

# *Animals in the Midst of Cities*

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## Animals in the Midst of Cities

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### Abstract

Our hypothesis is that ecological transformation involves socio-environmental communities formed through joint action on a material environment, which can be set as a conjunction of practices between senses and meanings — giving birth to landscapes, life environments and matter of all kinds — analyzed in the context of solidarities — as well as conflicts of territoriality, in which human collectives associate with living matter and the environment to fight against other uses of space or to implement new ways of seeing nature. The environment as a collective work then becomes a self-sustaining call to action, which enhances the skills and legitimacy of the actors (citizens, formal and informal collectives) and their role in socio-ecological transition. We thus witness emerging environmental citizenships of a new kind that deviate from political militancy and testify to civic engagement in ordinary practices, a collective environmentalism that contributes to public action and democracy. What we call ordinary environmentalism includes environmental alliances and socio-environmental communities (with cats and cockroaches, mushrooms and noise interpretation, narrating, creating music, etc.) that have hitherto been considered negligible and we emphasize their value in democratizing the co-production of everyday and ordinary environments. One way to do this is to admit – as many scholars in the field of biosemiotics have done – that nature is made up of « signs, interpretations and meanings » (Wheeler 2014: 375) and to increase our knowledge of an aesthetic experience related to nature. We will deploy these issues on a theoretical level through the conceptual expression of environmental forms and the concept of immunity. Based on an interdisciplinary research, the related fieldwork includes a hundred non-directive interviews and observations conducted in several French cities (Paris, Rennes, Lyon), in specific neighborhoods such as the public housing district of Blosne in Rennes and the Croix-Rousse district in Lyon, or with specific associations to reflect the role of public institutions in the socio-natural arrangements of groups of inhabitants in the cities of France.

**Keywords** Immunity · Agency · Feeding · Taming · Killing

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## Introduction

Cities are places for the development of devices and technical objects for the habitat of human animals that reflect the social, economic and political relations of these groups. The urban spaces partially admit living beings of other species and places configured for this purpose. Nature in the city, animals or plants, is often considered as furniture, i.e., intended to decorate the city or some of its spaces, possibly taken into account on health grounds. Until the 1990s, particularly in France, the ignorance of city-dwellers vis-à-vis the species present in the city is astonishing. More recently, in relation to the development of environmental policies, city-dwellers are becoming aware of urban biodiversity. However, few species are considered positively outside of the domestic space (the bee, for example) and many are considered negatively, being unwanted in the urban space. This is the case with insects, for example, perceived as vermin to eradicate indoor and outdoor spaces. This is also the case with stray animals in cities suspected to be dangerous for human populations, either because they carry diseases that are poorly understood or because they may be aggressive towards human beings, in particular towards children. In this context, it is interesting to examine the forms of alliances between human beings and animals present in cities which are often more numerous than city dwellers realize.

Thus, in this article, we will examine the way in which alliances between animals and human beings participate in the construction of life forms, at the intersection of senses and meaning. These alliances, i.e., relations inscribed in time and space that benefit the human beings involved and the animals concerned and imply various modes of signification, communication and interpretation (Tønnessen and Kadri 2014), contribute to the quality of city life in numerous ways – both positive and negative – that we will examine hereinafter.

Research in different disciplines concerning animal species in the city is currently numerous although still limited. In the 1990s and the 2000s, geographers whose scientific discipline places them at the juncture of the social sciences and natural sciences published three books on animal geographies (Wolch and Emel 1998, *Animal Geographies*, London, Verso; Philo and Wilbert 2000, *Animal spaces, beastly places* et new geographies of human-animal relations, Londres/New-York, Routledge; Blanc 2000, *Les animaux et la ville*, Paris, Odile Jacob). It is interesting to see that these works highlight this dichotomy between desired species and unwanted species, in particular the place accorded, on the one hand, to mammals and, on the other hand, to insects. Numerous works, in anthropology in particular, attempt to describe both the behavior of humans and animals and the interactions between the two groups (Piette 2002; Mondémé 2013; Vicart 2014). These works, some of which are based on multi-species ethnographic surveys (Kirksey and Helmreich 2010), are not content to apprehend animals as “objects shaped by human societies” but analyze “their active share in social dynamics” (Michalon 2018).

In the context of this article, we will favor an approach based around biosemiotics and zoosemiotics (Sebeok 2001). The usual definition of this discipline inspired by Peircean research focuses on the signal or the sign, a form of symbolic, biological, physical, chemical exchange between two elements, even two living beings; whether these signs are intentionally produced or unintentional, they're always the the product

of a desire to communicate and they are produced in the context of interactions or even intra-actions (Barad 2007). Wheeler (2008: 140) defines biosemiotics as:

“a semiotics not only of verbal human and non-verbal communication, but also of the communicative nature of all living organisms as they forge (...) meanings in their environments. (...). [It] involves [a] semiotic widening, (...) [and the] (...) framing [of ways] of seeing the world — both human and non-human.”

