particular interest to examine their role in the shaping of labour market relations. The term 'intermediary' however needs to be clarified. Basically, a labour market intermediary is any "organization that makes a match between an employer with a job opening and a person who wants that job" (Osterman, 1999: 133). Labour market intermediaries can be differentiated according to their main function: conveying information, screening applicants or matching elementary competencies (Bessy and Eymard-Duvernay, 1997). We investigate Internet intermediaries (whatever their administrative status) whose main function consists in posting job ads and building *curriculum vitae* databases: the so-

called 'job boards'. This choice is not gratuitous. Firstly, this function is closely related to the standard middlemen models depicted as neutral information transmitters which symmetrically facilitate the search on both sides of the market. Secondly, it is possible to carry out a comparative analysis on the way intermediaries filter and organize the information (see below, section 3).

How does one empirically address the impact of the Internet on labour market outcomes? Kuhn and Skuterud (2004) compare the relative performance (in terms of unemployment durations) of two modes of job search: Internet and 'traditional'. Their study is highly instructive since it shows that, *ceteris paribus*, Internet job search does not correlate with shorter unemployment durations. This result contradicts the prediction that a more efficient matching technology should mechanically reduce frictional unemployment. Following Kuhn and Skuterud's work, our study goes one step further by comparing job ads posted in newspapers with those posted on the Internet. Focusing on job boards, our first objective is to examine how Internet intermediation transforms information formats and to estimate the amplitude of this transformation. This analysis of the Internet job board formats improves our understanding of labour market outcomes. Following the 'Actor-network-theory' approach to markets (Callon, 1998, Callon and Muniesa, 2005), we maintain that market organization has an impact on the relative power of demanders and suppliers. Callon and Muniesa define markets as collective devices that calculate compromises on the values of goods. They show that calculation is distributed among a large number of heterogeneous entities: market professionals (Barrey and al., 2000) as well as the rules, information formats and material tools they use (Beunza and Stark, 2004). These entities constitute devices that allocate calculating capacities among suppliers and demanders. This framework enables us to regard asymmetries of calculation: intermediaries distribute calculation, and sometimes prevent certain agencies from calculation, thus reducing their power and autonomy. Several market

configurations are possible. Intermediaries can either respect the equilibrium or favour one side to the detriment of the other. The second objective of our study will be to assess the intervention of Internet intermediaries on the equilibrium of relations between the two sides of the market.

Section 2: Methodological framework

In order to achieve our two objectives, we investigated the way labour market information is "arranged" by intermediaries. How do intermediaries organize job vacancy information? How do job seekers concretely access this information? First, we focused on the activity of labour market intermediaries and the socio-technical devices they implement in order to coordinate employers and job seekers. Secondly, we compared job ads.

The operation of Internet job sites

The labour markets' migration into the Internet has been driven by the emergence and rapid growth of electronic intermediaries, hosted either by advertisers (the so-called 'job boards') or by traditional "brick and mortar" intermediaries (public employment services, temporary employment agencies, recruiting agencies). Both categories compete in cyberspace to attract job seekers and announcers (employers or agencies who intervene on behalf of the announcers). As their status and mission may affect the way they frame and filter information flows, it was interesting to compare Internet based labour market intermediaries on a large scale. Our study, which focuses on French intermediaries, is built-up from four years doctoral research (Author B, 2006). Empirical sources include the observation of the tools developed by job boards in order to organize matching and interviews with labour market professionals.

First, we observed the matching tools developed by job boards to give job seekers access to ads. Several dozen sites were subject to ongoing observation intended to identify the various mechanisms used to invite both job seekers and companies to access the site, browse, and reach the provided information. We developed a typical Internet job seeker profile in order to test the appropriateness of the tools and compare the degree of information framing carried out by each site. Our theoretical framework conducted us to focus on the matching markers privileged by intermediaries. These were traced through the input fields and classifications incorporated in search engines.

In addition to this systematic monitoring process, 24 semi-directive interviews were conducted between 2001 and 2004 with various labour market experts. Three categories of experts were interviewed:

- French job-board administrators (some of them being interviewed several times):
www.anpe.fr; www.apec.fr; www.bale.fr; www.jobline.fr; www.keljob.com;
www.monster.fr; www.recrulex.fr; www.stepstone.fr; www.supersecretaire.fr.
- Market professionals who resort to these job boards: recruiting agencies (*Philial; Circular Search*), corporate advertising agency (*Anonymous*), human resources supervisors (*Pfizer; Schering Plough*).
- Public employment services: executive and technical departments of the ‘Agence Nationale Pour l’Emploi’ (*ANPE*); Public desks dedicated to Internet job search (*Horizon 93; Cyber-Emploi Centre*).

