

LA PART (fantasm)ODORIFIQUE DE L'ENVIRONNEMENT | OUR (fantasm)ODORIFIC ENVIRONMENT

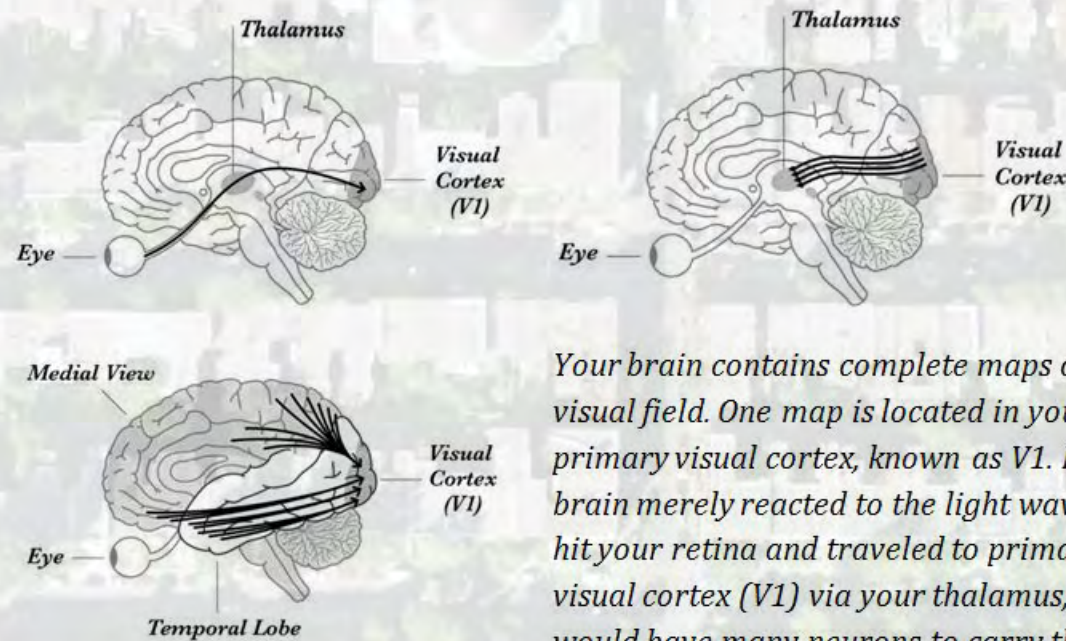


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The brain receives more input from itself than from the outside world.
Let's take the visual system as example:



Your brain contains complete maps of your visual field. One map is located in your primary visual cortex, known as V1. If your brain merely reacted to the light waves that hit your retina and traveled to primary visual cortex (V1) via your thalamus, then it would have many neurons to carry that visual information to V1. But it has far fewer than one would expect (top image), and ten times as many projections going in the other direction, carrying visual predictions from V1 to the thalamus (center image). Likewise, 90 percent of all connections coming into V1 (lower image) carry predictions from neurons in other parts of cortex. Only a small fraction carries visual input from the world.

Lisa **Feldman Barrett**, 2017. *How Emotions Are Made: The Secret Life of the Brain* / The origin of feeling (Figure 4-1), New York: Houghton Mifflin Harcourt, p. 61.

A large number of studies suggest **a close relationship between the treatment of olfactory and affective information.**

Contrary to the vision, which pathways go through the neo-cortex before reaching the amygdala, our olfactory system has a direct connection with the latter, which is an essential cerebral structure in the decoding of emotions. Therefore, a perceived odor causes a pre-conceptual emotion in the first place, whereas what is visually perceived immediately leads to a cognitive analysis.

Because **the olfactory input**, encoded initially by a sensory neuron of the nasal mucosa, **transmutes into a molecular image** in the glomeruli of the olfactory bulb, we are able to interpret the smell. This image, equivalent to that produced in the areas of visual association of the brain, then passes in the olfactory cortex to carry out a work of memorization.

Thus, **scents are linked to** a complex web of mental representations defined by **our experiences but also** by **our imagination** that drives us to project ourselves mentally into a possible future or not.