The advantage of this approach is to confer (or not to confer) a special role on voluntary exchange mechanisms between the animals themselves, their living environment and human beings as well as the evolution of these exchanges or their interactions. More than just a theory of space, biosemiotics could well be a theory of urban agentivities with research aimed at analyzing the relationships between humans and animals (Michalon et al. 2016) within “hybrid communities” (Lestel 2008). According to Dominique Lestel (2015: 3) “A hybrid community is a community in which living beings (subjects, individuals persons in varying degrees), live together, and share: meanings (semiotics), interests (conflicting spaces), affects (emotional and psychological dimension). It is a cultural ecosystem.” It is thus a question of focusing on urban evolution, with special interest in the processes — on the animal and on the human side — that engage mechanisms of exchange leading to co-evolution. The interest of this work could be the analysis of how these communities are forged between senses and meaning, to analyze their role in the ecological transition more effectively as well as to understand the role of environmental forms these alliances forge between nature and culture. For example, does the ‘free cat’ narrative developed by associative groups in charge of the management of stray cats contribute to implementing a new dynamic for urban biodiversity? Do the multiplication of urban beehives and the representation of a city hospitable to bees constitute a benefit for urban ecology while favoring competition between domestic and wild bees over resources? Or has the use of pesticides helped to create an urban ecology and the polluted spaces of cities?

We will deploy these issues on a theoretical level through the conceptual expression of environmental forms and the concept of immunity. Relying on interdisciplinary research, this reflection is based on surveys conducted over the last twenty years on the relationship between urban societies and urban natures. Two series of surveys serve as a support for reflection. A first work initiated in the 1990s by eco-ethicists and geographers focused on human relations with the cockroach, an unwanted animal, and the stray cat, a wanted animal according to the relevant management modes (Blanc 2000). A hundred non-directive interviews and observations were conducted in several French cities (Paris, Rennes, Lyon). Finally, cutting across the various sectors of collective environmentalism, the recent CIVIC ACT project aims to give a spatialized overview of citizen environmentalism — beyond a sector of activity or specific collective — on the scale of Greater Paris. Greater Paris Métropole, a territorial public establishment created on January 1, 2016, had 6,968,051 inhabitants in 2016. Paris represents 32% of this area, with 2.2 million inhabitants. Depending on the research, the interviews were conducted in specific neighborhoods, for example, the public housing district of Blosne in Rennes or the Croix-Rousse district in Lyon, or with specific collectives to reflect the role of public institutions in the socio-natural arrangements of groups of inhabitants in the cities of France (Blanc and Paddeu 2018).

These urban nature cultures inform us about the variety of relationships between city-dwellers and animals in cities: they range from individuals living in social housing wishing to exterminate insects seen as intruders to the protectors of bees in the name of a benevolent ecology. Through daily practices, city-dwellers weave metaphorical links to living beings. The relationship between their lifestyles and that of animals reveals a culture of living specific to a great variety of places in the city. Groups and individuals do consider animals as a sign of identity. Therefore, the representations of the animals are linked in a dialectical way with the qualified places valued by city-dwellers (de Certeau et al. 1994).

In contrast, animals are specific to the diversity of places. In the city, animals are at least as numerous as the available feeding, resting and reproduction sites. What does ecology teach us about species living in urban settings? Animals are found on the periphery, on subway and railway tracks, and even in household appliance motors or on children's heads in the case of lice. Birds for example are distributed according to urban potentialities: parks and gardens will be invested by species with a forest or woodland tendency, large areas of lawns will welcome species used to open spaces and a meadow environment. Ecology studies carried out on some of these species confirm that the city includes a multitude of environments, i.e., places where biophysical dimensions are taken into account. These environments are ecological opportunities for different animal species. There is a gradient of species from the periphery to the center: specialist species are to be found on the edge of cities in certain environments, while generalist species are able to establish themselves in a variety of environments. In addition to these wild species, or feral in the urban space, there are a large number of domestic animals, long-time companions of the sedentarization of human beings, for example the dog or the cat, but also other more decorative species, such as aquarium fish or aviary birds (Clergeau and Blanc 2013).

To think of how biosemiotics, the science of signs in nature, can help to forge an ecological perspective, we need to think in terms of making sense of one's environment. According to Timo Maran (2014), the continuous and processual nature of Peircean sign typology shows the importance of environmental properties and material structures in relation to semiotic activities. Moreover, Peircean theory, anchored in a pragmatic vision of semiotic production, highlights the role of context and the consequences of interpretation on the interpreter. In our examples, the represented object, i.e., the cockroach, and the event in question, i.e., the swarming of the insect, relate to the context, i.e. the domestic space, and qualify it as dirty. The urban dweller is led to act in accordance with this interpretation. The production of environmental forms is based on this semiotic activity and facilitates the implementation of immune devices. Though the attribution of a quality to the elements of the environment is different and proceeds from a history of the environmental relationship where the natural element and the meaning have grown together. The concept of environmental form can be key to an understanding of these phenomena and differs very largely from the concept of 'affordance' which implies an externalization/objectification of the environmental relation.

By environmental forms, we refer to a process of aggregating and modelling the relationships of environmental phenomena or processes in such a way as to organise the environment. The representations produced are externalized (landscape, nature writing, etc.) or internalized (mental representations) (Maran 2014). Thus conceived,



environmental forms refer to the aesthetic apprehension of environmental models. According to Timo Maran (2014), it is important to take into account the modeling or shaping of activities that enable all living organisms to create meaningful living environments, based on the various hybrid signs — both artificial and natural — present in the environment. For example, some animals misinterpret human artefacts that they incorporate into their activity of creating an ecological niche (e.g., the use of shiny debris for magpie nests) or that they attempt to swallow in disregard for their own survival (e.g., plastic debris for gulls).

