

The vegetative city

Andrea Mubi Brighenti

To cite this article: Andrea Mubi Brighenti (2018): The vegetative city, Culture, Theory and Critique, DOI: [10.1080/14735784.2018.1478320](https://doi.org/10.1080/14735784.2018.1478320)

To link to this article: <https://doi.org/10.1080/14735784.2018.1478320>



Published online: 28 Jun 2018.



Submit your article to this journal [↗](#)




Article views: 4



View Crossmark data [↗](#)



The vegetative city

Andrea Mubi Brighenti 

Department of Sociology, University of Trento, Trento, Italy

ABSTRACT

The vegetative stratum is a layer of existence that is inherent not only in plants. Here, I propose to look at how vegetative life – or, the vegetative mode of existence – affects cities. The vegetative mode of existence is not focused on activities, routines, achievements. Here appears a city that is not industrial or industrious. When the industrious city retreats, or falls apart, the vegetative stratum becomes visible. The vegetative city is a city without any central nervous system. I suggest the interpretation of the vegetative city as a hopeful manifestation of the urban that only takes place *when the time is ripe*.

For the rest of time, life makes its course.
Gilles Clément, *Éloge des vagabondes*

Introduction: the vegetative stratum

This paper stems from an attempt to think about cities through the prism of plant life. It seeks to develop a non-reductionist view that does not fall into the trap of saying that the city is ‘like a plant’ – just as in the past it was claimed by urban theorists and philosophers that the city is like an organism, or like a machine. If one risk of this exploration lies then in conflating the two terms, the opposite risk lies in dichotomising them. Necessarily, the paper moves along a thin line, where reinstating the nostalgic dichotomy of nature versus culture is also always present. Taking inspiration from Deleuze and Guattari (1980: 31), all dualisms are false, even though the evolution of thought is often somehow forced to transit through them. On what terrain can the city and the plant meet in a way that some fruitful insights into the nature of both can come to light, without forcing categories and ideologies upon independent processes? How to prepare the soil for such a meeting? The paper does not present any conclusive argument. It contents itself with undertaking the opening up of the field for the possible encounter between phenomena that, while admittedly different, might prove to enter a resonant phase. Consequently, the plant-city relation explored here is neither analogic nor isomorphic, rather, it pivots around a number of points of resonance: these may also be called inconclusive elective affinities that have their qualitative ‘moments’ of happening.

Vegetation entertains a special and complex relation to the city, beginning from the fact that plants are an essential component of the urban ecology. However, what specifically

interests us here is not so much vegetation *per se*, biologically understood, nor even plants as part of the hybrid composition of urban space, ecologically or ‘post-humanly’ understood. Rather, I would like to focus on what I propose to call *the vegetative stratum*. The vegetative stratum is a layer of existence that is inherent not only in plants, but also animals and possibly also other biological kingdoms. It encompasses the functions of vegetation and the states associated with it. In the following, I propose to approach vegetation as a ‘stratum’, or layer, in order to allow for the coexistence of it with other strata (mineral, animal, etc.), possibly in reciprocal interaction. Advancing this view, I suggest it is possible to apply the notion of vegetative stratum to city sections on various scales, and even the city as a whole, to apprehend urban life from a novel perspective. *The city also vegetates*: this, in short, is the hypothesis I submit. If urban space possesses a vegetative stratum, a series of heuristic working questions ensue, such as: How to capture and describe it? How could recognition of the vegetative stratum change our conception of what is urban and what is not? What are the consequences of observing and exploring the city through the vegetative stratum?

Despite the fact that we incessantly experience the vegetative form of existence in our life (whatever we do, we *also* vegetate), the latter proves elusive to the analytical mind. Animals have their vegetation, yet it is difficult to express in words what constitutes the *proprium* of such state. Interestingly, the converse may also happen: plants may contain or express a certain animation, especially as it occurs in peculiar, qualitatively distinct *animistic moments*.¹ If animals among other things vegetate, and plant at times also animate, then it is only through a series of tentative approximations that one can approach the *intermediate milieu*² where the vegetative stratum is located. In his vegetal philosophy, for instance, Marder (2013) has importantly pointed out the ambivalence intrinsic to the common understanding of vegetation: on the one hand, vegetal being has long been regarded as a diminished state of life, to the point that doubts were recurrently raised by philosophers about the inclusion of plants among the living entities (doubts which were only finally dispelled by nineteenth century biology, with the discovery of plant metabolism). On the other hand, and etymologically, to vegetate means to blossom and flourish, and observers were always awed by how, contrary to animals, plants may continue to grow and develop until the very term of their existence.³ So, the vegetative state has been simultaneously – and to some extent, contradictorily – seen as, on the one hand, luxuriant, chaotic, deregulated and excessively vital, as well as, on the other, mute, numb, inert and lacking vitality.

What is more poignant is that our theoretical understanding of the status of plants is not only scientific but also inevitably moral and political. Using the scheme of the plant as a model for society has been a recurrent idea in Western discourse. For instance, as documented by Niccoli (2003), the image of the tree features abundantly in the sixteenth- and seventeenth-century German world, recalling both social unity and stratification.

¹Some plants, such as *Desmodium motorium*, are known to perform spontaneous visible movements (Shepherd 2005). Yet, animation may also be said to come about in different guises than just – more or less mechanical – movement. I suggest that plants may animate even when they do not mimic animal behaviour.

²With apologies for redundancy: admittedly, the milieu is intermediate by definition.

³The Latin verb *vēgēto*, *-āre* is both intransitive and transitive. Whereas the intransitive form means ‘being alive’, the transitive forms conveys the sense of ‘animating, reinvigorating, strengthening and fortifying’. A common phrase in modern-day Italian, ‘vivo e vegeto’ – meaning that someone is alive and kicking – directly traces from the original Latin verb. By contrast, in the youngsters’ slang, one can find expressions such as ‘ma sei un vegetale!’, to tease a lazy, inert person.

Incidentally, the socio-political image of the tree in Central-Northern Europe resonates with Canetti's (1978[1960]) claim that the mass symbol of the German nation is the forest: the Germans as the continental people, the 'landed' people, look at trees as symbols of their own rootedness.⁴ Not by chance, then, a more or less subterranean nostalgic vision of the silvo-agrarian society seems to run through modern German philosophy, from (at least) Ferdinand Tönnies to Martin Heidegger. The latter's famous retreat hut in Todtnauberg (in the southern Black Forest mountains), for instance, grounds the ideal of a return to authentic, 'Bauer-like', off-grid living, that also comes with a traditional family model and a whole worldview.⁵ Being territorialised in this way sets out a neat contrast with urban life which, as argued by Deleuze and Guattari (1980: 538), begins with a movement of deterritorialisation, of detachment from the land. For the silvo-agrarian thinking, plants stand for a model of 'natural life' that modernity has lost. Sometimes, even progressive contemporary authors seem to fall prey to some forms of silvo-agrarian nostalgia.⁶ Of course, nostalgia is the mourning for the loss of something that was never there in the first place but that is not what matters most. The consequence of looking at plants nostalgically is that cities are presented as *anti-nature*. More contextually, in many of the pro-plant, pro-silvo-agrarian authors, this substantively means that urban rhythms are regarded as different (= wrong) from the rhythms of agrarian societies (= right): as expected, this view turns into the complaint that modern life lacks the patience, commitment and fidelity that characterised the peasant's relation to vegetal cycles of existence, that urban rhythms are chaotic, unhealthy, obnoxious etc. In other words, the tropes of classic urbanophobia resurface.

