

# Watching Mobile TV in Constrained Telecommunication Networks

Julien FIGEAC

CNRS – Télécom ParisTech, Paris

**Abstract:** This article shows how users adopt Mobile TV in situations of mobility by choosing TV programmes that are adapted to the size of their mobile phone screens and other constraints of daily commuting, including telephone network reception problems, short time slots, etc. It illustrates how users limit "places" where it is relevant to use Mobile TV in urban environments, in accordance with mobile telephony availability, and consequently, how they re-define the places where older forms of media are used. Consumers use media, including multimedia cell phones, and contents suitable to the resources and constraints encountered during their travel times. This article thus identifies the renewal of media preferences and diverse behavioural factors in connection to telecommunication networks. It describes how this type of engagement in media activities relates to a form of strategic media attachment consisting in exploiting utilisation opportunities in augmented urban environments.

**Key words:** media consumers, reception, mobile TV, multimedia cell phone; mobility.

In many countries, users have adopted Mobile TV devices because they appreciate easy and continuous access to TV contents (KAASINEN *et al.*, 2009). In France, few users frequently watch the fifty television channels broadcast by multimedia cell phones. Political control of the telecommunications sector has had a significant impact on the development of this device and this business. It is especially linked to the problems of communications network availability in urban environments and public transport. This explains why this service is consulted as much at home as on the move. For example, teenagers have become accustomed to watching television programmes on their mobile phone in their room, using a wireless connection, when the TV set of the house is not available. Certain users also associate this service with their daily media practices because they use public transport systems to go to their workplace. In addition to listening to music or reading, they wish to be entertained differently when travelling, for example, by watching television.

The goal of this paper will be to analyse these consumers and describe how users develop strategies to overcome important use constraints in order to watch Mobile TV when commuting. Several studies have dealt with these questions. They showed that numerous constraints hinder users from transferring television preferences to mobile phones in situations of mobility. For example, the small size of mobile phone screens (CHIPCHASE *et al.*, 2007), the short time slots in which they are used and the noise of urban environments (SÖDERGARD, 2003) finally prompt users to select programmes that are not at the centre of their television preferences. It has been observed that these use constraints linked to Mobile TV contribute to polarizing this televisual consumption towards the news because these programmes can be watched over a short period of time (KNOCHE & McCARTHY, 2005; OKSMAN *et al.*, 2007). More generally, this factor explains why televisual consumption aligns with users' preferences in terms of usability of Mobile TV devices (FLEURY *et al.*, 2013).

In the continuity of this report, this article will describe how users develop strategies to adopt Mobile TV viewing and adapt their choice of television consumption to mobility constraints. It is not possible to be satisfied in saying that they use this service to avoid being bored, from a desire to relax or let go, or out of simple curiosity or habit without any particular preference (O'HARA *et al.*, 2007). Users employ a strategy in selecting a TV programme that can be watched on the small screens of their mobile phone over short periods while commuting. They denote a "focus, a suspension, a pause in what is happening" (HENNION, 2004) to select a specific television genre (CORNER, 1991) and to evaluate the selected TV programme. Through these strategies, they evaluate which programme is relevant to watch under these practical circumstances. They evaluate which television preferences are adapted to this new screen, which ones correspond to mobility constraints. Thus they review and renew their television preferences.

Contrary to a structuralist vision of media practices, the paper will show how users assume control of the renewal of their media practices and how the practical circumstances and the ecological dimension of daily activities intervene in the dynamic of media consumption. The article will also show how technical mediations play an active role in the daily renewal of media practices. Indeed, the principal use constraint encountered when travelling is the problem of phone network availability. First of all, the paper will show how users strategically overcome this constraint by transforming it into a resource enabling them to explore new contents and new forms of entertainment.

