The connected migrant: an epistemological manifesto

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The connected migrant: an epistemological manifesto*

Abstract. *Current trends in thinking on contemporary migration (in particular, theories on transnational networks) agree that today's migrants are the actors of a culture of bonds, which they themselves have founded and which they maintain even as they move about. Formerly a latent feature but typical of all groups on the move, this culture of bonds became visible and highly dynamic once migrants began massively to use modern information and communication technologies (ICT). It is more and more common for migrants to maintain remote relations typical of relations of proximity and to activate them on a daily basis. The paradigmatic figure of the uprooted migrant is yielding to another figure: the connected migrant.*

Key words. *Culture of bonds – ICT – Migrants – Mobility*

Résumé. *Tous les courants de réflexion sur le phénomène migratoire contemporain (et notamment les théories des réseaux transnationaux) s'accordent sur le fait que les migrants d'aujourd'hui sont les acteurs d'une culture de lien, qu'ils ont eux-même fondée et qu'ils entretiennent dans leur mobilité. Auparavant à l'état latent, mais propre à tous les groupes qui se déplacent, cette culture de lien est devenue visible et très dynamique une fois que les migrants ont commencé à utiliser massivement les nouvelles technologies de l'information et de la communication. Aujourd'hui, il est de plus en plus fréquent que les migrants parviennent à maintenir à distance et à activer quotidiennement des relations qui s'apparentent à des rapports de proximité. Le déraciné, en tant que figure paradigmatique du monde migrant s'éloigne et fait place à une autre figure: le migrant connecté.*

Mots clés. *Culture de lien – Migrants – Mobilité – TIC*

The epistemological viewpoint that conceives the migrant within a global system of mobilities is a sociological approach that has its conceptual weaknesses and is still searching. While the idea that 'the defining feature of the contemporary world is more circulation than stable structures and organizations' (Urry, 2000) is widely accepted in contemporary human sciences, migration theories seem to be hobbled by a vision that continues to separate migrant mobilities from sedentary mobilities, migratory trajectories from urban itineraries, transnational circulations from proximity movements, and so forth.

The concerned institutions, but also the research sphere, recommend that the international migrant be defined as: any person who moves to a country other than that of his or her usual residence, any person who crosses at least one national border. Unlike the immigrant, who comes to stay, the migrant is usually thought of as someone in transit, who comes to work, travels across our territories and cities, and who goes back home or leaves for somewhere else. Within its sketchy analytical outlines, the migrant's sociological portrait is summed up by the image of a permanent break with the places that link the individual with his or her native environment as well as a confrontation with a world that thinks and lives differently. Geographers consider that the concept of migrant (which they place alongside that of emigrant or immigrant) is based on a physical criterion, that of movement in space, by virtue of which the migrant must not be confused with the foreigner, a concept based on a juridical criterion: a foreigner is anyone who does not have the nationality of the country in which he or she resides, a quality subject to change in accordance with national policies concerning nationality acquisition. Nor is the migrant the same as the nomad, whose movement ensures the coherence of his culture and his group – which moves with him (Joseph, 1984). Defined with respect and by contrast with the sedentary, the concept of migrant immediately excludes anything to do with the figure of someone with roots.

At the global level, the heterogeneousness of the sources can nevertheless lead in practice to skipping from one concept to the other, without noticing that one is dealing with different kinds of mobility. Whether it stems from a problematic defined in terms of territory, cultural identity or social and institutional integration, the definition of migrant refers to and focuses on a series of breaks and oppositions inherent to his fate and which are constantly used as one of the chief organizing principles of any theoretical reflection on populations on the move: mobile/immobile, neither here nor there, present/absent, in the center/at the periphery, and so forth. Yet it seems to me that this way of thinking about the movements of persons is an abusive historical and sociological simplification. These concepts do not hold up well in a

world given to generalized mobility and unprecedentedly complex means of communication. The generic divide between migrant, foreigner, immigrant and nomad, and even sedentary, tends to blur. Never in the past have there been so many people able to envisage as a given the fact that they or their children will no doubt at some time live and work in some place other than where they were born. Migrants who, traveling on a tourist visa, deal in petty trafficking, tourists who travel and ultimately settle in the country where they vacation, immigrants who, having acquired the desired national-ity, go back to traveling, dynamic young managers, travel addicts, all must juggle with different mobilities if they are to find some stability.

