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Common Grounds: Thinking With Ruderal Plants About Other (Filmic) Histories

Teresa Castro

Department Cinéma et audiovisuel, Université Sorbonne Nouvelle, 75012 Paris, France; teresa.castro@sorbonne-nouvelle.fr

Abstract: This article explores the connections between film and ruderal plants: plants that grow spontaneously in anthropized environments and that we often call "weeds". Thriving across damaged lands, ruderals are not only exceptional companions for thinking with at a time of ecological rupture, but also a way of engaging with less anthropocentric histories. As argued in this paper, such histories also pertain to film. Despite its timid representational interest in ruderals and "weeds", cinema is concerned with the stories of collaborative survival, companionship and contaminated diversity raised by such turbulent creatures. Framed by a reflection on our ruderal condition, a discussion around some recent artists' films allows us to explore some of these problems, while putting an accent on the idea of affective ecologies and involutionary modes of perception.

Keywords: affective ecologies; ecocriticism; lichens; plants in film; ruderal plants; vegetal turn; weeds

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1. Introduction: Beyond Representation Alone

Celebrated as the co-creator of a world-changing device known as the *cinématographe*, French inventor Auguste Lumière apparently used the machine's prototype only once, in order to shoot a view called *Mauvaises herbes* ("Weeds", view nº 64, 1896) [1]. Despite its suggestive title, the film in question is less about the fortuitous plants known as "weeds" than about the rising swirls of evanescent white smoke caused by their burning. In those early years, and for many decades to come, trees, plants, let alone the humble and reviled weeds—"nature's most unloved plants" [1]—rarely made it to the foreground. From its beginnings, film was pictured as a human-centred medium, as illustrated by the views that the Lumière brothers displayed to marvelled audiences in France and abroad. If the rustling leaves in the garden setting of *Repas de bébé* ("The Baby's Meal", Louis Lumière, view nº 88, 1895) famously caught their eye, briefly rescuing our vegetal companions from the background, film consistently measured its shots against human bodies and human time scales. Unsurprisingly, the ten views shown at the historic Grand Café screening in late 1895 were all carefully composed around human figures, renewing with anthropocentric modes of vision and temporalities [2]. Moreover, the early spectators' fascination with moving leaves does not actually suggest an undocumented affinity towards the vegetal realm. Swirling sea-waves, tossing waterfalls and fluttering clouds (of steam, dust or smoke) equally attracted their attention. Hinting at the powerful experience of seeing fugitive, unplannable movements captured on screen, even a beer's fleeting head could stand out against a lively tableau (p. 308, [2]).

Historically, cinema's timid but noteworthy interest in plants as filmic subjects in their own right goes back to this initial period. As early as 1896, there was talk in the French press of documenting the lifecycle of a rose (or of a rhododendron) by means of the movie camera [3]. Before the Institute Marey put the idea into practice, German botanist Wilhelm Pfeffer shot four time-lapse studies on plant motion between 1898 and 1900, the technique "endow[ing] plants with a vivid sense of vitality" (p. 56, [3]) [4]. Envisaged as a new research tool by different disciplines, among which was plant physiology, filmic technology began to

unmoor itself from its anthropocentric underpinnings, exploring other-than-human scales and helping to shake the boundaries of century-old conceptions about life and the living [5]. Writing about *The Life of a Plant* (Percy Smith, 1926), a *Secrets of Nature* production starring a garden nasturtium, a reviewer commented that after seeing the film "you find it difficult to believe (. . .) that the life of a plant is not as sentient as your own" (p. 9, [4]) [6].

Nonetheless, beyond the specific interest evinced by a handful of experts and scientific popularisers alike in vegetative movements (and the audiences' continuing fascination with time-lapse technology), plants were rarely promoted to the role of film stars [7]. Certainly, once stencilling became mechanized (1907) and as different additive two- and three-colour systems were perfectioned in the following years, flowers graciously lent themselves to the spectacular showcase of flamboyant palettes, like in Gaumont's *Études des fleurs* ("The Kingdom of Flowers", 1910) [5] or *Bouquets dans des vases* ("Bouquets in vases", Gaumont, 1912) [6] (Figure 1). Placed on rotating pedestals, as if arrayed behind the glass of a fancy shop window, flowers (but also fruits and vegetables) occupy the centre of the screen. But such films are exceptional, and the subgenre too modest with regards to its supposedly phytocentric ambitions, to turn plants into more than just a curious footnote in the history of cinema.

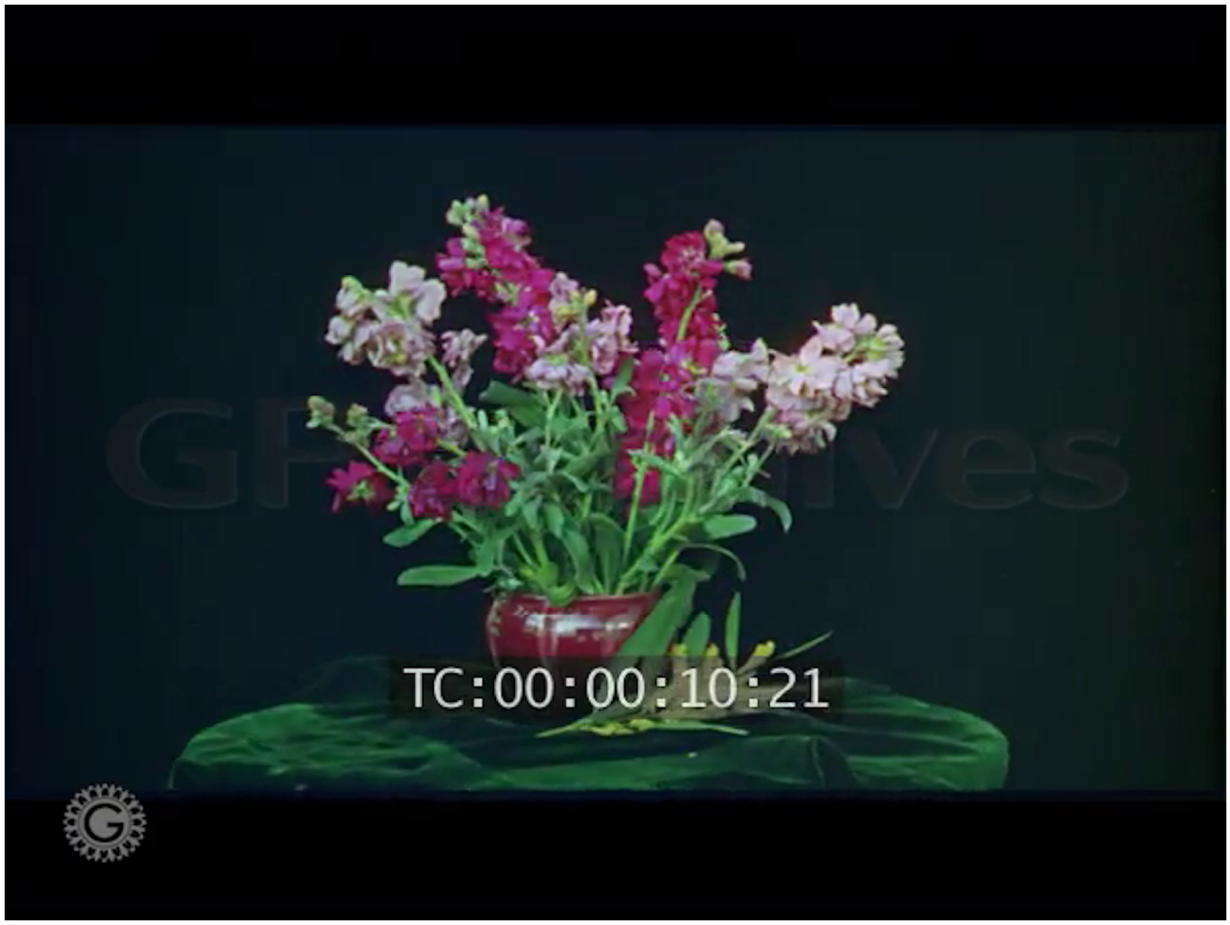

Figure 1. Film still from *Bouquets dans des vases*, Gaumont, 1912 (© Gaumont Pathé Archives).