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## **The structuring effects of telecommunication network availability**

This article will study a specific usage constraint/resource: the availability of a phone network. It is a fact that the connectivity of this network is constraining as it makes the use of Mobile TV possible or not. And sometimes, the unavailability of the phone network forces users to switch off a programme, in particular in underground public transport. In "Ubiquitous computing" (WEISER, 1991), from a theoretical point of view, which happens to have preceded the current developments of this service, technologies must be invisible: they must be embedded in usage environments and they must work in the background of the user's awareness. This invisibility of technical mediations can be observed in the uses of Mobile TV because the phone network waves are not perceptible to users. It is the mobile phone that manages the connection to this invisible technical network. In addition to this invisibilization of technologies, "ambient intelligence" (DEY *et al.*, 2001) proposes to develop technologies able to determine, by inference, what a user does in a context, or tries to do, in order to offer him use of the best-adapted service. Mobile services are not (yet) able to produce such usage opportunities in proposing the relevant service to use depending on the activity of the user, the type of phone network available, the force of the signal, the place, the time of day, etc. These adjustments must be completely made by the users. They must evaluate, among the media supports and the services available during their journey, which use is relevant in regards to the practical circumstances.

This path of research can be explored in the prolongation of "Ubiquitous computing" by observing how users resort to various opportunities of usage offered to them while commuting. The objective is to pinpoint how the invisible work of technologies develops urban environments (HARRISON & DOURISH, 1996; DOURISH, 2006) by changing the way people generally move in cities and use public transport. The city can be divided into multiple territories according to their technological equipment and the diversity of usage opportunities it produces. For example, railway stations form territories rich in opportunities because they are equipped with multiple communication networks: radio, telephone, GPS and, more recently, Wi-Fi hotspots. It thus becomes interesting to describe how users demarcate "places" (HARRISON & DOURISH, 1996; DOURISH, 2006) in urban environments by territorializing their various media activities around the usage opportunities produced by technology.

This article will show how users delimit places to use Mobile TV. The users who replace reading the press with watching Mobile TV will move

differently in urban environments. They must evaluate the phone network reception in order to watch a televised programme. To do so, they will decode the graphic indicators of his mobile phone interface. Even if these indicators show the availability of Mobile TV at this precise moment, they do not provide any information on its evolution during the itinerary. As this technological resource does not enable them to coordinate its uses with the itinerary effectively, the users must extract the indications that deliver information on the (future) availability of Mobile TV from the urban environment. The indications they will exploit are those they use to follow their routes (the name of the stations, the indicators of places, etc.). It is through them that they will identify the relevant "places" to watch Mobile TV.

This paper focuses on the availability of the phone network to describe how users proceed to evaluate the connectivity of this technical mediation and, consequently, to evaluate the relevance of Mobile TV use in these practical circumstances. The paper will show how users demarcate "places" dedicated to the use of Mobile TV while describing how they index their television reception on the availability of this technical mediation. Through these two parameters of Mobile TV and its territories of use it will be shown how this service supplements, or to replaces, the media activities previously developed by the participants in their trajectory of utilization.

## **Methodology**

The results are taken from a study made with a sample of 15 Mobile TV subscribers. This sample is primarily constituted of technophiles, i.e. users from 25 to 45 years old, college graduates, with a professional occupation in a large, French conglomeration in Paris.

To observe their uses in situations of mobility, we carried out ethnographic observations using camera glasses. These enable the analyst to record the evolution of the subjects' visual field in a specific situation and capture their engagement from their subjective perspective (LAHLOU, 2011). Several groups have also used them to study mobile phone uses in natural settings (MARK *et al.*, 2001, RELIEU, 2002), either alone or coupled, to log data (ZOUINAR *et al.*, 2004). In this research, the users were to film their journeys in public transport for one week. The video database is based on round trips made between their residence and their workplace. It represents approximately 80 hours of recording.

