

# When Fungus punched Anthropos in the Gut: On Crap, Fish-eating Trees, Rhizomes and Organized Networks

Patricia de Vries

---

*Abstract: Today's internet has become like Deleuze's societies of control, media scholars argue. The network's invisible infrastructure, with near global reach, has amplified hierarchies, and is owned, exploited and surveilled by internet, advertising, and data-analytics companies, and by state security institutions. With the digital data produced by the often banal and quotidian activities of millions of internet users – or individuals – a monopoly of a handful of Tech Giants accumulate massive amounts of wealth, and influence. The world wide web, various media scholars contend, has degenerated to a serpent's coil. This article argues that the rhizomatic Wood Wide Web provides a basis from which to rethink today's debate on the present and future of the internet, and challenges a predominant understanding of the societies control. Beneath our feet and beyond our perception, a subterranean meshwork of trees, mushrooms and fungi forms an ecology of trans-species solidarity, singularities, and creative, collaborative interactivity that could carry us outside the entrapments of the supposed totality of the societies of control.*

*What can the World Wide Web learn from the Wood Wide Web?*

---

*I meant to write about death, only life came breaking in as usual*  
— Virginia Woolf

## Prelude

On a warm summer day, somewhere in the early 1980s in a forest in British Columbia, Jiggs accidentally fell into a pit of crap. After realizing he was stuck, sunk up to his eyeballs in poop, the poor dog whimpered, and waited impatiently for his people to dig him out of his predicament. Little did he know that, like the White Rabbit leading Alice into Wonderland, he was about to reveal an entrance to a new world — one of tubers and crawlers and of a splendid way of co-existence.

## Introduction

A desecration of modernist tradition, the death of humanism, an overhaul of logocentrism, an artistic experiment, a new philosophy of the subject, a new '-ism', the bandying about of words, an industry, a fad, horseshit, Gospel: Deleuze's and Guattari's rhizome project has been labeled many a thing. In the 1990s, the rhizome was a popular party drug among media theorists. It is easy to conceive why it pervaded cyber culture: a language of infinite possibilities, of boundless connections, of change, affective energies, and the possibility to inhabit a different world.

It was in the late 1980s when the rhizome first appeared on the Continental Philosophy stage. "We're tired of trees. We should stop believing in trees, roots and radicles," Deleuze and Guattari write in *A Thousand Plateaus*. "They made us suffer too much" (Deleuze and Guattari, 1987, 15). Here, the tree symbolizes aborescent knowledge, structured by hierarchically branching binaries, separating subject and object, nature and culture, human and

machine. The ordered, dualist, and static tree-system finds its counterpart in the rhizome. Instead of dividing, branching and separating, the rhizome connects a multiplicity of objects, places and species. Unlike the oppositional tree structure, the rhizome is a relational, polymorphous, open and heterogeneous network.

In *A Thousand Plateaus* Deleuze and Guattari describe how the rhizome, “assumes very diverse forms, from ramified surface extension in all directions to connection into bulbs and tubers. [...] Any point of a rhizome can be connected to anything other, and must be. [...] It ceaselessly establishes connections between semiotic chains, organizations of power and circumstances relative to the arts, sciences and social struggles” (1987, 7).

Like baroque forms, rhizomes “live with passionate intensity a life that is entirely their own. They break apart even as they grow; they tend to invade the space in every direction, to perforate it, to become as one with all its possibilities” Deleuze writes in *The Fold* (2006, xix). The rhizome “actualizes the virtual” — it scratches off the veneer and maps out areas that have not been explored yet. A rhizomatic methodology makes visible what is often imperceptible, what is under the radar — or beneath your feet.

We are immanent to the structures we try to overturn, Deleuze and Guattari contend. The task is to rethink and overturn these structures and to intervene in the status quo from the inside. Who says *this* is Real Talk and *that* idle talk? Who says *this* is spirituality and *that* Philosophy? “The multiple *must be made*, not by always adding a higher dimension, but rather in the simplest of ways, by a dint of sobriety, with the number of dimensions one already has available — always  $n-1$  (the only way the one belongs to the multiple: always subtracted). Subtract the unique from the multiplicity to be constituted; write at  $n-1$  dimensions. A system of this kind could be called a rhizome,” Deleuze and Guattari explain in *A Thousand Plateaus* (1987, 7).

Hangovers, as everyone knows, come after the party. Skip ahead to the start of the second millennium. The internet of the new millennium no longer looks like the days of yore. John Perry Barlow’s dream of an independent cyberspace where netizens live happily ever after has forever swirled down the drain. A collaboratively built decentralized and anonymous space where, to refer to Peter Steiner’s famous cartoon in *The New Yorker* ‘nobody knows you’re a dog,’ a liberating force that could ‘*heal the world and make it a better place for you and for me and the entire human race*’ has been steered into a ditch by a small monopoly of centralized and proprietary platforms that control user interaction and collect user’s data for profit, while state apparatuses of surveillance happily make use of this data to their own ends – a banger of a hangover for numerous media theorists and activists alike.

## Rhizomatic Hangover

In *Postscript on the Societies of Control*, Deleuze argues that new forces are knocking at the door. These forces are the “*societies of control*, which are in the process of replacing the disciplinary societies” (1992, 4). This “new monster” in which “liberating and enslaving forces confront one another” is our immediate future, Deleuze writes (Deleuze 1992, 4). In the societies of control, he explains, “individuals have become ‘*dividuals*,’ and masses, samples, data, markets, or ‘banks.’ [...] The old monetary mole is the animal of the spaces of enclosure, but the serpent is that of the societies of control” (Deleuze 1992, 3). “The coils of a serpent are even more complex than the burrows of a molehill,” Deleuze writes (1992, 6). We are living under “ultra rapid forms of free-floating control” where power is no longer disciplinary and institutionalized but always on the move and hard to grasp (1992, 4). A predatory animal crawls through the fine cracks and fissures, spreading its deadly poison, Deleuze writes. However, “[t]here’s no need to fear or hope,” Deleuze argues, “only to look for new weapons” (1992, 4).