The global media paint a picture of an easily accessible elsewhere that contributes to standardizing, reinforcing and generalizing this *culture of mobility*. Thus Simmel's implicit praise of the stranger as the eponymous hero of modernity and mediation is becoming both widespread and trivial-ized. Likewise, today's immigrants develop networks, activities, life 'styles' and ideologies that form a link between their home country and the host country and which re-introduces them to mobility. Finally, current trends in thinking on contemporary migration (in particular theories on transnational networks) agree that today's migrants are the actors of a *culture of bonds*, which they themselves have founded and which they maintain even as they move about. Formerly a latent feature but typical of all groups on the move, this culture of bonds became visible and highly dynamic once migrants began massively to use modern information and communication technolo-gies (ICT). It is thus increasingly rare to see migration as a movement between two distinct communities, belonging to widely separated places and characterized by independent systems of social relations. On the con-trary, it is more and more common for migrants to maintain remote relations typical of relations of proximity and to activate them on a daily basis. This 'virtual' bond – via telephone or email – makes it easier than before to stay close to one's family, to others, to what is happening to them, at home or elsewhere, and even allows one to do this better. The paradigmatic figure of the uprooted migrant is yielding to another figure – one that is as yet ill defined but which corresponds to that of a migrant on the move who relies on alliances outside his own group of belonging without cutting his ties with the social network at home.

The migrant is also at the root of a *surveillance culture*, which ICT extends largely beyond national territories in both its hard version (retention centers) and its soft version (electronic surveillance via databases such as the Application de Gestion des Dossiers des Ressortissants Etrangers: AGDREF; or the Schengen Information System: SIS). The 'technologiza-tion' of border controls has led to the actual transformation of their nature.

From barrier zone to differentiated electronic screening zone (meant to slow down but not to stop), today's borders are no longer constrained by physical geography. Ubiquitous and in the form of databases, they have suddenly appeared in consulates, prefectures, on the laptops of policemen, parked alongside an ordinary highway tollbooth and within the databases of different transport companies. If we agree with Robert Sack (1986: 19) who claims that territory acquires meaning at the political level as a means of *monitoring* people, processes or social relations, then we can suggest that these new electronic borders, which use an extraterritorial network logic, in effect extend national or community territories beyond their national borders.

Today electronic administration and, in particular, biometric identification systems interest both host countries and countries of emigration. But if their interests converge when it comes to public security and fighting documentary and computer fraud, there may be different reasons behind the constitution of databases from 'proprietary technologies'. The countries of destination are studying these techniques in the hope of finding a tool for monitoring and fighting the globalization of migratory flows; the countries of origin, conscious of the economic and political profit they can derive from their transnational communities, all attempt to increase their geopolitical influence and accumulate the social and financial capital coming from these widely scattered populations through the introduction of multifunctional identity cards. Caught between two – or several – administrative policies, living and moving about in an economically unbalanced world where national borders have lost their meaning, living in a time of globalization where all exteriority has vanished, sharing files with strangers and at the same time the anonymous electronic destiny of the man in the street,[1] the migrant seems to embody the ideal-type of the management of a world in motion.

If all of these realities are put together, the definition of the migrant based on different forms of rupture considered to be fundamental and radical runs into trouble. Alternatively, another organizing principle emerges: mobility and connectivity provide a set of variables for defining the 21st-century migrant. Together they act as a vector that ensures and guides the lines of continuity in migrants' lives and in the relationships they have with their environments at home, in the host country or in between. Yesterday the motto was: immigrate and cut your roots; today it would be: circulate and keep in touch. This evolution seems to mark a new era in the history of migrations: the age of the connected migrant. It is these lines of continuity that we will attempt to address with the aim of approaching and coming to understand this figure.

