

FROM COUNTERCULTURES TO CYBERCULTURES TO STARTER
CULTURES: MATERIALISATIONS OF THE BACTERIAL SELF IN
JENNA SUTELA'S *NIMIIA CÉTŪ* (2018)

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In 2018, Somerset House in London presented *nimiia cétŭ*, a new twelve-minute digital film by Finnish artist Jenna Sutela. Realised under the aegis of *n:dimensions*, a research residency funded by Google Arts and Culture, *nimiia cétŭ* was produced in partnership with artificial intelligence artist Memo Akten, Damien Henry (Experiments Team Lead for Google Arts and Culture, Paris), and the bacterium *Bacilli subtilis*. The work comprises distinct visual and sonic elements and has since been exhibited as an audio-visual installation, though it remains available to view freely online. While these shifting modalities render categorisation slippery and imprecise, at the core of *nimiia cétŭ* lies the heterodox interactions between the artist and her collaborators, artificial intelligence (A.I.), and *Bacilli subtilis*.

The film opens with a computer's view of the *Bacilli subtilis*, offering an approximate rendering of its cellular choreography as if observed through a microscope. We then move to a black screen, where the microbe's now pixelated forms are redolent of a celestial expanse. At play in this transition seems to be the parallel functions of microscope and telescope as instruments that mediate between human scale and a remote cosmos (figure 1). After several frames, a script bursts onto the screen, dancing across the bacterial movements. Taking the form of ersatz graphemes, certain characters disperse into sentence-like patterns, whilst others coalesce to form a looping, knotted scrawl. Although some elements of this syntax approximate familiar linguistic patterns, they largely resist semantic interpretation.

At around the three-minute mark, the screen transitions to a 3D rendering of a Martian vista. There is a roaming view of a channelled earthen landscape, referencing a popular Victorian belief that Mars boasted a sophisticated canal system, which is overlaid by the graphic script (figure 2). The rest of the film moves between close-ups of bacterial movements, flashes of graphic activity,

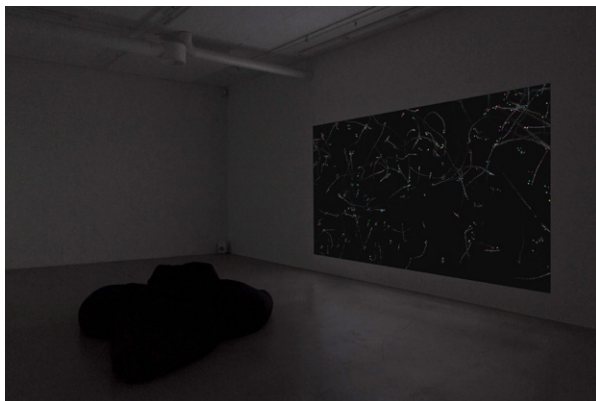


Figure 1 Jenna Sutela, *nimiia cétii*, 2018. Video, sound, 12'06 mins. The work was created in collaboration with Memo Akten and Damien Henry as part of *n-dimensions*, Google Arts & Culture's artist-in-residence program at Somerset House Studios. Thanks to Kieran Bates from the Institute of Zoology at Imperial College London, Adam Laschinger for sound recordings, and Manus Nijhoff and Leith Benkhedda for 3D work. The video includes music with Miako Klein in contrabass recorder and Shin-Joo Morgantini on flute, with sound production by Ville Haimala. Courtesy of Kunsthall Trondheim and Jenna Sutela. Photo: Aage A. Mikalsen & Daniel Vincent Hygstedt Hansen.