For Guattari “ecosophy” is such a weapon (Guattari 1989, 18). Ecosophical practices encompass the environment, social relations and human subjectivity (18), and require understanding of the interactions and relations between ecosystems, techno-scientific, economic, and juridical mechanisms, and the production of subjectivity (32).<sup>[1]</sup> Essential to ecosophical practices is that they have to be articulated with “no overall hierarchy” on “many tangled and heterogeneous fronts” in order to “organize new micropolitical and microsocial practices, new solidarities and

new aesthetics and analytic practices” (Guattari 1989, 34-36). Ecosophical practices, Guattari explains, are antidotes to mass media standardization, normalized subjectivity, conformism, rationalization, and homogenization. “[W]e must learn to think ‘transversally’” (28). In other words, these practices are rhizomatic: n-1.

That Deleuze’s concept of the societies of control struck a chord among media and internet theorists needs little explanation: the web, it is argued, turned into the serpent’s coil. Some put their weapons down. “We lost the war,” Frank Rieger and Rop Gonggrijp lament at the Chaos Computer Club Conference of 2005 (Gonggrijp 2005). “We lost the war for privacy. We lost the war for free internet. We lost the war against the surveillance industry. ... We are inside the future of a dark sci-fi novel that we never wanted and speculated about. ... The police state that knows everything about us, corporations that are part of the state entity... We are *there* now, it is not a future anymore. It is here” (Gonggrijp 2005). Peter Sunde, too, has thrown the towel in the ring. “We’ve lost. ... There is no need in fighting anymore. (...) The internet will keep getting destroyed, it will keep becoming more and more centralized. We can’t do anything anymore. We’ve tried. We sucked at it. (...) [C]apitalism won. It’s game over. We’re too lazy; we’re too tired. ... They’re capturing all the control, all the money, all the information, all the politicians, all the power. The only way to win the game is not to play,” according to Sunde (Sunde 2015). Sunde, Rieger and Gonggrijp, pioneers of the early internet culture, sound the death bell of the internet. Get your coat – the party is over and the night is young.

Other media scholars take the societies of control to be an aborescent tree-system. “We’re tired of rhizomes,” Alexander Galloway and Eugene Thacker complain in *The Exploit* (Galloway 2007, 153). “The promises of rhizomatic media have not been fulfilled. The world is not operating through networks of difference as Deleuze argued,” Galloway, a self-proclaimed “recovering Deleuzian,” explained at the Control Conference at the University of Stockholm in 2016 (Galloway 2016). “Let’s have the trees back!” (Galloway 2016) Far from being nonlinear, parallel, open and heterogeneous, “it’s a monochromatic culture we’re looking at today – very few dreams became a reality” (Galloway 2016). What is needed, according to Galloway, are different concepts and new methodologies to engage with today’s societies of control (Galloway 2016). In *The Exploit* Galloway and Thacker proffer nonexistence as an antidote. “When existence becomes a measurable science of control, then nonexistence must become a tactic for any thing wishing to avoid control. ... The nonexistent is that which cannot be parsed by any available algorithm” (Galloway 2007, 136, 137). Adam Morris, makes a similar point. Engulfed by processes of appropriation and encroached upon by data clusters used as a “method of control”, identity has become a “commodity”, managed by the “two super-institutional poles of Empire”, namely “surveillance and marketing” (Morris 2012, 107). Resistance to this “accumulation of biopolitical information” can be found in anonymity. “[H]ide within the silent majority”; “de-activate” yourself as a political and economic subject, Morris commends (107).

Shoshana Zuboff understands the societies of control as a new genus of capitalism. In her polemic piece ‘Google as a Fortune Teller: The Secrets of Surveillance Capitalism’ (2016) Zuboff warns of an assault by Surveillance Capitalists. Tech giants like Google, the Telematics Industry, the Internet of Things, data brokers, and internet companies influence and modify our behavior. With the data we feed them – through the smart phones in our pockets, the Instagram accounts we thumb through while driving around in our telematics-equipped cars, by using news, navigation and health apps, fitbits and smart household junk in our wireless apartments – Surveillance Capitalists have “access to the real-time flow of your daily life”, Zuboff poses, “[to] your reality – in order to directly influence and modify your behavior for profit” (Zuboff 2016). This, she argues, threatens “the existential and political canon of the modern liberal order” (Zuboff 2016). Under that canon Zuboff lists self-determination; the sanctity of the individual; the ideals of social equality; the development of identity, autonomy and moral reasoning; the integrity of contracts; the freedom that accrues to the making and fulfilling of promises; norms and rules of political agreement; the functions of market democracy; the political integrity of societies, and the future of democratic sovereignty (Zuboff 2016). She fears a future in which we all become “information slaves” of Google (Zuboff 2016). “We are the native people now,” Zuboff decries (Zuboff 2016). Oceania seems a stroll down Sesame Street.

Others perceive the societies of control as a society ruled by algorithms running on datafied people. Tinker with some algorithms and you can win an election, word has it (Kolbert 2017).<sup>[2]</sup> “We are in the midst of a massive land grab for power by billionaires via our data. Data which is being silently amassed, harvested and stored. Whoever owns this data owns the future,” thus argues Carole Cadwalladr in *The Guardian* (Cadwalladr 2017). And in *The Scientific American* a group of scholars – amongst which a biologist, and economist, political scientists, social scientists, and computer scientists – warn that a “programmed society”, in which “algorithms know pretty well what we do, what we think and how we feel,” and in which our judgments and decisions are predetermined by said algorithms, “leads to a brainwashing of the people,” or worse even: “[a] top-down controlled society, which (...) is in principle nothing else than a totalitarian regime with a rosy cover” (Helbing et al. 2017). Life sure wears little make-up these days.