The bottom line is, we perceive the world as we are disposed to understand it. What we encode in our mind depends on our past experiences, our knowledge, and our needs. Reality is a subjective structure that can vary greatly between individuals

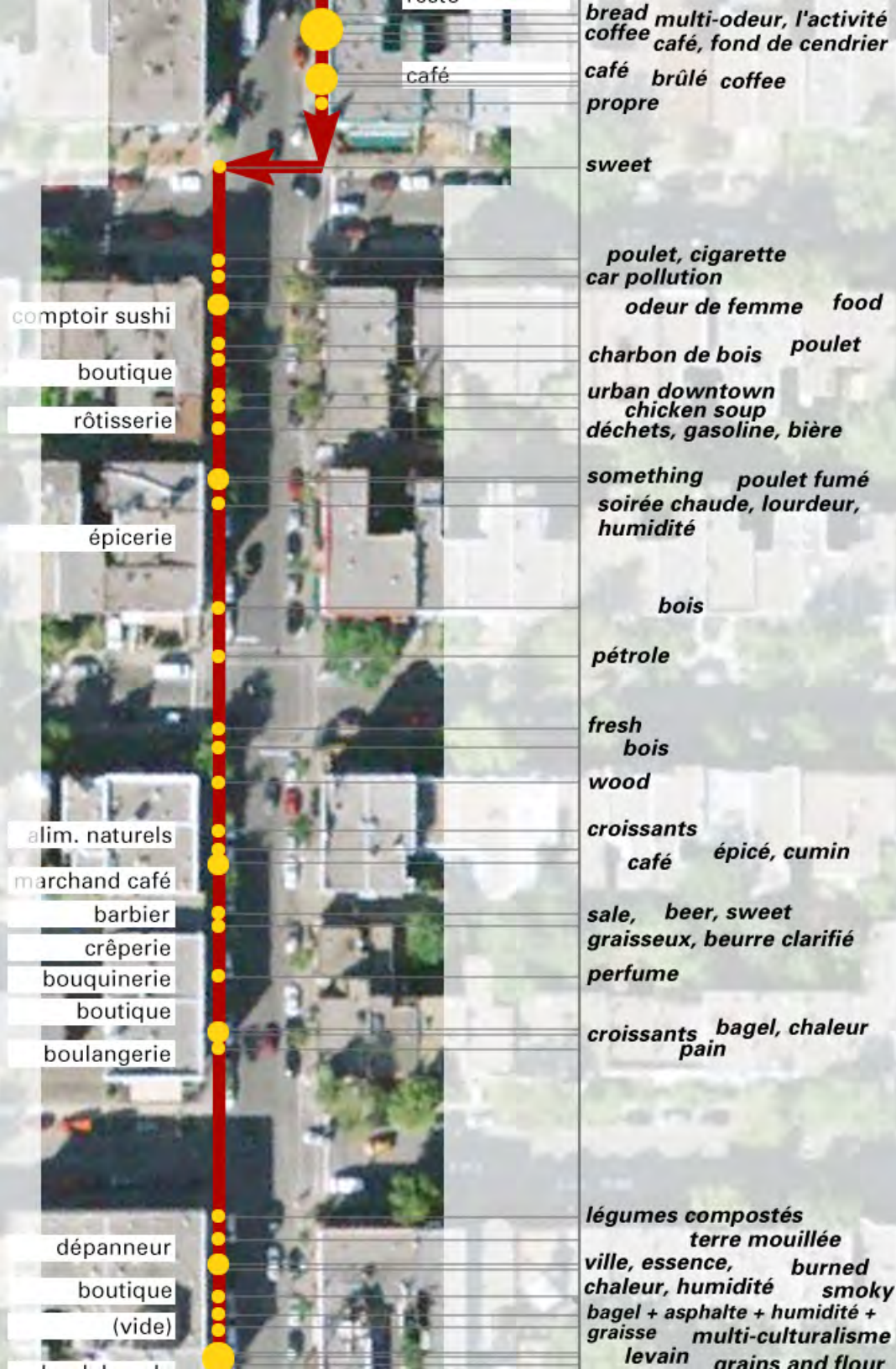
The reality of **the environment** **is** shaped by the unstable ground of our memory which follows various temporal rhythms.