Figure 2 Jenna Sutela, *nimiia cétii*, 2018. Video, sound, 12'06 mins. The work was created in collaboration with Memo Akten and Damien Henry as part of *n-dimensions*, Google Arts & Culture's artist-in-residence program at Somerset House Studios. Thanks to Kieran Bates from the Institute of Zoology at Imperial College London, Adam Laschinger for sound recordings, and Manus Nijhoff and Leith Benkhedda for 3D work. The video includes music with Miako Klein in contrabass recorder and Shin-Joo Morgantini on flute, with sound production by Ville Haimala. Courtesy of Kunsthall Trondheim and Jenna Sutela. Photo: Aage A. Mikalsen & Daniel Vincent Hygstedt Hansen.

and shots of the Red Planet. Present throughout is a soundtrack comprised of low, rasping bass notes contraposed with keening noises and a spoken version of the script.¹ Key to shaping the film's eerie atmosphere, the strangeness of these audio recordings is only enhanced by their seeming proximity to human phonological systems: the cumulative effect is an uncanny soundscape of guttural cries, squelching, bubbling, and thrumming electronic beats.

Hedging frontiers between biological and computational systems, Sutela has described *nimiia cétii* as 'an experiment in interspecies communication.'² An aggregate of the Finnish word *nimi*, translating as 'name' in English, and the acronym CETI, which stands for communication with extra-terrestrial intelligence, the work's title tallies with this speculative poetics.³ Cognate notions of expanded selfhood, distributed cognition, and networked subjectivities traverse the artist's practice, which is informed by the legacies of cybernetics, cyberpunk, and New Age philosophies.⁴ Much of this work is born from 'collaborations' with non-human agencies, such as bacteria or A.I., and prioritises networked relations over discrete form. When trying to make sense of *nimiia cétii*, this notion of connectivity, in both its ecological and technological senses, is pivotal.

To be sure, there is no shortage of networked thinking in the landscape of contemporary art. In recent years, numerous artists, ranging from Anicka Yi to Pamela Rosenkranz and Pierre Huyghe, have sought to render the diverse scales of interspecies life. Inspiring a novel art-historical nomenclature, ranging from Caroline Jones' 'symbiontics' to Nicolas Bourriaud's 'inclusive' aesthetics, such descriptors invoke a praxis more finely attuned to the entanglement of human and non-human beings.⁵ What ties together these artists is a focus on the politics of scale, accompanied by various claims for a molecular de-centring of the human. The subject as 'individual' recedes from view, replaced by an order of relations that remains largely aniconic. Crucially, this relational body is rendered through materials ranging from bacteria to fungi and synthetic hormones, shifting attention toward the biological substrate of corporeal experience. In this sense, there is an interesting parallel between *what* these works of art claim to show us and *how* they show us; human privilege is ostensibly jettisoned in favour of material instability and communicative contingency.

Beyond the immediate bounds of art history, this orientation toward bio-materiality follows wider patterns in contemporary theory, namely the shift

toward post-humanist and the new materialist ontologies over the past decade. More specifically, themes and modalities of Sutela's work might be linked to the specific brand of material feminism associated with scholars such as Myra Hird, Jane Bennett, and Stacy Alaimo.⁶ Equally, the influence of symbiotic theory, most closely associated with the figure of Lynn Margulis, might also be noted. Uniting these various thinkers is an understanding of the subject as inextricably bound to its ecological milieu, which works to undermine humanistic assumptions of autonomy and corporeal inviolability. Erstwhile maligned agencies, such as bacteria, thus assume a fundamental importance within this eco-logic of co-existence. To the extent that it engages more-than-human networks that would otherwise be inaccessible, such concerns would appear to find their essential expression in *nimiia cétii*: Human-bacterial symbiosis does not just manifest at the level of thematics, but is built into the work's very structure.

The promises, pitfalls, and aesthetic dispositions of this relational sensibility can be sensed in the ever-growing presence of ecological themes in international exhibitions, curatorial initiatives, art publications, and symposia. Though largely beyond the scope of this article, there is certainly further critical work to be done in reflecting on art's 'work' in this context. Needless to say, this interest in relational ontologies has reached an inflection point when the global scale of ecological catastrophe is being felt with ever-intensifying urgency. A redemptive impulse thus haunts these various institutional schemas, manifesting in quixotic appeals for what the art object could or should achieve in this context.⁷ On this point, it is not incidental that the predominant heuristic strategies applicable to this strand of practice have emerged within this para-curatorial context. Whilst I by no means wish to discount such narratives, there is arguably a degree of strategic professionalism at play here, which should not be underestimated.