Various media artists understand the societies of control as an invisible and complex force whose intangible omnipresence shapes and mediates our lives in uncontrollable and invisible ways, like an invisible hand. By way of visualizations a “visual vocabulary” is build around the invisible coils of the serpent. The aesthetic language of this weapon is characterized by images and mappings of data-centers and data-farms, countless zeros and ones (0100011), “data-points” on faces and objects, visualizations of data-streams, mathematical formulas and geometric figures, kilometers of cables and tubes, and countless knobs, buttons, and blinking lights. Other media scholars attempt to keep the serpent at arm’s length by probing and mapping its habitat and its tracks. To name just a few: the technologist Finn Brunton and Helen Nissenbaum, for example, wrote *Obfuscation: A User’s Guide of Privacy and Protest* (2015), which lists a plethora of “safe spaces,” tactics and tools of disinformation and circumvention one can use, such as ad blockers and VPNs. The Digital Methods School at the University of Amsterdam published *The Tracker Guide to the Cloud* (2012), a guide that identifies online trackers. And the filmmaker and journalist Laura Poitras, Edward Snowden’s first confidant, published *Astro Noise: A Survival Guide for Living under Total Surveillance* (2016). Here, the societies of control are understood as an invisible architecture of power, of and tools and guidance for “survival” are offered. Again others attempt to take refuge in temporal zones of invisible non-identity provided by cryptographic concealment strategies, masks and tools. In recent years we have witnessed the emergence of numerous trickster-like, subversive camouflage face masks, goggles, balaclava caps, stealth wear, umbrellas, and camouflage make up to undermine data capturing and identity recognition technologies of the societies of control. On one side critics that visualize, expose, reveal, and map different parts of the coils of the serpent— a language of transparency and materialization. On the other side masks, stealth wear, cryptologic tools, guidebooks, co-operatives – a language of field exploration, obfuscation, anonymization, coupled with a guerilla approach.

And then there are those, mainly programmers, engineers and tech savvy designers, that look back longingly to the vanished internet of the olden days. Their suggested remedy is to fix the internet, remake it like it used to be, to go back to the old formula: a decentralized, distributed, commons-based network without corporately owned clouds, Tech Giants, or other companies amassing and exploiting data on users getting in the way. Community-owned networks, these nostalgics hope, should provide a neutral internet, and weaken the monopoly and control of the current gatekeepers of the societies of control. It seems absurd to want to return to an idealized past, as Elizabeth Kolbert, quite pointedly, observes: “Thirty years ago, almost no one used the internet for anything. Today, just about everybody [in the West] uses it for everything” (Kolbert 2017).

Taken together, beneath the hyperboles, there seems to be an insistence – a quasi-religious conviction if you will – that world wide web has fallen prey to the serpent, and wrath is upon us. We’d better get hold of our crypto tools, fix the internet, or else we become Google’s slaves.

Why do so many media scholars succumb to the siren song of Total Control? What is gained when all is lost? Douglas Rushkoff argues in *Present Shock: When Everything Happens Now* (2013) that more than “rational self-preservation” such apocalyptic thinking “gives us a way out. A line in the sand. An us and a them. And, more important, a before and an after” (Rushkoff 2013, 255). *We know* what is coming next. *We are here* now. *This way* we are going. And *this* is how it will all end. Solace is found in predicting what comes next, after the shift. We don’t

like surprises and loath unknowns. “Collapse porn”, to use Leigh Phillips’ term, gives us a sense of location and direction, an illusory semblance of control in the midst of uncertainty. A kind of hindsight-bias: “*I just knew this would happen, I knew it all along.*” “Apocalypto,” as Rushkoff calls it, resolves the “precarious uncertainty” of present times, it offers “the relief of finality” (245). In a similar vein, Stuart Hall observes, in 1979, in his poignant and ever relevant ‘The Great Moving Right Show’: “There is a sense in which the appearance of organized Fascism on the political stage seems to solve everything for the Left. It confirms our best-worst suspicions, awakening familiar ghosts and spectres”, Hall writes (15). However, as Hall has argued, such reasoning “is an argument against the satisfactions which sometimes flow from applying simplifying analytic schemes to complex events” (15). His observation aged well.

Today, apparently, as some media scholars do, you can earn an upper middle class income by shouting “Totalitarianism!” and declaring things dead and lost to Silicon Valley. At the end of the day you get to go home to your cozy abode, kick off your shoes, take a hot whirling bath, and continue to lament, over a glass of chilled Sancerre, how all is going to pot.

I’m tired of Survivalists. I’m tired of Silicon Valley fatalism. I’m tired of accelerationism. I’m tired of control societies. I’m tired of neoliberal determinism. I’m tired of Carnap. I’m tired of dividuals. I’m tired of pro-depressives. I’m tired of surveillance porn. I’m tired of either/or-anxiety. I’m tired of monochromatism. I’m tired of surface-web centrism. I’m tired of reifications. I’m tired of panopticons. I’m tired of network centrism. I’m tired of the monumentalization of technology. I’m tired of nostalgics. I’m tired of Orwell. I’m tired of Romantic weepers. I’m tired of “everything-is” philosophies. I’m tired of post-truth and fake news. I’m tired of meme-wars. I’m tired of men proclaiming change can only happen in the polis. I’m tired of cartoonish portrayals of soulless bags of shit in Silicon Valley snatching the Cyber World from the Good Humanist, and then flinging it into the abyss.

Perhaps the internet has not fallen prey to the serpent, but to a simplified understanding of Deleuze’s societies of control. The world wide web may not be your colorful, happy-go-lucky, psychedelic dream-come-true. It may seem to operate as an enslaving tree-system, that does not inhibit the co-existence of rhizomatic forces, too. As Deleuze writes: “*liberating* and enslaving forces confront one another” in the societies of control (Deleuze 1992, 4 – italics mine). The serpent represents the world of the logical empiricist, a largely predictable, orderly, repetitive, same-old place –  $n+1$ . However, as Guattari argues, we need to abandon the “pseudo-scientific paradigms” of information theory, systems theory, and linguistics (24) that are trapped in “a cycle of deadly repetition”, (26). Sameness is taken as the result of a perceived repetitive structure in nature – or in large datasets – which supposedly underpins patterns of behavior that, in turn, can be calculated and predicted and controlled. The world as we know it, according to this logic, consists of visible regularities, patterns recur with more or less stability, and with the right mathematical method stable patterns can be detected, analyzed, reduced to information, and mathematically modeled. “A stupefying and infantilizing consensus,” according to Guattari (1989 33). And moreover, it is not the whole story. As the famous cliché goes, there is more than meets the eye here.  $N-1$  is a *methodological principle*, or, and more to the point, an attitude heavily against inductive reasoning, against generalizations of abstractions ( $n+1$ ).  $N-1$  calls for an open mind, an imaginative mind willing to *find*, or rather, to *create* something different, something other *in* the repetition of the same, to *make* the rhizomatic, to *seek it* out, as a form of affirmative politics.