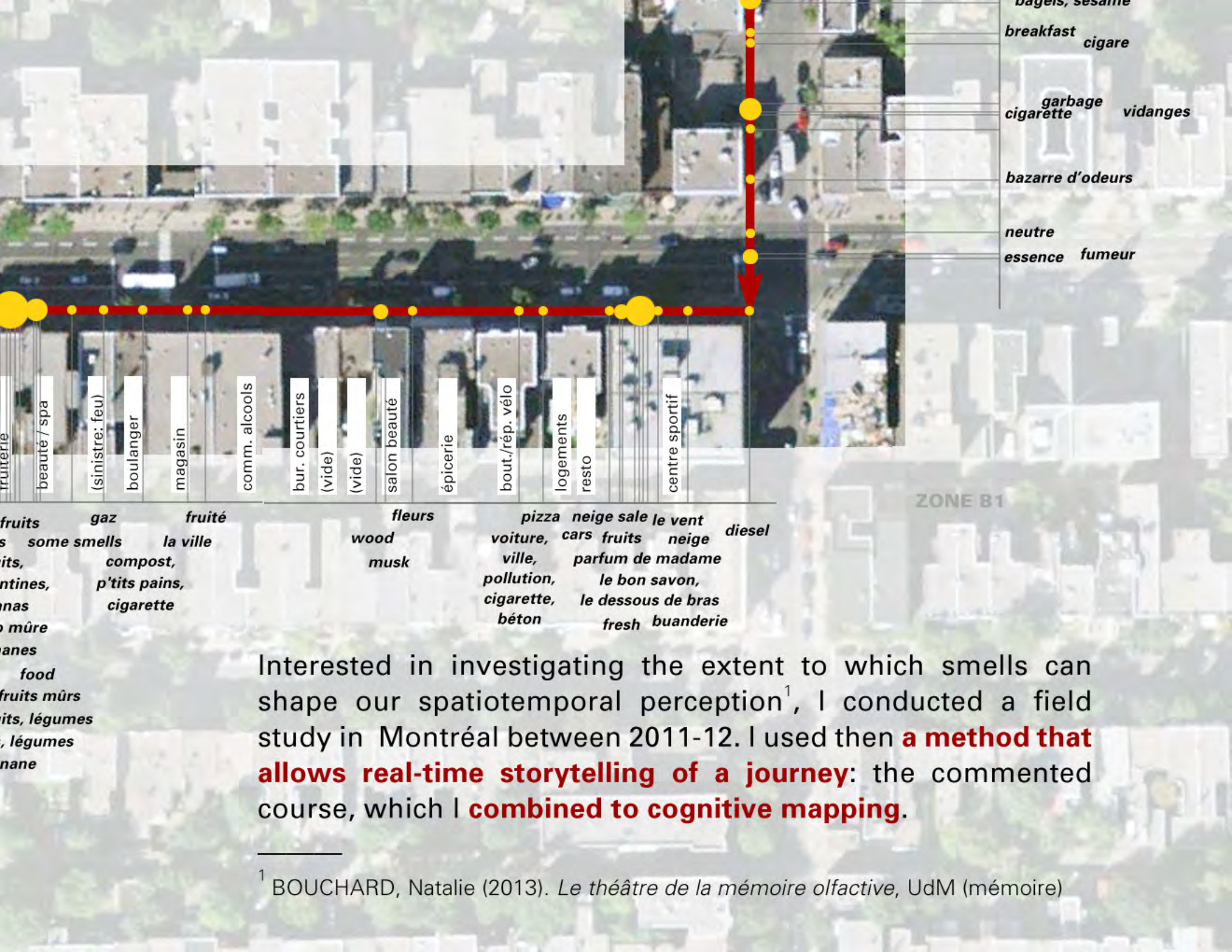
Its geometry is static, yet **constantly flooded by various dynamic atmospheres**; thus, it transmits a range of signals which are all possibilities for the individual to make sense of the space.



By maintaining close ties with imagination and memory, olfactory fluxes exert a significant influence on our definition of space.