The various criticisms levelled at contemporary art's previous 'relational turn' are hardly immaterial in this respect.⁸ As theorised by figures like Bourriaud, this strand of practice positioned artmaking as a social interstice, disengaging from capitalist exchange to produce non-reified modes of community. What such aesthetic claims tended to overlook, however, was the quality, contingency, and inexorable reification of any collectivism produced therein. In the case of *nimiia cétii*, the viewer's engagement with the *Bacilli subtilis* is channelled through several layers of digitised intervention, which

comes into play at the stages of post-production and distribution. Viewing the work, whether in-gallery or via a computer screen, one is perhaps struck by how slick, mannered even, its abstraction begins to appear. In this sense, ‘collaboration’ seems a curious choice of descriptor for the project. And so, we can begin to sense a cleavage between the work’s ecological claims and its aesthetic form. We might even go as far as to say that *nimiia cétii* hinges on a fundamental tension: It seeks to attend to the unknowability of more-than-human ecologies yet renders these biotic agents legible within an economy of spectacular visibility. Dwelling in this unresolved territory is, I would argue, both necessary and ecologically illuminating.

In this article, I want to consider how and why biomaterials have come to feature so prominently in contemporary art. In so doing, I will argue that *nimiia cétii* exemplifies a particular aesthetic tension, wherein the image aspires to coherence in the face of ecological turmoil. Evidently, this traffic between art and life is rendered all the more ambiguous as the latter is increasingly sequestered as an economic resource. And, to this point, the bacterial actors of Sutela’s work have accrued a distinctive currency in recent years. Parsing these conflicts will lead us to a wider, materialist, question, which is what happens when holistic models of the subject converge with capitalist agendas. This impels a re-examination of the aesthetic and political stakes of ecological relationality as they illuminate the relationship between materiality and historical contradiction.

The commensal ideal and its paradoxes

Returning to *nimiia cétii*, I want to tease apart the particular valences bacteria assume in this context. The basis of the work’s script was drawn from the records of the Martian language devised by nineteenth-century Swiss medium Élise-Catherine Müller, better known today as Hélène Smith. In the tradition of spiritism, the term ‘medium’ denotes the clairvoyant whose body is both the giver and receiver of messages delivered from a paranormal source. That *nimiia cétii* references Smith specifically is striking, for this medium was unique amongst her contemporaries in claiming that her alien interlocutors inhabited and spoke through her own body.⁹ These trans-historical connections surface in Sutela’s artist’s statement, which describes how Smith’s script worked to transcribe messages from microbial entities usually assumed to be voiceless.¹⁰ In a more recent interview, the artist expanded on such preoccupations:

I'm often thinking about how we're actually some kind of spirit mediums channelling our gut bacteria. I guess I'm generally preoccupied with the unknown and the otherworldly in both organic and synthetic forces that shape our lives.¹¹

In this passage, Sutela parses the core motivation of *nimiia cétii*, which was to render the cellular depths of bacterial ecologies both tangible and intelligible. Here, we might recall how the film alludes to historic links between microscope and telescope. For indeed, what unites these instruments is their capacity to render foreign bodies amenable to anthropomorphic projection.¹² To follow this brief, *nimiia cétii* invites reflection on how these 'Martian beings' are not located elsewhere but are immanent to the very substance of the self.