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These video recordings enabled to describe how travel directs Mobile TV uses and, reciprocally, how the methods of using this service orient how one travels in urban spaces. To show engagement in this form of multi-activity, first the movements of users in public transport are described: their bust and head movements, their visual commitments and their quick glances (SUDNOW, 1972). While describing how a user stops looking in the direction of his telephone screen to look at the platform or the name of a station, shows how his attention is diverted from the activity of following his route to focus on the television reception activity. Then, when describing how he once again looks at the screen, which was kept within glancing range, the sequential organisation of this form of multi-activity is recomposed to show how the distribution of visual engagements, between the uses and the itinerary, takes the form of a succession of "logical" operations, preceded by body positioning.

To describe engagement in this form of multi-activity, the participants were shown the video recordings of their activities. The objective was to have them explain their intentions and their tactics, using the method of "self-confrontation interviews" (THEUREAU, 2006).

This method was developed by ergonomists. It leads the user to discover the parameters contained in the situational ecology orienting his practices. Using the recordings, he can clarify his activities as he discovers them. This is why self-confrontation interviews constitute a resource in understanding how media activities and television tastes are positioned. Interviews, questionnaires and logbooks are not very useful in understanding the ecological setting of media activities. The ethnographic observations are also too far from the participants' activities to make it possible to observe these settings. For example, with them it is impossible to understand how users articulate reading a newspaper and Mobile TV reception around information from their mobile phone network indicators. Only the video recordings, coupled with self-confrontation interviews, show the action of these technological and ecological variables in the uses and in the reconfiguration of media activities.

## ■ The organisation of media practices using communication network availability

As the members of the sample chose to watch Mobile TV while commuting, they partially reconfigured their old media practices. This phenomenon is explored in examining the case of Linda, a 42-year old receptionist, because she develops the most complex media strategies, perfectly characteristic of the practices observed in the sample. The method based on video recordings invites the authors to finely tune the analysis of this one case in order to describe in detail the spatiotemporal organisation of uses during daily commuting. Instead of multiplying the examples as part of a quantitative approach, the goal here is effectively to report on contextual strategies and practical details of the organisation of media practices with one example. These detailed descriptions allow the contextual settings to be described that structure the practices of other users in the sample and, more generally, the appropriation of Mobile TV devices.

In describing the video recordings of Linda's uses, it will be shown how she re-organised her media activities by alternating her reception of various media (press, radio and Mobile TV) according to phone and radio network receptivity. These descriptions then illustrate how she redirects her media activities four times, during the 80 minutes between her residence and her workplace, according to the reception or the unavailability of telecommunication networks (see diagram 1 in the Appendix). The objective is now to describe the sequential organisation of her media practices.

Ever since she has been able to watch television on her mobile phone, Linda has not performed the same ritual before crossing the "threshold" (THIBAUT, 1994) of her residence because she no longer spends her travel time reading. She relies on her new telephone in order to replace reading magazines with watching Mobile TV. Even if she no longer takes magazines with her, she still reads while commuting. She now picks up the free daily newspapers that other passengers have left on the seats of the tube. Consequently, in the morning she enters the underground train searching for a seat where there is a free daily newspaper (photo 1).

Once she has found a newspaper, she does not read it immediately. She keeps it on her lap in order to read it later on (photo 2). In other words, she carries out a "preparatory gesture" (DATCHARY & LICOPPE, 2007): she keeps this media resource and thus shows her intention to use it at another time (during this trip or, later, at her workplace or at home). It is important to

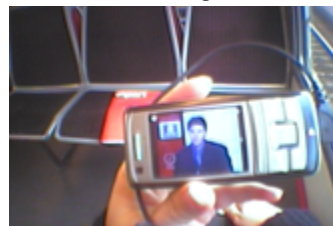
realize when and in which practical circumstances this anticipation of reading the daily newspaper will take place.