FIGURE 1
Source: *Vase*, Edgar Rubin (1915)

Clearly, in this article I will not be discussing continuity over the long term (migrations run through the whole history of humankind), but rather I attempt to put into perspective different readings of this continuity on a time-scale stretched to the full elastic capacity of our possibilities of observation. In other words, while acknowledging that time establishes continuity, I will go no further on the time scale than what I can measure and study at present.

The figure of the 'in-between space' or 'neither here nor there but here and there at the same time' announces, as it were, the arrival of the connected migrant in the sociological literature. Globalization, network theories and transnational processes have pointed up certain aspects that can be used to configure his future profile: multi-belonging (to territories and to networks), hypermobility, flexibility in the labor market, the capacity to turn a relational dexterity into a productive and economically effective skill are all features that we will certainly find in the make-up of our migrant.

But doesn't this migrant, who belongs to several geographical zones and social milieus rather than to an 'in-between zone', multiply dividing lines rather than bonds? In migrations, as in Escher's paradoxical figures, ruptures and continuities sum up the same dynamic. In the picture by Edgar Rubin featured here (Figure 1), we can see either the vase or the two profiles; likewise, in our analysis of the features of the migrant, we can see either the ruptures or the continuities. The passage from one figure to the other, from one state to the other, occurs at the level of our perception. When one figure appears, the other recedes into a potential state. Today the evolution of our societies towards a 'liquid' modernity, as Zygmund Baumann (2000) calls it, attributes more meaning to continuity than to ruptures, which nevertheless remain a part of the picture, but in a potential state. Whether they shift, change their nature or reoccupy the stage of migrations in the future will be determined by society as a whole as will the direction of our gaze.

1. Choosing a level of analysis

In order to define and understand the way the connected migrant works, I am suggesting four levels of analysis, based on fieldwork and research.

1.1. Place the migrant in a global system of mobilities

Our general approach comes under the logic of the 'mobility paradigm' as it was formulated by Alain Tarrius in the late 1980s.[2] To this we add another 'level', that of mobilities arising from the use of ICT and a broader circle of comparison that includes 'non-migrants'. Using the principles set out by Alain Tarrius in new situations, with analytical tools taken from ICT, I attempt to ascertain the extent to which migrant and non-migrant mobilities still differ. *Instead of seeing only the discontinuous character of the territories traced by the practices of migrant and non-migrant mobility, we try to conceive and prove the continuum, in space and in time, as perceived in the multiple movements that are accumulated and articulated in people's lives.* The heuristic aims of our approach at this level of analysis are: to consider the migrant in all his modes of mobility (physical, imaginary, virtual) and to verify whether our society shows evidence of a shift from a predominant sedentarity to a predominant hypermobility.

I am not going to expand on this point here; the work on 'migratory flows' by Gildas Simon, Alain Tarrius and researchers with Migrinter (Migrations internationales, espaces et sociétés), or the many studies inspired by their research, are contiguous approaches. My contributions with respect to a tried and true method are: the introduction of new mobilities engendered by ICT, the expansion of the comparative framework to include non-migrants, and the development of the 'Wherenet' system of observation (to which I return later).

2. The 'relational settlement into mobility'

The bonds (a hundred times more so than the economic context*)* are *the* creator factor of mobility. The second level of analysis initially investigates a commonplace of the new trends in sociology of migrations: the temptation to abandon the problematic of integration in order better to highlight the new 'circulatory dimension' of contemporary migratory phenomena. If it is true that these new patterns of migration can no longer be ascribed to social processes described in classic terms of integration, assimilation and insertion,

then we find ourselves faced with a reversal of our perspective. Questions of integration are going to have to be rethought in the specific context of the multiplication of temporary displacements and the participation in a variety of social milieus.