That bacteria might acquire a renewed cultural relevance within a semantics of relationality is, to a certain extent, supported by salient trends in evolutionary biology and immunology. Specifically, the plethora of literature, both commercial and academic, that has examined the role of the microbiome in human health. Broadly speaking, what this research indicates is that certain strains of microbial life are beneficial to human physical and psychological well-being.¹³ I will return to the industrial calculus of this 'probiotic' subject in short order, but let us first consider its potentially generative implications. In the 2017 audio-play *Bare Gut Life*, a collaboration with writer Elvia Wilk, Sutela outlined what is at stake here rather eloquently:

These foreign messengers sent into the inner tubes can inform the head brain about bacterial infections, gastrointestinal disorders, medication uptake, riots, protests, petty disagreements, breakups, ecological shifts, mycological takeovers and even the weather down there. What the sensor can't tell you is whether your conscious state is messing with your gut or whether it's the other way around.¹⁴

The thematic focus of *Bare Gut Life* is the gut-brain axis, or the chemical axis of communication between the gastrointestinal tract and the central nervous system. What the above passage describes is a more radical, in the sense of foundational, link between psyche and soma; disaggregating the cerebral from the neurological, consciousness from the cranium.¹⁵ Whilst the brain



Figure 3 Jenna Sutela, *Nam-Gut (the microbial breakdown of language)*, 2017. Video, sound, 19'02 mins. The work is based on *Gut-Machine Poetry* (2017), an online commission by Kiasma Museum of Contemporary Art realised in collaboration with Vincent de Belleval and Johanna Lundberg. Voice by Jessica Edwards. Courtesy of Kunsthall Trondheim and Jenna Sutela. Photo: Aage A. Mikalsen & Daniel Vincent Hygstedt Hansen.

is the most heavily insulated and protected organ of the body, the gut is right in the thick of things, so to speak. Such ruminations flow through Sutela's wider body of work, where the gut-brain has been a recurring motif; also appearing in the 2017 film *Nam Gut (the microbial breakdown of language)* (figure 3) and a recent series of paintings titled *Gut Flora* (2022) (figure 4).

To be sure, these references are rarely figurative, or even indexical. In keeping the artist's networked methodology, they play out within the contingent structures and arrangements through which the content of her work is channelled. As such, I do not wish to suggest that Sutela's practice should be read in mute correspondence with scientific thought, as if illustrative of some shifting topology of research. Rather, the gut-brain serves as a capacious rhetorical device to parse the ideas of bacterial intra-dependence animating a work like *nimiia cētii*. Indeed, this non-deterministic axis of



Figure 4 Jenna Sutela, *Gut Flora (Cerebrobacillus)*, *Gut Flora (Lactogalaxius)*, and *Gut Flora (Glossococcus)* (left to right), 2022. Fired mammalian dung glazed in breastmilk, each 90 cm × 60 cm. Courtesy of Jenna Sutela. Photo: Author's own.

communication resounds through Sutela's descriptions of the project, where form and content are framed as an emergent function. When questioned on her intentions for *nimiia cētī*, the artist consistently responds in terms of metonymy, wherein the work of art supplants an understanding of the body as 'an assemblage of motley life forms interacting at multiple scales.'¹⁶

At first blush, this 'probiotic' sensibility constitutes a noteworthy departure from cultural narratives concerning microbial life as a disturbing, even abject force. Indeed, in her foundational theorisation of pollution and taboo, anthropologist Mary Douglas reserved a special place for bacteria, insisting that the development of germ theory has produced an isomorphic relation between dirt and pathology.¹⁷ Of course, such anxieties have by no means diminished, and recent years have seen the anthropomorphised microbe framed in alternately anxious and animist terms as an atavistic response to the 'human' disturbance of Nature. This pandemical narrative—so aptly

bracketed to the liberal vanitas of a ‘bios-fear’ by anthropologist Elizabeth A. Povinelli—forms part of a larger symbolic economy, which clearly exceeds actual chains of microbial transmission.¹⁸ Representational schemas thus not only shape perceptions of pathology, but have a material impact on the subjectivities and social relations that arise therein.