The cybernetic notion that our messy and entangled world, and all the people and creatures on it, can be understood as data processing and adjustable systems, hit fertile ground and morphed into a profitable industry of cognitive therapists, social psychologists, self-help books, effectiveness workshops, productivity-enhancing and self-control apps, and Big Data projects, such as those of Cambridge Analytica. That the cybernetic paradigm edged its way into our competitive, neoliberal culture of “winners” and “losers” will not surprise many. After all, neoliberalism emphasizes individual responsibility, flexibility, continuous growth and (technological) self-improvement – onwards and upwards; success is a choice.

Many scholars have debunked this networked, neoliberal revamping of this 19<sup>th</sup> century sanitized, teleological and instrumental worldview. Every byte of data has someone's greasy chicken-salad-sandwich fingerprints on it. Data is "distributed amongst so many different systems, actors, and processes [a confluence of physical, virtual, computational, and non-computational stuffs]," Ian Bogost explains (Bogost 2015), that calling it "data" is a huge misnomer. "Data" needs first to be interpreted and selected as "data." The value attributed to it is theory-laden – smear marks and all – and includes concomitant assumptions. What is considered data is therefore contextual, arbitrary, and often riddled with anthropomorphic generalizations. What's more, many things and events cannot be factually accounted for, cannot be datafied.<sup>[3]</sup> In other words, life refuses to be completely informationalized, no matter how loud serpents give praise to Big Data.

We are dogpaddling in an abundance of grey matter, when it comes to understanding ourselves or our motivations. Not because we're so endlessly unique, special, autonomous, complex and amazing, but, for one, because we have never been able to solve the induction problem, possibly because of our mediocrity.<sup>[4]</sup>

### **Do One Better, Human.**

While you've been busy staying every bit fit in the gig economy, a group of botanists has been revolutionizing the way we think about trees, intelligence and organized networks. As many a tale has told us, forests reveal a world of difference. Not for nothing are they inhabited by the likes of Ewoks, wood nymphs, elves, Bigfoot, unicorns, and a cross-dressing wolf, amongst other creatures. What is more, a forest, botanists teach us, is not just a collection of individual trees. Researchers of the laboratory of Suzanne Simard, Professor of Forestry at the University of British Columbia, found that beneath the soil of the forest, certain kinds of common fungi exist in close relationship with trees. Below the ground, tree roots and fungi combine to form what is called a mycorrhizza, a Greek word pair consisting of the words for fungus (*mykós*) and root (*riza*). Simard explains in her TED Talk 'How Trees Talk To Each Other' (Simard 2016b) that the mushrooms – being neither plant nor animal – we see in the woods are just the tip of the iceberg. Tube-like threads grow out of their stems and these filaments of fungi grow inside and around plant roots. They are suspended between the tapering tree roots creating an intricate web.

The relationship between these mycorrhizal fungi and the trees is mutualistic, benefitting both organisms, Jennifer Fraser writes in the *Scientific American* (Fraser 2015). Neither fungus nor plant can flourish without the activity of the other (Tsing 2015, 138). Forest trees and their root fungi share resources in an "exchange for basic care" (Fraser 2015). They exchange carbon for minerals. Fungi labor for the tree, and in return the tree delivers 20 – 80% of its carbon to fungi, crucial food the fungus needs to build its body, as it cannot photosynthesize and cannot ingest CO<sub>2</sub>, Fraser explains (Fraser 2016). The tree, in turn, needs minerals to be able to stand up straight and grow. Without minerals the average tree would be knee-high and as limp as a noodle. Fraser describes how fungi obtain those minerals by worming their tubes deep through the soil, deeper than the tips of any tree root could ever go, mining and drilling through all kinds of mineral-rich soil particles (Fraser 2016a). Proving that looting is not the sole privilege of the human species, fungi tubes drill through pebbles, rob springtails – little hexapods – of their minerals and suck the nitrogen out of fish carcasses – possibly a leftover of a bear's meal (Fraser 2016a). So, in a way, trees eat fish.

This infinite network of intertwined fungi threads and tree roots is called the Wood Wide Web. It's a mycorrhizal network "of many colors and shapes," Simard says (Simard 2016b). "There can be hundreds of kilometers of mycorrhizal fungi under a single footstep." The web they form is wood-wide, and so dense it makes it hard to view any tree as an individual, Fraser argues (2015b). A tree, it seems, is not a single perennial plant, but rather a crossroad of various relations. Or in the words of Guattari a "terminal" of "processes of subjectivation," a collective singularity that is future oriented (Guattari 1989 23, 24). In fact, the strains are so densely bound up together that they cast doubt on the boundaries between fungi, trees, roots, soil, nutrients, and everything in between. The forest, Simard explains, seems to operate as a *single organism* (Simard 2016b). A tree, then, to refer to Deleuze and Guattari, is several, a multitude really, a transversal forest of species operating above, below and beyond surface level.

The Wood Wide Web, Fraser continues, allows trees of different species to communicate with and support one another (2015b). Much to her amazement, mycorrhizal fungi connect the same species of trees and also act as conduit between different species, like birch and fir trees (Fraser 2015b). In addition to sharing food with their various neighbors, trees – through their root fungi – send warning and stress signals to other trees to help them prepare for a coming external threat, Fraser explains (2015b). Merlin Sheldrake, an expert in mycorrhizal fungi, adds: “A plant under attack from aphids [plant lice] can indicate to a nearby plant that it should raise its defensive response before the aphids reach it” (Macfarlane 2016). “Trees cry out in a chemical way,” Simard clarifies (2016a). When a tree is under attack by a leaf-eater, say caterpillars or budworms, it produces chemicals that make its leaves taste repellently disgusting. These chemicals are moved through the fungi web to warn other trees that there’s an intruder in their midst. To refer to Deleuze: flesh sure is tender.

The biggest and oldest trees are the busiest trees, the so-called “nodes” or “hub-trees,” Simard explains. These “nodes” sprout lines in all directions and can be connected to hundreds of other trees — and everything that lives off it, on it, in it, under it and between it. Mycorrhizal fungi, Simard notes, increase the resilience of the *entire forest* (Simard 2016b). Who said we need new solidarities with no overall hierarchy? Voilà.