Besides the fact that the opposition between urban and natural does not hold, because cities have their nature too, this is not the line of thought that this paper suggests to take. The unfolding of two interrelated yet distinct phenomena should be considered, namely, the life of plants *in* cities, and the vegetative life *of* cities. My hypothesis is that a study of the vegetative stratum may reveal something about the untamed and unpredictable nature

⁴In *The Golden Bough*, James Frazer, recalled the ancient worship of trees in Northern Europe, where trees were conceived of as tree spirits in connection to weather (rains) and fertility (pregnancies). In this respect, the May tree tradition is particularly striking:

In spring or early summer or even on Midsummer Day, it was and still is in many parts of Europe the custom to go out in the woods, cut down a tree and bring it into the village, where it is set up amid general rejoicings; or the people cut branches in the woods, and fasten them on every house. (Frazer 2009[1890]: 88).

⁵Of course, this does not mean that the whole of Heidegger's philosophy is to be reduced to sheer urbanophobia. Nonetheless, Todtnauberg life provides an interesting entry point into the philosopher's work – and its importance can hardly be diminished given that most of his works were written there. For a rich documentation on Heidegger's hut, see Sharr (2006). An unforgettable literary rendition of Heidegger at Todtnauberg was provided by Thomas Bernhard in his novel *Old Masters* (1989[1985]). Before Heidegger, in the early generation of German sociologists, it had already been determined by Tönnies that, whereas community (*Gemeinschaft*) is premised upon land property and family organisation as embodiments of the 'natural law' (*Naturrecht*), society (*Gesellschaft*) is founded upon the notion of juridical person, the institution of money and the ensuing contractual obligations (Tönnies 1887). However, Tönnies also held that there must be a natural law of society as well, thereby suggesting that social order always needs a compromise between will and custom.

⁶Take for instance, the case of Marder: it might sound as groundless provocation or unsubstantiated to claim to take Marder as supporter of an agrarian vision of society. However, following his autobiographic remarks about how he became interested in plants, one reads a story of a boy who grew up in many different locations in Russia, Israel and the US, and for whom plants came to represent an ideal of rootedness, constancy and fidelity to the land. Cosmopolitanism and silvo-agrarian nostalgia can be intertwined. Here, the point is clearly not to criticise Marder, whose exceptional scholarship is of undoubted value, rather, to ponder how probably every theorist has his or her 'agrarian moment'. I do not condemn this sympathy per se, but highlight that it is just one of the possible ways in which plants can be approached.

of cities, but also remind us that the mute, numb, non-historical nature of cities is no less precious, no less vital than its organisational, eventual and historical nature.⁷ If plant growth and the vegetative stratum challenge the infrastructural, legal, governmental and architectural order of the built environment (iconically illustrated by plant roots piercing the asphalt, moving bricks, breaking into sewage, and slowly but irresistibly covering buildings and infrastructures), then the relation between regulations, policies, rhythms and growth becomes a sensible area of enquiry. If it is perhaps not too difficult to imagine a certain vandalism of plants – connected to their relentless vitality dyed in intractableness – vegetative states also seem capable of putting us in communication with a great sense of calm and relief, sometimes even acquiescence.⁸ How to explain such a duplicity?

On growth and sentience

The notion of ‘vegetativeness’, or vegetative stratum, may help to review the notion of not only plants, but also animals and minerals, as well as their possible ‘sociation’, the space of their unfolding encounter. While, as said, the vegetative stratum is not specifically located in plants alone, observing plants retains a powerful revelatory potential. As a caveat, however, it should be specified that what is going to be predicated of ‘plants’, ‘animals’ and ‘minerals’, should more precisely attributed to the vegetal, animal and mineral layers of existence, to vegetation, animation and mineralisation as analytical keys to cut through the actual phenomena. The phenomena to be observed are compound of different types of ‘life’ – or, modes of existence – that may appear in a plurality of loci and intermingle in an exponential number of ways.

The life of plants highlights how the vegetative stratum is topologically distributive, flat, non-hierarchical. While the plant can certainly be studied biologically as a series of interconnected functions (and, much of current biology focuses precisely on the genetic underpinnings of such functional architecture), the phenomenology of vegetativeness also reveals a global non-functional dimension of plant life. The plant does not subject its parts to a strict organisational diagram and, especially, it does not sacrifice those parts for the benefit of higher organisational requirements. Lack of functions that interrelate the parts inside the whole organism, lack of hierarchy that subjects the parts to a single functional scheme for the organism: this is what vegetal life presents us with.⁹ Whereas the animal possesses specific sense organs, every plant cell is sensible; in other words, vegetal sensitivity is more distributed and open than animal sensitivity.¹⁰ Now, the problem posed to our comprehension is how to reconcile flatness and sentience, or non-hierarchy and awareness, insofar as our usual understanding of awareness tends to place it hierarchically at the top of a pyramid composed by lower-level biological circuits.

Over the last decade, plant biology has clarified that plants are more than mechanistic reflex complexes, indeed, they are capable of orchestrating a multiplicity of stimuli into

⁷I must credit an anonymous review for reminding that the ambivalence of vegetation must be recognised here, too.

⁸Albert Camus in his late work employed the beautiful and mysterious expression *consentement à la terre*, meaning an ‘acceptance of the earth’ which does not rule out humanism (and the state of ‘rebelliousness’ which Camus famously attached to the human condition).

⁹Again, this statement must be read as a matter of degrees when referred to actual plants, and as a matter of kind when referred to the vegetative stratum.

¹⁰Deleuze and Guattari’s (1980) philosophical (not biological) notion of rhizome (set out in contrast to ‘the tree’) provided an early attempt to de-emphasise hierarchy and re-emphasise distributedness, in not only plant life but especially, as the French philosophers put it, ‘the image of thought’.

meaningful experience. As a consequence, plants are now seen as more ‘animated’ than they were before. The very rise of an, albeit controversial, domain of ‘plant neurobiology’ testifies this fact. Debates about plant intelligence (Tassin 2016) have interestingly helped to strike a new balance in the old duality evoked above, between lively and numb plants. It is now admitted that, not so differently from animals, plants learn by association (Gagliano et al. 2016), accumulate experience (Gagliano et al. 2014), and even have proprioception (Bestien et al. 2013). Plants are also known to possess rhythms and memory, a bodily memory exempted from brain yet capable of and storing information collected from environmental signals through processes such as histone methylation and histone acetylation/deacetylation, which imply self-modification of genetic material. Plants generate memory imprints from events they have experienced, both short-term (through local concentration and de-concentration of proteins) and long-term (through genetic modifications that are passed down to the next generations via seeds) (Thellier et al. 2000; Molinier et al. 2006; Gális et al. 2009; Gagliano et al. 2014; Gagliano et al. 2016).

