RESEARCH
09/28/2017

Ending automobile dependence (periurban and rural mobility)

Finished research

Data sharing is a key to consolidating scientific methods and knowledge, and notably feeds discussion across opposing viewpoints. However, it is a nascent practice in qualitative research. A team from the Centre for Cities, Territories, Environment and Societies (CITERES) are paving the way with a project to reopen six qualitative studies conducted in peri-urban and rural areas. The project has three objectives: establish a methodological framework to mutualize qualitative data, define the requirements to share data, and provide a renewed analysis. The challenge: gain a better understanding of mobility in sparsely populated areas and identify pathways to ending car dependence.

Research participants

MARIE HUYGHE

LAURENT CAILLY

DOMINIQUE ANDRIEU

HERVÉ BAPTISTE

NICOLAS OPPENCHAIM

HERVÉ BAPTISTE

DENIS MARTOUZET

Contact : Anne Fuzier

1. The Research

1. The Research

[Mobility](#) in suburban and rural areas raises social and environmental issues that the Mobile Lives Forum explored during the 2013 international meeting on "Sustainable mobility in the periurban, is it possible?" Since then, the amount and diversity of research on mobility in these territories has only increased. The project "Moving away from Car Dependence" hypothesized that it was possible to increase the knowledge of daily mobility in sparsely populated spaces by pooling, cross-referencing and reanalyzing data from several research projects already carried out.

The research team, led by Laurent Cailly and Marie Huygue, aimed to revisit six investigations conducted by the CITERES laboratory between 2009 and 2016: UPHA - Usage et Programmation de l'habitat (Habitat use and programming); Périvia - Le périurbain à l'épreuve des modèles d'habiter (The periurban and ways of dwelling); MOUR - Mobilité et Urbanisme Rural (Mobility and rural urbanism); MOBITER - Mobilité et Dynamique des Territoires Ruraux (Mobility and dynamics of rural territories) ; Modalter - Territoire périurbain et organisation modale (Periurban territory and modal organization); Les ménages, opérateurs d'une métropolisation qui ne dit pas son nom (Households, the untold operators of the metropolis). While based on different objectives and investigative protocols, these research projects all mobilized a qualitative method and all involved a series of interviews with inhabitants living in car-dependent areas in the Centre region. In France where the pooling and dissemination of qualitative research data is not yet common practice, this ambition raises methodological and technical questions, but also ethical and legal ones. This is why a part of the research aimed to define the conditions under which data pooling and secondary analysis can be carried out (Part 3 of this article, "The conditions and goals of a secondary analysis of qualitative data").

The other part of the research (part 2 of this article, "The results") involved reanalyzing the data from the entire corpus in three directions. The first axis studies the forms of arrangement of daily mobility throughout space and time, using a sample of GPS traces analyzed using a statistical and qualitative approach. The second axis studies people's experience and representations of travel through the reanalysis of semi-structured interviews. Finally, the third axis examines the modalities of the shift towards alternative modes of travel to the individual car, taking into account the time that such change can take.

2. The results

• First axis: circulatory approach to forms of spatial-temporal arrangement of daily mobility

The first axis reuses a series of GPS traces produced in previous research programs and analyzes them from two standpoints, one quantitative and the other qualitative.

- Quantitative angle: statistical analysis of GPS traces

In this first part, the researchers examined the methodologies for analyzing GPS traces used for producing a comparison of forms of mobility in periurban areas; they hypothesized that the residential context (rural, polarized, isolated) does not determine spatial practices.

After the reanalysis, the researchers were able to identify new synthesized indicators to summarize the traces and compare them, and then to establish a typology of mobility practices in rural and periurban areas. The typology shows that people's practices unfold in different ways; they are more or less extensive geographically, more or less polarized by the city, more or less constrained around the place of residence.

The typology also shows that all classes include individuals in different territories with similar spatial practices and ties, which would tend to validate the initial hypothesis that there is no location effect that can explain an individual's type of spatial practices.