Botanists had no idea about the existence of this “incredible, communicative network,” Simard explains, because “we didn’t know *how to look*” (Simard 2016a). What is even more impressive: new kids on the block of a different tree species, in a shaded understory, are supported with extra resources by their bigger, older and stronger neighbors, Fraser writes (Fraser 2015b). But what really boggles the botanist’s mind is this: battered and dying trees dump their excess carbon in the Wood Wide Web, which then very often ends up feeding newcomers in the forest, sent along the network to new seedlings, ones that are more resilient and have better chances of surviving global warming, Simard explains (Simard 2016a). She does not yet understand “who runs the show”: if the trees or the fungus decide who gets what. There seems to be no notable hierarchy. Although the extent of its relations remains opaque, it seems the Wood-Wide Web *thinks ahead* to anticipate the needs of the whole forest (2016a). Jaw-dropping.

This dazzlingly collaborative, future-bound structure that is the Wood Wide Web is challenging us to rethink the partial understanding we had of trees, for one. But there’s more, much more. It challenges us to reassess how the metaphors and models we use to navigate the world play out in knowledge, and blind us. The Wood Wide Web provides a new framework in which to rethink media scholar’s limiting and paralyzing understanding of the societies of control. Thirdly, it challenges us to review the limits of empirical observation, to look beyond the surfaces and to reevaluate our relationship to beings without nervous systems, and to tree-huggers. The Wood Wide Web also raises significant questions about the vitality of matter; the possibility of kinship and collaboration with multiple others in an infinite network of connections, and the notion of common ground. The forest seems to organize itself around, to use Guattari’s words, “solidarities, new gentleness” and “an ecosophical ethics” (34, 45). But that’s not all. The Wood Wide Web questions the adage that Man is – by its own reckoning – the Overlord of Knowledge, too. In *The Posthuman* (2013) Rosi Braidotti writes: “the centrality of the Human, that is of the Man, that is a masculine, white, urbanized, speaking a standard language, heterosexually inscribed in a reproductive unit and a full citizen of recognized polity, is now challenged...” (Braidotti 2013, 65).

–By fungus! Fungus gut-punched Anthropos.

May you purr in glee, Darwin.

## **Are you tired of trees? Bring in the forest!**

Much more than a bunch of individual trees, the forest is a rhizomatic network, a multidimensional multiplicity, connecting all kinds of creatures co-existing and cooperating benefitting the forest as a whole – from the molar to the molecular. Exceedingly tiny little fungi-tubes saw away at the branch we’re sitting on, rupturing our fuzzy notions of trees, roots, fungus, and the forest, but also of empiricism, humankind, and, certainly not least, of organized networks and societies of control.

After decades of painstaking research, Simard and her team of international fellow botanists were able to draw the first outlines of this multilayered network. The network is so fine, layered, and intricate that scientists have only caught a glimpse of the web – not to mention its possible connection to other networks. And yet it was right there all along, burgeoning under their feet. In *The Limits of Critique* Rita Felski argues that instead of “digging down” or “standing back” we should trace the “interconnections, attachments, and conflicts among actors and mediators” (Felski 2015, 171). Standing back you stare at the tree, its towering trunk, its branches and leaves; by digging down you see its root-system, but then the mycorrhizal fungi lay in ruins. You can’t see the forest for the trees. You must begin in the middle. “Soil is fantastically difficult stuff to work with experimentally, and the hyphae are on the whole too thin to see,” Sheldrake says (Macfarlane 2016). Even laser-scans are too crude for the little, translucent tubes of the fungus, he says.

Sheldrake explains that for each scientific paper he produces he plans to write a “dark twin” in which he describes “the messy network of crazy things that underlies every piece of cool, clean science, but that you aren’t usually allowed to see—the fortunate accidents of field work, the tangential serendipitous observation that sets off a thought train, the boredom, the chance encounters” (Macfarlane 2016).

Cut back to that summer day in a forest in British Columbia, some 30 years ago: Simard says she first saw a glimpse of the subterranean infrastructure during a rather awkward incident with her dog Jiggs. Out on a walk in the forest with her family, the dog suddenly scampered off deep into the woods. She and her aunts, uncles, nieces and nephews followed the sound of his barking and yelping, which lead them to an outhouse. There, they found Jiggs, who had fallen two meters down to the bottom of the outhouse pit. While the whole family was busy digging him out, Simard suddenly noticed they were standing on a thick tangled carpet of intertwining and exposed tree roots. This, she explains, was the day she began to explore the underground ecology sizzling beneath the forest soil (Simard 2016a).

Research on the Wood Wide Web, it could be argued, is more an act of creation, than of discovery. It requires an open view to allow chance-events and serendipity to sneak in. Thirty years of collaborative research later, often hard, frustrating, and repetitive work, peeling one layer off another from the surface, countless experiments on microscopic spore examinations, meticulous tests of the short-sequence of the DNA of hundreds of root samples in a series of countless plots, years of moving backward and forwards, the botanists at Simard’s Forestry Lab learned where, or rather, *how* to look. They now start to unfold and untangle what has remained invisible: the vast and intricate infrastructure of a delicate forest *in between* the forest.

Guattari insists that to “break out of totalizing frames” we need to look for ethico-aesthetic inspirations in order to “comprehend the interactions between ecosystems, the mechanosphere and the social and individual Universes of reference” (Guattari 1989, 28,29). The ecological thinking of Guattari and Deleuze – their “nature-thought” – has inspired a slew of creative ecophilosophers, ecocritics, and rhizomatic theorists alike that have taken to subterranean stems of plants, to forests and to many other organisms and matter to critique the snake in the grass and the many guises of aborescence. For the virtual sylvan meshwork that is the Wood Wide Web to become actual, botanists had to break out of their own limiting frames to be able to see and understand the interactions going on below their feet. Admittedly less poetic than an aesthetic transformative experience, it all started with a shit-smear pet — but the story didn’t end there.