However, to think about cinema with plants is not necessarily to focus on representation alone [8]. To return to *Étude des fleurs* and *Bouquets dans des vases*, the most relevant aspect of these pictures concerns our perception of their colours and what they tell us about filmic flowers. If their vibrant hues strike us as nonnatural (in particular the chronochrome florae of *Bouquets dans des vases*), it is probably because of the synthetic, celluloid character of these specimens—yet another iteration of what Sarah Cooper has aptly named "techno-flowers",

flowers that come to matter through cinematic means and, one can add, through very concrete, material supports, such as the flexible and highly-flammable material known as celluloid [7]. Curiously, before it became the motion pictures' stock of choice (and a synonym for cinema generally), celluloid—essentially composed of nitrocellulose and camphor (a plant-derived chemical in its natural form, synthetised in the early 20th century)—had also transformed the buoyant industry of artificial flowers. Indeed, if silk and fine cotton remained the privileged choice for dressmakers and milliners excelling in the fine art of fabricating flowers, celluloid imposed itself as a cheaper alternative to organic funeral wreaths [9]. Jean-Luc Godard (incidentally, an exquisite filmer of flowers and gardens [10]) seemed to recall this curious fact when he observed, in his *Histoire(s) du cinéma* (1988–1998), that "Technicolor films will use the same dominants as funeral wreaths" [8]. Whatever the case, celluloid wreaths and artificial plants are as much the child of chemical industries as aniline dyes, colour filters and special film stocks manufactured during cinema's quest to achieve so-called "natural colour" [11]. Relying on voracious energy economies [12], all of these products leave their toxic imprint on the planet, the environmental impact of film inviting us to reframe the old question of ontology. As pointed out by Anat Pick and Guinevere Narraway (drawing on Nadia Bozak's *The Cinematic Footprint* [9]), a retooled filmic ontology stresses cinema's extractive nature by reconsidering indexicality as the "hinge or hook that connects the [photographic and digital] image to the world" (p. 3, [10]) [13].

If thinking about cinema with plants potentially means to engage in discussions around ontology, complex materialities and overlooked industrial ecologies such as those interweaving celluloid film, industrial dyes and artificial flowers, my essay wishes to explore yet another facet of this problem. Taking Auguste Lumière's paradoxical (non-)inscription of plants in film history as a cue, I wish to concentrate on the humblest of them all: "weeds" and, more specifically, disturbance-adapted species known as ruderal plants. As we will see, ruderal plants are much more than the "weeds" of cities and industrial sites, the successful "colonizers" of wastelands and urine-saturated tree beds. Flourishing in what we can call, as did anthropologist Anna Tsing, the everyday ruins of capitalism, and embodying what she calls a "third nature" (p. viii, [11]), ruderals are exceptional companions for thinking with, in particular at a time of rupture, when "all the world's a dump" and that particular condition "wreck[s] the very-being world of the world" (p. 2, [12]) [14]. Relegated to the fringes of our screens, ruderals will allow me to illustrate the theoretical and methodological point that I wish to make about the challenge of thinking cinema with plants: if plant representation can be our starting point, plants can always tell us an array of complex stories, including about film itself. In the context of this essay, ruderals will take us from the representational to the surprising entanglements bringing together human (film)makers and spectators, plants and the camera.

Thinking with ruderals about other filmic histories (but also, as we will see, with lichens: reliable bio-indicators and composite organisms standing for collaborative survival and symbiosis [15]) is no minor affair. Among others, it implies reckoning with the politicisation of the living to which ecological thought has been inviting us for several decades. To politicise forms of life as neglected as lichens and ruderal plants means bringing the unnoticed, the trampled and the trodden to the space of our agonistic polis, to reimagine it as a common ground: a place of care and mutual recognition open to all sorts of humans and the more-than-human. In other words, thinking with ruderals and lichens is perhaps a way of articulating visions on the new communities to be invented if we wish to make a "world" out of the devastation that according to philosopher Michael Marder and others equally permeates our senses and thoughts. In the hope that the lethal logic of the dump and the "ontological toxicity" [12] on which it relies can still be subverted, this is clearly a difficult, but vital task. Film has an evident role to play, in particular when it comes to reframing the terms in which we think about attention. Turned into the most valuable of commodities by the boom in digital content, "attention" must be rescued from the grips of economy, particularly if we wish to revitalise our capacity to see. To "undump" attention is

to think about it in ethical terms, not as a resource or an asset, but as a means of caring; a way of noticing what we were taught to ignore and to background. Film can help us do that—and more: it can give shape to new ("involutionary") modes of attention, kinder and more generous to others.

"The wisdom of the plants", Gilles Deleuze and Félix Guattari once wrote, is that "even when they have roots, there is always an outside where they form a rhizome with something else—with the wind, an animal, human beings" (p. 11, [13]). With a bit of luck, thinking with ruderals and lichens might bring us closer to the wisdom of plants, helping us forge more ecological rationalities. By this necessarily plural notion (ecological rationalities can express themselves in various forms), philosopher and eco-feminist Val Plumwood understood the different ways of "phasing out destructive capacities and evolving a sympathetic partnership or communicative relationship with nature" (p. 68, [14]). But one could also recall Marder on the "strategies of undumping": "uncluttering, revitalising physiological, cognitive, ecological and planetary metabolisms, reactivating becoming beyond mutations provoked by the dreams of immutability at every one of those levels" (p. xiv, [12]). More concretely, thinking with ruderals and lichens is also a way of engaging with less anthropocentric histories, accounts that ignore the nature–culture divide and which can tell us "small, partial, and wild stories of more-than-human attempts to stay alive" (p. 6, [15]). As we will see, such histories equally pertain to film: a medium whose general lack of representational interest in ruderal plants (and lichens) does not mean that cinema is not concerned by the issues raised by such strange, queer and turbulent creatures.

2. Our Ruderal Condition

Certain vegetal species are called ruderals, from the Latin *rudus*, *ruderis:* gravel, rubble, ruins. Ruderal plants are those that grow spontaneously in anthropized environments, that is, habitats disturbed by human presence or action, such as the piles of debris evoked by the word's etymology. The use of the term in a botanical context goes back to Carl Linnaeus' nomenclature. In the 10th edition of its *Systema Naturae* (1758), *ruderale* refers to the type of soil where certain plants grow [16]. For instance, vervains are known to flourish in damp ditches, sandy roadsides, abandoned gravel pits: in sum, typical ruderal milieus. Even though Linnaeus could not have known this (the ruderalisation of the planet accelerated considerably only after his lifetime), ruderals thrive in devastated soils, saturated with iron, phosphates and, of course, nitrates [17]. Widely used in agriculture, man-made fertilisers have radically improved agricultural productivity, but the abundance of ammonia and nitrates has its cost. Synthetic fertilisers have not only transformed the global nitrogen cycle (one of the most altered biogeochemical cycles on Earth and one of the largest contributors to global warming today), but are also the cause of increasing nitrate pollution, harmful to people, animals, plants, soils, bacteria and bodies of water alike. Usually, nitrophilous ruderal plants (or at least those tolerant of the high nitrate contents frequently found in their disturbed habitats) are reliable bioindicators—as we will see, a there is very concrete way of implicating them in worlding projects.