Notably, the psycho-somatic contagion informed a series of artworks realised by Anicka Yi between 2016–2017. Working directly with bacterial cultures, Yi created several paintings and installations, such as *Grabbing at Newer Vegetables* (2016) and *Force Majeure* (2017), whose entropic presence called forth an affective register of dis/ease. Situated by the artist within the broader nexus of immigration, racialisation, and patriarchal relations, these bacterial cultures were neither reducible to an abstract political subject, nor the narrative of emancipation such identifications would imply. So, what is useful about putting *nimiia cétii* into contact with these near contemporaneous interventions is how it orients us toward the incommensurate materialities of interspecies kinship. Or, put more directly, how the differential sanctioning of human-bacterial porosity cannot be viewed apart from capitalism’s structural divides.

These stratifications are organised according to vectors such as gender, race, and class, with marginalised bodies being most susceptible to pathologisation.¹⁹ Literary theorist Nicole Shukin has thus cautioned against any critical narrative that smooths over such antagonisms, insisting that ‘[t]he Janus face of the longing for interspecies intimacy is the horror of breached species barriers . . .’.²⁰ As such, we might understand bacterial ontologies as exemplary of what Shukin terms the ‘paradox of entanglement’, whereby more-than-human intimacy is pathologised as a marker of difference, whilst simultaneously fetishised as an object of desire in concurrent cultural discourses.²¹ If viewed aside from such contradictions, the art-object might be seen to function as a key site for the aesthetic consolidation of this desirous relationality. And so, whilst the implications of Shukin’s paradox obviously exceed artistic discourses of relationality, they do have an important bearing upon them. Contextualising *nimiia cétii* in this way speaks to the relay between the art object and its social currencies; what Shukin has termed the ‘nauseating recursivity’ through which the potentiality of life is rendered as a semiotic and material closed loop.²² Though the antibiotic culture explored in Yi’s work and the probiotic stance that characterises Sutela’s practice might

seem antithetical, I would suggest that both express a particular view of the subject conditioned through biopolitical objectives.

To elucidate what I mean by this requires a brief excursus into the biopolitical history of bacteriology. From its inception, the so-called ‘war’ against bacteria has been shaped by politico-economic imperatives. Anthropologist Heather Paxson has traced the parallel histories of biopower, Pasteurian notions of hygiene, and the acceptance of germ theory, as outlined in the writings of Michel Foucault and Bruno Latour.²³ Framed as a corrupting force, bacteria provided the hygiene movement with a fulcrum by which the enemy of national well-being was rendered visible, legitimising state interventions into public life.²⁴ What emerges from this transversal reading of Foucault and Latour is how the control of bodies and the control of bacteria are historically intertwined, with the regulation of these hazardous agents providing the basis for a purer, more productive self. Of course, this is not to deny the harmful impact of pathogenic bacteria, especially as they continue to disproportionately affect the most vulnerable bodies and communities. Rather, what it highlights is how the landscape of bacterial cultures addressed by Sutela is embedded in biopolitical debates on the value assigned to vital agencies. Returning to *nimiia cétiï*, I want to develop our understanding of the probiotic subject manifest in Sutela’s work. In doing so, I will extend my discussion of the triangulated relationship between the individual, health, and wealth, which I argue is key to making sense of this commensal ideal.

Regulated Autonomy

A red thread running throughout Sutela’s work is an interest in decentralisation, which manifests through her work’s thematics, distribution, and materials. As members of the prokaryote family, bacteria themselves do not contain a fixed nucleus or control cell. Instead, these single-celled beings navigate their environs and engage in sexual reproduction through processes of transfer and exchange.²⁵ It is clear how this pertains to the affirmative potential of microbial ontologies, which serve as a provocation to think beyond dichotomies of psyche and soma, subject and milieu. If such concerns underpin *nimiia cétiï*, they also extend to Sutela’s wider practice. Take, for example, projects such as *From Hierarchy to Holarchy* (2015), *Nam Gut (the microbial breakdown of language)* (2017), or *Gut Flora* (2022) (figure 5, 3, and 4). Nevertheless, there is a set of tensions latent to this ethical and aesthetic

disposition, which puts pressure on such reparative claims. To this end, I want to draw attention to Sutela and Wilk's 2016 essay 'Slime Intelligence', written as a complement to *From Hierarchy to Holarchy*. In particular, the conflicting politics of de-centralisation are concisely summarised in the following passage:

As a living model of nonlinear action and lateral collaboration, the slime mould prompts the question of whether organizations could ever truly develop “naturally” as an organism, devoid of top-down controls, or whether imposed horizontality only advances the interests of external forces governing the body, instead of the interests of its constituent parts . . . A decentralized, autonomous organism has no ideology, ethics, or accountability; whereas it might be preferable for a corporation to act according to a core logic beyond self-serving opportunism. In the case of holacratic systems of corporate organization, it's hard to imagine the “oatmeal” driving the participants as being anything other than capital.²⁶

In *From Hierarchy to Holarchy*, *Physarum polycephalum* (slime mould) was placed within a Plexiglas structure hollowed out with a CNC-carved maze, whose form derives from a corporate org chart (figure 5 and 6). The work alludes to how the spatial intelligence or 'problem-solving' skills of slime moulds have been seized upon by corporations as a modelling-agent for efficient production. Attending to such bio-mimetic impulses, the above extract captures how these 'holocratic' organisations seek to further accumulation by outsourcing elements of the decision-making process to workers.²⁷ In this disturbing parallel, distributed autonomy is mobilised to produce a false sense of empowerment, whilst the structural relationships governing the organisation remain intact.

When discussing the collaborative leanings of Sutela's practice, I already suggested that such frictions are built into *nimiia cétii*. To create the work, the *Bacilli subtilis* was first studied and filmed under a microscope, generating what Akten referred to as a 'language agnostic' representation of its activity.²⁸ Once enough data had been gathered, these movements were coded by a computer, which generated a glyph set based on an analysis of what it saw. A neural network trained on Sutela's voice then produced a block of sound calibrated to the cellular formations contained within each frame. Over

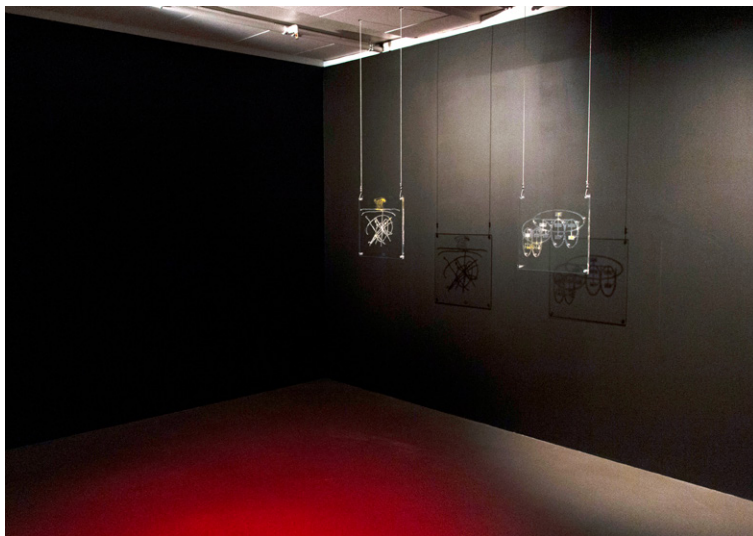


Figure 5 Jenna Sutela, *Minakata Mandala*, 2017 (right) and *From Hierarchy to Holarchy*, 2015 (left). *Physarum polycephalum*, agar, oats, CNC engraving on Plexiglas, both 50 cm × 50 cm × 1.5 cm. Courtesy of Jenna Sutela and Kunsthall Trondheim. Photo: Aage A. Mikalsen.



Figure 6 Jenna Sutela: *From Hierarchy to Holarchy* (detail), 2015. *Physarum polycephalum*, agar, oats, CNC engraving on Plexiglas, 50 cm × 50 cm × 1.5 cm. Courtesy of Jenna Sutela and Kunsthall Trondheim. Photo: Mikko Gaestel.

time, A.I. allowed the computer to develop its own syntax that departed from this initial input, eventually generating the script we see and hear in the film. At the stage of post-production, these textual and sonic elements were combined with graphic renderings, themselves spliced to deliver visual texture; all of which occasions a certain detachment from the initial context in which the project took shape.