- Qualitative analysis of GPS traces

In the second part, the researchers examined the arrangement of mobility systems in inner suburbs. Unlike quantitative researchers, they hypothesized a specificity of mobility practices and more broadly of the ways of living in these low-density spaces located on the edge of agglomerations. GPS traces were treated with a so-called circulatory approach [1], which makes it possible to integrate the territoriality of the links structuring mobility systems into the analysis.

The reanalysis showed that the practices of inhabitants in the inner suburbs were performed both at the local level, between home and work, and at the metropolitan level. Daily practices are local, while trips related to social life and exceptional purchases are spread out over the agglomeration or its periphery. The reanalysis thus invalidates firstly the idea of a complete dependence on the resources of the agglomeration alone; and secondly, the assumption that mobility systems are increasingly autonomous within the periurban territory of residence.

These practices between dense urban and diffuse urban spaces are deployed in several ways:

> Building routes in corridor/clusters: in choosing their routes, people's first concern is speed of access, as they implement strategies to optimize their trips. While functional aspects are predominant, the interest or beauty of the landscape may be involved in the choice of route. Individuals also choose their route according to available roadside resources (shops, drive-throughs, but also urban parks, media libraries, cafes, etc.), picking and aggregating opportunities along the way.
> Following circumvention strategies: the chosen routes bypass the agglomeration, in

a bid to have a quicker and more fluid journey. Individuals use bypasses, ring-roads, express lanes, etc.
In rhizome: the spatial practices unfold "in all directions," the space is well-travelled and well-known, crisscrossed by extremely dense paths.

The material arrangements (GPS traces and corresponding activity logs) were also analysed alongside the testimonies (semi-structured interviews) in order to understand their motives and meanings.

The circulatory approach is thus an innovation compared to more traditional approaches centered around the origin-destination pair; it has made GPS data speak differently and highlighted, at the level of the city, the topological purposes of connection and continuation.

More information : download the synthesis of the first axis (in French only) part 1 and part 2

• Second axis: experience and representations of travel

The researcher responsible for the second axis questioned the experience and representations of travel, approaching mobility as a system and not as a simple movement from point A to point B. This theme has been the subject of recent work in urban spaces, but it has been scarcely studied in low-density spaces. Is there a specificity to how people perform their travel practices that is unique to the periurban condition? What relationship do the inhabitants have with the sensuous dimension of travel? What sociabilities emerge from travelling in periurban areas? While mobility is part of varied systems of representations, common traits have nonetheless emerged, characterizing the experiences and representations of movements in low-density spaces:

A shared goal of optimizing travel time, which determines the experience of mobility. Individuals deploy strategies that allow them to control their travel time: choosing the best route, the departure time, their seat on the train so that they can optimize their travel time, etc.
The question of sociability, which is particularly clear in the case of public transport. Here too, individuals implement strategies that allow them to either favor or avoid these relationships of co-presence that can be experienced as resources or as constraints. These sociabilities born in public transport can be extended in the residential space, with some respondents maintaining friendships with neighbors met on the train.
The investment of travel time, which varies according to modes of transport and the time of day: the morning commute serves more as a conditioning for the workday, while the evening commute is more a time to relax.

Beyond these common traits, the reanalysis showed different experiences during travel,

that can be explained in part by different sensitivities depending on the surveyed individuals and the mode of displacement used. For example, with motorists, sensitivity is mainly exercised through visual modality; while some are sensitive to the landscape, most motorists pay little attention to it, instead exercising a kind of automatic attention mindset. On the other hand, among the few respondents who travel on foot or by bicycle, their sensitivity is not limited to the visual aspect: the respondents also mention their direct contact with the environment, the feeling of the wind, sound perceptions, etc. The pleasure taken from these trips becomes a criterion for selecting a particular mode of travel. Finally, the researcher proposes to use the concept of experience as an integrative concept, in order to take into account both the sensitive (the lived) and the social (representations) dimensions of space and to study how they interact dynamically to guide the practices of mobile individuals and influence their modal choices.

More information : download the synthesis of the second axis (in French only)

• Third axis: teachings, the potential for changing habits and obstacles, temporalities of change

In the context of questioning the automotive system, that contributes to characterizing low-density territories, the issue of changing mobility practices is particularly important today. How can we understand the evolution of people's modal practices? What are the obstacles to modal change? From this, how can we promote change towards more sustainable lifestyles?