In practically all of the studies we have conducted and in all of the life stories of migrants we have recorded, we have found an episode in which 'a friend' temporarily became the resource person who protects and socializes, thus becoming at the same time a capital of both settlement and of mobility. It is with the help of this friend that migrants have found work or set up a business, and, thanks to this invitation – providing a fixed address – that they have obtained a visa to travel in the West.

While the authorities seem to be happy with the temporary and non-institutional nature of this type of migration, we posit that this informal armistice is due to the massive contribution of the individuals in the host societies and not of their institutions. Migrants without papers but who have friends have successfully integrated in the international market. This social form of integration from the bottom up, which has been a source of 'settlement into mobility' for thousands of migrants with no solid financial or institutional capital, poses a question not only for the nature of any migration policy but also for our sociological vision of migrations. Whether this is a spontaneous solidarity or a closely reckoned profit, this ability to 'establish bonds', to make friends, has softened the procedures of absence dictated by the Schengen space and, by creating a *social continuum,* has ensured the success of the project of mobility.

By 'relational settlement' I mean the social device by which the migrant organizes his life of mobility. Relational settlement is especially visible in the organization of the departure and the return, but also in the 'intermittent integration' that I described above. The social continuum is also significant in the management of relationships and activities at a distance.

The use of ICT is a must when it comes to preparing to travel, orienting oneself in the traveled space and organizing encounters. Contrary to what some forecasters have suggested over the past few years, ICT has improved the quality and speed of services rendered, but has by no means – with a few exceptions – entailed a reduction in travel. This observation carries a special meaning when it comes to migrants and to a political context generally unfavorable to their mobility. Migrants have adopted most modern means of communication and have thus developed new tactics for mobility, integration in host societies and the struggle for the survival of their community.

Obliged to talk at length and frequently to the family at home while being curtailed by the high cost of international communications, migrants were 'on the look-out' for any advantages in both fixed and mobile communication

systems. Promotions, messaging and, *in extremis*, exploitation of loopholes in the networks are zealously tracked down in order to satisfy the 'compulsion for proximity' and have led to the production of the different forms of at least intermittent remote presence useful and necessary to the maintenance of family and community life.

The development of communication practices – from simple 'conversational' methods where communication compensates for absence, to 'connected' modes where the services maintain a form of continuous presence in spite of the distance – has produced the most important change in migrants' lives. Not only have migratory practices been revolutionized (in particular the activation of networks, remote organization, the monitoring of movements) but also the way mobility is experienced and implicitly the construction of relational settlement.

The forms of sharing are transformed: classically one exchanged news, told each other what had happened. 'Now', Christian Licoppe (2002, 2004a&b)[3] observes, 'we communicate to talk about a feeling, an immediate emotion, the state one is in. It is another way of constructing the relationship. This form of connected presence (which is but another translation of "here and there at the same time") is very sensitive to modes of remote presence: it changes its cognitive and emotional nature in accordance with the richness of the interaction.' 'And there is naturally a specific affinity between mobile multimedia services and management of "connected" relations and situations', he concludes.

In this vein, it seems to me that Abdelmalek Sayad's (1999) analysis of the migration experience as a 'twofold absence' is no longer meaningful, owing to the emergence of a social space of 'presences': today's generations, who have become used to mobility, are endowed with an exceptional ability to continuously renew their bond with their home environment even as they establish contacts with the societies of the countries of destination. The idea of 'presence' has thus become less physical, less 'topological' and more active and affective, just as the idea of absence is implicitly altered by these practices of communication and co-presence. The socialities engendered by these connected 'presences' manifest themselves by a multiplication of changes of location and direct contacts, which highlights even more the precarious, temporary dimension of migrants' mobility but also the density of their relational network. Beyond the opposition between present and absent, fine-grained divisions are constructed which encourage us to reconsider the both remote and immediate relation in a perspective of continuity. The communication variable thus becomes a determining criterion in explaining the evolution of migrants' practices of relational settlement.