## **Out of the woods of the www, into the forest of the WWW**

If network logic is “the dominant template for our social lives”, as Ulises Ali Mejias argues (Mejias 2013, 156), and if, as Wendy Chun argues, networks are performative, self-fulfilling prophecies, and if we are, as Deleuze argues, part of the problem and the task is to change things from within, then we should not succumb to cynicism, join the tech-fixers or attend a masked ball. There is a fine line between acknowledging the extent of the trouble we are in, and succumbing to abstract futurisms, techno-fixes, sublime despair, or a politics of indifference, Donna Haraway argues in *Staying with the Trouble: Making Kin in the Chthulucene* (2016). For Haraway, staying with the trouble means to show up, to show up for each other, and that requires to reject the cynics, the techno-fixers and the

game-over attitude. As long as we fail to imagine a socio-political life outside of the networks-of-control model, we remain stuck in this grid. As long as we argue there is no space outside of it and everything is governed by this single overarching Totality, the only way “out” is to transcend it, exit it, or hide from it. The network is also a Model, and should not be conflated with our seedy, leaky, and fuzzy social Realities. The gap between them is vast. The network of control may seem a tree-system, but that is not the only thing growing in the forest.

“Imagine a network map, with its usual nodes and links,” Meijas asks us in *Off the Network: Disrupting the Digital World* (2013 153). “Now shift your attention away from the nodes, to the negative space between them. In network diagrams, the space around a node is rendered in perfect emptiness, stillness, and silence. But this space is far from barren. ... This space is not empty but inhabited by multitudes that do not conform to the organizing logic of the network” (153).

Perhaps the internet seems a toxic totality, because we do not yet know *how* to look between its nodes and links. There is space around nodes and links, and between the diagrammatic network and our understanding of social reality. It is in *these* spaces, around nodes and trees, and between branches and links, that assemblages group and troop. The Wood Wide Web might help us to rethink the network of control model, to foster assemblages, collectives of people and things, and seek out and experiment with alternative ways of establishing connections and relating that enables collaborative future-building, not *outside* the network and *off* the grid, but *in the spaces between* the network and our social realities. The Wood Wide Web might inspire, to quote Guattari, “new practices of the Self in relation to the other, to the foreign, the strange” and it might help to articulate “a nascent subjectivity, a constantly mutating socius, and an environment in the process of being reinvented” which in turn could lead to a “reframing and recomposition of the goals of emancipatory struggles” (1989 46/47, 33).

We can see the trees, but the underground rhizomatic meshwork remains hidden. Branches and tubes coexist. The task is to think indeterminacy and determination together. Their connection is relational and transformative. “Indeterminacy”, as Anna Tsing argues in *The Mushroom at the End of the World: On the Possibility of Life in Capitalist Ruins* (2015), “expands our concept of life showing us how we are transformed by encounter” (Tsing 47). We already inhabit contaminated, commingled, relational spaces. These spaces are often imperceptible, but they *are* there. We just need to know *how* to look to find them – to actualize the virtual. We need to seek out the rhizomatic in the network (n-1), seek out the spaces between the network where other worlds and different ways of relating are bumping.

Below the forest floor fungal tubes extend themselves in skeins entangling plant roots, soil and nutrients. As ways of life come together, Tsing explains, “patch-based assemblages are formed” (Tsing 163). These wood-wide assemblages, Tsing writes, are a densely entangled “contaminated diversity” without self-contained units. The patchy assemblages are like a center-less map, inhabited by a cross-species multiplicity, subject to relational transformation (28). The Wood Wide Web (WWW) is affected and “transformed by every encounter” (28). Its “units” are “encounter-based collaborations” (33). The network of the worldwide web (www) on the other hand, presupposes demarcated and neatly cut nodes, standardization, duplication and homogeneity, which enable it to ignore noise and contamination on its lines and links. The nodes of the lowercase www “can stand in for all as a unit of analysis” (28). The uppercase WWW, in contrast, lacks a protagonist (28) as it is always already interconnected: “a contaminated diversity of indeterminate encounter-based collaborations” (33). Where the www is infantilizing, homogenizing, desingularizing, and represses heterogeneity, the WWW operates on tangled and heterogeneous fronts that resingularize and affirms difference.

In the WWW the primary directive is not linking nodes, but composing collectives. While the www is embedded in assumptions about nodes taken to be self-contained, self-organized, independent and autonomous entry-points, the WWW is structured around co-existence, collaboration, and kinship, bursting the bogus categories of the I-me-my-mine, amongst others. The demarcated nodes and echo chambers - *ego chambers?* - of the www are blasted apart by the WWW's assemblages of species that gravitate around aspirations and needs. Where the www is uniform, hierarchical, framed, the WWW is egalitarian, pluralist, and an unmarked force field. There are no top-

down structures in the WWW, no decision trees, no binaries, no models, no maps, no grids. Where the www emphasizes the single user, personalization and “relentless” and “self-contained” individuals, the ecopractice that is the WWW, stresses “subjectivation” and leads us to “re-examine the relation between the individual and subjectivity, and above all to make a clear distinction between the two” (Guattari 23). The individual of the www becomes in the WWW, to refer to Guattari, “a terminal for processes that involve human groups, socio-economic ensembles, data-processing machines, etc” (23). Every single act always already implies others. Organism *plus* environment, as Gregory Bateson argued. Each ‘I’ is a ‘we’.

The WWW is a deterritorializing assemblage that spreads rhizomatically, undermining the network logic of the www. It defies a one-size-fits-all global model, and as such it is not a scalable unit. Where the www thinks in terms of scalability – “the hallmark of modern science” – the WWW cannot scale up, cannot be mathematically modeled or duplicated as it is entangled, contaminated, and patchy (Tsing 38). Scalability requires standardization, uniformity, duplication and is “oblivious to indeterminacies of encounter; that’s how [it] allows smooth expansion” (38). The www is seemingly self-organized, “and self-replicating things can be controlled, they are interchangeable and scalable” (140). The WWW forms “an infrastructure of interspecies connection,” “develops through interactions with other species” and can neither be scaled nor controlled (141). Similar to Guattari’s ecophilosophy, the WWW does not homogenize various levels of practice nor does it make a connection between them under one flag (Guattari 34). This is why the www has near global reach, while the spaces of the WWW are local, situated, embedded, patchy, grounded and connected in mutual exchange. The WWW, to appropriate the words of Guattari, “enables the singular, the exceptional, the rare, to exist *with a State structure* that is the least burdensome possible” (34, italics mine) in order to “reinvent the relation of the subject to the body, to phantasm, to the passage of time, to the ‘mysteries’ of life and death” (22). There’s a WWW in the www.