In the 18th century, the term ruderal did not have the connotation that it was to acquire once it became bound to disturbance processes such as soil nitrification. Then fundamentally linked to ruins, some ruderal plants played an active cultural role in the Romantic monumentalisation of certain specific landscapes. The *Cymbalaria muralis* or ivy-leaved toadflax, a floriferous perennial with small lilac flowers, vulgarly seen on the ruins of Rome and also known as the "Colosseum ivy" is a case in point. Before the brushing and cleaning of multiple restoration campaigns ripped most species off its walls, the Colosseum—described as "a giant stone vase" by German historian Ferdinand Gregorovius (p. 294, [16])—was actually inhabited by all sorts of trees and plants. In his *Flora of the Colosseum of Rome* (1855), the amateur botanist Richard Deakin recorded as many as 420 species, among which rare flowers that grew nowhere else in Europe and whose seeds were perhaps transported to the capital of the Roman empire by the African animals who once fought in the Flavia amphitheatre [18]. Today, most of them have disappeared, even

if the Colosseum still harbours species that can no longer survive outside its perimeter due to increased pollution and raising temperatures, such as *Asphodelus fistulosus* (onionweed) and *Sedum dasyphyllum* (the Corsican stonecrop).

Other common names for the ivy-leaved toadflax include mother of thousands, travelling sailor and Oxford weeds. Indeed, many ruderals are considered "weeds": an imprecise, deprecative term, tainted by discussions on "alien" and "immigrant" species and rife with fear-mongering metaphors on "biological invasions" [19]. Introduced in England in the early 17th century (supposedly via seeds dissimulated in the boxing of marble statues brought from Italy), the ivy-leaved toadflax was originally found in the Mediterranean basin and is now considered a "naturalised" species in many temperate regions of the planet. On the contrary, the *Asphodelus fistulosus* that still subsists in the Colosseum features as an "invasive" plant in the Federal Noxious Weed List published by the United States Department of Agriculture [20]. It is true that the "naturalization" of certain species to the local flora can cause serious damage to so-called "native" plants, as "cosmopolitan" species (an adjective sometimes used by botanists to describe ubiquitous plants) take over their living environments and effectively reduce biodiversity. But the problem with onionweed is that livestock avoids eating it and that it outcompetes grasses and more "desirable" forage plants. British nature writer Richard Mabey appropriately sums the "weed" problem when he writes that "plants become weeds when they obstruct our plans, our tidy maps of the world" [1].

As Romanticism faded and more disciplined standards were set for urban landscapes (in Paris, even lichens were sometimes removed from tree trunks during the 19th and the 20th centuries [21]), ruderals came to refer to plants that grow on gutters, sidewalks, wastelands, road verges, railways and freight yards, industrial landfills, eroded lands, etc. In sum, the everyday ruins of capitalism: highly disturbed habitats where ruderal vagabonds precariously coexist with other species, among which is our own [22]. Like certain fungi, ruderal vegetation is that which emerges despite devastation, whether that devastation is invisible to the human eye, as with contaminated soils, or whether it assumes more flamboyant expressions, as in Beirut, where the famous "green line" that separated the eastern and western sectors of the city during the civil war became a death strip overgrown with brambles, grass, sycamores and wild fig trees [23].

Ruderal plants are often mentioned for their capacity to "recolonise" debris after violent conflicts [24]. In Germany, the flora and vegetation of *Trümmerlandschaften*, the rubble landscapes of the early post-war years, did not fail to catch the eye of botanists and ecologists, in particular in Berlin, a city divided by the Cold War and dotted with many interstitial, feral spaces [25]. In *Germania, Anno Zero* ("Germany Year Zero", 1948), Roberto Rossellini's conclusion to his war trilogy, shot in Berlin in the summer of 1947, ruderals can be spotted pretty much everywhere. One sequence in particular comes to mind: after telling his teacher that he has just poisoned his ailing father, young Edmund Kohler wanders the city. He comes across a group of children playing football in a heavily blasted but blossoming street. He tries to join them, but the children rebuff him: Edmund walks away, making his way among a jungle of what looks like sticky goosefoot (*Chenopodium botrys*) [26] (Figure 2).

Unlike ruderal plants, Edmund is unable to survive in the heavily-disturbed milieus of post-war Berlin. The history of the city's *Brachen* (a term that can be translated as "wastelands" or "abandoned lots") has been explored by British geographer Matthew Gandy in his documentary *Natura Urbana—The Brachen of Berlin* (2017). Drawing a cross-generational history of these marginal spaces, Gandy's film is a thought-provoking meditation on evolving botanical and ecological discourses, urban biotopes and the question of the commons. If *Brachen* are ephemeral spaces by definition, the predatory practices of big property developers, as well as the city's hyper-gentrification, have turned such urban commons into an endangered naturecultural form. Anthropologist Bettina Stoetzer has equally made clear that such interstitial spaces are inseparable from plant–people relations, as well as

questions of social justice, very often implicating immigrant and racialized communities. "Exploring Berlin's urban ecologies ethnographically", she writes, "involves looking for unanticipated human-nonhuman interactions that occur at the edges of the city's infrastructures and that do not adhere to national or capitalist schemes for multicultural gardening and rehabilitating nature" (p. 309, [17]). To put it differently, urban and ruderal ecologies bring about untamed forms of diversity, beyond strict garden infrastructures and their designs on vegetal life [27].

Figure 2. Ruderals surround Edmund, film still from *Germania, Anno Zero* (Roberto Rossellini, 1948).

If "weeds" are the nemesis of human endeavours—certain humans struggling and often failing to "control" them, poisoning soils, rivers, lakes and all sorts of living bodies in the process—ruderals are anthropophiles or, more specifically, synanthropic organisms, i.e., undomesticated species living closely alongside or benefiting from human beings. Humans may not always notice or appreciate them, but they are embedded in the fabric of our lives. A 1986 episode of *L'Aventure des plantes* ("The Adventure of Plants", TF1), a series by French botanist and pioneer urban ecologist Jean-Marie Pelt and filmmaker Jean-Pierre Cuny, remind us exactly of that. In its opening sequence, the camera turns its attention to pellitories-of-the-wall, Canadian fleabanes, buddleias, fat-hens and trees of heaven growing in Paris [28]. Despite their love of humans, ruderal plants have a slightly murky status, like the rainwater that so often spreads their seeds. On the one hand, they have a bad reputation: they are sometimes called "invaders" and "opportunists". In the name of "diversity", ruderals are accused of "biotic homogenization", fuelling narratives of fear and safety and nourishing fantasies of pristine ecologies, very often inseparable from nation-making projects [29]. On the other hand, they are amazingly resilient, at least from a human perspective, thriving in the most unlikely places. In fact, the term ruderal also refers

to a specific survival strategy: according to the C-S-R triangle strategy, coined in 1974 by British ecologist J. Philip Grime, plant species are either competitors (C), stress-tolerators (S) or ruderals (R) [18]. Ruderals are plants that thrive in (highly) disturbed situations, but that only support low levels of stress (such as extremes of temperature and moisture supply); on the contrary, stress-tolerators such as lichens, composite organisms able to survive in extremely harsh environments, are disturbance sensitive (for instance, lichens are sensitive to nitrogen atmospheric pollution and for that reason reliable bioindicators). Ruderals tend to be small and to have short lifecycles (many ruderals are annuals). Nonetheless, they are capable of restoring minerals and nutrients, of attracting insects and birds, of regenerating life. They are also the vegetal allies that some still know how to use and prepare. Ruderals can be our first nourishment and our first medicine: green purslane makes for delicious soups and the common vervain is a well-known medicinal herb.