The plant biologist Chamovitz (2012) has argued that there is awareness in plants because, while not having a central nervous system, they do have the feeling of the elements surrounding them as well as of the fields of forces they are inserted in. Plants of course feel the light, but they also perceive odour, touch and gravity – in short, they have an ‘immensely sophisticated sensory machinery’:

Plants are acutely aware of the world around them. They are aware of their visual environment; they differentiate between red, blue, far-red, and UV lights and respond accordingly. They are aware of aromas surrounding them and respond to minute quantities of volatile compounds wafting in the air. Plants know when they are being touched and can distinguish different touches. They are aware of gravity: they can change their shapes to ensure that shoots grow up and roots grow down. And plants are aware of their past: they remember past infections and the conditions they’ve weathered and then modify their current physiology based on these memories. (Chamovitz 2012: 223)

Chamovitz is very cautious in his argumentation, and provides a wealth of scientific data and experiments in order to argue that plants do feel, but have no intelligence (insofar as they have no brain). Indeed, it would be misleading to borrow the animal model of intelligence to plants. But we should also add that, besides the risk of confusing sensitivity with intelligence, there is always the risk that attributing our own perceptual senses and attitudes to plants leads to incorrectly anthropomorphising them. Such risk is for instance quite tangible in popularising books, such as Wohlleben’s (2016), which, while well informed and written by a specialist forester, often indulges in characterising ‘lazy branches’, ‘fearful leaves’ and ‘clumsy trees’. Direct comparisons between humans and plants tend to generate several inconveniences. For instance, there is a fundamental difference in the way animals and plants perceive the light: the former do it with eyes, the latter without them. Are we dealing in both cases with the same understanding of ‘perception’? In order to sidestep the dualism ‘the plants and us’ – which risks conjuring up an endless mirroring effect, a veritable *mise en abyme* – this paper suggests to triangulate the relationship *via* the city, understood as a very distinct sort of creature. The city may be endowed with ‘life’; however, it is clear that its life is *per se* neither vegetal nor animal – nor, for that matter, fungal or mineral. Instead of analysing plant life by comparing it to the human animal physiological-psychological build-up – then projecting onto the plant our perceptual senses and, *a fortiori*, our model of intelligence – it could be more interesting to attend

the direct (although, at first sight, uncanny) *plant-city connection*. Tackling this connection, the perspective of growth becomes relevant.

From a morphological point of view, Thom (1988) remarked that the ramified form exhibited by plant development corresponds to a movement of expansion of the creature into its environment (which we may call *radiation*), up to an optimal deployment that is given by the plant's nutritive need.¹¹ Since usually the plant feeds on light (chlorophyllous) or on surrounding dead organic matter (saprophytic), Thom contends that its form derives from an *identification* with the spatial extension of the nutritive environment:

Le Végétal doit en quelque sorte s'identifier au milieu nourricier, donc à l'étendue spatiale. D'où une structure ramifiante qui, si la générativité de la morphogénèse biologique pouvait se déployer indéfiniment, aboutirait à un « fractal » de dimension de Hausdorff intermédiaire entre 2 et 3. La self-similarité qui caractérise les fractals « réguliers » joue donc un rôle essentiel dans la morphologie végétale. (77)¹²

[The Vegetal must somehow identify itself to its nourishing milieu, and therefore to spatial extension. Hence, a ramified structure that, if the generativity of biological morphogenesis could unfold completely, would attain a 'fractal' figure of Hausdorff dimension between 2 and 3. The self-similarity that characterises 'regular' fractals plays an essential role in vegetal morphology.] (my translation)

Such radiation (*épanouissement du végétal dans le milieu* or, expansion of the vegetal into its own milieu) reminds us that the growth of plants is completely different from the growth of animals, insofar as the former is much less centred than animal life. Plants have been traditionally characterised as *scissile*, meaning that a plant can be pruned and reproduced by cutting. However, as everyone who's ever tried to perform pruning, cutting or grafting knows, these are refined gardening techniques, far from being smooth and easy to enact. Because of the possibility of surviving cutting to a degree animals would not, the very boundaries of a single plant are called into question.¹³ As a consequence, individuality in plants is different from individuality in animals. At the same time, the plant is not completely a-centric; rather, it could be said to possess a complex centripetal zone, a kind of 'barycentre zone' where relations of centrality and peripherality can still be distributed. Concretely, if I cut the root badly, in a way that destabilises or creates a fatal disturbance to the barycentre zone, the plant will probably not survive. The fact that the cut is in any case always a shock to the plant, not an anodyne event to go through, suggests that a form of individuality is in fact present in it. Perhaps, the mathematical model of the *potential well* could be employed to describe

¹¹Incidentally, it can be remarked that, describing such expansion of the vegetal into the environment, Thom seems to be thinking above all about angiosperms (trees). Whether his model holds for other types of plants remains to be ascertained.

¹²Thom continues remarking how immobile marine animal such as corals pursue a similar topology: 'Chez les animaux marins sessiles qui se nourrissent d'un plankton indifférencié, on retrouve presque la morphologie ramifiante du Végétal: il leur suffit de diriger le courant dans un filtre approprié pour capturer leur nourriture (le courant est parfois créé par l'animal lui-même)' (Thom 1988: 77) [Sessile marine animals that feed on undifferentiated plankton exhibit a ramified morphology that is similar to the vegetal one: to capture food, it is enough for them to direct the currents into an appropriate filter – sometimes it is the animal itself that creates the current] (my translation).

¹³Animals can also survive amputation, and sustain organ transplantation. As to the former, however, the amputability of animals is anatomically reduced vis-à-vis that of plants – this again testifies that the degree of centredness of the individual animal is higher than that of the individual plant; as to the latter, it is quite interesting that the very terminology of this medical operation speaks a vegetal language: it may actually be the case that organ transplantation is effectuated upon the vegetative stratum of the animal, rather than on its animated one.

this field of differential distributions in the formation of individuality across different domains, highlighting how a different ‘breadth of equipotentiality’ contradistinguishes minerals, fungi, plants and animals.¹⁴ Without venturing into detailed formal models, suffice it here to say that the scissile nature of the plant corresponds to a different mode – or at least, a different degree – of individuation. In plants, the limits of the individual are less sharply drawn than in animals.

The problem of individuality can be approached from different perspectives, with the heuristic aim to de-familiarise from usual preconceptions about plants and animals. One way to do so could be, for instance, to hypothesise that the vegetative stratum is of non-individual nature (difference of kind), but that each living entity appropriates it in different ways (difference of degrees). The encounter between the stratum and the entity then determines a *measure* of being, and the question may turn into singling out the measure that is inherent in plant life as a whole (and, as we shall see, how such measure reframes the city). We know for instance that plant clonal colonies – only some of which are connected via root system – can grow much older than individual trees. The famous Pando group of quaking aspen (*Populus tremuloides*), located in south-central Utah, United States, dates back least 80,000 years and is the heaviest known living organism, weighting, according to estimates, about 6,000 tons.¹⁵ Clearly, an organism such as Pando deeply challenges commonsensical notions of individuality. One cannot see the whole of Pando, only some of its manifestations, least embrace its temporal span of growth. Pando is an organism, but also a whole forest, a whole population: it is, in fact, a *multiplicity* in Deleuze and Guattari’s (1980) sense. An ‘extreme’ case of individuality, Pando suggests that even a tree can, in fact, be a rhizome. Even a single tree appears here to form an ensemble of ‘connectors’: a colony, a population. In space just as in time, Pando exceeds the measure of the individual: biologists have suggested that Pando is dying – however, its ‘death’ will probably span hundreds or even thousands of years. Under these circumstances, does it make any difference to say that it is living instead of dying?