In simplest terms, whether viewed in a gallery or online, *nimiia cētīi* is not immediately legible as the outcome of inter-species collaboration. But more importantly, there is a degree of commensuration enacted in this transition, which lends itself to familiar narratives surrounding the digital image as a universal translator and fungible hedge.²⁹ From the emphasis placed on A.I. in Google's promotional materials, one might suspect that this was exactly what the project's funding body had in mind. Yet this levelling principle flows through a much longer historical frame. For indeed, this notion of regulated autonomy might serve as a maxim for the modes of subjectivity engendered by the economic and ideological tenets of neoliberalism. 'Slime Intelligence' attests to this long-established complicity between neoliberal rationalities, systems thinking, and the correlate field of cybernetics, which, as art historian Pamela M. Lee has comprehensively outlined, has cast a long shadow over the history of contemporary art.³⁰

To this point, what is striking about how Sutela's work engages with bacterial ontologies is that such non-unitary models of identity intersect in important ways with histories of the networked subject. In his influential study of the links between new communalism and digital utopianism, media historian Fred Turner identifies an ecological sensibility integral to late-twentieth century-cybernetic subjectivation.³¹ At the heart of Turner's study lies the counter-cultural initiatives of Stewart Brand and the Whole Earth Network, a group whose principal objective was to cultivate a holistic awareness of the social, technical, natural systems of which the individual was part. Freed from the constraints of bureaucracy, via a peculiar blend of eco-utopianism and techno-fetishism, this networked subject would be better equipped to intervene in and connect with global systems. If overcoming the forms of alienation precipitated by bureaucratic control was central to this cybernetic utopianism, this holistic worldview would be cultivated through consciousness of the self. As argued in sociologists Richard Barbrook and Andy Cameron's eponymous essay, this 'California

ideology' induced a schizophrenic mode of existence, which strives toward unfettered connectivity yet resents encroachment onto individual liberties.³² When considering this vexed metaphoric of interconnection, it is difficult not to be drawn back to Shukin's paradox of entanglement: The crux of both narratives is a fetish of relationality in the pursuit of self-assurance, a turn inwards that leaves a whole range of structural exclusions intact.

At this juncture, we can identify a set of commonalities running throughout the ideologies of countercultures, cybercultures, and starter cultures, which Sutela's work exposes. These connections were explicitly referenced in *Nam Gut*, described by the artist as a predecessor to *nimiia cétií*. Developed through a similar form of bacterial wetware, Sutela has spoken of this project in relation to the Homebrew Computer Club, among the principal antecedents of today's Silicon cyberculture.³³ In *Nam Gut*, the idea of a 'home brew' was literalised as a kombucha ferment inserted into the body of a computer, situating bacterial cultures within a history of digital utopianism and its neoliberal underbelly (figure 3). The bacterial self-modelled in Sutela's work is therefore ambiguous because it not only signals a point of origin for ecological models of relationality but sets the stage for a cybernetic fragmentation of the subject. And crucially, with respect to the commensal ideal outlined above, this symbiotic narrative is itself rooted within a cybernetic lineage. Rising to prominence through the work of Lynn Margulis, James Lovelock, Humberto Maturana and Francisco Varela—figureheads of symbiogenesis, Gaia theory, and autopoiesis respectively—this biospheric consciousness emerged within the same conflagration of techno-capitalistic reform and political atomisation.³⁴

Interestingly, these various evolutionary frameworks have gained institutional traction in recent years, as set out by curatorial endeavours such as Serpentine Gallery's long running 'General Ecology' programme, as well as numerous symposia and events organised by the influential publication house *Ignota*. And, noteworthy here is the fact that Sutela has been a formative participant in both examples. Regardless of the ethical or political dispositions of figures like Margulis or Lovelock, the radical distribution of agency they advocated fuses all too readily with neoliberalism's logic of general equivalence. As political theorist Melinda Cooper has incisively demonstrated, a sense of vitalism has come to unite economic and ecological modalities, with self-organisation serving as their abiding structural principle.³⁵