To conduct their reanalysis, the researchers relied on a pattern of mobilitary trajectories, which they constructed by combining a psychosocial approach with a sociology of bifurcations. These two approaches schematize change by placing it in the long timeframe of individual biographical trajectories and identifying different phases in the implementation of a given practice: reflection, testing, continuation, temporary or lasting stops, etc.

At the level of the change processes, they identified the factors influencing the process of change, its temporalities and outcomes. It can be the free or constrained nature of the change, the elements that triggered it, the positive or negative experiences that accompany it, the resources identified or developed, etc. In particular, the moments of reflexivity and evaluation by individuals of their new mobility habit, called "feedbacks," appeared to be decisive in the choice of whether or not to maintain the habit, especially if individuals have accurate and quantified information about the pros and cons of the mode in question, such as time, budget and CO_2 emissions.

At the level of biographical trajectories, the diagram allowed researchers to place modal experiments in a more global trajectory: they are often neither a sudden conversion nor a definitive choice. The analysis shows alternations, back-and-forth, between cars and

altermobilities . Changes in habits sometimes go hand in hand with deeper changes in people's way of life. They can also be explained in the light of past experiences, especially habits from childhood or adolescence, when a positive or negative experience of mobility can help determine whether a person will adopt or reject a mode of transport years later.

Finally, the concept of a mobility trajectory also brings to light a "snowball effect" of change, that can be seen in two ways. On the one hand, some of the individuals who have put in place new practices for their commuting trips have extended them into their weekend or leisure trips. On the other hand, an evolution in mobility practices can have an impact on other family members, especially children.

These analyses have led the researchers to propose recommendations for public authorities, in a bid to encourage and accompany individuals towards modal changes. In particular, they recommend paying attention to the life moments and biographical turning points that are conducive to change, as they present an opportunity to inform individuals about alternative mobility options. This can be achieved, for example, in one-on-one interviews offered by suburban municipalities to newcomers in the area. The researchers also suggest that the actors of change can use investigative tools to learn about people's entire mobility trajectory, in order to provide appropriate support. Positive experiences can be retested and valued, while negative experiences can be avoided. Finally, they stress the importance of feedback: in order to maintain a mobility habit, individuals need concrete elements that show them in a precise, quantitative and fast way the positive or negative impacts of their habit on their budget, their transport time, their environmental footprint, etc.

More information : download the synthesis of the third axis (in French only)

3. The conditions and goals of a secondary analysis of qualitative data

These results are based, on the one hand on a review of literature on secondary analysis carried out by the researchers, and on the other hand on their feedback following the metaproject.

Secondary analysis is the "reuse of pre-existing (particularly qualitative) data produced in previous research" (Heaton, 2008). It then involves one or several primary researchers, i.e. data providers, and one or more secondary researchers, i.e. recipients of existing data. In the case of the metaproject, the researchers conduct a reanalysis, that is a "secondary analysis involving all or some of the primary researchers" (Duchesne, 2017); this reanalysis is conducted from a pooling, defined by the team as the "sharing of data produced separately by the researchers taking part in the operation."

Data sharing is an approach already well established in Britain and the United States. In France, despite recommendations from European institutions and major national public

research bodies such as the CNRS, there is no formal national obligation. Secondary sharing and analysis projects remain few and far between in France because of a tension between their scientific benefits and the difficulties they raise.

• The scientific benefits of secondary sharing and analysis of qualitative data

From a scientific point of view, secondary analysis has many advantages. First, it optimizes data that is often not fully exploited, by analyzing it in light of other research questions, from new angles or methodologies. The data can be reused for comparison. Secondary analysis also allows researchers to deepen the first analyses or strengthen their validity by working on larger or more diverse samples.

For their part, the metaproject researchers found pooling to be greatly beneficial as it gave them the opportunity to dig deeper into new themes or methods from ready-to-use data.