The comparison of job ads

We first compared ads posted on the Internet at the beginning of the decade with those appearing in the press during the same period in France. Then, we compared ads posted exclusively on the Internet in two countries: France and United Kingdom. Table 1 presents the

job advertisement samples. The ads were taken from the French press in 2000 and from French and English job sites in 2001. The selected sites and newspapers are among the most important in this period, in terms of the number of published ads. To ensure a relative homogeneity in the sample, half the selected sites were ‘transnational’ (for example: Monster.fr and Monster.uk). Finally, three samples are compared: (1) 800 French ads from newspapers (2) 400 French ads from Internet job-boards and (3) 400 British ads from Internet job-boards (see table 1).

INSERT TABLE 1 ABOUT HERE

The same selection principles were used for all the job advertisements: a fixed number of ads were taken from each site and newspaper, respecting job category distribution proportions (banking, computer services, purchasing...). Our samples were therefore representative of the diversity of the ads posted or published in each site or newspaper. All the data was analysed in their original language using Prospéro, a textual data-processing program (Chateauraynaud, 2003). This software allowed us to identify ads that refer, for example, to the salary, the location or the job status and to assess whether they contained specific requirements such as educational level or prior work experience. Prospéro determined the occurrence rate for each marker.

In order to examine the differences between print and Internet job ads, we compared sample 1 with sample 2. We first provided an analysis for the whole corpus and then restricted it for three relevant occupations (sales representative/assistant, manager and engineer). Results presented in section 3 clearly illustrate that the way Internet sites frame information flow impacts the content and format of the information presented in job advertisements. We also compared sample 2 with sample 3 in order to examine the balance between markers that inform applicants on job characteristics (salary, location, status...) and those used to operate a

selective process (educational level, prior experience...). Findings exposed in section 4 show that the institutional context may influence the balance between the two types of marker.

Section 3: “Putting right” in order to match

Print advertisements can be perused by skimming through a newspaper. On the contrary, ads posted on the Internet are digitized and classified in databases that are presumably invisible.² Reading job ads on the Internet thus requires a learning process which, rather than being left to chance, is managed by the job sites. As intermediaries, these sites have to ensure they meet the respective expectations of both recruiters and job seekers. They must therefore intervene on both sides of the market in order to give job seekers the right access keys and incite recruiters to respect a specific format in writing their ads. Site managers thus develop tools designed to favour “appropriate” matches and avoid “inappropriate” ones.

Guiding job seekers by remote control

For the site managers we interviewed, the search engine configuration presented on the home page has a strategic dimension. How should the job searcher be informed? Should one favour the job title or the educational level? Should it highlight job location or salary level? Two pitfalls familiar to users of documentary research tools must be avoided: if the job seeker uses an unduly selective method to define the search criteria, interesting ads may be missed as an overly selective search “dries up” the market. If the search criteria are too broadly defined, the searcher may be submerged by a multitude of ads as an insufficiently selective search “drowns” the market.

² The print format obviously does not eliminate the constraints of classifying, however. This is accomplished through the specialization of print media and what are, by definition, “classified” ads (Author A and al., 2003).

A closer examination of several French sites reveals the “investments in forms” (Thévenot, 1984) which attempt to gauge the visitor’s action. Three means of access (affecting the presentation of both information and job seekers’ responses) may be privileged: the nomenclature, keywords and input fields. These different procedures reflect different intensities of information framing imposed by the sites.

Classification: planning the matches

The job site exerts considerable influence when it imposes the adoption of a single convention and a single language for both recruiters and job seekers. The French public employment service (ANPE) web site, for example, is wholly organized around an occupational register (known as ROME). This nomenclature is the most pertinent means of accessing the ads, and the job classification acts as a powerful “focal point” which both advertisers and applicants are encouraged to use. As a result the search is limited to fixed categories that do not take into account the specificity of either the job seekers’ profiles or those of the available positions. Thus, applicants with skills overlapping several occupations or ads relating to “emerging” fields are often badly integrated into the matching process or excluded from the employment market laid out by the French public employment agency. A common referent for firms and workers nonetheless helps to lighten the cognitive burden weighing on players and reduces the uncertainty inherent in matching job seekers with vacancies. This mechanism requires heavy investments on the part of the public agency, which has to centralize data and carefully regulate the information flows. It presents an advantage in that it maintains a balance between the parties involved in that they share the same common reference and can extend their search to related jobs. This is far from being the case when keyword entries are privileged.