Standing for the alien, the undesirable, the out of place—but also for the multiple, the decentred and the entangled—ruderals, like "weeds", are fitting companions for those who grow in-between (Figure 3). Those who prosper in the fissures and cracks of dominant discourses; those who infuse wildness and diversity in all sorts of toxic monocultures. Those, in sum, who invite us to read against the grain of conventional natural and cultural histories. After all, ruderal plants are the migrants of the vegetable realm, the anti-forest of urban wastelands, the overlooked flora of our ecological obliviousness. They are the vegetation of the contaminated commons, the interstitial condition of the undercommons [30]. They embody what Tsing calls "third nature": precarious forms of multispecies coexistence in the ruins of advanced capitalism [31]. In other words, the possibility of transforming "the dump" into a breeding ground for life: the prospect of world-making in the midst of the devastation.

Figure 3. Ruderal plants growing in the cracks of a cobblestone pavement, Lisbon, Portugal, 2022 © Teresa Castro.

3. Common Grounds: On the Affective Ecologies Binding Humans, Ruderals and the Camera

A handful of artists and creators—among which is the late Lois Weinberger (1947–2020), often remembered for his ground-breaking work around marginal zones, nature–culture

hierarchies and ruderal ecologies [32]—have engaged with what Sarah Cowles calls "a ruderal aesthetics", explored in works of contemporary art and design where "ruderal species are dispatched as artistic subject and medium" (p. 388, [19]). When it comes to film, the medium's aforementioned human-centredness means that explicit references to ruderal plants are historically rare, rarer even than mentions of "weeds" [33]. In order to find them, cinematic incursions into urban interstitial spaces and man-made industrial wastelands provide us with interesting (but nonexclusive) clues. Robert Siodmak's and Edgar G. Ulmer's *Menschen am Sonntag* ("People on Sunday", 1939), George Franju's *Le Sang des bêtes* ("Blood of the Beasts", 1949), Jacques Tati's *Mon Oncle* ("My Uncle", 1958), Marcel Carné's *Terrain Vague* ("Wasteland", 1960), Pier Paolo Pasolini's *Accatone* (1961), *Mamma Roma* (1962) or *Uccelacci e Uccellini* ("The Hawks and the Sparrows", 1966), Michelangelo Antonioni's *L'Eclisse* ("The Eclipse", 1962), Andrei Tarkovsky's *Сталкер* ("Stalker", 1979), Jacques Rivette's *Le Pont du Nord* (1981), Agnès Varda's *Sans toit ni loi* ("Vagabond", 1985), Bela Tarr's *Kárhozat* ("Damnation", 1988) and *Sátántangó ("Satan's tango", 1994)*, Bruno Dumont's *La Vie de Jésus* ("The Life of Jesus", 1997), Wang Bing's *West of the Tracks* (2002) and Patrick Keiller's *Robinson in Ruins* (2010), to quote but an evident few, all offer us valuable insights to the stories told by ruderals. Some of these tales are about the terrain vague as a place of leisure and pleasure, the home of vibrant and transgressive communities; others about forms of governance and biopolitics dictating what should be valued or relegated and even excluded: what should be "weeded". In these films, ruderals often stand for the proletarianization of different lifeforms (and forms of life), embodying power relations, as well as the fallouts from globalization, labour migration and capitalism.

Amongst these non-exhaustive examples, Tarkovsky's *Stalker* is certainly one of the most striking. The ruderal is much more than a "simple" landscape: it tells us a "rush of troubled stories" about "contaminated diversity" (p. 34, [11]). In a film otherwise known for its allusions to the environmental dangers of nuclear waste, ruderal vegetation plays a prominent role, both in the city's apocalyptic wasteland and in particular in the Zone. As explained by the Stalker, the latter is a "very complex maze of traps": "as soon as humans appear, everything begins to change" [20]. For this reason, the Zone has been likened to the phenomenological reality of the Anthropocene (a notion not yet coined at the time of the film's shooting) [34]. Concretely however, and in line with Tarkovsky's refusal to understand it in allegorical or metaphorical terms, the Zone (from the Latin *zōna*, "belt, girdle, imaginary band circling the earth") is a ruderal milieu, a fragile and unstable environment haunted by incessant transformation and precarious survival. A place where the Stalker, the Professor and the Writer (in other words, the Human) are all affected by the more-than-human. Beyond its remarkable depiction of ruderal landscapes, *Stalker* also tells us other stories: cacophonous tales about our entangled vulnerability, linked to historical contingencies and the "indeterminacies of encounter" (pp. 46–47, [11]) [35]. According to camera technician Sergey Bessmertny, the dam and abandoned power plant on the Jägala river, Estonia, where most of the shooting took place, "had an expressive texture: cracked, lichen-covered concrete broken glass, oil stains" [21] (Figures 4 and 5) [36].

Because of a chemical complex upstream, that section of the river was heavily polluted, as evinced in a famous shot, where snow can be seen falling on toxic foam floating down the river. "A few years later, when it turned out that most of the members of the crew had passed away", Bessmertny adds, "rumours appeared that it was because the area around the place of filming had been poisoned" [21]. Sound recordist Vladimir Sharun is likely behind such reports: according to him, the cancers that took Tarkovsky's and his wife Larissa's lives (as well as those of Nikolai Grinko and Anatoly Solonitsyn, who play the Professor and the Writer, respectively) were caused by contamination from the chemical plant [22].