Data sharing also addresses issues relating to the administration of evidence: making research data visible allows third-party validation of results and contributes to the transparency of research in social science. In the field of mobility, researchers generally say little about their methodological choices; the visibility of the data would facilitate discussion around the results, all the while highlighting the investigative material.

Data sharing also promotes knowledge about research methodologies and can help develop new research methodologies or tools. This argument is particularly relevant in the field of mobility, which is characterized by the recurrent emphasis on methodological innovations (mobile methods , go-along interviews, etc.). The metaproject's researchers confirm that this pooling has fostered exchanges and discussions between them about their methods, but also their own choices regarding theories and their scientific commitments.

While there are many advantages to data sharing and secondary analysis, they also raise several questions.

• Can qualitative data be reanalyzed?

The data from qualitative research has the specificity of being produced from the researcher's scientific point of view, questions and investigative procedures. In the humanities and social sciences, data is considered to be inseparable from the context in which it was produced. Therefore, losing the contexts of the investigative situation weakens the value of materials and compromises the reuse of the data. There are two positions on this: the relational conception claims that the data exists only in relation to the contexts in which it was produced and that it is impossible to understand and analyze data without having participated in the investigative situation. The constructivist position is more open: any research process is determined by a specific context of analysis, whether it is a primary or secondary analysis. A secondary analysis may produce results

whether it is a primary or secondary analysis. A secondary analysis may produce results that are different from the primary, since it will have been conducted in a different context, but this does not necessarily invalidate the primary results. However, the initial context of investigation remains crucial in determining the value and framework for reanalyzing the material.

The metaproject's researchers adopt a constructivist position and argue that these issues pertaining to the data's dependence on context can be mitigated by data contextualization, which allows them to approach the initial production contexts with a documentation that sheds light on them.

However, in practice, they have encountered difficulties related to the extremely time-consuming nature of this recontextualization, which is increased by the large amount of pooled data. First, delving into the data produced by other researchers took the secondary researchers a considerable amount of time, not just to familiarise themselves with the data and its context, but because of the risk of wasting time studying interviews that aren't adapted to their own research questions. Second, the recontextualization of the selected data was also time-consuming; for example, each selected quote required rereading all or part of the interview to be properly understood.

These challenges were mitigated by the proximity between the themes and questions of the various programs (residential routes, mobility practices and daily lifestyles), limiting the risk of delving into inadequate data. The fact that the researchers participating in the primary and secondary analysis know each other also facilitated the process, with the former advising the latter on the data they considered appropriate. However, the primary researchers' role is ambivalent as they may hold certain biases with regards to their data and deem some data irrelevant when it would actually be useful for the secondary analysis - an issue that one of the metaproject's researchers encountered.

• The legal, epistemological, ethical and methodological issues of data sharing

According to the metaproject researchers, the ethical and legal questions raised by data sharing revolve mainly around the issue of trust. It consists of a more-or-less formal arrangement between the investigator and the respondent that sets out the conditions for the production, use and sharing of the data, and helps establish a trusting relationship between the investigator and the respondent. This is a strong methodological requirement in the scientific community, even though in practice this agreement takes various forms (written, oral, recorded or not) and there is no code of ethics establishing its founding principles or enacting rules of conduct governing data sharing. This maintains the uncertainty surrounding this relationship of trust, which may be problematic when reusing previously produced data: how to ensure that an agreement that has been tacitly reached between the primary researcher and the respondent remains valid for a second analysis? In the case of the metaproject, the secondary researchers felt that the primary

analysis. In the case of the metaproject, the secondary researchers felt that the primary researchers' involvement in the reanalysis project exempted them from contacting the respondents who were interviewed during the primary research.

However, they still have to observe a confidentiality requirement insofar as the data relates to the private lives of the respondents. As such, interviewees should not be identifiable by people outside the study or by other participants, which is all the more difficult in the field of mobility as these surveys may be focused on localized areas, where the distance between investigators and respondents and between respondents themselves is small. However, total anonymization is difficult to achieve as it requires masking all personal data; it risks undermining the goal of a qualitative and comprehensive methodology that aims to weave networks of meaning among the collected information.