Keywords: distributing the “calculation”

The keyword gives job seekers a broader latitude in the definition of their search criteria. On most sites, this definition concerns the entire content of a job advertisement: job searchers enter the keywords in a special field and the search engine scans the database to extract only the ads including the search terms. Keywords do not require a general classification and can include anything from a “job title” (or its synonym), a job category, a skill, a company name, a tool or a programming language, etc. They thus reflect the site’s low level of intervention in the matching process. Despite the relative lack of framing in this type of matching, it can nevertheless lead to a wide variety of “matching failures” due to spelling mistakes or ambiguous terms (‘human resources’ for example, might call up all the ads instructing applicants to contact the “Human Resources Department).

This is a crucial issue for a site like Keljob.com, a vertical job search engine. Its role consists in guiding job seekers’ requests towards more than a thousand sites, such as corporate portals and recruitment or temporary agency sites. To organize searches and reduce error rate, the site’s administrators call on copywriters to summarize their ads: job seekers’ queries do not scan the entire content of the ads but only the keywords associated with each one. This means that Keljob often advises the advertiser in the definition of the pertinent keywords. In practice, the job board contributes to the standardization of the way job ads are summarized.

With keywords, the calculation process behind the final matching is distributed among humans and non-humans (Callon and Muniesa, 2005): recruiters, job seekers, intermediaries and search engines. But as we have just seen in the case of Keljob, this distribution can be unequal when the job seeker makes a blind search, without knowing which terms are privileged by the advertisers.

Input fields: defining the conventional matching markers

Most job sites adopt an intermediate position between nomenclature and keywords: job seekers are provided with a “multi-criteria” search option which involves completing the different fields in list boxes. In France, such fields mostly deal with job location, activity sector and status wanted. The list is not exhaustive, however, and some sites may ask applicants to indicate a minimum salary or the number of years of prior experience.

With this procedure, the intermediaries select the conventional matching markers for the market they define, although these markers are not compulsory as job seekers can select the ‘all’ or ‘no preference’ options. The role of these sites, which remains visible without being intrusive, is decisive in establishing and maintaining market conventions. They are all the more effective since they also bear on the way job offers are drafted thus contributing to a type of ad formatting that is not without consequences on their content.

Formatting the ads

Through input fields, the job board will incite the recruiter to adopt a predetermined format for its advertisements. Framing may be fairly insignificant if only a few fields are predetermined but stronger or quite forceful if the required formatting is more rigorous. In this case, the formatting clearly influences the way the ads are written. Although the ad writer is not required to fill in all the fields, their very presence has an impact on the way the ad will be presented and will not necessarily reflect the way it would have been presented spontaneously in the absence of external constraints. In order to examine the impact of this ad formatting, we compared French ads posted on the Internet with those published in the French press. This comparison shows that the way information is framed by Internet sites has a real impact on several levels.

Standardization and quantification

The presence of predetermined fields on the websites may encourage ad writers to automatically fill them in. Thus, the appearance of criteria such as prior experience, education, foreign-language levels and salary (for which pre-formatting is relevant) become more frequent on the Internet ads than in the print announcements (Table 2).

INSERT TABLE 2 ABOUT HERE

Some input fields immediately call for indicating an order of magnitude: it is necessary to specify a “foreign language level”, a “computer proficiency level” or a “wage level”. The ad writers also tend to sum up their requirements in quantitative terms through, for example, the “length” of experience and not simply the fact that prior experience is required. With the shift from newspapers to the Internet, the ads show a sharp increase in the frequency of mentioning the experience required and its duration.