The notion of multiplicity enables the setting of plants in movement in space and time. Philosophers have traditionally defined the plant on the basis of its rootedness. For this reason, the plant has been associated with a sense of stability and safety (staying put). The plant is said to be *sessile*, fixed in one place. In fact, however, plants are much more adventurous than just rooted, localised creatures. A first-rank connoisseur such as the gardener Clément (2002) has dubbed plants ‘the great vagabonds’: for the plant includes not only the part of it that is present before our eyes – its trunk, branches and roots – but also its seeds, which travel with the wind at great distance. The air of the globe is thick with such travelling seeds and spores. Consequently, the notion of individuality comes to be very much relativised by the fact that the entity itself exists in a ‘diffuse state’ or dispersive cloud. Animals’ seeds do not travel even a fraction of the

¹⁴In mathematical physics, a potential well is defined as the region that surrounds a local minimum of potential energy; a potential well determines a region where the law of entropy is suspended and energy can be accumulated, given that no energy can escape the region until the local maximum is surmounted. The model is applied by Thom in his semiophysics, but is also widely used in quantum mechanics. In the context of our discussion, it may indicate the degree to which the individual creature exists in a condensed or diffuse state. A connection may be established with Schrödinger’s (1946) idea that living organisms thrive on suckling orderliness from their environment, by which action a taming of the increasing entropy can be locally achieved.

¹⁵Information retrieved from: [https://en.wikipedia.org/wiki/Pando_\(tree\)](https://en.wikipedia.org/wiki/Pando_(tree))

vegetal distance, which creates a completely different geometry of sociation – for instance in terms of mating and reproduction, but also more generally in terms of the definition of what counts as a social encounter, and where the boundaries of individuals in interaction can be drawn. The notion of multiplicity crafted by Deleuze and Guattari is aimed at tackling similar spatio-temporal spans. The life of Pando seems exceptional, yet only insofar as we rely on a commonsensical understanding of animal individuality. In other words, we are biased towards attaching importance to a certain type of individuality (and especially so when the animal is human). But, populations, generations and species may similarly be regarded as individual entities. For instance, when palaeontologists reconstruct the encounter between two civilisations, or when historians document the dynamics of a revolutionary change, or when ecologists model the impact of the human species on other species present in a given niche, individuality must change nature. In fact, no animal exists aside from a population of which it is a specimen (*une fourmi, ne veut rien dire* – as Deleuze used to say – *mais on n'en finit pas avec les fourmis*). From this perspective, the notion of multiplicity highlights the similarity between plant and animal life: only by looking at animal populations (and ultimately, species are a manifestation of populations) can we see animal seeds travelling the continents and colonising new lands as plants do. We may also say, that the vegetative stratum radiates through animal existence as the enhancement of dispersion, distribution and growth.

The relative lack of coordination that contradistinguishes the plant corresponds quite neatly to what Nietzsche once called – generating much misunderstanding – *the will to power*. From the Nietzschean perspective, if there are living beings endowed with will to power, these are the plants, and perhaps the fungi, certainly not the animals in the first place. The reason is that Nietzsche (1883–88: fragment 647) locates the essence of power in the *lack of organisation*, in looseness instead of tightness: a soft connection between the parts enables the type of flexibility and multiplicity of equilibria that a strong connection destroys because of its rigid encasement.¹⁶ For Nietzsche, power lies in an openness to life (*bejahende, yes-saying*) which plant life embodies best. This is why he writes that humans still have to learn from flowers how to bloom. Compared to the restlessness and dissatisfaction of the animal, vegetal existence teaches the priority and primacy of *patience* over agency, of the capacity to feel over the capacity to act: vegetative states are characterised by an intensity of feeling, by a ‘pathos’ that signifies openness to the environment (Thom’s *épanouissement dans le milieu*). This diffusiveness is perhaps epitomised by blossoming, but by no means confined to it. In fact, as the plant projects itself into the environment it develops and entertains a special relation with the four Aristotelian essences: the plant is *earth* that projects itself into the *air*, and its life spans a minimal threshold defined by *water* (without water, the plant dries and dies) and a maximal thresholds defined by *fire* (burning is the final destruction of the plant cut down into wood).

In conclusion, it is advisable to admit that the connection between plants and animals is not a linear one. On the one hand, vegetation seems turned in the first place towards bacteria and insects, rather than towards vertebrate animals (with humans among them). On the other hand, plants are also permanently turned towards the weather. A complex

¹⁶Max Weber’s subsequent image of the *stahlhartes Gehäuse* – the iron cage of rationality – can be understood as a negative illustration of this same principle.

geometry of encounter ensues so that – through the plant – animals similar to us can enter a threshold zone where the horizon of animality is intimately infused in climatic conditions. It is just simply not fruitful to oppose plants and animals, or plants and minerals. Instead, what could be more helpful is to examine how a vegetative stratum characterised by growth through ‘dispersive connection’ seems to infuse plant and animal life – as well as perhaps even (in ways that are still hypothetical at the moment) fungal, bacterial and mineral life.

Vegetal temporality, vegetative hopes

As suggested above, the vegetative stratum may be approached as not only a spatial topology, but also a temporal register and a temporal horizon. Plants are the most long-lived life forms – there is proof of some *Pinus longaeva* specimen of several thousands years of age.¹⁷ Yet it is not the sheer extension of a life that matters (of course, by contrast, other plants only live a few months), rather, the qualitative character of vegetal temporality. *En gros*, as a first approximation, the vegetal appears as a *slow*, as opposed to the *quickness* of animal existence. In few minutes, a human equipped with a chainsaw can cut a tree that employed decades to grow to that size. Thus, there seems to be an indelible disproportion between these two kingdoms of life. It may well be that, from the point of view of plants, animals – and, among them, humans – look like frantic, accelerated creatures with neurons firing like crazy. Plants and animals have made two evolutionary choices based on irreconcilable compositions of speed: if you stare at a plant and try to see it grow, you can’t see it – better, you can’t see it grow even in the process of actually looking at it growing before your eyes.¹⁸ In practice, it is only through specialised technological visualisation techniques such as time-lapse photography and high frame-rate filming (or high-speed photography) – technologies that enable humans to change their perceptual latitudes, dislocating rhythm and magnitude of perception – that we can *see* plants grow. If, at birth, we are not made for this type of perception, it is perhaps because animal life added onto the vegetative stratum a different enterprise, endowed with a different temporality and a different topology, and chose to invest onto that distinct form of life (perhaps, animation might not be even properly described as a stratum, but should be better theorised through its ‘moments’ of being). At some point during evolution, the kingdoms were parted; but there are also always involutive movements that re-open the conversation.