Once seated, she immediately takes her telephone to watch "Télématin", a channel France 2 newscast (photo 2). During the self-confrontation interview, she says that she continues watching television, an activity that she had begun during breakfast with her husband and children. Furthermore, she likes to immediately watch Mobile TV because her favourite television programme (the TV news "Télématin") begins at the exact same time she takes the Metro. In regularly taking this route, she has learned that she will not be able to watch Mobile TV at the end of fifteen minutes, when the train runs beneath Paris. Consequently, she watches Mobile TV as soon as she sits down in the train because she likes this TV news programme and knows that it will be impossible for her to use this mobile service afterwards. Indeed diagram 1 (in Appendix) shows how this receptionist watched Mobile TV for 13 minutes between the moment she took the train (8.00 A.M) and the moment she did not have access to the phone network, just after the "Télématin" TV news. It is relevant to understand how this user anticipates the unavailability of the phone network to switch off Mobile TV before using another media. How is this anticipation deployed in regards to the practical circumstances of which it takes advantage?

**Photo 1: Linda picks up a newspaper**



**Photo 2: Linda watches a newscast before sitting down**



This question will be answered using the video recordings because they allow the description of the sequential organisation of this transition between these two media activities, i.e. the end of Mobile TV reception and the beginning of her reading the daily newspaper. The goal here is to show which elements of this usage situation the receptionist perceives as relevant in operating this transition and how this transition is indexed on the availability of the phone network.

### **Pragmatic strategies for dealing with the availability of telecommunication networks**

The transcription of the video recording of her trip to work (diagram 1) allows to answer these questions. Once seated in the underground, she watches the televised news while keeping a free daily newspaper on her lap.

The connection to the programme lasts approximately 2 minutes 40 seconds between the moment she launches it and the moment the TV news appears on the screen. She watches this programme for one minute before losing the connection. She needs one additional minute to restore it. She watches it again for four minutes and 44 seconds before losing the Mobile TV connection once again.

This second disconnection occurs 30 seconds after the underground leaves the station "Bibliothèque François Mitterrand" ("BNF"). During the self-confrontation interview, she specifies: "Here, it cannot be picked up any more (Mobile TV) so I listen to the radio". That proves that she had anticipated the unavailability of Mobile TV because she identified this area as a borderline: "after the BNF nothing can be picked up any more". When she crosses this borderline in going to the office, she says she stops using Mobile TV before launching the "radio" function of her mobile phone that she will listen to while reading a newspaper.

However, the transcription of this journey shows that she tries to connect once again to Mobile TV even if the underground has left station BNF for 45 seconds, in other words once she crossed this borderline. The launching of the connection lasts approximately one minute until she can watch the televised news again. But, as she could have predicted, she succeeds in watching it for only seven seconds before the programme is cut off. It is only after this ultimate attempt that she decides to listen to the radio with the FM Tuner of her mobile phone. As usual, she activates the radio to listen to it while she reads her free newspaper. She opens the daily newspaper 20 seconds later when the underground arrives in the Austerlitz station and when the Mobile TV reception becomes definitively impossible. It is consequently in these practical circumstances that she reactivates the reading activity that she had left on standby 13 minutes before in a preparatory gesture.

The transcription of this sequence reveals better why she was hesitant during the self-confrontation interview: "it picks up often in fact, it picks up until the BNF, from there, after passing the BNF, it does not pick up, near



Austerlitz nothing can be picked up any more". She knows that connection with Mobile TV will be difficult at the BNF station, but she is not completely sure. But she is certain she cannot launch Mobile TV when she is in the following station, Austerlitz. Why is it so difficult for her to identify the exact moment when the phone network is no longer available? And, consequently, why does she try day after day to restore connection to this service in an area where phone reception is difficult?

It appears in fact that she does not try to optimize these transitions between Mobile TV, the radio and the newspaper, even if she has identified the borderline where she will be forced to change media activities. The imprecision of this border is not a problem for her. On the contrary, this imprecision enables her to test, day after day, the technological mediations which connect her to media activities: she continues to handle her telephone to test it; to understand whether the connection problems are related to her telephone or the phone networks; to spot whether the telephone operator has deployed the Mobile TV network in this area; to check if this service is usable in the underground systems in Paris; to re-evaluate the borders between Paris (where Mobile TV is unavailable in underground systems) and the suburb where she lives (where this service can be consulted in overland transport). This contribution will now describe how she tests these technological mediations, which frame her media activities, before showing, in the last part, how this test leads her to re-qualify the places of her media practices (De CERTEAU, 1980; HARRISON & DOURISH, 1996; DOURISH, 2006).