With all of these measurable variables, moreover, we note a standardization of the expressions used in the ads: “x thousand euros a year” (for the salary), “x years of higher education” (for training required) or “x years of experience”. The priority information is that which permits the job seeker’s profile and the nature of the job to be summed up with clear and quantifiable signals. In practice, the ad writers present more selective criteria on the Internet than in the print media, requesting, for example, someone who is “bilingual in French/English” rather than someone with “good knowledge of English”. The presence of specific input fields also demands a higher degree of accuracy from job seekers than an ‘open’ keyword format. Here too, the information is more often quantified: the mention of salary and the presentation of the amount in euros are considerably more frequent on the Internet than in the press. A chi-square test shows that differences between Internet and newspaper samples are significant for all the

criteria mentioned (experience and its duration, salary and its amount, education attainment level and foreign language ability) (table 2).

INSERT TABLE 3 ABOUT HERE

The increasing requirements observed on the Internet might be attributed to the specific nature of the ads that are posted there, namely the fact that computer specialists and managers were initially overrepresented. But evidences of increasing requirements, standardization and quantification are mostly confirmed when we compare similar jobs on the Internet and in newspaper samples. We selected sales representatives/assistants (“ordinary” jobs), engineers (requiring technical skills) and managers. Table 3 shows that, for these three relevant jobs, the frequency with which educational requirements, language proficiency and salary (including amount) are mentioned is significantly higher in Internet ads than in print announcements.

Markers: disclosed, forgotten, or emphasized

Results concerning markers also vary from one site to another according to the degree to which they intervene in the presentation of the ads. Experience duration and education level, for example, occur more frequently on Internet sites with pre-determined input fields corresponding to these requirements (such as Newmonday), than on sites where they are absent (Jobpilot and Stepstone) (see table 4).

INSERT TABLE 4 ABOUT HERE

The presence of input fields equally has a noticeable effect on personal identity criteria. The existence of a given field thus encourages recruiters to disclose certain criteria, while others are less frequently mentioned because the field does not exist. No site proposes a field for the applicant’s gender, for example. As a result, this item appears less frequently than in the print

ads, as if the copy writer dare not add a discriminatory criterion that was not already included in the list of information to be provided.³

Risks of standardized information

The way access to the ads is structured and the degree of formatting vary considerably from one site to another. One feature, however, remains constant: both sides of the market are subject to equal treatment to successfully operate the matchmaking process. Privileged criteria are codified or give rise to standardized markers, or even quantified signals, which easily lend themselves to the search engines' matching calculations. The risk here is that a selection based on the most "observable" features will be favoured, such as educational credentials, foreign language or work experience, to the detriment of other variables (such as the applicants' career paths or particular skills), which are considered "non-observable" (Kuhn and Skuterud, 2004). Credentials that cannot be quantified, or anticipated, have a hard time circulating on the web. They will be overlooked by the job boards, whose primary concerns are generating large volumes of transactions. Highlighting only those qualities "observable" from a distance may also erase the distinctive features of job seekers and ads alike, since these require proximity in order to be brought out (Neuville, 2001). More generally, this kind of evaluation overlooks the role of confidence in the hiring relationship (Granovetter, 1974) and may contribute to increasing uncertainties concerning the applicant's profile (Autor, 2001).

We shall now take a closer look at the question of the markers circulating on the Internet: are they intended to profile the applicant or the position offered? Is it possible to maintain a

³ We performed similar comparisons between Internet and newspaper ads in Spain. The results paralleled the French ones. For example, when there was a field for the applicant's age, the proportion of ads mentioning age was much larger than when the field was absent.

balance between both sides? Our analysis reveals that the situation varies from one country to another and that the site administrators' control depends on the national context.

Section 4: Connecting or selecting?

In this section we consider the matching markers selected by the job boards. Some of them help to maintain a certain balance between recruiters and job seekers while others, on the contrary, privilege one side to the detriment of the other. The degree of framing operated by the sites may be considered more or less favourable to job seekers depending on whether the sites seek to inform them about jobs and companies or to select them on the basis of their profile. Job boards have to resolve a tension between two principles: on the one hand they want to adopt a "neutral" attitude to safeguard the labour market's "transparency", and on the other, they must satisfy their paying customers, namely the advertisers. This tension is reflected in the job ads, as we shall see in the comparison between British and French ads.

Whose market?