However, different techniques can be used to preserve some anonymity: for semi-structured interviews, researchers can give respondents pseudonyms, but also conceal their address, their employer, their exact age (giving an age bracket instead), etc. As part of the metaproject, the question also arises for GPS traces [2], which can easily identify respondents by reconstructing their places of residence and work. Several methods of anonymization exist, based on the spatial or temporal perturbation of traces and/or stopping points. However, they inevitably alter the possibilities for data analysis, particularly for qualitative analyses that aim to understand traces in relation to their environment and to the territory in which they take place. As with interviews, some degree of perturbation in the data relating to home addresses, workplaces or collection dates helps limit the risk of identification.

• Rules for sharing, disseminating and reanalyzing

Considering the tensions between the scientific benefits of data sharing and the legal, ethical and methodological issues related to the relationship of trust with the respondent, the metaproject researchers proposed several conditions for the proper sharing and dissemination of data.

First, they chose to limit access. They decided that the people who can access the data must be trained in research and competent in the use of qualitative methodologies. In addition, under an ethical imperative, any researcher wishing to access the data must not benefit financially from it.

Second, the data must be used for scientific purposes, which are underpinned by a notion of the common good; this scientific purpose is the basis for the relationship of trust with the respondent, who finds a symbolic reward in participating in a process of public interest. Academic research or an educational project may thus warrant access to the data, but the researchers suggest limiting access to the academic field, due to uncertainties about the objectives of other organizations and the difficulty in assessing their ability to handle qualitative data.

Finally, based on their experience in data reanalysis, the researchers identified some keys to a successful secondary analysis, in particular the need to anticipate the large amount of time it will consume. Exchanges between primary and secondary researchers also play a part in a successful secondary analysis. In order to promote a wider dissemination of pooling and reanalysis, they call for a generalized "normalization" of data (transcription, coding, thematization, inputting into automated analytics software) and for training researchers, including PhD students, in secondary analysis. However, these provisions don't negate the reservations that researchers can feel.

• Factors of subjective reservations

In addition to the difficulties associated with objective constraints, the metaproject team identified a subjective reluctance among researchers to share data. In qualitative research, data collection is based on an interaction between researchers and respondents, where the researchers strive to establish a relationship of trust and reciprocity with the respondents through persuasion, listening, sharing, revealing parts of their own personality, all of which constitutes a process of seduction that they may be reluctant to see exposed. Moreover, this commitment leads researchers to feel a certain emotional attachment to their data that can make them fearful of being dispossessed of it if it becomes available to other researchers, especially since they see little benefit in such data sharing as it is still hardly recognized professionally. These obstacles are entrenched by the hierarchical nature of the academic field, where experienced and well-established researchers have routinely published papers in their own name on the basis of field surveys carried out by young researchers, who therefore risk seeing their prior work being instrumentalized for the benefit of other researchers.

To overcome these reservations, the team first of all calls for the implementation of data management policies either at the national level or within research labs, in order to better support researchers in these efforts. They also suggest better recognition of data sharing as a practice, by enhancing its place in the CVs of researchers published by laboratories and assessment bodies. Finally, making researchers more aware of the benefits of data sharing is another avenue raised by the metaproject team.

• The position of the Mobile Lives Forum

According to the Forum, the legitimacy of the primary researchers as the custodians of the data can be put into question. This role would be recognized because of the trust relationship established with the respondent. However, since the framework and conditions of this trust relationship remain fuzzy, it seems difficult to make this a strong ground for refusing the dissemination of data, insofar as this data is meant to be used in a research project; indeed, the team showed that a person's participation in a research project was a determining indicator of that person's consent to being studied. Because

data sharing is not a legal obligation for researchers, there is a concern that researchers may object to it on questionable personal grounds (e.g., rivalry or poor relationship with the secondary researcher). The ability for the primary researcher to privately manage such data appears at odds with the pursuit of public interest that supports data sharing. It could then be argued that the data should be made available to an academic institution that would ensure that such sharing takes place under the best conditions. In addition, the Forum questions the team's recommended restrictions with regards to sharing data (i.e. sharing exclusively with the academic field and with a competent audience). While it is indeed difficult to assess the ability of an individual or organization to implement qualitative methodologies, such a restriction runs the risk of excluding perfectly competent people. Moreover, insofar as scientific research should benefit all, it seems problematic to restrict data access to a particular audience.