Being fundamentally evolutionary and processual, these environmental forms lead us to the idea of a morphodynamic environment. It is doubly so, both from the point of view of the modeling activity, and from the point of view of the biophysical materiality that is at stake. This materiality is not inert and passive matter (Bennett 2010), but matter endowed with specific qualities that make it possible to determine whether or not it belongs to the realm of the living, which contradicts the thesis of intentionality as the only basis of formations and refers to the essential properties of structures. Second, the environmental forms result from interactions between inert matter and living matter as well as with human activities, such as appropriation, interpretation and formation of the environment. Third, and the urban is specific in this respect: urban forms are neglected in terms of their nature in the same way as human bodies. The biophysico-chemical qualities of urban environments are fully reappropriated for human purposes, and the fight against degradation consists in defining the means to neutralize the dynamics of entropy. Fourth, the reinterpretation of the city as an ecological system is only marginal and concerns spaces, parks and gardens, for example, and chosen elements of nature. The idea of hospitality is central from this perspective as we are harboring beings of nature. It's about renaturalizing the city. An awareness of the choices made in the production of the city would lead to reviewing the rules of urban planning and architecture to produce environmental forms with an ecological meaning at several levels. It involves designing buildings, squares, streets, living things, climate change, short cycles of materials — and bio-sourced ones. On the other hand, we can analyze how people connect to this environment in ways that highlight the environmental forms, such as landscapes, stories, atmospheres... In hybrid environments, a semiotic approach could be adopted to study the ways in which matter, transformed by human models, differs from organized matter by physical or biological processes (Vernadsky 1945). For example, we could compare the semiotic potential of human dumps and natural sediments. One could examine how matter, semiotized by humans, constrains the intrinsic capacity of matter to trigger natural signs and to allow (or afford, in Gibson's sense) for semiotic processes to take place. Subsidiary questions would address the effects of such changes on different animals interacting with the material and how other species interacted with this material. This research perspective is based on the idea that semiotic affordances and natural signs have a significant impact on both human and non-human animal health.

Collective immunity is, in this sense, the capacity to build relationships that protect and go in the direction of the reproduction of commons. In order to understand this collective immunity and its role, we need to analyze — as social scientists — the complex relationships between spaces, animals and humans. So, in order to adapt the cities to environmental changes, taking into account all of these relationships instead of referring only to artificial/technical means is crucial. Neglecting the cultures and natures at work

when trying to build up collective immunity, is to diminish the capacity to grow forms, relationships and signs that develop in a self-sufficient way (Blanc and Barbe 2018).

We will analyze the role of animals in cities both in terms of biosemiotics and environmental forms (Blanc and Benish 2016). First, we will look at some examples of animals that populate cities and tease out the meaning both inside the home and in the public space. In a second step, we will look at different kinds of actions triggered by these animal presences. Finally, we will outline how these actions are meaningful with regard to the construction of local communities and urban commons as a way to build immunity systems.

## Beasts

### Insects

As Camila Leandro (2018) explains in her thesis on the dung beetle, from which we borrow these few reflections on the scientific history of insects, the study of insects — much later than that of botany and vertebrates — was shaped by the invention of the microscope in the seventeenth century. Separating and classifying insects differently from other invertebrates (the arachnids, annelids, crustaceans, etc.) would mark the beginning of the golden age of entomology. Many naturalist societies developed then. The first in-depth studies of insects date back to the 1960s and are more specifically the work of medical or agricultural societies (Leandro 2018). In 1964, Rachel Carson's pioneering book *Silent Spring* drew the attention of a wide audience to the concomitant disappearance of birds and insects due to pesticides widely used in agriculture but also in the public spaces of cities. However, the conservation of insects would begin well after that of vertebrates and plants and would affect only a small number of species. In Europe alone, only 123 of the 105,000 known species of insects are protected. Two insects are mentioned in the Rural Code under the management of natural areas: the European honeybee (*Apis mellifera* Linnaeus 1758) and the mulberry silkworm (*Bombyx mori* Linnaeus 1758) (Leandro 2018). The pollinating fauna is considered extremely reductive to the point of considering only domestic species. The pollinating function of many insects is neglected and wild insects, such as the wasp, are stalked. But how are these species representative of European entomofauna and does their protection not reflect cognitive, affective and aesthetic biases? The study of the relations of city dwellers with cockroaches makes it possible to shed light on certain exchanges between a species of insects and human beings living in cities.

On the eco-ethological level, as Colette Rivault, eco-ethologist and member of the research team explains, cockroaches are present in all major cities in France in all types of housing: hospitals, restaurants, food shops, private apartments. Because they are a nocturnal species, their presence is discreet. Totally omnivorous, they eat all types of food consumed by humans, organic waste discharged into garbage cans and sewage and feces. Our work was limited to the German cockroach (*Blattella germanica* Lineus 1767), by far the most widespread, a cosmopolitan species, which has not adapted to the different climates under which it lives, but has instead sought favorable microclimates corresponding to its own ecological requirements. The ecological niche of the German cockroach can be defined by its thermal, hydric and spatial characteristics. As



we wrote ourselves in our PhD quoting our colleague Colette Rivault, a specialist of cockroaches:

“As its presence is linked to the presence of human beings and the foods it stores, it means that it will not be found in vacant apartments for some time. Obviously, if the density of the population in a kitchen increases significantly, and the carrying capacity of the environment is exceeded, the animals will be able to move and settle in less favorable areas. We will then observe a dispersion linked not only to passive transport by man, but due to active movements of cockroaches. We can then find them in the other rooms of the house or even, in a building, in an adjoining apartment. If the environmental conditions of their micro-habitat are modified and become unfavorable (linked either to an increase in the size of the population, or to a scarcity of resources or insecticidal treatment), we observe an increase in the length of their displacements for at least part of the population. To change apartment, animals can use multiple traffic lanes such as ventilation ducts, gaps around pipes (water, gas, collective heating), expansion joints or cracks, depending on the type of construction. Garbage chutes can also provide a route for spreading although a cockroach does not stay in places that serve as passageways.