Site administrators claim that they develop tools in order to facilitate matches between job seekers and vacancies and at the same time provide equivalent assistance to both sides of the market. The following advertising pitch illustrates this point of view: *"With Keljob.com, job seekers can browse the entire job market in three clicks. A new form of job search has come into being: simple, fast, efficient. [...] Recruitment professionals can easily come into contact with motivated applicants who are informed of their new job opportunities in real time."*

Economic theory goes along with this logic of "bilateral" or "balanced" action. But the observation of site activity suggests a sharp tension between the catchwords and actual

practice which is more favourable to recruiters than job-seekers. Their unilateral strategy makes the site a “pre-selector” rather than a “facilitator”.

Transparency in theory only

According to the site managers we interviewed, job boards connect job seekers with firms without favouring one side or the other and both are able to browse the market before they meet. This opinion validates the transparency hypothesis, or perfect information theory, which characterizes the Walrasian market⁴: an economic agent can be placed in contact with all the potential contracting parties and has precise information concerning the characteristics of the goods on the market, which eliminates the dilemma between extensive and intensive information margins (Rees, 1966). The way job sites operate seem to suggest they follow this type of logic. By means of their search engines, all recruiters and job seekers can potentially be brought into contact with each other and obtain precise information through the circulation of ads and summaries.

This presumes that both recruiters and job seekers are suitably well informed as to the characteristics of the goods sought-after. To be truly competitive, recruiters should have sufficient knowledge regarding available skills and applicants regarding current vacancy profiles. The summaries outlining applicant profiles must be matched by ads exclusively devoted to describing the proposed job. The intermediaries’ intervention should have no direct effect on the arbitrages and choices made on both sides of the market.

⁴ The auctioneer-intermediary's main function is the centralization and distribution of information. However, a Walrasian market presumes homogeneous merchandise and adjustment through flexible prices (two conditions which are not verified on the labour market). What concerns us here is the transparency hypothesis (Author B, 2004).

Seeing or being seen

As with traditional print media (Author A and al., 2003), websites are confronted with the constraint of organizing information. The job seekers' cognitive abilities are limited: if the ads corresponding to their searches are presented on a series of screens, those appearing at the top of the first screen are privileged. Sites thus tend to offer advertisers a specially-created 'visibility bias', such as an advertising space or ad rates depending on the degree of visibility required. For example, the Keljob.com site proposes a scale of tariffs that varies according to advertising space: the most expensive ads appear at the top of the search result lists. The asymmetry is further reinforced when the job seekers are unable formulate their job preferences. In this case, access to the ads, and thus to the market, is subject to screening mechanisms based on the applicant's profile rather than the job description. The search engine on *Recrutex.com* (a site specialized in ads for the legal profession) asks Internet searchers to quantify their prior experience before accessing any ads. Similarly, on the Adecco temping agency site, job seekers are requested to fill in a form detailing their availability and skills prior to accessing assignment ads. This emphasis on the applicant's profile may hamper access to precise descriptions of the job being sought-after.

Job seekers: calculating and being calculated

Although they do not have the same calculative capacity (Callon and Muniesa, 2005) as the advertisers, job seekers are nonetheless able to establish equivalencies and hierarchies and define the terms by which they highlight job applications. They are thus capable of making a rational job search. They can even outsmart the search engine's traps by reformulating their queries in a variety of ways. From their standpoint, the job sites constitute efficient tools for accessing information about vacancies.

The tools provided by the sites, however, can also contribute to reduce their calculative capacity. A “swing” occurs when job seekers are paired-up with ads according to personal profile rather than job vacancy description. This is the point at which relative market transparency shifts to total opacity/opaqueness. With this type of tool, the job seeker criteria tends to disappear in favour of the search engine’s matching algorithms based solely on data describing applicant profiles. The matching process is perfectly and mechanically calculated to answer the needs of the recruiting company. Under these conditions, how can job seekers win back their initiative in the matchmaking process? To effectuate a job search on the Internet, applicants require a certain degree of technical and semantic skills in order to use the computers tools efficiently, to fit in with each type of web site and present their profiles in such a way as to maximise their chances of being matched with a vacancy. Job seekers have to adapt themselves both to the way each site is structured and to the ad requirements. The next section demonstrates that this exercise differs from one country to the next and that the matching markers are conditioned by the institutional contexts in which recruitment and selection take place.

Whose Markers?

One of the prerequisites for market transparency is well-informed job seekers. This is far from being the case when matching or access to ads is based on selection criteria. Even if they do find a way to access a significant quantity of ads, does it necessarily follow that they are well-informed?