3. Identifying the mobile networks of belonging

Our social life is deeply rooted in mobile technologies. Whether we are concerned with communication, information or access, these terminals that we wear about ourselves interconnect us, give us access to different services (transportation, banking, traffic, monitoring) and to different spaces. They are the material support of our connection to our spheres of belonging – urban, national, banking, social, familial, and so on. The portability of the networks of belonging is a feature of all our lives. Migrant or non-migrant, practically everyone finds themselves subject to a logic of access: to circulate, to take money out of the bank, to get medical care, to enter one's home, to call, etc.

To account for the anthropological mutations in the mobility of our moorings, Dominique Boullier (1999: 43) proposes the neologism *habitèle* to designate our way of appropriating (materially and symbolically) a network space. Many studies in migration literature focus on the organization of migrant networks, but few of these take into account the migrants' ability to appropriate the networks to which they belong.

The advent of the *age of access*, which Jeremy Rifkin predicted for the economy, supposes the passage from an ownership regime, based on a notion of inheritance amply distributed within society, to a regime based on short-term use of resources controlled by networks of service providers. It has already come to pass that the spaces we feel a part of are no longer only territories but also networks. More liberated from geographical constraints, it is conceivable that the connected migrant also enjoys more autonomy. But the passage from *habitat* to *habitèle* also entails changes in the mode of *hospitality*. In private space, one talks less and less of reception and more and more of aid to access: for a migrant, sharing the address book of 'my French friend', using his bank account to receive paychecks, buying a mobile phone with his help are as much evidence of hospitality as steps towards integration. In institutional space, organizations in charge of managing foreigners are increasingly becoming 'e-administrations': home page, privacy databases, public transportation card, health insurance card, multiple-function identity card (which will soon act as a bank card, electronic passport, etc.).

What we retain is continuity of services, which is assiduously sought by both users and service providers. Interconnectivity at all geographical and functional levels, although still not very effective, is a utopia that fuels the production of a whole patrimony of *habitèles*. These instruments play an important role in constructing locality, but also mobility. The question of belonging has become closely linked to modes of access. One has only to

look at the examples of services like the OWS-ID card, e-justice or MoneySend.

4. Working on the 'memory' of mobilities

Migrants' 'e-practices' of communication and organization and the transition from paper documents to electronic supports (including ID documents) produce a vast, mobile and largely uninvestigated corpus on the Web (with modes of access subjected to more or less monitoring). Yet it is these electronic traces that may tell us the most about how transnational networks function, enable us to measure migrants' integration and organization, and to understand the nature of the surveillance exercised by the institutions in charge of monitoring foreigners. This delegation of the memory of our mobilities to recording instruments is unprecedented and allows us – not to say obliges us – to open a new field of observation. The fourth level of our analysis therefore concerns the storage and processing allowed by ICT of the traces of mobility and connections layered on the different electronic supports.

Until recently, documenting migrations supposed gathering information composed of statistics, material artifacts, writings and audiovisual documents providing evidence of the practices of persons settled into mobility and testifying to their era. Migrants, like those who are charged with managing their mobility, increasingly rely on ICT, thus generating an important mass of digital data. Furthermore, the very nature of digital information – its plasticity and the lifetime of its supports and systems – generates new forms of obliteration. For instance, in my research, I was initially confronted with the necessity to save certain corpuses that were in danger of being lost – as was the case with the famous *Pajole* website for illegal migrants housed in the church of Saint Bernard. But when we actually began working, I realized that digital documents were omnipresent, in a great variety of formats, mediums and content – emails, administrative files, SMS, audiovisual documents, in all possible languages on all possible supports. After the accumulation of archives came the layering of the document formats and the software versions used to read them, the fragility of the backup systems, the difficulty of giving coherence – and thus meaning – to the corpus. Confronted with a serious problem of anomie and quantity of information, my second concern was not to succumb to aimless navigation. That is where the questions entailed in the organization of scientifically convincing electronic data turn out to be central. The stakes involved here find their concrete expression in the project of a research team that joined the group ICT/Migrations at the Fondation Maison des Sciences de l'Homme, which is to assemble

Web archives on migrations; this project provides an opportunity to give some consideration to an 'electronic' sociology of migrations. The joint group plans to study long series of data collected automatically by means of a probe conceived using corpuses provided by the researchers, and crossing these data with results obtained from direct observation.