Although the cockroach is an animal strictly confined to the urban environment and the presence of man, it does not live throughout the entire urban environment. It does not occupy streets or parks. In the city, it is not found everywhere. Rather, it is found in restaurants, canteens and other establishments that deal with food and private homes, regardless of their standing. It is rarely found in isolated lodges. There are also no cockroaches in certain buildings like warehouses where there is no food, water or heating. In the urban environment, it is therefore mainly found in regularly occupied apartment buildings.” (Blanc 1996)

Colette Rivault concludes that it is “the city itself whose artifices generate a species of urban ecology: the cockroach”. These data concerning the ecology of the cockroach can be compared with the findings of brief etymological research into the names used for this insect: ‘*blatella*’ the scientific word and ‘*cafard*’ in French, the common word. This highlights the fact that the term ‘*cafard*’, like ‘*blatella*’, refers to the nightlife of the animal. Indeed, ‘*cafard*’ in French comes from the Arabic *Kafir* ‘who does not have faith’. The pejorative suffix ‘ard’ replaced the initial combination. The cockroach is defined by a metaphor: the meaning evolved gradually from ‘who does not have faith’ to ‘the one who flees the light’. This term comes to designate the cockroach in many areas and the word entered the French language in the nineteenth century. The Latin term for cockroach — a term encompassing various insects ‘who are fleeing the light’ — is similar in meaning.

The color of the insect, its nocturnal manners and the places in which it lives has given rise to a slang phrase in French, ‘*avoir le cafard*’, i.e., to have black ideas. The nocturnal manners of the animal predominate in representations and practices as borne out by a number of literary texts (where the cockroach swarms, threatens, must be destroyed, generates discomfort, etc.). We can see these as a projection of the values of human society on the animal world. With regard to the cockroach, a striking example is

found in Keith Thomas' book in which he analyzes the exclusion of certain animals and parts of humanity between the sixteenth and nineteenth centuries. He quotes a letter written by a friend of animals in 1879 whose house was invaded by cockroaches: "I hate to make war on cockroaches, they have as much right to live as black Zulus. But in one case as in other, what can you do?" This heartfelt cry of racism at the heart of colonialism is reflected in contemporary remarks about insects. Our non-directive interview focuses on cockroach representations and practices and highlights the animal's detestation.

Insects are different from other animals because "we can not so much influence them as destroy them when they bother us". Insects have no place. This interviewee is from the countryside of Beauce, in the Paris region. She seems to have set ideas about animals and even insects.

"I hate flies. You will never see a fly in the house. As soon as there is one, I hunt it in every room. It comes from the countryside. We put things on the ceiling to catch them. We did not like doing that but we had to kill flies. I have more horror of flies carrying diseases and germs..."

Interviewees quickly think of the swarming of the insect:

"It is not very pleasant to lift objects under which there are woodlice because it has a swarming appearance, cockroaches too. All these little legs... It's a very basic disgust in humans. We manage to reason with each other, but there is a repulsive aspect in many insects..." [Interview between Nathalie Blanc and X; 1996, in Rennes, France] (Blanc 1996).

The presence of the insect in the city indicates a poorly-managed environment. Sometimes, the quality of the building and its faulty management are involved. The habits of neighbors alone cannot explain the presence of cockroaches, as explains the same interviewee: "It would be necessary to clean up these water pipes. They are downright rotten. The pipes are part of the original building. You cannot even repair them, you have to replace them entirely." The insects come from an underworld composed of pipes, sewers and swamps, supposedly found under buildings. The degraded building and the presence of cockroaches are also linked to sharing space with irresponsible people.

Insects reflect the dirtiness of the inhabited environment and are themselves described as dirt. The dirtiness of the animal is related to household practices. When they cannot provide a solution, the inhabitants become puzzled. The dirt of the animal transforms habits, leads to other practices: "We lock the food in boxes. It's dirty! It's like headlice, a clean head does not have lice, an apartment that has no critters is all right." [Interview between Nathalie Blanc and X; 1996, in Rennes, France] (Blanc 1996).

The cockroach as a negative construction, as a sign of dirt, is a social fact. The dirt is also that which represents the animal. This rejection affects the entire class of insects, and even more so the species described as nuisances associated with excrement (for example, flies). As regards the cockroach, we focus on the aspect of the animal and the term that qualifies it in the common language.

“The cockroach, I place it in the dirt, I am in the common thought. I'm even sick of the cockroach. Through the cockroach, you feel cockroach, it brings you back to something. The cockroach, it boils down to « avoir le cafard » (having black thoughts). It brings you back to dull moments in your life. You have only one desire, to crush it. Thus the cockroach inspires false, if not foolish interpretations. It occupies the empty places that man has left. We know, on the contrary, thanks to ecologists, that the insect lives in inhabited spaces. Very few citizens are interested in animals, their biology or their ecology. None will consult a dictionary, a book about it, except to learn how to get rid of it: ‘How they live, it does not interest me... It interests me from the moment we know how to destroy them...’ ” [Interview between Nathalie Blanc and X; 1996, in Rennes] (Blanc 1996).

One of the inhabitants moves into a completely refurbished apartment, including the kitchen, invested with a certain luxury. She is surprised; many cockroaches swarm around the sink. However, the flat seems to be clean. This contradicts what she knows, namely that this insect is related to man's filth. She is afraid of it and cannot always crush it:

“I hit it and tried to crush it on the floor. It fled, I do not know where. I remembered my terror trying to catch them in the kitchen... At the time, I was trying to kill as much as I could, burning them in the sink, by hand, with newspapers. I even went there with my hands. I washed my hands afterwards. I could not stand this swarming. All insects do not make the same impression.”