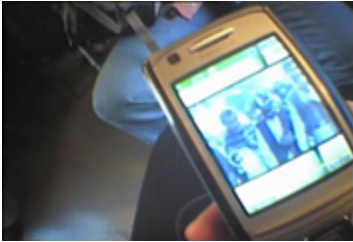
### **Strategies related to the network indicators**

Users can evaluate the intensity of the phone network with two indicators posted on mobile phone screens. The first indicates the type of phone networks to which the telephone is connected (EDGE, 3G, 3G+). The second indicates the intensity of the signal of this phone network.

Using the video recordings allows to observe that Linda is connected to Mobile TV when these indicators show her that this service is available. When she is in an area where she knows from experience that Mobile TV is unavailable, she will try to launch this service if these indicators show her that the phone network is (temporarily) available. For example, during the self-confrontation interview, she said she had identified the fact that Mobile TV was unavailable between the BNF and the Austerlitz station. The phone

network indicators, located at the top left of the screen (photo 3), clearly indicated the loss of the signal to her when the TV news stopped (even if network indicators are not really visible in these screenshots, they are clearly distinguishable from video recordings). Just after-wards (photo 4), these indicators showed her that the network was available again. Consequently, she tried to connect to Mobile TV even if she knew that this service is usually unavailable at this place. This graphic information made connection to the service relevant under these practical circumstances.

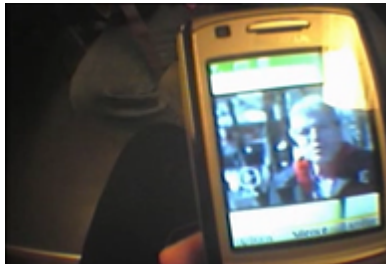
**Photo 3: Loss of reception**



**Photo 4: Reception picked up again**



**Photo 5: Loss of reception**



In the same way, when the service stopped after this last connection, these indicators showed once again that phone networks were unavailable (photo 5). Thus they contributed to dissuading her from using Mobile TV. They encouraged her to read a newspaper and use the radio function on her mobile phone.

These indicators form relevant support to evaluate under which circumstances she can (or cannot) watch Mobile TV. However, they indicate to users that reception is not possible once the service is blocked, the programme stopped, the image immobilized. This information appears too late to allow users to anticipate this unavailability of Mobile TV. The limit of these indicators is to reveal instantaneous information, relating to telephone signal reception at a precise moment, without specifying the degree of

receptivity of the signal in the minutes to come. This information would be useful for a user who would like to watch Mobile TV in the Metro. An indicator could provide this information to the user if his trip was traced, the orientation of his journey predictable, his stops in the stations anticipated and the speed of his movement calculated to indicate to him how long he would be in this area where Mobile TV is available. In other words, no technological mediation can fulfil this function (legally).

Consequently, users must seek other resources to anticipate the evolution of telephone signal reception to evaluate if it is relevant or not to start watching Mobile TV under these circumstances. To anticipate the connectivity of this invisible technical mediation, they identify the environmental indications that give information on telephone signal fluctuations. That will be describe in the following section.

### **Strategies related to the ambient environment**

In addition to the indications given by network indicators, users seek indications in the surrounding environment that help them anticipate the availability of the phone network at moment T+1. Then they attribute the information given by the telephone interface to the place where they are.