The vegetal has in many cases been imagined as possessing a temporality that revolves or pivots around a rhythmic cosmic pattern. For instance, in his joint work with Irigaray, Marder has highlighted the dimension of seasonal *waiting* that characterises plants, especially in the agricultural encounter with humans:

At the origin of the seasons, then, planetary time is measured by the stages of plant life and of the human dealings with plants. There is an appropriate time for entrusting the seed to the earth – the season of sowing, which came to be a synecdoche for all the other seasons. (Irigaray and Marder 2016: 144)

¹⁷For instance, the Norway Spruce specimen known as ‘Old Tjikko’ has been determined to be 9,559-year-old. See https://en.wikipedia.org/wiki/Old_Tjikko

¹⁸Incidentally, this is an illustration of the fact that the perspectively visible and the invisible are not opposed to each other, but rather coexist and somehow feed into each other. I have dealt extensively with the intricacies of the relation between the visible and the invisible in Brighenti (2017).

Vegetative time is integrally a seasonal time and, in fact, seasons are named after the events that contradistinguish the life of plants. For instance, the Italian word for winter, *inverno*, literally means the lack of spring (*ver*), which in turn is the sprouting of vegetation; while in Spanish summer is *verano*, which is the fully vegetative season, etc. The time of seasons is the opposite of the time of logistics, a non-logistical time that is also the time of art – art understood as precisely a natural production. The idea that the plant is slow is somehow reassuring; but is it correct? The impression of the vegetal being as a creature of ‘slownesses’ may need to be reviewed. In practice, everyone who owns a garden remains always surprised by how fast the grass and the plants are found suddenly overgrown. They have not simply grown fast, they have in a sense *already overgrown*, grown before we could cast our gaze upon them – grown in the invisible.

Like a sumo fighter, the plant moves in the in-between, in a kind of ‘smooth space’ that sidesteps measure (Deleuze and Guattari 1980). The wonderful high-speed photography capable of revealing to us the fluid sprout of a bud is essentially a technical device to dislocate our animal temporality and put us in touch with the vegetal horizon of time. Unfortunately, it is also a trick that may end up hiding more than revealing – for vegetal time is not slow, but *aeonic* – akin to what Spinoza once called *eternity* – a mundane eternity everyone of us can experience through one’s own mode of existence.¹⁹ While animals and plants appear as mostly out of synch with each other, the ‘profane illumination’ of vegetative temporality lies in generating the notion of the *right time*.²⁰ The right time is the endogenous production of the vegetative stratum. In this sense, Clément underlines that

Pour des raisons liées aux saisons, au rythme des flux dans l’organisme des plantes, à l’incidence énergétique du soleil, à l’abondance ou à la rareté de l’eau, les végétaux prennent leur temps. Ils se décident au développement lorsque les circonstances nécessaires au développement sont réunies. Accélérer le processus les amènerait à croître dans des conditions menaçant leur propre vie. Alors ils attendent le moment venu. Le bon moment. Ni crédit ni dette de temps. À aucun moment le temps ne représente un placement, un objet de spéculation, il est *juste* ou alors il n’est pas. (Clement 2011: 87)

[For reasons related to seasons, to the rhythm of flows inside plant organism, to the energetic impact of the sun, to the abundance or scarcity of water, vegetals take their time. They only determine themselves to develop once all the necessary circumstances are reunited. To try to accelerate the process would just lead them to grow under life-threatening conditions. So, they wait for the moment. The good moment. No time credit, no debit. To them, time is never an object of speculation: either it is *right*, or is not.] (my translation)

Even in its incredible accelerations (its being already-overgrown) and decelerations (the seed as time traveller through vernalisation and droughts), the plant is always on time. The plant, Clément suggests, cannot but happen at the right time; whilst the animal often hurries up, the plant secretes its own sovereign course. Of course, that does not mean that the plant is not exposed to the sudden changes in weather and climate that represent adverse events to it (extreme thermal excursions, droughts, floods, early snow, late frosts, hailstorms, wild fires ...).

¹⁹An elaboration concerning the difference between three types of Deleuzian temporalities – aeonic, kronic and chronological – is provided in Brighenti and Kärrholm (2016).

²⁰Of course, as one reviewer has acutely noticed, the notion of ‘right time’ may be suspected of reintroducing a form of silvo-agrarian nostalgia. As hinted above, the ‘silvo-agrarian moment’ is probably unavoidable. The point is not to renounce universals, but to reject universals that are imposed upon life instead of being locally generated by it.

Vegetative timing is in-between time, and simultaneously time that prepares and sustains the rhythms of life as it proceeds through the becoming of weather (Shepherd 2005). It is thanks to plants that animals, with humans among them, got to know that there is a right time, a mature time, an apposite time: the *fruitful* time. It is important to clarify the nature of such fruitfulness. Because of its low degree of visibility, the vegetative stratum may be easily misunderstood for an infrastructural level of sort, which is not. The plant neither supports action, nor ‘acts’, in the sense that it does not operate in the register of ‘making things’. Certainly, the plant is productive, and also extremely productive in terms of bringing forward flowers and fruits, but not in the sense of an ‘industrious’ production. In many cases production is overabundant: for instance, the production of fruits in a plant is generous, for only a minute fraction of seeds will end up in a situation that is favourable to their germination. But fruits and seeds are not functions, rather, ways of deployment of the plant’s own existence (expressions, not products). Only through a series of chemical tricks used in industrial agriculture and genetic engineering (such as the manipulation of auxin hormones) are plants spurred not simply to produce *more*, but turned into production-oriented machines. Left to itself the plant may be productive or overproductive, yet without being solely oriented towards production: the plant does not seem ‘obsessed’ by production as animals are.

Cultivation has been for millennia the way humans have encountered plants, at least since the ‘creation of the garden’ evoked by Clément. Culture itself is, quite literally, cultivation. In a famous definition of culture, Simmel (2011[1900]: 483) wrote that culture entails bringing something *beyond* what would come effortlessly from it: it is a form of intensification and overcoming. If culture is originally a relation of the animal with the plant, aimed to make plants more productive (agri-culture), the use of props, stakes, clips, grafts, fertilisers, selection and so on, has also been turned by humans upon themselves, through those processes we call education, disciplination, as well as care of the self and self-cultivation (and even eugenics). Culture, Simmel suggested, is essentially ‘refinement’, or civilisation of nature, a form of nurture. However, ultimately, there seems to be no tenable opposition of kind between nature and nurture. Nurture and cultivation are, in fact, a part of nature, and it is only in the ways, the degrees and the technologies with which humans have sophisticated this tendency that they have managed to distinguish themselves. For the rest, nature itself is thoroughly experimental. What the plant is oriented towards remains linked to an understanding of its rhythms, of its seasons, rather than subsumed under a single overall project.