She even pays attention, she says, when she walks in the countryside “in nature”, not to spoil a spider's web. She finds them beautiful. “These little animals do not do anything to me...” But she does not want spiders inside her home. “Insects are trouble, they are intruders from the moment they should not be there, not at my place...” The cockroach is represented as a vector of diseases, but symbolically. People do not imagine, as they do for the pigeon, that it carries germs and bacteria. They do not use the word disease to describe the danger it represents. They make the animal itself the sign of death and disease. “They will carry dirt and disease. We imagine a ladybug with a personality, a story, but not the cockroaches because it's taboo: it is dead!” [Interviews between Nathalie Blanc and X; 1996, in Rennes] (Blanc 1996).

## Bees

The bee is symbolically a life-giving insect: in this sense, the bee has been represented in bestiaries through history as the purest, the most virtuous but also the most caring and kind animal, giving favors and lavishing its soft medicine to all (Pastoureau 2011). Nowadays, these symbolic aspects are evidenced, in particular, by the development of beekeeping in urban areas. But beyond those, the discourse concerning the presence of the honeybee in the city refers to the sensitization of children and adults to wildlife, and highlights a major ecological service provided by pollinating insects. Hundreds of beehives have been placed in a variety of locations and communities: from the roofs of the Paris Opera House or the Théâtre Graslin in Nantes, to the parks and gardens of the

Mairie d'Aubervilliers, the third poorest commune in France. These bees produce, paradoxically, a honey more abundant and of better quality than in rural areas. Recently, critics have denounced the excesses of this policy that benefit bees and harm the wild bee species. The APPAI, a civil beekeeping association in the commune of Ivry-Sur-Seine in the southern suburbs of Paris, was created by an extremely committed beekeeper who developed a relationship of trust with his bees; this man spends a lot of time interpreting their movements as evidenced by this interview:

“You have to realize that we work with wild animals, that they do not know us, that we do not know them and when they have decided to do that, we can only help them to do it in good conditions, etc. But no more. It's the bees who are the masters. (...): I cannot caress them but you have to be in front of the entrance of a hive and see them working. Bees that act as cooling fans, bees that take out the corpses from inside, those that bring pollen, the color of the pollen. Last year, they came back, it was like small red flares. I wondered, ‘What is this? It seemed like they had rolled in the pollen of acacias... Red chestnut trees...’” [Interview between Nathalie Blanc and the representative of APPAI; 2018, in Ivry-Sur-Seine, France].

The beekeeper accompanies his animals and helps to pollinate the city through the circulation of bees in the urban space in search of food. He submits to their movements highlighting their wildness more than their domesticity. On a symbolic level, the contribution of bees is threefold: the presence of these insects signals the possibility of living in the city and transforming the city into food; the fact that these animals — carrying a strong positive connotation — can reproduce in artificial environments such as urban spaces is also a sign that human spaces are not purely spaces of death; finally, the idea of recolonizing life in urban spaces is akin to citizen empowerment and puts an end to the idea of collective powerlessness.

### Stray Cats

Unlike the insect, an unwanted animal, reminiscent of dirt in urban spaces, or desired if the animal works for humans, the cat is an animal that can be approached, caressed and loved. On the one hand, it is an intimate companion and may even be endowed with a personality. It sometimes becomes ‘someone’ with whom it is possible to exchange the attributes of power — meaning we can witness cat-owners allowing their pets to actually exert some kind of authority on them, given certain circumstances. On the other hand, stray cats may be shunned as they can be seen as dangerous and filthy, or looked after by civic organizations. Ecological studies teach us that cats living in rural areas on wild prey tend to be solitary (less than one cat per km<sup>2</sup>), while street cats with access to “clumped food resources” band together in urban areas where the density is high (2000 cats per km<sup>2</sup>) and involve communal nursing or affiliate group assemblies (Jaroš 2018; Macdonald et al. 2000). The main explanatory hypothesis of the spatial organization of cats, and more generally carnivores, is that of the dispersion of resources (food and shelter). In cities, this dispersion is related to the urban morphology (defined as the spatial structure of all urban forms: buildings, roads, free space, etc.) and the presence of food provided in part by human beings. The means of control involves actors and logic specific to this animal and its presence in urban areas. The control

practices, whether individual or collective, are subject to controversy even though they all have the same objective, i.e., in the case of the cockroach (its eradication) or the bee (its protection). In any case, this opposition between wanted and unwanted animals refers to the policies of animal control and to questions of hygiene and public health.

This work deals with the place of animal living beings in the city and has made it possible to distinguish between desired and unwanted species. However, some species such as cats can change from being desired in the domestic space to being wild cats (or street cats). This change in status results from the behavior of the cats themselves, which move between the domestic space and the street and benefit from both worlds, as has been observed for Croix-Rousse cats in Lyon. It may also be the result of behavior towards these animals that tends to prioritize the well-being of individuals at the expense of groups of street cats, perceived negatively in terms of health, and housed in shelters for adoption (Jaroš 2018). Generally speaking, it is important to develop an analytical grid that makes it possible to distinguish the types of natures that interact with urban lifestyles. It is a question of getting beyond the animals' Umwelt or the way in which humans participate in the animal's Umwelt. An environmental perspective involving the animal accords an important place to environmental arrangements in the way these animal individuals are qualified in urban and rural spaces depending on their location. In the dialectic between desired and unwanted animals, the ways in which urban spaces are constructed and their relationship to natural processes is central.