Two different types of vacancy markers emerge: those intended to inform job seekers and those aimed at selecting them. The first type provides information on the offer: a job offered in a given type of company under given conditions (wage, contract, location, working hours). The second type conditions the application: job seekers are required to have a given profile,

defined in terms of professional or personal abilities. The issue that emerges here is the balance between the job profile on the one hand, and the applicant's profile on the other: in other words, information markers versus selection markers. This balance is result of the various human and non-human players involved in the writing job ads: company representatives (HRM, company head, immediate supervisor, colleagues), job classifications, collective agreements, regulations, ad agents or recruiting consultants (Author A and al., 2003). We can also add the job sites that also contribute in standardizing ads through their administrators, clients, information categories and keywords. These participants all control ad content by contributing to their wording, formatting and circulation. This collective effort necessarily generates uneven results from one country to another because of the different institutional contexts. This is illustrated by a comparative study of the way companies, jobs, and job applicants are presented in Internet ads in the UK and France.

The influence of institutional contexts

The importance of institutional contexts can first be gauged in terms of labour market mediations (Bessy et al., 2001). Here we can note the intervention of the agencies in 70 percent of the British ads, while recruiting consultants appear in only one-quarter of the French ads. This difference has effects on the relative importance accorded to the companies and the jobs within the ads: the name of the firm figures in eight out of ten ads in France and often equally mention personnel numbers and annual turnover. This information fades into the background in the UK, however, where the agencies overshadow company names. On the other hand, British ads provide a wealth of detail about job content, location, and work hours (Author A, Author C, and al., 2003).

INSERT TABLE 5 ABOUT HERE

Remuneration also emerges as a major preoccupation in the UK: it is addressed in nearly nine out of every ten ads and six out of ten British ads specify the amount of the salary. In France, only 30 percent of ads mention salary despite the fact that, as previously mentioned, predetermined ad formats clearly provide the incentives to do so (table 5). A third of the British announcements mention financial or in-kind benefits in addition to the base salary (table 5). Most of these “extras” are not indicated in the French ads, either because they may be assumed (social benefits defined by law) or because they are not customary in France (certified training programs, casual dress) or again, because they are negotiated during the final phase of recruiting (days off, etc.). In the UK, information about remuneration, benefits or job status (full or part-time) are thus provided to job seekers before any meeting with the recruiter. The job seekers can thus evaluate the quality of the proposal, which is not the case for their French counterparts.

Selection markers in France: forms and weight

As we have seen, one of the signs of the market’s “swing” in favour of advertisers is the possibility of matching not on the basis of the job vacancy, but rather, on that of the job seeker’s profile. This kind of shift is manifested by job ads containing a large number of selection criteria, which means that all the applicants who do not have the requisite profile are refused access to the ad from the outset. Such a degree of exclusion is more visible in the ads posted on websites in France than in the UK, and this difference is confirmed by all the selection criteria considered in our analysis: age, education, experience, foreign languages (table 6).

INSERT TABLE 6 ABOUT HERE

As Table 6 shows, the proportion of prerequisites is considerably higher in French ads than British ads. The only benchmark common to advertisers in both countries is experience, mentioned in over three-quarters of the ads. The greatest difference concerns applicants' educational background, with three times more mentions in France than in the UK and concerns almost exclusively higher education qualification requirements. Educational background and experience are not compensatory in France where both are often stipulated requirements within a single ad; thus generating an even more selective recruitment process. Proficiency in a foreign language also differentiates ads between the two countries (table 6). In France, this requirement essentially concerns English and constitutes a *sine qua non* for access to all kinds of jobs. On the contrary, as English is already considered as the international language, British applicants are exempt from such a requirement. The mention of age is exceptional in the UK, which may surprise French applicants who are still confronted with this criterion. Indeed, the absence of allusions to age, gender, or other personal descriptors in British ads reflects the effectiveness of the country's fight against discrimination.

The differences between French and British ads are fairly striking. British ads characteristically contain very few markers allowing recruiters to select candidates by profile, but offer precise information on salary (considered to be an essential benchmark), benefits and job-status. French ads are, on the contrary, marked by the diversity and profusion of criteria aimed at screening job-seekers prior to accessing the offers, whereas the job-seekers themselves have relatively little information on the employment conditions proposed (tables 5 and 6). The screening process forms an integral part of a specific form of establishing contact between recruiters and job-seekers. In France, initial contacts are mainly effectuated by mail (postal or electronic) as candidates are requested to send an application (involving a varying amount of documentation) prior to any direct meeting. In the UK, contacts are more

interactive since potential candidates are encouraged to telephone for further information before applying.