Forming an intangible topography in motion, **smells allow a form of circulation in the temporal thickness of the environment.** In other words, the fragrant harmonies we perceive continuously allow us to evolve, by conscious or distracted mental projection, between the virtual planes of countless places we have encoded in our memory.





truiterie
 beauté / spa
 (sinistre: feu)
 boulanger
 magasin
 comm. alcools
 bur. courtiers
 (vide)
 (vide)
 salon beauté
 épicerie
 bout./rép. vélo
 logements
 resto
 centre sportif

bagels, sesame
 breakfast cigare
 garbage cigarette vidanges
 bazarre d'odeurs
 neutre
 essence fumeur

fruits
 some smells
 la ville
 gaz
 compost,
 p'tits pains,
 cigarette
 fruité
 fleurs
 wood
 musk
 pizza
 voiture, ville,
 pollution,
 cigarette,
 béton
 neige
 cars fruits
 parfum de madame
 le bon savon,
 le dessous de bras
 fresh
 le vent
 neige
 diesel
 buanderie

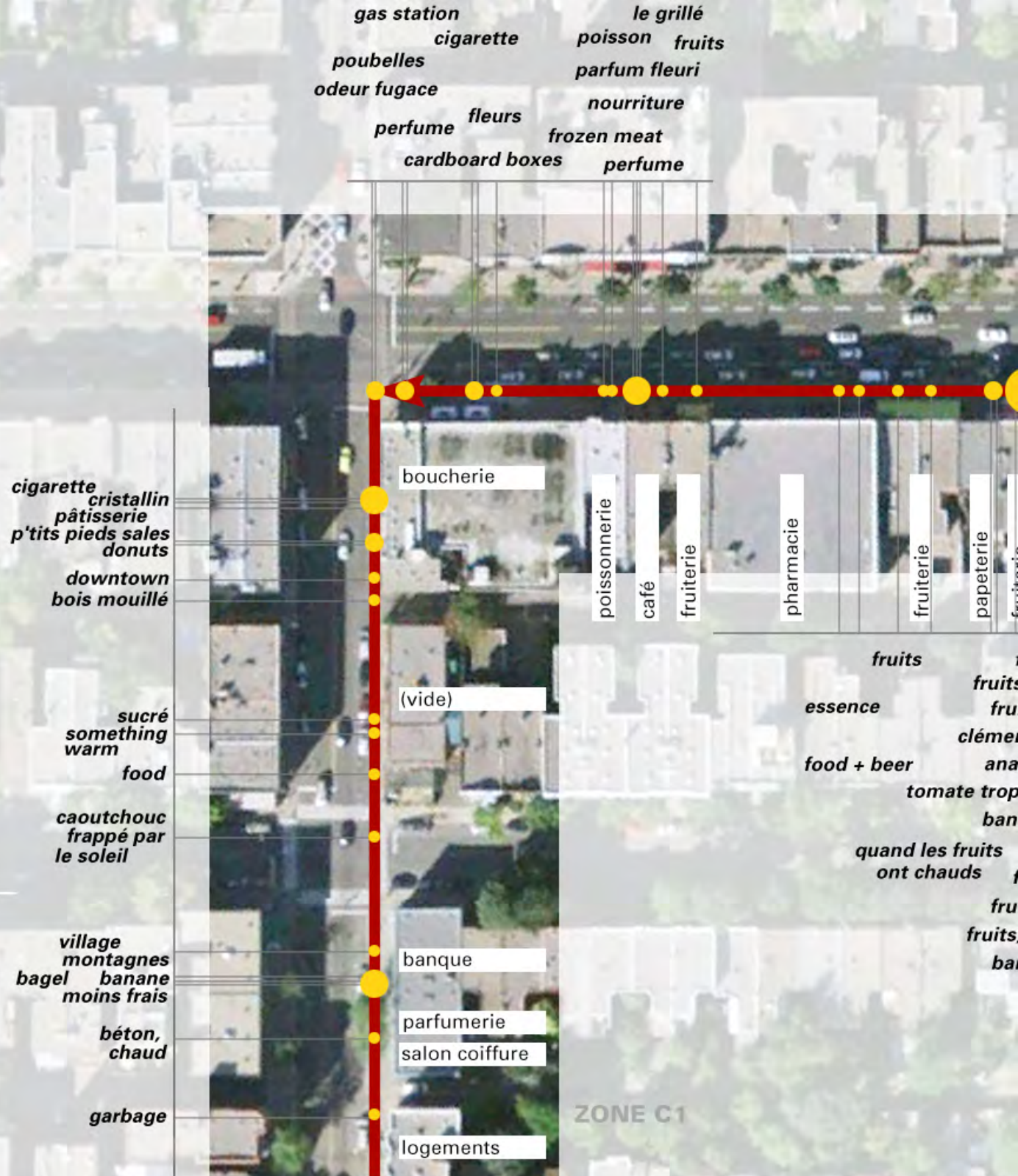
ZONE B1

Interested in investigating the extent to which smells can shape our spatiotemporal perception¹, I conducted a field study in Montréal between 2011-12. I used then **a method that allows real-time storytelling of a journey**: the commented course, which I **combined to cognitive mapping**.

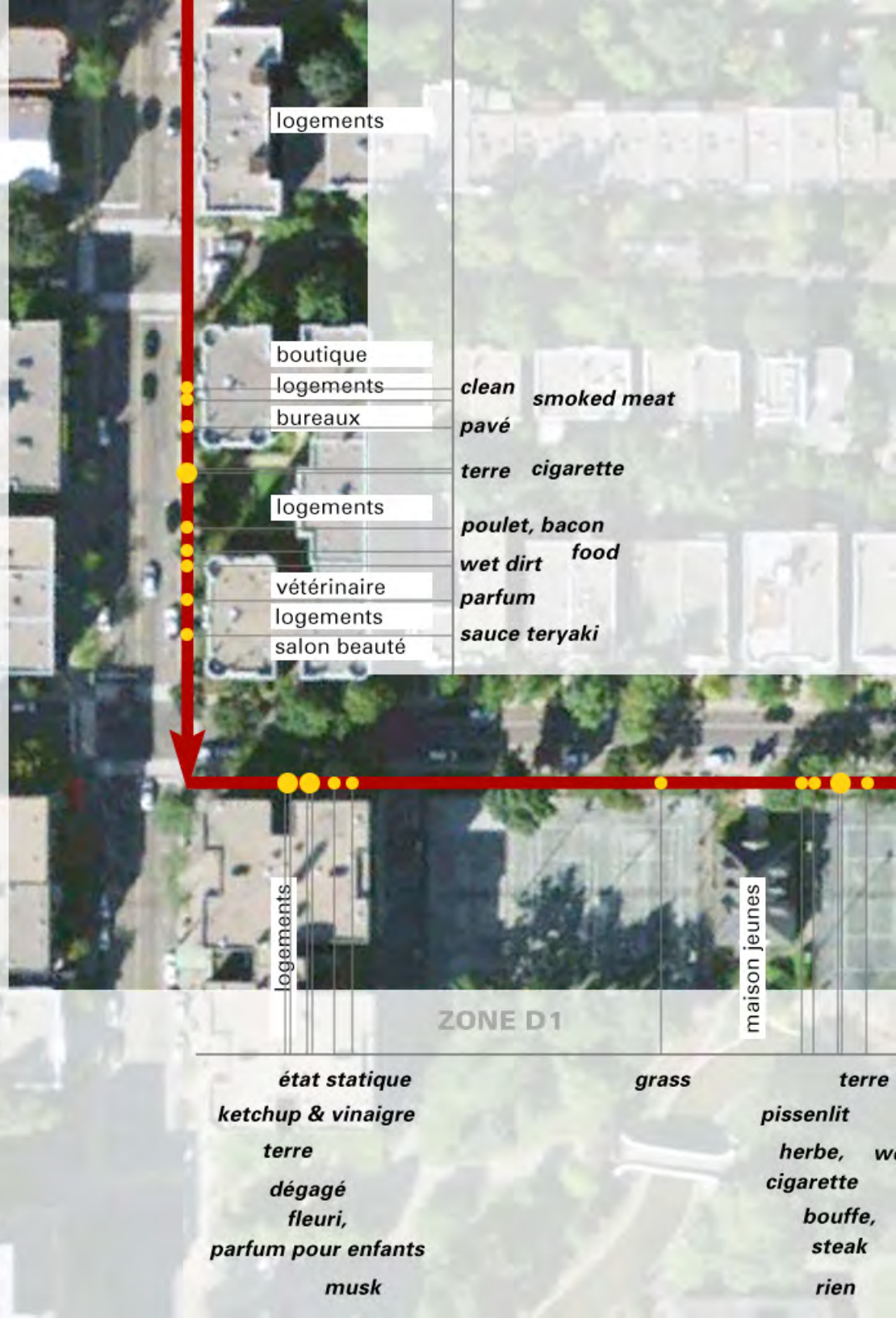
¹ BOUCHARD, Natalie (2013). *Le théâtre de la mémoire olfactive*, Udm (mémoire)