Our thesis is that several types of natures can be distinguished in the city, at the juncture of materiality, representations, practices and urban policies. First of all, it is the set of phenomena that escape human control because they are of another dimension, either due to their geographical scale or their magnitude: these are the seasons, storms, floods, etc. But it is also a nature of lesser importance, which is not voluntarily introduced into the city (birds, mushrooms, ants, foxes, bacteria...). These are then natural phenomena, which are the result of the artificialization of the urban environment. At the intersection of the natural and built environment, they escape human control and are often unwanted. Finally, there is a desired, controlled nature, which is the product of a voluntary introduction, either collectively (green spaces, parks) or individually (garden, plants, pets, geranium pots...), and which is the object of controlled practices. This discreet and ordinary nature contributes to the quality of living both in the home and in the daily public space.

These distinctions make it necessary to reflect upon the articulation and integration of the scales at which these natures occur in the city. They also imply relating them to the different spatial categories (apartment, etc.) and to urban forms. Thus, the city, which is analyzed as a homogeneously artificial environment, appears fragmented and diverse in its naturalness. The aim is to account for the diversity of these urban environments. In fact, the question of nature's place in the city refers to a dialectic between self-reference and hetero-reference: the city is a human space produced by the control of natural processes, even though these same processes are beyond the control of both the planners and the city dwellers themselves (Magnus and Remm 2018).

## In the City

Animals are intermediaries in staging urban lives for many city dwellers. They reflect a living city and are witnesses to it on different scales. For example, the presence of bees

represents the city as a living environment for species other than ours. Animals both represent a positive and negative relationship. On the negative side, the question is to get rid of the animal. Such an impulse transforms representations of the city. The urban space, invaded by wild and unwanted species, should be pure, and the animal presence signals impurity. Mould, rotting matter and other symptoms of organic degradation are strongly rejected as too close to death. Compost, in this sense, rehabilitates the idea of the metamorphosis of life as a work of nature. On the positive side, relational construction is varied: the animal is an intermediary in the appropriation of urban spaces. It facilitates the use of the cities hidden corners by feeders. It allows dog owners to develop a relational universe around the animal's walk. Three examples will illustrate this point. The first example relate to individual reports of hunting insects that invade the home. A second example is how cat feeders take ownership of urban spaces by placing large amounts of food in the city, replacing the urban strangeness and domesticating spaces, favoring the reproduction of these spaces as ecological milieux. Finally, the city also needs food and the activity of bees is a way of enlivening the urban spaces.

### **Killing**

The interviewees go to great lengths to rid the apartment of cockroaches. A woman in her forties, living in the neighboring tower of Blosne in Rennes, regularly changes the furniture but never finds the insects. "Where they live is the great mystery." The methods and techniques used to kill them show how the cockroach becomes a daily concern:

"We use Bégon, the classic insecticide. We used it enthusiastically; we used it for a while in the morning. It worked well, but you have to do it at night. Then we prepared ambushes: we switched off the lights, we came back an hour later, those we saw, we sprayed with the product. I was even hunting for a moment behind the furniture. Now I go where I know they are. Otherwise we used the classic method: we crush them with a slipper !" [Interview between Nathalie Blanc and X; 1996, in Rennes, France].

The animal encourages the development of hunting techniques that go far beyond the mere idea of overcoming the creatures.

In short, the unwanted insect reflects the uncontrollable forces of the universe. By crossing boundaries, they signal the porosity of cities. Does this fear not highlight the impossible spatiality of the idea of control? In this context, the death of the insect corrects the wrong-doings of the faulty management and suppresses the panic fear linked to its presence. Killing the insect is simply getting rid of an invader.

Also, insects are seen as uncontrollable, the idea that they would be there against all the odds and for all eternity can be reflected in the remarks. The same interviewee adds:

"We will never be able to eliminate them: I have the impression that they are too archaic a species that have adapted to too many different situations. We should exterminate the cockroaches: even if we put deadly gas in the cellars, small



cockroaches would always come back and appear elsewhere...” [Interview between Nathalie Blanc and X; 1996, in Rennes, France].

These city dwellers talk about indestructible eggs and cubs. For them, only the presence of a nest can explain the origin of the cockroach in a building. Such an interpretation refers to an outbreak of a contamination. The word nest would be an equivalent. The cockroach is experienced like a disease that proliferates. Opposite ideas are developed by ecologists (i.e. no nest, don't exist without human presence...).

## Taming

Women or men who feed animals in the public space, including stray cats, are called ‘foster mothers’ or ‘nannies’. Generally tattooed in the name of civic organizations who take care of stray cats since the law of 1999 in France, which makes it mandatory to manage stray animals, the presence of these animals in the public space has been accepted more easily since then. The people who feed the animals see it as a duty. It is a necessity for them and for the cats. Their work in ‘the field’ — this is the term they use — produces a different mode of city/animal cohabitation. In doing so, they take ownership of a territory which, in its planning and management, usually and exclusively falls within the remit of the public authorities. In the city, the only area on which city-dwellers have power and control is inside houses or flats. Nowadays, these people — gathered in civic organizations — have an authorisation to contribute to the management of public spaces (gardening at the base of trees for example). A woman who feeds a large number of stray cats explains her choice:

“We found 200 cats in Bercy in a very poor state. Traders had recovered some. They had had the cats for at least a fortnight and fed them somehow. A gentleman had discovered this well before us and came to feed them. A Portuguese worker was lighting a brazier in the winery during the winter. When we discovered this, the brazier was on and about twenty cats were warming themselves around it. We wanted to start by sterilizing the cats. We almost fought with the Portuguese.” [Interview between Nathalie Blanc with the representative of the École du Chat Libre; 2000, Paris, France].