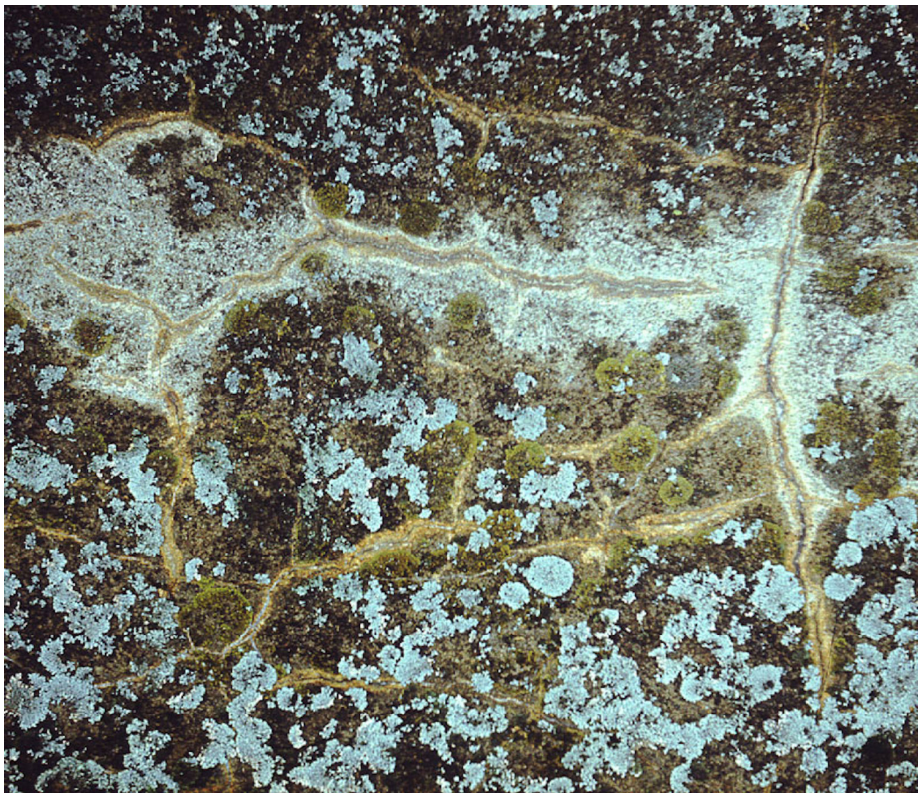

Figure 4. Lichens on a concrete wall (photograph taken during the filming of Andrei Tarkovsky's *Stalker*) © Serguei Bessmertny.

Figure 5. Andrei Tarkovsky surrounded by plants during the shooting of *Stalker* (1979) © Serguei Bessmertny.

However, the stories of "contaminated diversity" that I have in mind are about companionship and collaborative survival, not death. As Tsing herself writes, "I use the term 'contaminated diversity' to refer to cultural and biological ways of life that have developed in relation to the last few hundred years of widespread human disturbance. Contaminated diversity is collaborative adaptation to human-disturbed ecosystems" (p. 95, [23]). Certainly, such stories can be deeply disturbing for humans, challenging their perceived individualism and exceptionalism, like in Alex Garland's *Annihilation* (2018). In this xenobiological tale set in yet another Zone (a toxic ecosystem known as Area X), plant buds sprout in one of the characters' arms (a timid astrophysicist played by Tessa Thompson) (Figure 6).

Figure 6. Flowers sprouting on Josie Radek's arm, film still from *Annihilation* (Alex Garland, 2018) (© Netflix).

But again, it is not on such fears and anxieties that I wish to dwell—or even on strictly representational issues around ruderal plants. If filmic images can bear witness to the complex natureculture entanglements they express, I would like to suggest that cinema is also the place where affective ecologies involving humans, ruderals and filmic technology can be reconfigured. Moreover, maybe film can be a way of reclaiming what historian Carla Hustak and anthropologist Natasha Myers have named, in their rereading of Darwin's work on orchids, "involutionary" modes of attention: accounts that "map interspecies enmeshments and intimacies" fashioned by "pleasure, play and experimental propositions" (p. 78 and p. 98, [24]) [37]. Shifting Hustak's and Myers's unhinging of evolutionary logics towards the domain of cinema means reinventing the former, in order to accommodate the camera within configurations usually restricted to living organisms. Thinking with lichens might help us do that.

Soils-Habit-Plants (2017, 11 min), a short film by artists Mikhail Lylov and Elke Marhöfer, provides us with an interesting case-study. Interested in more-than-human communities and advocating for a less anthropocentric cinema, Lylov and Marhöfer focus

here on a number of ruderal "weedy" plants, such as wild millet and Japanese knotweed. As Marhöfer writes, the "plants in the film are typical of landscapes shared between humans and nonhumans. Despite their widespread and ubiquitous status, they can be called 'fringe species'" [25] [38]. Shot in Japan, while Marhöfer was conducting research on disturbed ecologies, the film also takes us to a plantation of sugi cedars and hinoki cypresses, the most noble of Japanese trees [39]. Established in the post-war years (sugi and hinoki provide high-quality and decay-resistant timber used for posts, pillars, floors, panels, etc., in shrines and temples in particular), such human-planted forests account for 30% of the total wooded area in the country and are today investigated for their high nitrogen leaching. A photograph lying on the forest floor, taken in Sarawak, Borneo, when the Malaysian state was still a British colony, documents "a by now logged down primary forest" [25] and alludes to the replacement of Japanese cedars and cypresses by other cheaper, natural "resources".

But the filmmakers also direct their attention to soil. Shot by Marhöfer with a macro lens (Lylov filmed the plants), the soil sequences are particularly striking. The ground level point of view adopted, as well as the unstable use of focus—the extreme close-ups of the soil, plants and even micro test plates oscillate between sharpness and blurriness (Figure 7) [40]—contribute to the feeling of a cinema unfettered by human-centred standards.

Figure 7. Wild millet, film still from Mikhail Lylov and Elke Marhöfer, *Soil-Habit-Plants*, 2017 (© Mikhail Lylov and Elke Marhöfer).

Lylov describes how he and Marhöfer involved themselves haptically and erotically with plants and the soil, caressing them with the camera and hinting at a relational cinema:

> If we speak of pleasure as a physical experience, filming plants and soil—in macro with no tripod—requires a lot of physical concentration and guessing. You are

> moving the camera, trying to follow the curve of a leaf or a soil particle, which induces an extremely strange state of the body. It's like you are maintaining a sense of touch on the verge of the sensible [26] [41].

Commissioned for an exhibition on Danièle Huillet and Jean-Marie Straub's work (two filmmakers known for their attention to soils and geology [42]), *Soils-Habit-Plants* effectively moves beyond oversight, perspectival form and logocentric knowledge, exercising its own involutionary mode of attention. Moreover, the film equally documents an affective ecology where the 16 mm camera (an avatar for filmic technology) is an active participant. Marhöfer in particular has insisted on the idea that filming is for her a means of generating affects and intensifying sensations, instead of creating representations. Her relationship with the 16 mm camera is crucial. Thinking of a different film (*Shape Shifting*, 2015, 18 min), the artist explains that she likes "to understand the camera as a machinic companion" [27]. Marhöfer remarks that "companions transform one another" and that "their entanglement with the environment from which they emerge, forms them"; "this companionship", she adds, "overlaps perspectives of the environment, the camera, and the human. It creates a diversity of sensations and temporalities and activates relational modes of perception" [27] [43].

Mapping on screen some of the enmeshments and intimacies that bind together humans and other-than-humans such as soil, bacteria and ruderal plants (what *Shape Shifting* does by delving into the Japanese *satoyama*, the border zone or area between mountain foothills, *yama*, and the arable flat land next to the villages, *yama*), Lylov and Marhöfer recall to us that exploring the other-than-human by means of film is also a way of shaping affective relationships encompassing machinic fellows. The joyful myriad of other-than-human agents potentially implicated are not limited to organic actants: in *Soils-Habit-Plants*, the camera's tremulousness, as well as the rapid editing of close-up shots of wild millet, evokes the collaboration of the wind [44]. *Soils-Habit-Plants* reminds us that other-than-human subjects hint at specific modes of sensing, feeling, affecting and being affected. Filming here means attuning both human makers and human spectators to the sensibilities of the soil, plants, the wind. Their positions and experiences are not the same: makers, and in particular the camera operator, are at the forefront of such "thinking with", understood here not only as an exercise in speculative reasoning, but as playful physical investigation ("thinking with" being an invitation to do our thinking otherwise, not only with our brains, but with our bodies). Questioning our human ways of perceiving the milieu, but also "the self", *Soils-Habit-Plants* is an experiment in "becoming with", an exercise in terms of an ecological subjectivity, for makers and spectators alike. This is where thinking with lichens might be helpful: symbiosis in lichens is a good way of thinking about ecological subjectivities, subjectivities deeply entangled with other forms of life, but also with technology and media.