To get as complete a range as possible of the olfactive topography of the route, the survey took place during three seasons: winter, spring, and summer (2012).

Thus, each participant —on a total of twelve— made the route under different weather conditions, and hours.



The significant quantity of oral data collected brought me to stage graphically the perception of the participant on an aerial map. In transcribing each of the commentaries at the place where it was expressed, I was able to confront the reality of the individual with the reality of the space. Like **a universe of narratives**, every route takes thus the shape of a large format poster **that shows the intimate relationship that is built between the individual and the space** he perceives.



The superposition of all maps in the end revealed the topography of a smellscape that was representative of a collective olfactory memory.

The narrative mapping procedure established to analyze the data was a very efficient tool for my investigation.

The Olfactory Memory Theatre:

excerpt of two routes. One expressed in French by a Francophone participant; the other in English by a Hispanic participant. © natalieb 2012

participant #10-OP
 age: 34 sex: M
 ethnic group:
 latino (Mexican)
 departure time: 18:23
 date: 07/08/2011
 season: summer
 weather: light rain
 • 23°C
 • wind N-19km/h
 • 78% humidity level
 spoke in English →

participant #07-ET
 âge: 53 sexe: F
 groupe ethnique:
 Québécoise (née au QC)
 heure de départ: 20:04
 date: 07/06/2011
 saison: printemps
 météo: ensoleillé
 • 27°C
 • vent SO-17km/h
 • 42% taux d'humidité
 s'exprime en français →

banane!
 odeur de
 prendre
 s'autres
 e jeune,
 anane et
 avec une
 squ'à ce
 raiment
 illement
 ne écran
 e donne
 inger un
 anane et
 s (rires). (laughs).

I can smell fruits. It reminds me of a market, but not a closed market, an open market. And most especially it brings the picture of a lettuce to my mind



right now I don't smell anything.

pas évident de ne pas se laisser influencer par les sons ou par ce que je vois...

that small smell reminded me of Mexico City. Like being downtown. I don't know why. Probably because of the pollution of the cars.

rien de particulier sauf un fond d'humidité.

again, that car pollution smell. It reminds me of a city.

encore! c'est dommage! une bonne odeur de poulet et encore la cigarette qui est derrière. Ça me défait toute le plaisir de cette senteur-là.

toujours les mêmes odeurs d'une soirée chaude, lourde... humide... ça me fait penser à des goutelettes.

that smell reminded me of wood, all wood. Yes. Basically wood. Yes.

I can smell some perfume. It reminds me of being inside a mall, where you have all the cosmetics. Probably the women over there have perfume.

ici ça sent la grande ville : l'essence, la chaleur, l'humidité.

there was a very small smell that reminded me of breakfast.