‘Feeders’ are not alone in caring for animals outside. Others do it and sometimes compete with them. The ‘feeders’ treat the latter as amateurs, dilettantes. But most city dwellers going from one place to another, passersby in the street, do not notice the animal presence. Even if they are considered marginal, the neighborhood actively seeks out the ‘feeders’: when children go away or when there is a break-up, people would like to get rid of the animals but do not know who to give them to. But according to the ‘feeders’, their mission is not to help people, but animals in distress:

“I do not want to take care of other people’s animals. People who have a cat must assume their responsibilities. The cohabitation of the city dweller and the animal is not self-evident. Problems arise, according to some, as a result of the transformation of the urban, formerly hospitable environment. People evoke a golden age when animals were integrated into the city. They describe what they call a small

countryside or village neighborhood with a precise morphology. They describe the idyllic past of today's transformed neighborhoods (Ménilmontant, Belleville in Paris, Croix Rousse in Lyon) and even go into detail: the size of the doors of buildings, of bins. Before, cats had small bins. Now they are big and they cannot climb in anymore and the lids are closed. It's all concrete.” [Interview between Nathalie Blanc with the representative of the École du Chat Libre; 2000, Paris, France].

These people, in addition to feeding the animals, establish relationships with all kinds of urban spaces and a variety of people which enriches the territories of domesticity.

### Feeding

Bees feed on the city and then feed it back. Our contact beekeepers, through the bee, develop a vision of urban environments:

“I believe that the environment cannot do without bees. It's something very simple and the environment is going to be the environment thanks to the bees. We know that if there are no more bees, 30% or 40% of the vegetables cannot grow, and that's not a propaganda thing, it's something that has been demonstrated by people. And then the bee, I think it's still the only insect, even animal, that makes the food it eats. She makes her food and then eats her food. She lives in complete autarky. In addition, the bee repays the gift of flowers planted by beekeepers. The space of relations is a space of exchange, of reciprocal food donation: ‘I see them alight on other flowers, I look and the people of the city say to me: did you see your bees? And the gardeners say: we deserve honey because we planted flowers for your bees. So, there is a kind of network that includes all the gardeners in the area, with the allotment gardens, the people of my city, and then everywhere because they know that I am a beekeeper.’” [Interview between Nathalie Blanc with the representative of the APPAI; 2018, Ivry-Sur-Seine, France].

The bees also give substance to the artistic passions that are reflected in the work of Olivier Darné, a visual artist in Saint-Denis, who developed a passion for bees more than 20 years ago. “These beings who play a crucial role in the functioning of the ecosystem and in agriculture” [Interview between Olivier Darné and Nathalie Blanc; 2017, Saint-Denis, France]. In the early 2000s, having no room to install hives on his own roof, he convinced the authorities to let him install hives on the roof of the town hall. Today, there are eighty hives and six million bees, making it the largest urban apiary in Europe. In 2009, the Poetic Party (*Parti Poétique*) decided to create “the honey bank”. The principle is to set up an assembly of members, investing in the activity of beekeeper of the Poetic Party. The return on investment is the honey produced. For Olivier Darné, this artistic project aims to encourage people to invest in living things: “turning this dead money into living bees” [Interview between Nathalie Blanc and Olivier Darné; 2017, in Saint-Denis]. In 2012, the Poetic Party expanded the project by creating a branch of the honey bank: the ‘Bank of Queens’. This project, which has won the international COAL (Art and Environment Coalition) Award,

created eight swarms from a hive and then handed them over to beekeepers who want to settle. For Olivier Darné, this amounts to creating “*a guarantee fund out of living matter*”. From a biosemiotic point of view, such an act is tantamount to prolonging the animist register and combining it with the analog register, where the animated living being, the bee, represents the living character of the territory.

To conclude this second part and as we begun saying, animals are intermediaries in staging urban lives for many city dwellers. But now we see that in short, for the vast majority of interviewees, animals accepted in the countryside become terrifying in the city, or simply out of place. So many animals in so many urban interiors is a sign of an urban pathology. This is an abnormal situation. The use of this term indicates what is at stake: “The animals must be in the countryside. There, it is normal to have animals. The place of animals is not in cities. Especially since they have no reason to be there.” [Interview between Nathalie Blanc and X; 2018, Ivry-Sur-Seine, France].

We can understand the presence of animals in urban spaces as a human need for affection. Affection here being defined as an urge to get in contact with other living beings, and to form some kind of sensitivity-based relationship with them. Even in this way, a structure accompanying the presence of the animal in the city (i.e. organizations) is still necessary for people to accept them as a positive presence. In truth, in connection with the greening of cities, the presence of insects, like a metonymy accompanying that of other animal species — themselves synonymous with increased biodiversity in the urban space — requires expanding the representations concerning them, until their ecological role has been accepted or there has been a change in aesthetic values.

## Communities and Commons: Building Immunity Systems

Following the crisis of 2008, civic actors — pushed alongside a renewed economic dynamism — played a great role in the expansion of metropolitan areas such as Paris, New-York or Rome (Borch and Kornberger 2015). Civic organizations not only play the role of intermediaries in times of crisis, but “they identify and answer the needs of a community, by gradually introducing new forms of governance of local spaces and resources.” This involves seeing how exchanges established thanks to the activity of the collectives — mixing humans and non-humans — differs semiotically from universes devoid of relations with living elements of nature. This process by recreating relationships with the environment establishes new bases of commons. Therefore, environmental forms such as city bees or shared gardens must be included in this reflection. The assumption is that what is built in common comprises environmental forms that refer to the communities that incorporate them into local or more widespread debate. Take the example of bees in a city. Having become important in recent years, their presence depends on rules of action established collectively to ensure their sustainability with the local public authorities. A representative of the APPAI explains: “It is also a contract that has been passed with the Mayor: the flowers planted in different places in the city will be honey flowers. It’s obvious that everything that is planted in Ivry is visited by our bees.” [Interview between Nathalie Blanc and APPAI; 2018, Ivry-Sur-Seine, France].