Even though they are often plant-like, lichens are not plants. Mistaken for mosses, and for a long time reduced to the status of primitive plants situated somewhere between fungi and algae, lichens are composite organisms, resulting from the perennial association between fungi, algae or cyanobacteria living in mutualistic association. For this reason, they challenge the essentialist insularity of the "individual" and have come to embody the chimeric and resolutely ecological vision according to which we are symbiotic beings in constant becoming. Associated with libertarian thinking and suspected of bias, mutualism was considered an anomaly for many decades. In the eyes of serious scientists, it seemed to suffer from that greater evil from which parasitism and other conflicting relations, reasonably focused on the "struggle for life", had always miraculously escaped: anthropomorphism. If not for the rebellious intelligence of the American microbiologist Lynn Margulis, who began to rewrite the history of our own cells from an endosymbiotic point of view at the end of the 1960s, the rehabilitation of mutualistic symbioses would certainly have taken a great deal longer [45]. In the wake of Margulies' work, three scientists concluded in 2012 that, from a biological point of view, we have never been individuals. Therefore, "we are all lichens" [28].

Lichens feature prominently in Marhöfer's *Becoming Extinct (Wild Grass)* (2017), a film shot in the Russian Southern steppes, in the Divnogorye Natural Museum reserve, as the crow flies not very far away from Chernobyl (Figure 8).

Figure 8. Lichens, film still from Elke Marhöfer, *Becoming Extinct (Wild Grass)*, 2017 (© Elke Marhöfer).

The park is known for its wild grasslands—many of which are threatened—as well as for its unique collection of animal bones (in particular, the remains of the ancient ancestors of tarpan horses, a feral species of steppe horses, extinguished in the early 20th century). In line with the idea of disturbed ecologies, the excavation sites in the Divnogorye concretely become places of collaborative survival between fungi, grass, flowers, insects and bacteria. As the artist puts it, the film "speculates about more-than-human relationalities, attempting to stimulate an environmentally attuned mode of acting in a damaged world" [29]. Anticipating many of the sensorial strategies favoured in *Soils-Habit-Plants*, *Becoming Extinct (Wild Grass)* explores sensations of colour, movement and sound, equally refusing oversight and engaging in (stunning) involutionary modes of attention. As Marhöfer writes,

> Affective encounters beyond the lived, and outside the human with machines, earth strata, light, lichens, soil, bacteria, plants, animals and their symbiotic endeavors, heterogeneous micro- and macro-perceptions and temporalities might potentially help us to learn inhuman interspecies modes of care and attention and enable us to confront the limits of the very concept of the human [29].

To "confront the limits of the very concept of the human" is, of course, to undermine anthropocentrism and human exceptionalism as we have known them, but also, potentially, to address the question of the untamed ecological subjectivities to come [46]. This point again brings me to Marder's remarks on the "ontological toxicity" that haunts our very selves.

It is not only that "all the world's a dump" and that the dump is depriving us from a world: according to Marder, we, as human subjects, are also becoming toxic and incapable of making world(s). The need to intersect the "natural environment", (eroding) social relations and the psychic had already been made by Guattari in his book *The Three Ecologies* (1989) [30]; writing thirty years later, Marder goes farther, detailing how we stopped being *of* and *from* the world [47]. Observing that "noxious thoughts and poisoned senses, toxic built environments, social milieus, and contaminated ecosystems merge and reinforce one another", he identifies "the desire to cleanse my garden of unwanted intruders" as a symptom of this ontological malaise (pp. 188–189, [12]).

Strongly marked by Deleuze and Guattari's work, Marhöfer recalls their credo on the "wisdom of plants": their capacity to form rhizomes and to entangle with the fabric of life. In addition to disputing the nature–culture divide, *Soils-Habit-Plants* and *Becoming Extinct (Wild Grass)* tell us the tangled, split and venturesome histories that we need to imagine in order to become again of and *from* the world—to sow worlds, to terraform with Earth Others. Such stories are likely to involve ruderals and lichens: if the first call us to "commoning", the second call us to symbiose.

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Notes

1 As told by Louis Lumière to the film historian Georges Sadoul. See Georges Sadoul, *Lumière et Méliès*, Paris: Lherminier, 1985, p. 94.

2 A couple of months after the Grand Café projection, the accidental reverse screening of *Démolition d'un mur* ("Demolition of a wall", Louis Lumière, view nº 40.1, 1896) introduced a specifically machinic (and therefore non-human) time experience to the Lumière catalogue.

3 Among others, see Michel Cordat, "Correspondance. La croissance d'une rose au cinéma", *La Nature*, 1896, nº 1219, p. 304.

4 Founded in 1899, the Institut Marey was also to use time-lapse in order to record the unfolding of botanical living processes, as explored by Oliver Gaycken in his essay on visualising plant motion between 1880–1903 [3]. In addition to Hannah Landecker's discussion of time-lapse techniques in early 20th century film in her article "Microcinematography and the History of Science and Film" (*Isis* 97, no. 1, 2006, pp. 121–132), the use of that particular technique in order to explore vegetal living processes has been discussed in recent studies, among which Caroline Hovanec's "Another Nature Speaks to the Camera: Natural History and Film Theory" (*Modernism/modernity*, vol. 26, nº 2, April 2019, pp. 243–265), Max Long's, "The ciné-biologists: natural history film and the co-production of knowledge in interwar Britain" [4] and Colin Williamson's "The Garden in the Laboratory: Arthur C. Pillsbury's Time-Lapse Films and the American Conservation Movement" (*Philosophies*, 2022, 7, nº 5: 118. https://doi.org/10.3390/philosophies7050118). See also the collective book *Puissance du végétal et cinéma animiste. La vitalité révélée par la technique* (Teresa Castro, Perig Pitrou and Marie Rebecchi, eds., Dijon: presses du réel, 2022).

5 On this topic, and in addition to the already-quoted Oliver Gaycken article [3], see also Teresa Castro, "The Mediated Plant", *e-flux*, nº 102, September 2019. Available online: https://www.e-flux.com/journal/102/283819/the-mediated-plant/ (accessed on 14 November 2022).

6 Produced by British Instructional Films, the extremely popular series *Secrets of Nature* released 144 documentaries between 1922 and 1933: out of these, 39 films focused on the plants. On *Secrets of Nature*, see, among others, Max Long, "The ciné-biologists: natural history film and the co-production of knowledge in interwar Britain" [4].

7 In their book *Secrets of Nature* (1939), filmmakers Mary Field and F. Percy Smith dedicate a few, amusing pages to the topic of "plants as film stars" (p. 147). They write: "A plant makes up its own mind—or whatever Nature has given it in place of a mind—as to the programme it intends to carry out; and unless one has already sufficient experience of its habits to know exactly what to expect, the working-out of a detailed script is useless, as the plant will be no more likely to follow it than it will to

conform to the percepts of textbooks"; and they conclude, "plants, unlike humans and animals, can be neither bribed nor bullied, coaxed nor cajoled. Unduly generous treatment is useless, and over-fertilization may injure or even kill the plant. Our wisest plan is to allow the plant to tell its story in its own way, while optically accelerating its slow and dignified progress to conform with the requirements of the age of speed" (p. 148). See Mary Field and F. Percy Smith, *Secrets of Nature*. London: The Scientific Book Club, 1939.