ça sentait comme du poulet grillé. Un oncle dans la famille avait une des premières rôtisseries à St-Jérôme. J'avais toujours plaisir d'aller manger mon poulet BBQ au Coq d'Or. Je remonte à longtemps! Des beaux souvenirs ça.

that smell reminded me of bread.

y'avait j'sais pas quoi là... aah! le café! oh! avec la cigarette, dé-gueu-lasse! c'est deux odeurs mélangées : superbe de café et l'fond de cendrier. Ça sentait comme des "botchs" de cigarette dans un seau avec de l'eau... quand t'ouvre ça ouach!

that smell I don't know but, it reminded me of... I don't know. I know that smell...

il y a quelque chose d'épicé là... cumin... ça me rappelle, voilà plusieurs années, d'avoir découvert la bouffe indienne avec de supers bons amis. On avait fait un festin incroyable dans un restaurant sur Sainte-Catherine. On avaient mangé mangé, comme des cochons!

ah! le dépanneur. Ça sentait pas les poubelles mais quasiment. Ça sentait comme des légumes compostés.

j'sais pas c'était quoi là... le levain peut-être? ah! c'est ça, une boulangerie! mais ça sentait pas le pain. Ça sentait très fort. C'était probablement ça, le levain.

j'aurais aimé que ça sente l'épinette ou le sapin (en passant devant un bosquet d'arbustes).

encore la cigarette! J'la sens de loin celle-là. C'est une odeur qui m'est agressive, qui me rappelle probablement quand j'ai arrêté de fumer y'a plusieurs années, c'était tellement pénible...

Let's borne in mind that, **we** never **smell** a pure scent, but rather a **mix**, that is volatile, and **that forms a unique fragrance in the moment**. One or two notes would probably predominate, which would make you say, for example: "I smell lilacs"; however, this lilac scent that was encoded by your memory is charged with numerous olfactory nuances: that of the almost imperceptible dog excrement a bit further away; that of the wet grass that lines the path; that of the strawberry gum that a child spat out a few minutes earlier, which is now stuck to one of your shoes; never mind the mint that you put in your mouth ten minutes ago...





Also, **our perception of smells is influenced by other sensory inputs** present at the same time. In that matter, our results suggest that **sight has probably the most significant one**. A close relationship is established between sight and smell, sometimes even going as far as remodelling the *smellscape* and consequently the *timescape*.

Our vision has such a strong influence on our perception that it can lead us to believe that a smell, not present in the environment, is there because it is bounded, for whatever reason, to the sensory cues that define our reality of the moment.



Each flow of scents that circulates in the environment is a possibility to restructure the reality of the individual. However, the olfactory dimension is never, or at least very rarely, taken into account in a design process. When it is, it is generally to avoid and/or control potentially unpleasant emanations. Nevertheless, **smells have the potential to become a strategic tool to configurate the experience we have of a place** because the mobilization of memory in urban planning is particularly significant to people.