These divergences offer valuable insights into the balance of power in the hiring relations. In the UK, where the labour turnover rate is high, companies' privilege market transparency and the job sites back them up in this approach. In France, job seekers are subject to a rigorous pre-selection process before they can even submit their application and similarly, the job-boards echo recruiters' requirements and policies. Recruiters are thus in a position of strength and do not hesitate to multiply pre-selection criteria that are then integrated into the web site toolkits thus further limiting access to the ads. Educational requirements provide a good example of this: they are more often formulated in the French ads found on sites with a specific "education" field than on others. Conversely, we found no British site that includes such a field in its search criteria. In supporting recruiter policies, the procedures installed by Internet sites can either be beneficial to the job-seeker or, on the contrary, reinforce an uneven balance of power, as would seem to be the case in France.

Section 5: Summary and conclusion

The organization and filtering of information are critical to the functioning of the labour market and this question has become particularly relevant since the information is conveyed through Internet. By analyzing how the job boards operate, we have shown that their role is not neutral in the process of matching recruiters and job seekers. They direct the job-search methods by compelling job-seekers to give their profiles without in return giving them access to the job advertisements of their choice. The most commonly-used tools are input fields (educational level, location, job category...) which compel both sides of the market to adhere to. Matching is easier to operate using codified markers which are sometimes reduced to simple quantitative signals. The question remains as to whether these transformations have a

direct impact on job-search performance. Recent studies have shown that job-hunting via the Internet is considerably less successful than expected. Despite its expansion, the Web still remains a marginal hiring channel in France (Bessy and Author A, forthcoming).

In addition, we have shown that the web sites echo the demands of the recruiters who pay them. In this respect, the institutional context limits players in their choice of markers and their use of corresponding matching technologies. In the French context, where there is a high level of unemployment, recruiters are encouraged to submit job-seekers to rigorous up-stream screening. By providing them with the appropriate pre-selection and screening tools and services, the job boards contribute in reinforcing information asymmetries between employers and workers: applicant profiling becomes a major factor in filling a vacancy. This result should be of concern for the Public Employment Service whose mission consists in correcting the long-standing disequilibria of labour markets.

The flexible nature of the Internet nevertheless allows us qualify our conclusions somewhat: e-mail, discussion lists and newsgroups together with personal web sites all constitute tools contributing to a more interactive job search through less formal information channels than those examined here. These matching technologies develop another use of the medium that is especially pertinent to professions associated with occupational markets (computer specialists offer a paradigmatic example of this). Accounting for these multiple uses implies focusing one's attention on how the job-seekers themselves take possession of the Internet, how they bypass or draw on the resources and framing set up by the market intermediaries.

Section 6: References

- Author A, Author C & al., *Des standards nationaux à l'épreuve d'internet. Sites et offres d'emploi en France, en Espagne et en Grande-Bretagne*. Noisy-le-Grand: Centre d'études de l'emploi, Research Report no. 12, 2003.
- Author A & Al. Des petites aux grandes annonces: évolution du marché des offres d'emploi (1960-2000). *Travail et emploi*, 2003, 95, 59-72.
- Author B. L'internet et le marché du travail: cadrage des interactions et pluralité des formats d'information. *Réseaux*, 2004, 22 (125), 113-142.
- Author B. *Les marchés numériques du travail: L'émergence de nouvelles technologies de coordination*. PhD Dissertation, Université Paris X-Nanterre, 2006.
- Autor, D. Wiring the Labor Market. *Journal of Economic Perspectives*, 2001, 15 (1), 25-40.
- Barrey, S. Cochoy, F. & Dubuisson-Quellier, S. Designer, packager et merchandiser : trois professionnels pour une même scène marchande. *Sociologie du travail*, 2000, 42, 457-482.
- Bessy, C & Author A. La mobilisation d'internet pour recruter : aux limites de la sélection à distance. *La revue de l'IREs*, forthcoming.
- Bessy, C. & Eymard-Duvernay F. (Eds). *Les intermédiaires du marché du travail*, Paris: PUF, 1997.
- Bessy, C. Eymard-Duvernay, F. Larquier G. de & Author A. (Eds). *Des marchés du travail équitables? Approche comparative France/Royaume-Uni*, Brussels: Peter Lang, 2001.
- Bessy, C. & Larquier G. de. 'IT Professional Wanted (£25000 + benefits)' / 'Entreprise recherche informaticien diplômé grande école'. In Bessy, C. Eymard-Duvernay, F. Larquier G. de & Author A. (Eds). *Des marchés du travail équitables? Approche comparative France/Royaume-Uni*, Brussels: Peter Lang, 2001, 227-268.