As the WWW is non-scalable, not everyone is included in its minoritarian assemblages. When you affirm everything, you affirm nothing at all. The WWW consists of patchy assemblages that (re)compose and (re)group around different *shared imaginings*, to “make each other’s world-making possible” (Tsing 152). This requires trust. Trust requires ties. Relations of trust are “a form of entanglement with reciprocal obligations,” Tsing writes (Tsing 272). ‘Trust comes by foot, but leaves on horseback,’ a Dutch saying goes. Trust is differentiated, subjective, relational, temporal and variable. You can have too much of it, but also too little. You trust some people but not others. You might trust someone to do certain things, but not other things. Trust involves vulnerability. When someone is vulnerable to you, trust comes easier. The WWW stresses the need “for the acknowledgement of our vulnerability to others,” Tsing writes (Tsing 2015, 29). Trust is about someone’s integrity, reliability and ability in a relevant matter. Trust is about trustworthiness. It is the partial and provisional result of the subjective evaluation of trustworthiness. Assemblages of the WWW are therefore vulnerable, they are variable, fragile, they break off and dissolve; they are always under construction, and always falling apart. “[M]utual benefits does not lead to perfect harmony” (Tsing 139), trust is not uniform. “Assemblages are contaminated and unstable... yet they are defined by the strength of what they [unintentionally] gather as much as their always-possible dissipation” (43).

“Chains of engagement cannot be reduced to self-replicating, interchangeable objects, Tsing writes (144). “Instead they require attention to the [stories] that maintain the chain” (144). Maintaining the chains of an assemblage means plain old labor. It means doing the actual hard, repetitive and often thankless care and accountability work. ‘To live, to live well, to live better,’ to paraphrase Alfred Whitehead’s *The Function of Reason* (1929, 5), you need to work collaboratively, harness group power, and work, work, work, diligently and persistently. An exhausting job, often from the margins, against the mainstream, and more often than not without the desired outcome – projects fail, people clash, and tides turn. Chains of engagement, just like ecosophical practices, come together and drift apart, and have to be “continually reinvented, started again from scratch,” Guattari writes, in order to explore new possibilities and to prevent to “become trapped in a cycle of deathly repetition” (Guattari 26).

Maintaining chains, like it or not, takes compromise. Compromise does not mean one cannot have (and fight for) strong convictions. Compromise means increasing your ability to relate. Compromise requires acknowledging the self-as-other. Compromise is about understanding the self as several, a multitude, and this entails taking into

account your obligation to and interconnection with other people and things. Or, and in German: *Die Bäume wachsen nicht in den Himmel*.

Assemblage-labor, too, inquires imagination, inspiration, and revelation: this is creative work. Plants and fungi do not just grow in the forest, but *make* the forest (Tsing 152), they are gatherings of collaborative encounters that *through their labor* transform landscapes and shape worlds (152). Instead of “unveiling” the network, materializing the immaterial by pointing to its physical infrastructures, or flying under the radar and creating black-boxes, the WWW invites us to play to the strengths of the multispecies assemblages *in-between* the trees, nodes and links of the network. Instead of pointing to the broken links, 404s, and information overloads of the www, the WWW invites us to look for open avenues and transformative encounters, to make new assemblages and relations possible between and within assemblages that form interdependent, fragile, trans-species collaborations. The WWW challenges the logic of totality and entrapment in the diagrammatically controlled grid of the www, and encourages us to seek out, excavate and *make* the sites where change is possible, other spaces, alternative spaces, in-between spaces. It invites us to seek out the different guises of the WWW in the www. Not a generalizable, programmable “if P, then Q”, but rather “what if not P altogether.”

The adaptable space of intricate, intertwined, inconsistent rhizomatic forces of the Wood Wide Web provides a fresh framework within which to rethink possible antidotes to the predatory snakes, aphids, parasites, and other toxic agents of the societies of control. There are more ways than one to the woods. There are lines of flight to escape the serpent. But to seek those out, for the multiple to be *made*, we need to know *where* to look, we need to learn *how to look in n-1 dimensions at the societies of control*. The task is to ‘do the works’ under today’s conditions. To go out for a walk in our neck of the woods, and look for chains of engagement, relations and connections between trans-species – as messy, disorganized, temporary, issue-specific, and located as they may be. The Wood Wide Web asks us to climb down Deleuze’s tree-system and to carefully look for alternative rhizomatic assemblages that make no distinction between ecological registers, between the physical and the virtual, and locales in-between. ‘Who’s we?’, you may ask. ‘We’ is whoever shows up willing to do this work-in-progress. Whatever the outcome, one thing is clear: if a tree falls in a forest and no one is around to hear it, it will not have fallen alone.

---

## Works Cited

Bateson, Gregory. (1972) *An Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution and Epistemology*. London: Jason Aronson Inc.

Bogost, Ian. (2015) “The Cathedral of Computation.” *The Atlantic*, January 15, 2015.  
<https://www.theatlantic.com/technology/archive/2015/01/the-cathedral-of-computation/384300/>

Braidotti, Rosi. (2013) *The Posthuman*. Cambridge: Polity.

Cadwalladr, Carole. (2017) “The Great British Brexit Robbery: How Our Democracy Was Hijacked.” *The Guardian*, 7 May 2017. <https://www.theguardian.com/technology/2017/may/07/the-great-british-brexite-robbery-hijacked-democracy>

Deleuze, Gilles and Félix Guattari. (1987) *A Thousand Plateaus: Capitalism and Schizophrenia*. Minnesota: Minnesota University Press.

Deleuze, Gilles. (1992) “Postscript on the Societies of Control.” *October* 59, 3-7.

Deleuze, Gilles. (2006) *The Fold: Leibniz and the Baroque*. New York: Continuum.

Felski, Rita. (2015) *The Limits of Critique*. Chicago: University of Chicago Press.