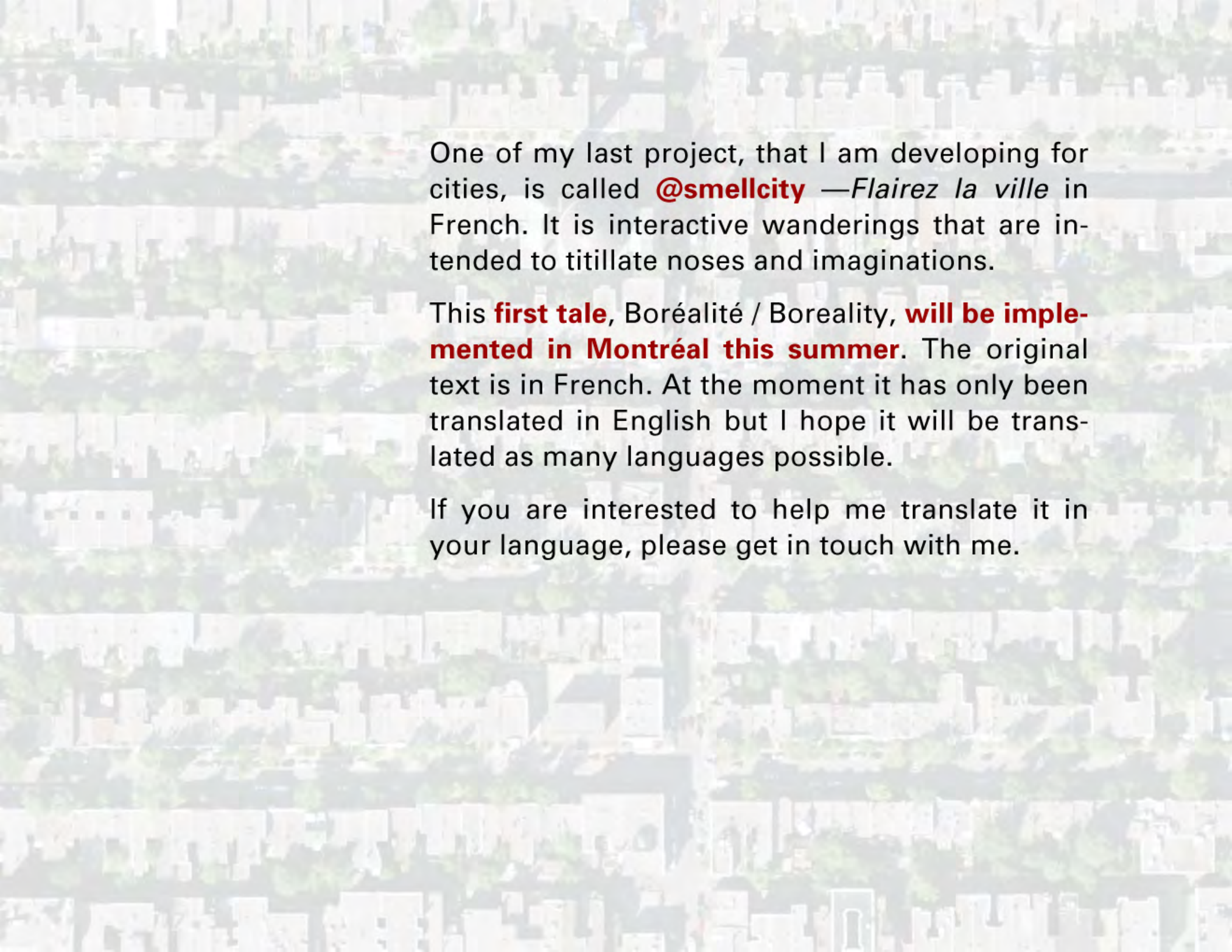
So,

- » how can an architect, an urbanist, or an environmental designer work with this medium?
- » what forms a time-based architectural structure moulded by an olfactory ecosystem could take?
- » **what strategies can be adopted to facilitate the integration of the olfactory dimension into the project at the design stage?**

Well, these are some of the questions I am trying to address, and this is why I am pursuing a doctorate in Cognitive Science / Philosophy at Université du Québec à Montréal on the subject of the spatiotemporal perception shaped by the olfactory memory under the supervision of Pierre Poirier.

Parallel to my research, and under the theme of **the Théâtre de la mémoire olfactive**, I launched several projects that quickly led me to **an approach in which the narrative is the fundamental medium of expression**. I have sought since to reflect the dynamic relation that is established between a place and the olfactory memory of individuals that frequent it.

Consequently, if I use cartography, it is not to identify zones of smells on the map, but to connect the scope of the narrative to the physicality of the space. The map is then less of a graphical apparatus than it is a mean to spark imagination. And a smell, captured in words, instead of being fossilized, lives on through the narrative.



One of my last project, that I am developing for cities, is called **@smellcity** —*Flairez la ville* in French. It is interactive wanderings that are intended to titillate noses and imaginations.

This **first tale**, Boréalité / Boreality, **will be implemented in Montréal this summer**. The original text is in French. At the moment it has only been translated in English but I hope it will be translated as many languages possible.

If you are interested to help me translate it in your language, please get in touch with me.

To conclude, I will say that, at that point of my research, and following numerous urban (nose) explorations, it seems clear to me that, if you want to use smells as a medium, you need to bear in mind that:

- » **temperature, atmospheric pressure, and the degree of humidity alter the character** of smells;
- » the volatility of an odor is variable according to the wind speed and other atmospheric precipitation. Thus **the form of an olfactory flux varies as it unfolds in time;**
- » **the intensity** of a smell **is dependent on the structural and material characteristics of the space;**
- » **the physiological state of the individual** who perceives a smell **has an important impact on the quality and intensity of the perception;**
- » **an olfactory sensation is diminished or eliminated by familiarisation;**

thank you for your attention, I look forward to answering your questions.

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illustration Renaud Perrin

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