5. Innovating methodological tools of investigation

5.1. Conceptual tools

5.1.1. Mobility transition.   The term 'mobility transition' refers to the hypotheses formulated in the early 1970s by W. Zelinsky (1971) in an attempt to conceptualize the (real or potential) migratory movements of the era between the end of traditional society and the formation of modern society. We have adopted Rémy Knafou's (2000: 93) approach, which understands this concept as a 'dynamic instrument of analysis capable of verifying the existence of the shift in our society from predominant sedentarity to predominant hypermobility'.

5.1.2. Connectivity.   In the electronic world, connectivity is a procedure enabling a user to connect with a computer system and, if necessary to be recognized by it. Connectivity also applies to the property of a telecommunications network in which it is always possible to complete a direct or indirect connection between any two terminals. In this article we use the term as a global analyzer of technical and social networks. It can verify the ability of the migrant having access to computer terminals to function in different networks.

5.1.3. Traceability.   A complex analytical concept, 'traceability' organizes, identifies and integrates information through automatic identification. It can probe different historical 'depths',[4] geographical zones,[5] social strata[6] and technological media.[7] Originally tested and applied in the market economy, the notion of traceability suddenly appeared in connection with human mobility. The software was originally designed to trace goods as they moved along a distribution chain,[8] collecting information on the merchandise and keeping track of the different moments recorded and stored on a digital support. Today traceability is increasingly used to organize the different means of archiving (in private and public space) and has become a key objective in the deployment of national security technologies (cf. Cehan, 2004). Concretely this means that electronic identifiers (RFID labels) will be used, in tests, to

'automatically record the arrival and departure of travelers on foot or in a vehicle'. These tests were to be carried out essentially in towns along the border between the US and Mexico or Canada. This identifier could be added to the passport and would remain active after the person entered the territory. The Computer Assisted Passenger Pre-screening System (CAPP-SII) is a device for pre-screening US-bound airline passengers. As Ayse Cehan (2004) explains, this system concerns the exchange of files between different State administrations, the remote collection of personal data provided by airlines[9] and the profiling of persons deemed to pose a security risk. Closer to us, EURODAC, the central database for refugees in Europe, is another example of surveillance. From the original simple concept of packaging logistics, traceability has gone on to become a system for the engineering of social identity, and a legal obligation.[10]

5.2. Innovative methodologies

Another epistemological perspective requires not only new methodological rules but also innovative techniques of investigation. We have seen that the environment of the connected migrant is strongly marked by communication, access and storage technologies. Methods and means of investigation will have to adapt both to this environment and to our problematics. Without conflating the field of studies on interactions in a migratory situation with research on the uses of ICT, researchers today, equipped with methodological skills that have been tested and proven in other areas, must also take a transdisciplinary view and work alongside engineers to help create different electronic devices capable of expanding our field, of validating our concepts, and of finding synthetic representations for vast sets of organized resources in different domains.

Probes, software programs and data-collection robots are electronic tools of investigation conceived for the purposes of selecting and sifting specific kinds of information from the mass of data in circulation. The theoretical premises underlying my research on recording devices come within what may be called the 'theory of aggregates' (which is the basis of certain specific extraction techniques). My position privileges a hybrid investigation solution in which the researcher's analysis guides the constitution of a corpus and completes it with information derived from qualitative and contextual studies. The extreme example of *Marlowe*,[11] a prototype for sociological data processing, in which the researcher's task is to 'dialogue' with a corpus he does not control, seems excessive to me.