A large variety of information can be used to identify a place. It is difficult to categorize all the architectural elements, or other indications, making it possible for a user to know where he is in his daily trip. For example, it is not possible for us to identify the various indications from which Linda identifies the BNF station. However, it is through them that she can identify the places where she will be able to watch Mobile TV and to define the borders where she must use another media. If it is impossible to study all the parameters that enable her to identify the places of use for Mobile TV, it is possible to isolate one. The person who often takes the same route can move while watching Mobile TV. She manages her activities using the perceptible light around the screen of her telephone. Like all users, Linda thinks that connection to Mobile TV is possible when public transport runs above ground. On the other hand, she thinks that connection is interrupted when transport moves underground. Consequently, she relies on this indication formed by light variations in order to direct her media activities:

J.F.: "And there you are watching TV..."

L.: Exactly, there the RER is outside so I start watching TV."

If we take another look at her last connection to Mobile TV in light of this indicator, it appears that she begins this use when the underground has been above ground for more than 10 seconds. However, when connection with TV news is established, the underground has just entered a tunnel. Consequently, when the reception of this programme stopped seven seconds afterwards, this indicator dissuaded her from attempting connection once again because the train had moved underground. This example illustrates how external light is used as an indicator, which is both relevant and problematical, regarding phone network availability.

First of all, this example shows how variations in luminosity, between the light of day and the semi-obscurity of tunnels, can influence the deployment of various uses. When the user is focused on reception, he can very easily locate these variations. In this example, Linda does not move her eyes from her telephone screen. She does not need to look outside to find her location because she can identify, through the rays that light the underground train, her departure from the BNF station. Day after day, she sees in these light variations an indicator showing phone network availability. This supplements information given by network indicators while enabling her to anticipate Mobile TV connectivity at the precise moment T+1, i.e. when the RER train heads above ground.

This example also shows how this information that users extract from external light is problematic. The fact that the RER moved above ground supplemented the information delivered by network indicators, leading her into error, because she could not watch the programme for more than seven seconds. For this reason, the participants test the phone network availability day after day because no indicator enables them to precisely anticipate these interruptions in connection. Uncertainty involved in the appropriation of Mobile TV shows us that the "logic" behind utilization proceeds from indications extracted from the situational ecology. However, these indications direct the course of action towards a model that differs from Gibson's theory of perception (GIBSON, 1979). Gibson defined the concept of "affordance" as a quality of an object, or an environment, which allows an individual to perform an action while considering the information given by an affordance directs the single activity of a person who is moving. Consequently, the light rays of an affordance overlap a coupling of perception and action without the mediation of reflexivity being necessary; this is the case when, for example, a door handle is grasped.

In this case, variations in luminosity in the underground train direct two activities at the same time. The participants make use of these variations to

exploit various uses and choose their itinerary. Luminosity transmits information on the phone network availability for the person who, in an urban environment, intends to manage these two activities simultaneously. This indicator is not useful for a user who is in a stopped train because information from telephone network indicators is enough for him. The relevance of this indicator comes from this mode of involvement in this form of multi-activity. It gives information to the participants who manage their journey on a peripheral level of attention, around the Mobile TV screen on which they are focused. The light gives information to the user who awaits its appearance because he makes use of it like a reference mark that determines the orientation of its uses. Consequently, mobile TV reception is embedded in a form of multi-activity because the indicators used to manage it are also used to manage the journey.

## ■ The appropriation of mobile TV creates new forms of mobility

This contribution is based on the description of the commuting of a participant between her residence and her workplace. Since she has started watching Mobile TV, she does not wait for the underground train in the same station as the one she chooses to return home in the evening. Before using this service, she waited for the underground on the Boulainvilliers station platform. During this wait, she read a newspaper or a magazine. She let the trains that went in other directions of the underground line go by and took the one that stopped at her destination.

When she started using Mobile TV, she reconsidered the itinerary because the telephone network and the radio network were unavailable in this station. Now she enters the first train that stops at this station, no matter what underground line it serves. Then, she makes an intermediate stop in another station to take another train that stops at her destination. She selected this intermediate stop according to Mobile TV availability. As the phone network is available in the aboveground stations, she chose to change trains at the "Champs de Mars" station near the Eiffel Tower. As this station offers a beautiful view of Paris, she can take advantage of the panorama while watching her favourite television programme (photo 7).