In particular, there seems to be a special affinity between the vegetative stratum and the state of *hopefulness*. Again, one should be wary of projecting human passions – such as joy, rage, envy – onto plants. Hopefulness, however, points towards a relatively well-defined state that alludes to seasonal becoming and transformation, including the sense of concentration, waiting, preparation and utopian promise – the seed. This is probably still an anthropomorphic reading, yet arguably a minimalistic one. We must approach the issue by recognising that vegetal existence is *indifferent* to many of our feelings, and certainly indifferent to despair. In a sense, vegetation is always hopeful because it does not know the abrupt interruption of life encountered by animals. If it is already difficult enough to say when an animal is dead – when it has finished dying – for plants, it is in many cases impossible. The cypress legendarily planted by Saint Francis of Assisi in the 1200s and that nowadays occupies (almost invades) a large share of the cloister of the monastery

of Santa Croce in Villa Verucchio, Italy, is perhaps already part dead in many parts; but other parts of it continue to live and grow. Less and more than an individual, that tree has lost the shape of cypress and has become a whole environment: it does not possess a single source of life (an individuality), but rather appears as a hyper-creature, a cluster of living lines and waves that continue to cross over a continent of dead biomass.

It is not surprising, after all, that humans and cities need plants to remain hopeful. For instance, travelling Japan during the *hanami*, the traditional 'flower viewing' festival of the cherry blossom (*sakura*) season, a foreign observer cannot fail to notice how people are not simply constantly turned towards flowers, walking with their nose upward and snapping amounts of pictures of them. During the *hanami* celebration period, it has been observed, Japanese people enter a kind of almost inebriated, flying state. One could argue that this is also connected to a sense of fulfilment or completion, which may be in part true. However, it should also be remembered that Japanese cherry breeds are fruitless and are selected specifically for their majestic yet fragile and transient flowering – blossoms last for no more than a couple of weeks. This seems to resonate with the specifically elegant Japanese mind set, which would find it gross enough to see the flowers as functional to the fruits. In fact, as reconstructed by the anthropologist Ohnuki-Tierney (2002), the symbol of the cherry blossom was heavily exploited by Japanese nationalism to encourage personal sacrifice for the country: the cherry blossom was the flower of election of kamikaze soldiers.²¹ In today's Japan at least, what seem to count is not only the single blossoming of a single tree, but the coming of a blossoming wave (*sakura-zensen*) throughout the country from South to North, which is daily announced by weather agencies and broadcasted by radio and TV networks. The people strolling in the street for the *hanami* outdoor parties appear to join such vegetal hopefulness and prolong it into themselves, into their own way of being. As explained for instance by Sadafumi Uchiyama, the Curator of the Portland Japanese Garden, the Japanese celebration is supposed to take place just before full blossoming, 'the moment before the best' – that is, in a time of intense anticipation and hopefulness.²² The *hanami* in this sense provides one of the clearest examples of how the arrival of a new season is akin to an act of conversion, a metanoia that marks the acceptance of a vegetative rhythm of growth coming incorporated into the animal²³ – as well as, perhaps, the recognition paid by the city to its own polymorphic stratigraphy of states and moments.

Vegetating in the city

Urban space is partitioned into heterogeneous territories where the vegetative stratum may be conveyed in various ways and to different extents. 'The vegetative city' may thus be imagined as a formation that unfolds in between other strata of the city, between its various 'layers' of existence as well as between its various degrees of sentience (capacity to feel, to remain open to the events in the environment). Thus, the vegetative

²¹Ohnuki-Tierney has furthered her analysis examining other countries besides Japan, showing how the symbol of the flower has been manipulated by authoritarian and totalitarian regimes as an aesthetic tool of political domination (Ohnuki-Tierney 2015).

²²Interview recorded in <https://watch.opb.org/video/oregon-field-guide-hanami/> (Accessed 15 March 2018).

²³In Japanese culture, in particular, this fact is mirrored in the feeling known as *mono no aware*, the 'pathos of things', or, the slightly melancholic awareness of the transience of being alive.

mode amounts to a peculiar form of expression of the city. More particularly, vegetative states tend to appear dreamlike: they present themselves as acentric, instead of egocentric, and impersonal, instead of experiential. The city knows such dreams, decentred or differed dream states which urban narrators of the like of Don de Lillo (*Underworld*) and Paul Auster (*In the Country of Last Things*), but also photographers such as Walker Evans (*Many Are Called*) and Robert Doisneau (*La Banlieue de Paris*), have managed to feel, and make us feel. The vegetative stratum is perhaps better understood by art rather than theory. Yet, it is perhaps possible also for social, spatial and cultural theory to encounter vegetativeness as a prism for understanding the urban process. The vegetative stratum speaks of a city that occurs *only* or *just* when the time is ripe. Contrary to the mineral, the mechanic and the animal city, the vegetative city is marked by its discreet, ramified growth, its brainless sentience, its aeonic or 'eternal' temporality.

The vegetative city thrives in between the animated city, the former constantly filling the *interstices* of the latter. Such interstitial nature was perhaps originally an *infrastructural* one: plants have in many cases traditionally provided the raw materials to build cities, even down to their foundations. The case of Venice might be interesting here. Venice is usually regarded as a maritime empire; however, its vegetative stratum was heavily tributary to the forests in the Alps and the Karst Plateau from where the wooden piles upon which the city is erected came. More generally, if we look at the city as built environment, then it may be helpful to observe that, as Gruber (2009: 6) has pointed out, both architecture and plants constantly 'deliver space' for other organisms – and actually, more than space, timespaces (Kärholm 2007). The garden, for instance, can be seen as the space of election for a suspension of the overlaid temporal strata that usually hide the vegetative mode.²⁴ What the garden offers is a clearing of time.²⁵ It may well be that humans have created gardens to 'explicate' their own vegetation. Thanks to Clément, we have learnt to enlarge the notion of garden. Unplanned or abandoned spaces, places in 'stand-by', such as vacant lots, urban interstices, *terrains vagues*, *friches*, *brousses*, *lieux incultes* are also gardens. They are wild gardens – to speak with Clément (2004, 2011), 'gardens in movement' which form the parts of a 'third landscape'. Wild gardens are the scattered bits and pieces of a larger, unitary 'planetary garden'. Such 'undecided landscapes' are, for Clément, the embodiment of spatial freedom and vitality: in these places, 'there is nothing that has to do with death'.

If the garden is practically everywhere in the city (as well as on the planet Earth), then it is just a matter of locating the stratum where the consistency of vegetative growth and rhythm can be perceived most clearly. Maybe even steel and concrete structures possess one such stratum ... Actually, certain buildings appear to not simply exist, but also vegetate. It is not the case of turning to contemporary architectural exploits where plants are variously 'appended' to buildings (such as in Boeri's Vertical Forest); rather, it may more productive to look at architectural ruins. As famously depicted by Simmel (1958 [1911]: 380), the ruin reveals 'a unity which is no longer grounded in human purposiveness but in that depth where human purposiveness and the working of non-conscious natural forces [*unbewussten Naturkräfte*] grow from their common root [*ihrer gemeinsamen Wurzel*]'.

²⁴The vegetative city does not seem to know either exceptional spacetimes, or spacetimes tied to specific events. A few examples may however be selected and discussed particularly for their clear visibility, while of course this choice remains contingent and idiosyncratic. Potentially, the whole city can be regarded through the prism of the vegetative stratum.

²⁵The reader will notice the Heideggerian overtone of this word.