Other city dwellers have negative representations of communities of action formed with living beings: for them the human/animal relationship should be significant, but

not intrinsically important. Only shy people unable to have real social relations fill this gap with animals. Another female interviewee does not think that these people are friendly:

“The dog plays the role of the child in exchanges in the street: it is an excuse to communicate. But there are different levels of sociability! It amounts to not investing in the life of the city. The people who defend animals do not mobilize for causes involving men or foreigners who are treated like animals: When Algerians were expelled like animals, how many people mobilized in the neighborhood?” [Interview between Nathalie Blanc and X; 2000, Paris 20<sup>e</sup> arrondissement, France].

The same people identified by this interviewee are even described as racists, as she explains: “When I talk about cleaning, I’m talking about shit, others are talking about Arabs.” She thinks that this political disengagement is characteristic of a category of city dwellers. The countryside, for her, is not a dream, but a “lived environment”. Her father was a small craftsman in Franche-Comté. Sociability in rural areas in former times is seen as a reference, as continue the same interviewee:

“People do not talk about their animals in the countryside. The animal was part of the natural kingdom and there was sociability. Another reference is sociability in countries where a lack of comfort and living difficulties go hand in hand with more essential social relations. So, in Africa, people talk to each other in the street, and do not need an animal to talk to.” [Interview between Nathalie Blanc and X; 2000, Paris 20<sup>e</sup> arrondissement, France].

These actions, collectively implemented and dependent on environmental communities, are linked to values that are concretely affirmed and dependent on the environmental forms that represent them, as finishes the same interviewee:

“Values, that's it ! So it's healthier city food, more local, with traceable partners if possible. It is also to create links between people, and then in the spirit of the [ecological] transition, to find the concrete means to involve people, not just to tell them, there will be no more oil in 20 years – get on your bike ! – but to convince them to roll up their sleeves and participate in concrete actions. It is to make them understand that you can do things as a citizen.” [Interview between Nathalie Blanc and X; 2000, Paris 20<sup>e</sup> arrondissement, France].

## Conclusion

Let us return to the concept of immunity as it is a key word for the entire article. We refer to the concept of scaffolding (Kull 2015; Hoffmeyer 2014a, 2014b), which specifies that a set of choices makes it possible to build a dynamic of easier decision making. In other words, past choices pave the way for subsequent decisions. In the same way, a set of decisions taken as to the meaning of events, within a process that

consists in overcoming surprises and in generalizing their interpretation, makes it possible to usefully guard against future catastrophes, i.e. events that are impossible to interpret for a group in a given situation.

The concept of immunity adds to the concept of scaffolding the idea that an easier decision-making process, a coordinated set of signs, helps and participates in the construction of collective protection. Immunity is therefore a pathway to understanding the bases of environmental resilience, which involves the ways in which humans and non-human animals inhabit places. We have tried to make clear how many narratives and representations of animals accompany a vision of their contribution to cities' lives as environmental forms related to metaphorical, analogical and symbolical content. The aesthetic modeling of animals' presence contributes to the way people make sense of their environment. For example, the dark color of the cockroach or the fact that these pest insects like heat seem to "prove" that they could be linked to people of color coming from southern countries. Cats being taken care as individuals in domestic spaces are often regarded as homeless living beings outside of these domestic spaces and shunned or exterminated. The bees produce food, which perform as a metonymy to their being an animal synonymous with life in cities. All these narratives and related imaginaries pave the way for behavior and local cultures and policies.

The hypothesis is that environmental forms contribute to immunity as they help to represent the meaning of what happens in the city instead of catastrophic or absurd events. Immunity clarifies how the group can interact with the event. Environmental forms, in these terms, act as a model, allowing a set of relationships to be qualified in advance. The main argument defended in this paper is that environmental behaviors are based on the creation of environmental forms (or aesthetic environmental modeling) that structure social groups and build the basis of their immunity to risky or abrupt changes, i.e. the framework for their reinterpretation of these changes. Habits and routines also enrich immunity. Such a system explains the difficulties in transforming human behavior toward the environment. Moreover it promotes an over-semiotisation of the environment that impedes taking into account material dynamics, including those of living beings. In this sense, ecological transformation politics relate to how to change environmental forms in light of the dynamics of living and non-living beings.

Therefore, the environmental forms must be analyzed in their multi-scalar and multidimensional, geographical, sociological, biological, economic and political complexity. Should we thus consider animals as creatures conditioning life forms embedded in human societies, and include a multispecies modelization framework? This echoes the work of K. Barad (2007) on "diffraction", an example of a methodology that consists in analyzing phenomena through each other, and in interpreting overlapping scales rather than measuring carefully spatialized phenomena according to a metric that has become insignificant. Comprising a multiplicity of entries and scales in the analysis of the phenomena, involves giving an account of the way in which current practices are part of multidirectional stories and their emerging qualities. These stories are those of these people and their reasoning, but also those of the underlying logics of exploitation, alienation and economic accumulation. The dynamic nature of these stories undermines any conception of decisive socio-economic structures that shape bodies or subjectivities. Thus, ways of exercising power must be examined from a variety of perspectives and contexts that stress time and space (Fox and Alldred 2015).

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