She thought of taking this initiative once she had the opportunity of watching Mobile TV. To use this service, she reconsidered her itinerary by

modifying her habits. She reconfigured her trip around her attachment to television programmes and phone network availability. In this manner, this itinerary leads to increased mobility (LICOPPE & INADA, 2006) through the use of new technologies. The journey is no longer calculated according to a purely strategic logic of connecting two destinations as quickly as possible. This search for performance is secondary compared to the pleasure felt watching television because she is entertained during the time spent in transport. This is why she now reorganizes commuting time around the requirements that must be respected in order to watch Mobile TV.

**Photo 6: Linda stands near the departure board**



**Photo 7: Linda is about to watch a television programme**



It is her engagement in this form of multi-activity that made these two communication networks, the phone network and the transport system, converge around this particular place. The place where she stops to watch Mobile TV (photos 6 and 7) is closely linked to this form of multi-activity. She stands near the arrival and departure board to be able to keep an eye on the arrival of the train (photo 6). Through her preoccupation with the activity which she will soon focus on (entering the train), she defines the temporal horizon of the reception activity in this intermediate place. This example shows once again how the activities of reception and commuting overlap to form a multi-activity, because the control of the first activity interferes with controlling the second, and vice versa.

The uses of Mobile TV modify the choice of intermediate stations and the way in which these places are used. It is interesting to see how these places will affect, retroactively, the uses of this service:

L.: "There I stop at the Champ-de-Mars station. In fact, I could have continued to the BNF station, but I preferred to stop, the weather is nice and all, and what's more, I could watch TV. [...] But it is not only because of that, it is also because the station is outside and the weather is nice. So I can watch TV while soaking up the sun.

J.F.: And that is why you turned and faced the landscape?

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L.: Yes, it is. Here, facing the sun, facing the landscape, the Seine river... In spite of the noise of cars and the train..."

She appropriated this "place" (HARRISON & DOURISH, 1996; DOURISH, 2006) because it allowed her "to watch TV facing the sun [...], facing the landscape, the Seine river... In spite of the noise of cars and the train..." Consequently, she did not choose this place only because the communication networks were accessible but also for its "atmosphere" (THIBAUD, 2002; THOMAS, 2010). She said during the interview that the perception of the sunshine in this place appears to her, retrospectively, as the main reason for which she left the underground to continue watching TV on the platform: "the weather is nice and all, and what's more, I could watch TV".

This example shows that the atmosphere of the places where Mobile TV is used is important in understanding its appropriation. Light is not only an indicator of phone network reception. The bright sunlight over-exposes this place. It makes it prominent, on a practical level, and makes it conspicuous, on a subjective level, as a place of exposure allowing her "to get some sun".

It is necessary to show how technical mediations converge with the atmosphere of the places so that they can be suitable as "places" to use Mobile TV. If it is relevant to continue the paradigm of increased mobility, while describing how the uses of Information and Communication Technologies (ICT) transform urban mobility, it is also necessary to describe how the "emotional tonalities" (THIBAUD, 2002; THOMAS, 2010) of urban environments influence the uses of these technologies. These emotional tonalities do not have direct impact on the televisual content choices. However, they enter into forming media tastes because they induce pleasures which bind a user to a media practice and affect his value judgments: to enjoy one of her favourite television programs "facing the sun, facing the landscape, the Seine... In spite of the noise of cars and the train...".