- Beunza, D. & Stark D. Tools of the Trade: the Socio-technology of Arbitrage in a Wall Street Trading Room. *Industrial and Corporate Change*, 2004, vol. 13 (2), 369-400.
- Callon, M. Introduction: The Embeddedness of Economic Markets in Economics. In Callon, M. (Ed.). *The Laws of the Markets*, Oxford : Blackwell Publishers, 1998, 1-57.
- Callon, M. & Muniesa, F. Economic Markets as Calculative Collective Devices. *Organization Studies*, 2005, 26 (8), 1229-1250.
- Chateauraynaud, F. *Prospéro, Une technologie littéraire pour les sciences humaines*. Paris : CNRS Editions, 2003.
- Devine, T. J. & Kiefer, N. M. *Empirical Labor Economics. The Search Approach*, New York: Oxford University Press, 1991.
- Freeman, R. B. The Labour Market in the New Information Economy. *Oxford Review of Economic Policy*, 2002, 18, 288-305.
- Gehrig, T. Intermediation in Search Markets. *Journal of Economics and Management Strategy*, 1993, 2 (1), 97-120
- Granovetter, M. *Getting a Job*, Cambridge, Mass.: Harvard University Press, 1974.
- Ioannides, Y. & Datcher-Loury, L. Job Information Networks, Neighborhood Effects, and Inequalities. *Journal of Economic Literature*, 2004, 42 (4), 1056-1093.
- Kuhn, P. & Skuterud M. Internet Job Search and Unemployment Durations. *American Economic Review*, 2004, 94 (1), 218-232.
- Mortensen, D. T. Job Search and Labor Market Analysis. In Ashenfelter, O.C. & Card, D. (Eds). *Handbook of Labor Economics*, Amsterdam: North Holland, 1986, 1171-1228.

- Mortensen, D. T. & Pissarides C. A. New developments in models of Search in the Labor Market. In Ashenfelter, O.C. & Card, D. (Eds). *Handbook of Labor Economics*, Vol. 3, Elsevier Science, 1999, 2567-2627.
- Neuville, J.-P. Les bons ‘tuyaux’ du marché de l’emploi. *Sociologie du Travail*, 2001, 43 (3), 349-368.
- Osterman, P. *Securing Prosperity, The American Labor Market : How it Has Changed and What to Do about It*, Princeton, N.J.: Princeton University Press, 1999.
- Petrongolo, B. & Pissarides, C. A. Looking into the Black Box : A Survey of the Matching Function. *Journal of Economic Literature*, 2001, vol. XXXIX (juin), 390-431.
- Rees, A. Labor Economics: Effects of More Knowledge. Information Networks in Labor Markets. *American Economic Review Papers Proceedings*, 1966, 56 (2), 559-566.
- Rubinstein, A. & Wolinski A. Middlemen. *Quarterly Journal of Economics*, 1987, 102 (3), 581-593.
- Spulber, D. *Market Microstructure: Intermediaries and the Theory of the Firm*. Cambridge : Cambridge University Press, 1999.
- Stigler, G. J. The Economics of Information. *The Journal of Political Economy*, 1961, 69 (3), 213-225.
- Stigler, G. J. Information in the Labor Market. *The Journal of Political Economy*, 1962, 70 (5, part 2), 94-105.
- Thévenot, L. Rules and Implements: Investments in Forms. *Social Science Information*, 1984, 23 (1), 1-45.
- Thévenot, L. Organized complexity. Conventions of coordination and the composition of economic arrangements. *European Journal of Social Theory*, 2001, 4(4), 405-425.

Yavas, A. Marketmakers versus Matchmakers. *Journal of Financial Intermediation*, 1992, 2, 33-58.

Yavas, A. Middlemen in Bilateral Search Markets. *Journal of Labor Economics*, 1994, 12, 406-429.