8 Recent and thought-provoking literature has often focused on the representation of plants on screen, in particular in horror films (but not only). See Dawn Keetley and Angela Tenga (eds.), *Plant Horror. Approaches to the Monstrous Vegetal in Fiction and Film* (London: Palgrave MacMillan, 2016, p. 145–162); Andrew Howe, "Monstrous Flora: Cinematic Plant Antagonists of the Post-World War II Era" (in Patrícia Vieira and Monica Gagliano, eds., *The Green Thread: Dialogues with the Vegetal World*, Lanham: Lexington Books, 2016, p. 147–163) and Marc Olivier, "Houseplant", *Household of Horror. Cinematic Fear and the Secret Life of Everyday Objects* (Bloomington: Indiana University Press, 2020, pp. 154–179).

9 Known as an inexpensive imitator of ivory, horn and tortoise shell, celluloid became a popular material in the second-half of the 19th century. Celluloid goods flooded the markets and accidents were not infrequent (celluloid combs, for instance, were known to explode and to injury their owners).

10 The "gardener"and its blossoming gardens are a recurrent character in Godard's films from the late 1980s onwards. Among others, see *Nouvelle Vague* ("New Wave", 1990), *Hélas pour moi* ("Alas for me", 1993) and *Notre Musique* ("Our Music", 2004).

11 Esther Leslie's *Synthetic Worlds. Nature, Art and the Chemical Industry* (London: Reaktion Books, 2005) provides a thorough and fascinating introduction to this point.

12 According to Paolo Cherchi Usai, the Chronochrome filters (as well as the filters employed by George Albert Smith's and Charles Urban's Kinemacolor, another successful additive process used between 1908–1915) absorbed so much light that they required "250 per cent more electric power to achieve a luminosity equivalent to that of a conventional projector". See Paolo Cherchi Usai, *Silent Cinema: An Introduction*, London: BFI, 2000, p. 30.

13 On this topic, and in addition to Bozak, Pick and Narraway [9,10], see also Teresa Castro, "L'ontologie fossile. Pellicule et impensé environnemental du cinéma(tographe), *Écocritiques. Cinéma, audiovisuel, arts*. *Cahier Textuel*, Gaspard Delon, Aymeric Pantet and Charles Hewinson, eds., Paris: Hermann, in press.

14 Significantly, if the word "ruderal" was for long only used by botanists, French geographer Jean Gouhier founded the science of rudology—the systematic study of waste—in 1972. Today, being a *rudologue* (a "rudologist") is a recognised occupation, "rudologists" specialising in the management of waste and in the prevention of environmental hazards. See the fiche "rudologue" made by the French Centre d'information et documentation jeunesse. Available online: https://www.cidj.com/metiers/rudologue (accessed on 14 November 2022).

15 The word symbiosis (from the Greek *symbíōsis*, "living together") now refers to any type of a close and long-term biological interaction between two different biological organisms, be it mutualistic, commensalistic, or parasitic. The term was subject to a century-long debate about whether it should specifically denote mutualism, as in lichens. It's in this latter sense that I'm using it.

16 Linnaean nomenclature identifies sixteen different types of soils: *lacustre* (near lakes), *palustre* (swampy), *nemorōsōrum* (wooded), *pratense* (of a meadow), *littorale* (littoral), *campestrium* (rural), etc.

17 If there is a difference between the ammonium nitrate used in fertilisers and the cellulose nitrate used by the motion picture industry, connections can be drawn between the two, as pointed out by Anaïs Farine in "Archives nitrates. Représentation, pollution, explosion: sur la piste des effets sauterelles", *Trouble dans les collections*, n° 2, September 2021. Available online: https://troublesdanslescollections.fr/2021/07/26/article-9/ (accessed on 14 November 2022).

18 In 1643, Domenico Panaroli had already observed the presence of many exotic species in the Colosseum, in his *Plantarum Amphytheatralium Catalogus*, probably one of the first studies of ruderal botany ever published. On the animal hypothesis, see Paul Cooper, "Rome's Colosseum Was Once a Wild, Tangled Garden", *The Atlantic*, 5 December 2017. Available online: https://www.theatlantic.com/science/archive/2017/12/romes-colosseum-garden/547535/ (accessed on 14 November 2022).

19 The ideological connotations behind the terminology used by botanists, biologists and ecologists with relation to nonindigenous plant species has regularly been criticised, including by ecologists themselves. Among others, see Robert I. Colautti, "A neutral terminology to define invasive species", *Diversity and Distributions. A Journal of Conservation Biogeography*, vol 10, issue 2, march 2004, pp. 135–141, as well as Jacques Tassin and Christian a. Kull, "Devising Other Metaphors for Biological Invasions", *Natures Sciences Sociétés*, vol. 20, no. 4, 2012, pp. 404–414. On the specific question of "weeds", see Lucia Argüelles and Hugh March, "Weeds in action: Vegetal Political Ecology of Unwanted Plants", *Progress in Human Geography*, vol. 46, issue 1, December 2021, pp. 44–66. On a different note, Richard Mabey also provides a thorough cultural critique of the discourse on weeds on his book on "nature's most unloved plants" [1]. See also his remarkable *The Unofficial Countryside* (London: Collins, 1973), a personal mapping of bombed sites, car parks, city docks, etc., published in 1973.

20 See https://adminplants.sc.egov.usda.gov/java/profile?symbol=ASFI2 (accessed on 14 November 2022).

21 The hygienist urges of urban managers, who tended to consider lichens unsightly, ignored botanical knowledge: lichens were known to constitute indicator of the air's *salubrité* (healthiness) since at least 1866. See William Nylander, "Les lichens du Jardin du Luxembourg", *Bulletin de la Société Botanique de France*, 13:7, pp 364-371, DOI: https://doi.org/10.1080/00378941.1866.10827433.

22 In relation to ruderals and "weeds" as "vagabonds", see *Éloge des vagabondes* ("In Praise of Vagabonds"), by French landscape architect Gilles Clément. The book's introduction and concluding essay have been translated into English by Jonathan Skinner: "In Praise of Vagabonds", *Qui Parle*, Spring/Summer 2011, vol. 19, nº2, pp. 275–297.

23 Jocelyn Saab's Beirut trilogy not only provides a striking portrait of Civil War Beirut as it documents a city progressively turned into rubble and speckled with ruderal plants. In *Beyrouth, ma ville* ("Beirut My City", 1982) a short-sequence focuses on an old-man who cultivates plants in a tree bed and continues to take care of them during an aerial bombing.

24 As episodes of great environmental disturbance, wars have also coincided with the involuntary introduction of new vegetal species. Spores and seeds present in horse forages, or concealed in clothes, shoes and vehicles, were often responsible for this. In 1871 (after the siege of Paris during the Franco-Prussian war), two French botanists published a study on such *obsidional* species (from the Latin *obsidionalis*, of/connected to a siege/blockade). Their *Florula Obsidionalis* lists an impressive number of species brought by German troops. In France, many species are known to have been introduced in Lorraine during the World War I. See François Vernier, *Plantes obsidionales. L'étonnante histoire des espèces propagées par les armées*, Strasbourg: Vent d'Est, 2014.

25 See Bettina Stoetzer, "Ruderal Ecologies: Rethinking Nature, Migration, and the Urban Landscape in Berlin" [17], as well as Matthew Gandy's essential book, *Natura Urbana. Ecological Constellations in Urban Space* (Cambridge, Massachusetts: MIT Press, 2022). Stoetzer also mentions the fact that many ruderal species found in postwar Berlin were introduced by soldiers and migrants during World War II.