## ■ Conclusion

Analysing video recordings of Mobile TV uses in daily commuting shows how the users strategically organize their practices with the resources of telecommunication networks and the constraints of mobility settings. Users redefine their itineraries in public transport to be able to watch their favourite

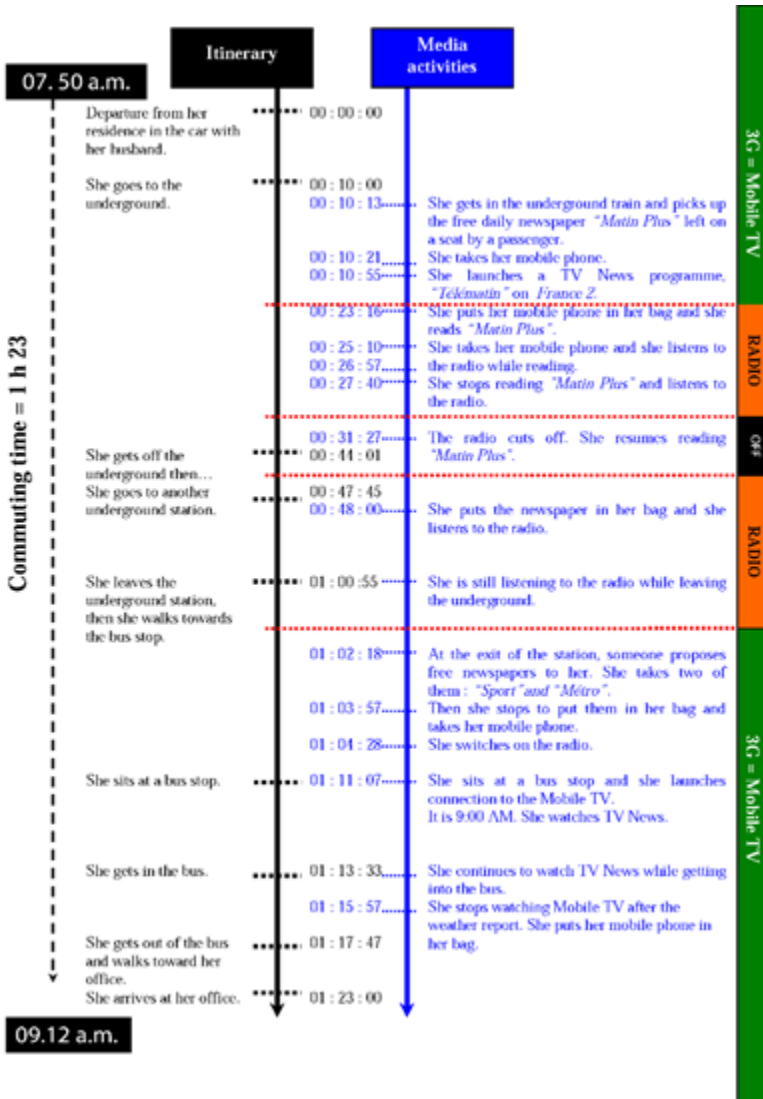
TV programmes. They exploit, as strategic users, the availability of the phone network by stopping at the stations where Mobile TV reception is available. They adapt to this constraint in preserving their old media practices to be used during the temporal gaps during which Mobile TV reception is impossible. Consequently, this technical mediation partially structures contemporary forms of increased mobility. It contributes to generating new itineraries in urban environments by directing Mobile TV users towards certain stations, by defining the phases and "places" (HARRISON & DOURISH, 1996; DOURISH, 2006) where the uses of various media become relevant. These mediations fulfil this function if users give them this capacity, if they exploit them as strategic users to renew their media activities during their journeys.

This analysis based on video recordings shows how the appropriation of a mobile device depends on the availability of cell-phone networks and, especially for applications requiring the highest bandwidth capacities, how this connectivity must be understood in relation to the means of transport taken by users. This shows how the usability of such devices must be studied in relation to natural settings of daily commuting in order to account for the structuring effects of usage constraints. As it appears here with the French example, this study reminds one of how business models of mobile phone applications should also include constraints related to telecommunication infrastructure variables because these problems tend to persist despite the optimization of networks, especially when users take the underground transport system. From this point of view, an intercultural comparison is particularly relevant because it shows how the usability of a device can actually vary from one country to another depending on the availability of cell-phone networks in a specific urban environment. Business models must also include dominant patterns of mobility in each country as they are structured around the individual and collective means of transport.



Appendix

Diagram 1 - Linda's trip between her residence and her workplace



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