From this perspective, what contradistinguishes the vegetative stratum is the failure of the instrumentalisation of nature. Indeed, Simmel remarks that what we see in the ruin is the fact that ‘nature has transformed the work of art into material for her own expression, as she had previously served as material for art’ (381). Whereas architecture commonly puts to work the forces of nature (physical qualities of building materials, force of gravity, etc.) in order to attain a certain stylistic design (art), the ruin shows what happens when the balance between top-down and bottom-up forces goes out of balance. At that moment (or, in that phase), previously captured forces spin out of control and re-emerge to visibility, instead of disappearing in the static order of the building.

Derelict industrial properties are veritable modern ruins. Contaminated soils, overgrown weeds and rusty fragments of unknown or old-fashioned production devices form a typical ruinous post-industrial landscape, with its intense sense-scape (Edensor 2007). In 2009, the Italian architectural studio Atelier Delle Verdure (2011) started exploring one such abandoned industrial site in Sesto San Giovanni, in the periphery of Milano.²⁶ Their leading idea was that the local spontaneous vegetation, i.e., weeds or ‘bad herbs’ (*la malerba*), could be profitably used for the reclamation of the site – a process also known as ‘phytoremediation’. Drawing on Ralph Waldo Emerson’s dictum ‘What is a weed? A plant whose virtues have not yet been discovered’, Atelier Delle Verdure advanced various plans and projects to establish rich connections between the various temporalities and the various forms of growth inherent in abandoned industrial properties.

In this way, it becomes possible ‘to understand vegetal elements as particles of a spontaneous landscape deserving attention and care’ (Atelier Delle Verdure 2011: 40). The ruin is itself a garden, and may call for an active gardening that does not necessarily destroy the thick temporality of growth where – to speak with Simmel – the common root of the purposive and the unconscious lie. Similar forms of extreme gardening challenge our very notion of garden space. Well beyond their practical achievements, they are important in the theoretical reformulation they make possible. All land plots and all urban corners where some sort of ‘clearance’ occurs prepare the apparition of the vegetative city. The vegetative city, I believe, is not a metaphor; on the contrary, the *stratum* is to be understood in a literal sense. This is what Deleuze and Guattari (1980) suggest. I do not think that places in stand-by are ‘waiting’ to be regenerated and that developers (or speculators) will bring those places to ‘fruitfulness’. On the contrary, what I suggest is that the interstices and small corners are *already* blooming and bringing their fruit. These places are breathing, they are sentient, their transition is vegetal growth.

The interstitial perspective pushes us to reconsider and rearticulate the relation between centre and periphery (Brighenti 2013). As said, the vegetative city conveys a form of in-between existence: the vegetative city is *a-specific*, insofar as its rhythms do not amount to events in a proper sense. To appreciate this event-less, numb city – which is easily overlooked for its invisibility, or even discarded as meaningless – may call for a specially refined sensibility. A lot of urban repair-and-maintenance work – as documented for instance ethnographically by Denis and Pontille (2011) in the Paris metro – shares similarities with these vegetative states. The city is somehow constantly ‘kept up’ by minor, trivial efforts. While one may argue that repair and maintenance work is in fact functional, the vegetative perspective suggests that more is at stake. While there is no denial of functions, the vegetative

²⁶ A rich visual documentation of Atelier Delle Verdure’s project is available at their site: <http://atelierdelleverdure.it/>

a. The animistic moment

b. The vegetative stratum

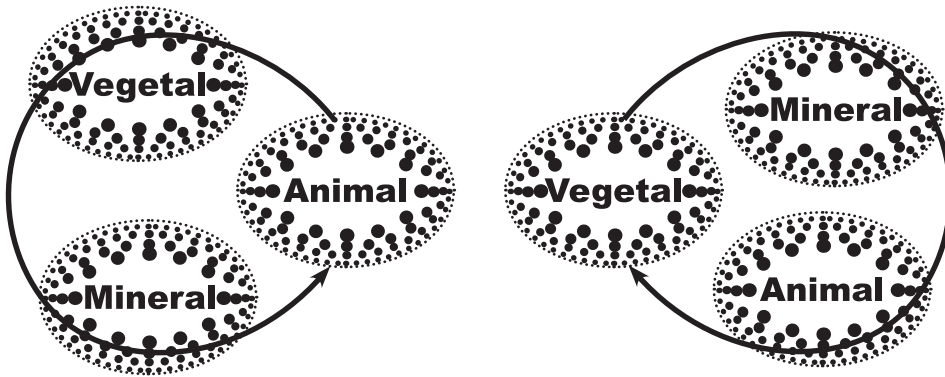


Figure 1. Vegetism and animistic moments.

perspective suggests that maintenance is simultaneously more-than-functional, embodying the immanent expression of a form of life of the city. The vegetative stratum may be said to permeate the city: it radiates and resonates in its growth without a plan. Consequently, besides the selective examples discussed so far, the vegetative city could be appreciated as a peculiar gaze *at the city as a whole*. This may be appreciated via the twin notions of ‘animism’ and ‘vegetism’, which might be figuratively rendered as in [Figure 1](#).

If we roughly – and even improperly – define animism as the attitude that consists in believing that plants, inanimate objects, and natural phenomena have a soul, then we may also define vegetism as the attitude that consists of sensing an impersonal, permeating living growth throughout the different domains of existence. While as a general belief animism may not have much worth, as a practice it is powerful and more common than usually held ([Stengers 2012](#)). Animism and vegetism appear to be parallel, but in fact function quite differently: for animism in practice cannot but work through special, punctual moments. These are ‘animistic moments’ ([Kärrholm 2016](#)) that produce a perception of the vegetal and the mineral as through the animal itself. Vegetism, by contrast, is event-less, it may only emerge as a halo-like, diffuse perception (or even, background knowledge) of the mineral and the animal through the vegetal. Whether or not it is actually possible to ‘see beyond animation’ is not immediately clear (insofar as seeing is quintessentially ‘animational’), and calls for further elaboration. Probably this connects again to the issue of plant sensorium and how it differs from the animal’s. What matters immediately, however, is the fact that, just as animism entails a passage of animation through different domains of existence, so does vegetism rely on the expansion of the vegetative stratum across a plurality of loci and activities. The vegetative stratum thus speaks of the connective-distributive-acentric aspect of cities, their impersonal (non-greed-driven) desire for growth, their expansive sentience and hopeful suspensions.

In conclusion, the vegetative mode of existence – or, what has been termed here, the vegetative stratum – is not focused on scheduled activities or projected achievements. In this sense, the vegetative city is distinct from the industrial or industrious city – if ever, it is what remains when the former retreats, cracks up or falls apart. The vegetative

stratum takes place when the time is ripe, it introduces us to a sentient city without a central nervous system. It is a city that does not act, yet lives and feels: a city that is sentient and responsive to its environment and the events that happen in it, although not productive of actions itself – a city that develops through its environment, unfolding and co-evolving in homeostasis with it. The city breathes, blossoms, takes root, releases seeds. The vegetative stratum is the anarchic city, a silent city that passes unremarked for the most part, sometimes belittled as numb and uninteresting, and *still* a vital city that brings rhythms into effect, crosses winters snowed under, looks for the new sun to come. The vegetative stratum embodies a life that, *regardless of all the rest* – which, please note, is no small thing! – ‘makes its course’.

Disclosure statement

No potential conflict of interest was reported by the author.