A symposium on these methodological issues was organized as part of the project in November 2018. However, it did not give rise to contributions directly related to the issue of secondary analysis, reflecting how rare this practice is in French mobility research. Here is a link to the conference: https://fr.forumviesmobiles.org/agenda/2018/03/05/mobilites-spatiales-methodologies-collecte-danalyse-et-traitement-16e-colloque-msfs-12371

More information: download the synthesis of this part (in French only)

4. Synthesis

More information: download the synthesis of the project (in French only).

Notes

(1) Unlike traditional approaches to forms of mobility, which focus on analyzing the origin and destination and places visited at the expense of the links, the circulatory approach takes into account the whole route, the paths taken, the stopping points, locations of intermodality, nodes and how these elements fit into the territory that is appropriated by individuals.

(2) GPS traces consist of a set of geolocated points recorded at a frequency of a few seconds to reveal the trips and stops made by the person being tracked.

Mobility

For the Mobile Lives Forum, mobility is understood as the process of how individuals travel across distances in order to deploy through time and space the activities that make up their lifestyles. These travel practices are embedded in socio-technical systems, produced by transport and communication industries and techniques, and by normative discourses on these practices, with considerable social, environmental

and spatial impacts.

More

Movement

Movement is the crossing of space by people, objects, capital, ideas and other information. It is either oriented, and therefore occurs between an origin and one or more destinations, or it is more akin to the idea of simply wandering, with no real origin or destination.

More

Altermobilities

Altermobilities represent all the alternative behaviours to an exclusive use of the private car for travel. They also imply a certain right to be slower, and pre-suppose that geographical and social spaces will be organised in ways that take into account a more limited use of cars.

More

Mobile methods

Mobile methods produce insight by moving physically, virtually or analytically with research subjects. They involve qualitative, quantitative, visual and experimental forms of inquiry, and follow material and social phenomena.

More

Keywords : mobility, lifestyle, automobile, peri-urban, rural, development, data sharing

Disciplines : Humanities, Social sciences, Prospective studies

Transport mode(s) : Automobile

----

[1] mailto:anne.fuzier@sncf.fr

[2] https://en.forumviesmobiles.org/sites/default/files/editor/axe_1.1_-_formes_de_la_mobilite.pdf

[3] https://en.forumviesmobiles.org/sites/default/files/editor/axe_1.2_agencement_de_la_mobilite.

[4] https://en.forumviesmobiles.org/sites/default/files/editor/axe_2_-_vecu_representation_deplacement_v2.pdf

[5] https://en.forumviesmobiles.org/sites/default/files/editor/axe_3_-_apprentissage_potentiel_de_changement_de_pratiques.pdf

6 https://en.forumviesmobiles.org/sites/default/files/editor/livrable_8-axe_methodo_0.pdf

7 https://en.forumviesmobiles.org/sites/default/files/editor/livrable_10_synthese_du_projet.pdf

8 https://en.forumviesmobiles.org/marks/mobility-450

9 https://en.forumviesmobiles.org/marks/movement-460

10 https://en.forumviesmobiles.org/marks/altermobilities-449

11 https://en.forumviesmobiles.org/marks/mobile-methods-697

12 https://en.forumviesmobiles.org/mots-cles/mobility

13 https://en.forumviesmobiles.org/mots-cles/lifestyle

14 https://en.forumviesmobiles.org/mots-cles/automobile

15 https://en.forumviesmobiles.org/mots-cles/peri-urban

16 https://en.forumviesmobiles.org/mots-cles/rural

17 https://en.forumviesmobiles.org/mots-cles/development

18 https://en.forumviesmobiles.org/mots-cles/data-sharing

19 https://en.forumviesmobiles.org/disciplines/sciences-humaines

20 https://en.forumviesmobiles.org/disciplines/sciences-sociales

21 https://en.forumviesmobiles.org/disciplines/prospective

22 https://en.forumviesmobiles.org/modes-transports/automobile