Without going into detail, or into the results, which are for the moment only partial, today I briefly refer to some elements of a study in progress –

'Wherenet' – that I am conducting at the Ecole Nationale Supérieure des Télécommunications (Paris) in collaboration with Christian Licoppe, Zbikniew Smoreda and Cezary Ziemlicki. 'Wherenet' explores the relationship between use of mobile services and spatial mobility. We know only a little about correlations between geographical mobility and the use of mobile communication services. What are the places and situations that lend themselves to which communication practices? To what extent do users' forms of movement – in accordance with geographical scale, means of transportation, types of inclusion in forms of activity and socialization – influence mobile communication? Does access to mobile devices in turn influence spatial mobility? Is there a perceptible difference in mobile-phone use depending on whether the users have 'sedentary' or 'migratory' biographies and experience? It is this set of questions that guided our research.

Ours is a more global ethnographic and quantitative investigation (analysis of 'access-providing' objects worn about the person and which equip individual mobilities, sociological interviews that act as an empirical basis for a transversal understanding of mobility behaviors and communication) based on a new device for the production of data. The device uses software designed by France Télécom R&D, which can be installed on mobile phones using GPRS (Global Packet Radio Service), and allows simultaneous recording of use linked to mobile communications (voice, data, image) and the possessors' movements (via localization of the cells crossed by the device). Our sample was limited to 20 representative people – migrants and non-migrants – in residence and working at different jobs. They were provided with mobile phones equipped with a software probe, which they could disable when they wanted (we signed a confidentiality agreement on the data collected). Using the automatic device, we tracked these people for 6 months. Interviews and questionnaires were constructed using the initial data obtained with the software probe, followed by a series of individual interviews to qualify connections, geographical itineraries and associated activities. The information from the interview was coded and correlated with the collected data and mapped. Although our results are only partial, the findings suggest that the distinction between migrants' practice of mobility and the practice of mobility by 'sedentaries' is becoming increasingly difficult to circumscribe.

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Notes

1. This *culture of surveillance*, directly inspired by immigrants, is starting to spread to all who are on the move, whatever the nature of their mobility.

2. See Tarrius (1989). In his *Anthropologie du mouvement*, the author considers simultaneously three 'layers', i.e. three levels of analysis of the space/time relationship characteristic of migrant mobilities: movement of proximity, movement within the host space, and large-scale international migrations.

3. See also, by the same author: 'Sociabilité et technologies de communication' (Licoppe, 2002).

4. With the exception of production of digitized documents in real time, many archives have been or are in the process of being digitized. But the most advanced project is certainly 'Genographic', a program launched by the National Geographic Society and IBM which, based on the analysis of DNA samples collected from several hundreds of thousands of subjects, reconstructs the history of human migrations, thus retracing the progressive population of the planet.

5. Today, all countries computerize their production of archives to different degrees; so, for instance, Mr X could be found in the archives of Poland and also in the genealogical department of the Ellis Island Immigration Museum, and so on.

6. We can establish traceability of migration at the familial, entrepreneurial, transnational, etc., levels.

7. Migratory traceability can also be a system for collecting traces of the use of the support on which we are doing research. For example, reconstructing the navigation paths on the Internet or the movements of a GPS user on a mobile phone.

8. Marked with electronic labels, barcodes or RFID (radio frequency identification) labels.

9. 'These 39 items of information stored in the PNR (Passengers Name Recorder) database concern primarily passengers' routes, means of payment, food preferences, on-board services requested, other services such as car rental, etc.' (Cehan, 2004).

10. This is a worrying situation for the whole of society, as the preservation of certain fundamental personal rights (right to anonymity, right not to be monitored, right to control the diffusion of personal information) is threatened.

11. *Marlowe* (code name MRLW) 'hosts structures for representing and storing knowledge which enables the researcher to delegate tiresome investigative tasks'. Since its resources are largely outsourced, MRLW enables collective work by combining concepts and examples, rules and procedures tested on different files. Unlike a human researcher, MRLW can explore and exploit countless combinations with no limit other than the capacities of the host machine (see Chateauraynaud, 2003).

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