- Fraser, Jennifer. (2016) "From Tree to Shining Tree". *NPR RadioLab*, 30 July 2016.  
<http://www.radiolab.org/story/from-tree-to-shining-tree/>
- . (2015) "Dying Trees Can Send Food to Neighbors of Different Species." *Scientific American*.  
<https://blogs.scientificamerican.com/artful-amoeba/dying-trees-can-send-food-to-neighbors-of-different-species/>
- . (2015b) "Dying Trees Can Send Food to Neighbors of Different Species." *Scientific American*.  
<https://blogs.scientificamerican.com/artful-amoeba/dying-trees-can-send-food-to-neighbors-of-different-species/>
- Galloway, Alexander and Eugene Thacker. (2007) *The Exploit: A Theory of Networks*. Minnesota: Minnesota University Press.
- Galloway, Alexander. (2016). "Why I'm a Vulgar Determinist." Keynote at Control Conference, European Society for Literature, Science and the Arts, Stockholm, 14 June 2016.
- Gonggrijp, Rob, Frank Rieger. (2005) "We Lost the War. Welcome to the World of Tomorrow." Keynote at Chaos Communication Congress, Berlin. 29 December 2005. [https://media.ccc.de/v/22C3-920-en-we\\_lost\\_the\\_war](https://media.ccc.de/v/22C3-920-en-we_lost_the_war)
- Gomes, Lee. (2014) "Machine-Learning Maestro Michael Jordan on the Delusions of Big Data and other Huge Engineering Efforts." *IEEE Spectrum*. October, 2014. <https://spectrum.ieee.org/robotics/artificial-intelligence/machinelearning-maestro-michael-jordan-on-the-delusions-of-big-data-and-other-huge-engineering-efforts>
- Guattari, Félix. (1989/2014) *The Three Ecologies*. New York: Bloomsbury Academic.
- Hall, Stuart. (1979) "The Great Moving Right Show." *Marxism Today*. January 1979.  
[http://banmarchive.org.uk/collections/mt/pdf/79\\_01\\_hall.pdf](http://banmarchive.org.uk/collections/mt/pdf/79_01_hall.pdf)
- Haraway, Donna J. (2016) *Staying with the Trouble. Making Kin in the Chthulucene*. Durham & London: Duke University Press.
- Helbing, Dirk et al. (2017) "Will Democracy Survive Big Data and Artificial Intelligence?" *Scientific American*. February 2017. <https://www.scientificamerican.com/article/will-democracy-survive-big-data-and-artificial-intelligence/>
- Kolbert, Elizabeth. (2017) "Who Owns the Internet?" *The New Yorker*. August 2017.  
<https://www.newyorker.com/magazine/2017/08/28/who-owns-the-internet>
- Macfarlane, Robert. (2016) "The Secrets of the Wood Wide Web." *The New Yorker*. August 2016.  
<http://www.newyorker.com/tech/elements/the-secrets-of-the-wood-wide-web>
- Mejias, Ulises Ali. (2013) *Off the Network: Disrupting the Digital World*. Minnesota: Minnesota University Press.
- Morris, Adam. (2012) "Whoever, Whatever: On Anonymity as Resistance to Empire." *Parallax* 18:4, 106-120. DOI: 10.1080/13534645.2012.714560
- Osnos, Evan. (2017) "Doomsday Prep for the Super-Rich." *The New Yorker*, January 2017.  
<http://www.newyorker.com/magazine/2017/01/30/doomsday-prep-for-the-super-rich>
- Rushkoff, Douglas. (2013) *Present Shock: When Everything Happens Now*. New York, NY: Penguin Random House Company.
- Simard, Suzanne. (2016a) "From Tree to Shining Tree." *NPR RadioLab*, 30 July 2016.  
<http://www.radiolab.org/story/from-tree-to-shining-tree/>
- Simard, Suzanne. (2016b) "How Trees Talk to Each Other." TEDSummit 2016. September 2016.  
[https://www.ted.com/talks/suzanne\\_simard\\_how\\_trees\\_talk\\_to\\_each\\_other](https://www.ted.com/talks/suzanne_simard_how_trees_talk_to_each_other)

Sunde, Peter. (2015) Opening Ceremony Transmediale, Berlin. April 2017. <https://blog.brokep.com/>

Tsing Lowenhaupt, Anna. (2015) *The Mushroom at the End of the World: On the Possibility of Life on Capitalist Ruins*. Princeton: Princeton University Press.

Vanderbilt, Tom. (2016) *You May Also Like: Taste in an Age of Endless Choice*. New York: Random House.

Whitehead, Alfred North. (1929) *The Function of Reason*. Princeton: Princeton University Press.

Zuboff, Shoshana. (2016) "Google as a Fortune Teller: The Secrets of Surveillance Capitalism." *Frankfurter Allgemeine Deuilleton*. 15 March 2016. <http://www.faz.net/aktuell/feuilleton/debatten/the-digital-debate/shoshana-zuboff-secrets-of-surveillance-capitalism-14103616.html>

---

## Notes

1. Guattari's ecosophy is indebted to Gregory Bateson's *Steps to an Ecology of Mind* (1972) who argued that "the organism which destroys its environment destroys itself", which is to say that the "unit of survival" in the world is not the species, not the family line, not the individual, but the interaction between organism plus environment, or organism-plus-environment (Bateson 1972, 489). Ecology, in the words of Bateson, is "the study of the interaction and survival of ideas and programs" (489).
2. Early 2017, various, largely liberal media reported of the alleged wheeling and dealing of the data-analytics firm Cambridge Analytica, during the Brexit Referendum and the 2016 US Election. By its own account, using their secret data sauce obtained from Facebook and a massive amount of consumer-data bought from data-collecting corporations, Cambridge Analytica had nudged Trump into the White House and had ushered Britain towards the 'exit' of the EU. It stirred many opinion and think pieces about the supposedly profound influence of a small number of corporations that collect, trade and exploit user's digital data and content.
3. The facts of Hans Christian Andersen's *Thumbalina* (1835) are straightforward: a tiny girl is kidnapped by a toad, who wants to marry her off to her son, and held captive on a lily pad deep in the woods. Some wood creatures – fish, butterflies, and birds - come to her rescue. A swallow drops her off at a meadow where she meets a fairy-prince, and they fall fall in love. However, these facts tell us nothing about the charm, warmth and wit of the characters, the poetics of the story, the allegorical style, nor of the contradictory and diverging meanings attributed to the tale.
4. Computation aside: we have yet to properly explain the underpinnings for the preferences we have and the choices we make. According to scientists, we lack a theory.

---

## Cite this Essay

<https://doi.org/10.20415/rhiz/034.e04>

---

RHIZOMES ISSN 1555-9998 ★ 230 East Hall Bowling Green State University Bowling Green, OH 43403  
Editors: Ellen Berry and Carol Siegel. Reviews editor: Craig J. Saper. Technical editor: Helen J Burgess