Notes on contributor

Andrea Mubi Brighenti is professor of Social Theory and Space & Culture at the Department of Sociology, University of Trento, Italy. Research topics focus on space, power and society. He has published, as author, *The Ambiguous Multiplicities: Materials, Episteme and Politics of some Cluttered Social Formations* (Palgrave Macmillan, 2014), *Visibility in Social Theory and Social Research* (Palgrave Macmillan, 2010) and *Territori migranti* [*Migrant Territories. Space and Control of Global Mobility*] (ombre corte, 2009). As editor, (with Mattias Kärrholm) *Urban Walls. Political and Cultural Meanings of Vertical Structures and Surfaces* (Routledge, 2018), *Urban Interstices. The Aesthetics and Politics of Spatial In-betweens* (Ashgate, 2013), *Uma Cidade de Imagens* (Mundos Sociais, 2012 – with Ricardo Campos and Luciano Spinelli), and *The Wall and the City* (professionaldreamers, 2009).

ORCID

Andrea Mubi Brighenti  <http://orcid.org/0000-0002-7498-9857>

References

- Atelier delle Verdure. 2011. ‘Il Malerbario’. *lo Squaderno* 20, 37–41.
- Bastien, R., Bohr, T. and Moulia, B. 2013. ‘Unifying Model of Shoot Gravitropism Reveals Proprioception as a Central Feature of Posture Control in Plants’. *Proceedings of the National Academy of Sciences* 110:2, 755–760.
- Bernhard, T. 1989[1985]. *Old Masters. A Comedy*. Chicago: University of Chicago Press.
- Brighenti, A. M. (ed). 2013. *Urban Interstices. The Aesthetics and the Politics of the In-Between*. Farnham: Ashgate.
- Brighenti, A. M. 2017. ‘The Visible: Element of the Social.’ *Frontiers in Sociology* 2:17, 1–11. doi:10.3389/fsoc.2017.00017.
- Brighenti, A. M. and Kärrholm, M. 2016. ‘Three Presents. On the multi-Temporality of Territorial Production and the Gift from John Soane’. *Time & Society* Available online at <http://journals.sagepub.com/doi/abs/10.1177/0961463X16678254> (accessed 7 May 2018).
- Canetti, E. 1978[1960]. *Crowds and Power*. New York: Seabury Press.
- Chamovitz, D. 2012. *What a Plant Knows. A Field Guide to the Senses*. New York: Farrar, Straus and Giroux.
- Clément, G. 2002. *Éloge des vagabondes. Herbes, arbres et fleurs à la conquête du monde*. Paris: Nil.

- Clément, G. 2004. *Manifeste du tiers paysage*. Montreuil: Sujet-Objet.
- Clément, G. 2011. *Jardins, paysage et génie naturel*. Inaugural lecture at the Collège de France, Paris. <https://www.college-de-france.fr/site/gilles-clement/inaugural-lecture-2011-2012.htm> (accessed 1 August 2017).
- Deleuze, G. and Guattari, F. 1980. *Mille Plateaux*. Paris: Minuit.
- Denis, J. and Pontille, D. 2011. *Nel mondo della segnaletica. L'ecologia grafica degli spazi del metro*. Trento: professionaldreamers.
- Edensor, T. 2007. 'Sensing the Ruin'. *The Senses and Society* 2:2, 217–232.
- Frazer, J. G. 2009[1890]. *The Golden Bough*. Oxford: Oxford University Press.
- Gagliano, M., Renton, M., Depczynski, M. and Mancuso, S. 2014. 'Experience Teaches Plants to Learn Faster and Forget Slower in Environments Where it Matters'. *Oecologia* 175, 63–72.
- Gagliano, M., Vyazovskiy, V. V., Borbély, A. A., Grimonprez, M. and Depczynski, M. 2016. 'Learning by Association in Plants'. *Nature – Scientific Reports* 6:924, 1–9.
- Gális, I., Gaquerel, E., Pandey, S. P. and Baldwin, I. T. 2009. 'Molecular Mechanisms Underlying Plant Memory in JA-Mediated Defence Responses'. *Plant, Cell and Environment* 32, 617–627.
- Gruber, P. 2009. 'Biomimetics in Architecture – Inspiration from Plants'. Paper at 6th Plant Biomechanics Conference, Cayenne (French Guiana), November 16–21.
- Irigaray, L. and Marder, M. 2016. *Through Vegetal Being: Two Philosophical Perspectives*. New York: Columbia University Press.
- Kärrholm, M. 2007. 'The Materiality of Territorial Production'. *Space and Culture* 10:4, 437–453.
- Kärrholm, M. 2016. 'The Animistic Moment: Clarice Lispector, Louis Kahn and the Reassembling of materialities'. *lo Squaderno* 39, 71–77.
- Marder, M. 2013. *Plant-Thinking. A Philosophy of Vegetal Life*. New York: Columbia University Press.
- Molinier, J., et al. 2006. 'Transgeneration Memory of Stress in Plants'. *Nature* 442:7106, 1046–1049.
- Niccoli, O. 2003. 'Images of Society'. In John A. Marino (ed), *Early Modern History and the Social Sciences*. University Park, PA: Penn State University Press, 101–122.
- Nietzsche, F. 1883–8. *The Will to Power*. English edition Walter Kaufmann (ed). New York: Vintage Book, 1967.
- Ohnuki-Tierney, E. 2002. *Kamikaze, Cherry Blossoms, and Nationalisms: The Militarization of Aesthetics in Japanese History*. Chicago: University of Chicago Press.
- Ohnuki-Tierney, E. 2015. *Flowers That Kill. Communicative Opacity in Political Spaces*. Redwood City, CA: Stanford University Press.
- Schrödinger, E. 1946. *What Is Life?* London: Macmillan.
- Sharr, A. 2006. *Heidegger's Hut*. Cambridge, MA: The MIT Press.
- Shepherd, V. A. 2005. 'From Semi-Conductors to the Rhythms of Sensitive Plants: The Research of J. C. Bose'. *Cellular and Molecular Biology* 51:7, 607–619.
- Simmel, G. 1958[1911]. 'Two Essays'. *The Hudson Review* 11:3, 379–385.
- Simmel, G. 2011[1900]. *The Philosophy of Money*. London & New York: Routledge.
- Stengers, I. 2012. Reclaiming Animism. *e-flux* 36. Available online at <http://www.e-flux.com/journal/36/61245/reclaiming-animism/> (accessed 7 May 2018).
- Tassin, J. 2016. *A Quoi Pensez les Plantes?* Paris: Odile Jacob.
- Thellier, M., Sceller, L. L., Norris, V., Verdus, M-C. and Ripoll, C. 2000. 'Long-Distance Transport, Storage, and Recall of Morphogenetic Information in Plants: The Existence of a Sort of Primitive Plant "Memory"'. *Comptes Rendus de L'Académie des Sciences - Series III - Sciences de la Vie* 323:1, 81–91.
- Thom, R. 1988. *Esquisse d'une sémiophysique*. Paris: InterEditions.
- Tönnies, F. 1887. *Gemeinschaft und Gesellschaft*. Leipzig: Fues's Verlag.
- Wohlleben, P. 2016. *The Hidden Life of Trees*. Vancouver, Canada: Greystone.