26 Originally from the Mediterranean, sticky goosefoot is often mentioned as one of the species that thrived in Berlin's ruins. First recorded in the city in 1894, the dry, rocky soils of the postwar period proved to be their "ideal milieu".

27 See also Natasha Myers, "From Edenic Apocalypse to Gardens against Eden: Plants and People in and after the Anthropocene", in *Infrastructure, Environment, and Life in the Anthropocene*, Kregg Hetherington (ed.), New York, USA: Duke University Press, 2018, pp. 115–148.

28 *L'Aventure des plantes* was first released as a 13-episode series in 1982; a second series was aired in 1986. The episode "Des hommes et des plantes" belongs to the second series and can be seen here: https://www.youtube.com/watch?v=surHaGNO4FU (accessed on 14 November 2022). Pelt's book on *L'Homme renaturé* ("The Re-Naturalized Human", 1977) is often mentioned as one of the first studies explicitly focusing on urban ecologies.

29 On this point, see Bettina Stoetzer's article, "Ruderal Ecologies" [17].

30 The term "undercommons" comes from Fred Motten's and Stefano Harney's book *The Undercommons. Fugitive Planning and Black Study* (Wienhoe, New York, Port Watson: Minor Compositions, 2013). To follow Yves Citton and Jacopo Rasmi, the undercommons evoke the neglected and ill-treated "commons from below", those upon which the modern "exploitation of human and other-than-human natures" has relied; fugitive, precarious and transgressive commons, refusing the values and norms imposed from above. See Yves Citton et Jacopo Rasmi, "Le Plantationocène dans la perspective des *undercommons*", *Multitudes*, vol. 76, no. 3, 2019, pp. 76–84.

31 According to Tsing, "first nature" refers to "ecological relations" and "second nature" to "capitalist transformations of the environment" (p. viii, [11]).

32 On Lois Weinberger and his interest in ruderal plants see, among others, Bergit Arrends and Jessica Ulrich, "Lois Weinberger: Green Man" (interview with Lois Weinberger), *Antennae. The Journal of Nature in Visual Culture*, 2011 issue 18, pp. 37–48; Philip van Cauteren (ed.), *Lois Weinberger* (Berlin: Hatje Cantze, 2013) and the already quoted text by Natasha Myers "From Edenic Apocalypse to Gardens against Eden. Plants and People in and after the Anthropocene", art. cit.

33 In the already evoked *Secrets of Nature* series, even the reviled dodder—a rootless, parasitic "weed", with little to no chlorophyll—deserved an episode of its own: *The Strangler* (F. Percy Smith, 1931, 11 min).

34 See, among others, Jeanne Etelain, "The Crisis of Anthropocentric Space. Thinking the Politics of the Zone with Andrei Tarkovsky's *Stalker*", *Thinking Space with Cinema and Literature*, Ludovic Cortade and Guillaume Soulez, eds., Bern: Peter Lang, 2022, pp. 75–91.

35 Following Anna Tsing, "To listen and to tell a rush of stories is a *method*. And why not make the strong claim and call it a science, an addition to knowledge? Its research object is contaminated diversity; its unit of analysis is indeterminate encounter" (p. 37, [11]).

36 The power plant in question had been blown up by the Red Army in 1941. Tarkovsky had initially intended to film around an old Chinese mine in Tajikistan, but an earthquake rendered the location unusable.

37 "Working athwart the reductive, mechanistic, and adaptationist logics that grounds ecological sciences, we offer a reading", write Hustak and Myers, "that amplifies accounts of the creative, improvisational, and fleeting practices through which plants and insects *involve* themselves in one another's lives" (p. 77, [24]).

38 As recalled by Marhöfer, the wild relative of millet that we see in the film is considered a particularly resistant "weed", "typical for patches of disturbed land" [25]. Likewise, Japanese knotweed (introduced in Europe as a garden shrubbery in the mid 19th century and used as animal fodder in the 20th century) is often described as a virulent "biohazard". Both species—*Panicum ruderale* and *Fallopia Japonica*—are ruderal.

39 On Marhöfer's film driven post-doctoral research in Japan, see the artist's website: https://elkemarhoefer.xyz/projects/disturbed-ecologies/ (accessed on 14 November 2022). As recalled by Anna Tsing (whose work is also about disturbance-based ecologies,

questioning the idea of ecology as balanced equilibrium), the aristocracy's obsession with sugi and hinoki meant that Japanese peasant forests privileged oaks and red pines (pp. 183–187, [11]).

40 The micro test plates seen in the film were used to evaluate the number of microbes living in three different types of soil [25].

41 On the erotic dimension of the film, see Mokoto Mochida, "I is an-other . . . Eroticism in Marhöfer and Lylov's film *Soil-Habit-Plants*", in Anette Busch and Tobias Hering, eds., *Tell it to the Stones. Encounters with the Films of Danièle Huillet and Jean-Marie Straub*, London: Sternberg Press, 2021, pp. 404-409.

42 In line with Gilles Deleuze, who observed that "The visual image, in [Straub-Huillet] is the rock" (Gilles Deleuze, *Cinema II: The Time-Image*, New York: Bloomsbury Academic, 2013, p. 244), the question of geology comes up regularly in interviews with Jean-Marie Straub. See, among others, Marhöfer's and Lylov's conversation with Jean-Marie Straub, "A Thousand Cliffs", in Anette Busch and Tobias Hering, eds., *Tell it to the Stones. Encounters with the Films of Danièle Huillet and Jean-Marie Straub*, London: Sternberg Press, 2021, pp. 312–335.

43 See also, with regards to *Shape Shifting* and the role of the camera, the conversation between Marhöfer, Lylov and Andrea and Matei Bellu, "Talking in Waves", in *Shape Shifting*, Berlin: Archive Books, 2015, pp. 69–72.

44 An intuition shared by Nida Sinnokrot in "*Soils-Habits-Plants*. Mikhail Lylov and Elke Marhöfer in conversation with Sahar Qawasmi and Nida Sinnokrot" [26].

45 See Lynn Sagan (Margulis), "On the origins of mitosing cells", *Journal of Theoretical Biology*, vol. 14, 1967, pp. 265–274. Margulis' research (initially received with great skepticism by her peers) promotes mutual symbiosis to the status of the engine of evolution, since at the origin of complex cells, called eukaryotes (containing a separate nucleus from the mitochondria and characterizing all plant cells and animals), one finds the fusion or symbiosis with simpler organisms, such as certain archaea and bacteria (single-celled organisms, without nucleus and mitochondria, so-called prokaryotes). Margulis's hypothesis radically reshaped the narrative around evolution.

46 On *Becoming Extinct (Wild Grass)* and subjectivity, see also Julia Bee's article "Filming through the Milieu. Becoming Extinct and the Anthropocene", in Gabrielle Dürbeck and Philip Hüpkes, eds., *The Anthropocenic Turn*. The Interplay between Disciplinary and Interdisciplinary Responses to a New Age, London, Routledge, 2020.

47 On the question of being of and from the world, see also See Bruno Latour's opposition between "Humans" and "Earthlings" (or "Earthbound", "Terrans" or "Terrestrials" in *Facing Gaia: Eight Lectures on the New Climactic Regime*. Cambridge: Polity Press, 2017 and *Down to Earth. Politics in the New Climactic Regime*. Cambridge: Polity Press, 2018.

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