In other words, these new theories of living systems were and are deeply intertwined with efforts to mobilise life as a resource; an uncomfortable fact conspicuously absent from the ebullient eco-romanticism of contemporary discourses of relationality. This prompts inquiry regarding the extent to which the bio-aesthetics of recent art might be complicit in furthering this lineage, thus failing to attend to its contested representational and historiographic meanings.

A micro-politics of self-care

As we have seen, the way in which the bacterial self materialises in Sutela's work is replete with contradictions, looping back to a cybernetic reconfiguration of the body / politic. In this concluding section, I want to set out how *nimiia cētīi* dramatises the contemporary stakes of this fraught narrative with respect to my key term of the probiotic. To do so, we might reflect on how current interest in the gut-brain intersects with the idea of self-care, which is another core thematic in Sutela's work. Central to decades of feminist activism and cultural production, the notion of 'self-care' invokes the political act of resistance faced with the oppressive conditions of racial capitalism, as per Audre Lorde's seminal definition.³⁶ Moreover, in recent years eco-critical scholars such as María Puig De La Bellacasa have argued that the qualities of compassion and attention fundamental to the ethics of care cannot be viewed as uniquely human attributes.³⁷ Bellacasa thus describes care as 'everything that is done (rather than everything that "we" do) to maintain, continue, and re-pair "the world" so that all (rather than "we") can live in it as well as possible'.³⁸ From this perspective, self-care would constitute an interspecies endeavour. It is precisely this commensal ethos, rooted in the inseparability and intra-dependence of bodies and ecosystems, that is thematised throughout the various media of Sutela's practice.

Nonetheless, I would caution that this term equally calls to mind a more nefarious conception of the subject, compatible with regimes of 'wellness' and 'self-actualisation'. This wider transformation of the politics of self-care has been comprehensively analysed by sociologists Pierre Dardot and Christian Laval. Extending previous analyses of neoliberal subjectivation, Dardot and Laval note that contemporary biopower works to promote a logic of self-investment whereby the individual recognises their active status in committing to professional activity.³⁹ With the target of the new power

the desire to realise one's best self, 'self-care' constitutes one of the core technologies holding terms such as autonomy, individuality, liberty, and fulfilment in check. As such, I would aver that the currency of probiotic cultures cannot be extricated from the horizon of biopolitical rationalisation, wherein health is conceived in terms of aspiration, mediated via the act of consumption. On this score, it is worth underlining how this reappraisal of bacterial commensality has occurred in tandem with novel methods of visualisation and metagenomic sequencing techniques. Such mapping projects do not so much reflect as produce a body, which is in turn made available for further exploration, protection, and management.⁴⁰

Little surprise then that much of the recent rhetoric surrounding probiotics focuses on the role of bacterial cultures in enhancing cognitive and bodily performance, coinciding with the objectives of a global wellness industry currently valued in the trillions. The influence of wellness culture is particularly striking in the language used to promote fermented foodstuffs, such as kombucha or kefir, as well as commercial probiotic supplements and dietary plans. Alternating between New Age promises of rejuvenation and corporate appeals to productivity, such rhetoric proposes that mind and body can be synergistically realigned with the assistance of commensal microbes. For example, the popular and aptly titled diet application *Zoe*, which provides tailored meal plans based on the user's individual microbiome, boasts that the 'good' bacteria found in fermented foods will allow the consumer to retrain their metabolism.⁴¹ With this in mind, it becomes clear that bacterial commensality is not necessarily opposed to biopower's positive relation to the living, to the extent that such narratives might acquiesce to economic imperatives. On this basis, the term 'probiotic' functions as an obscurant, operating aesthetically to buttress fantasies of self-regulation, whilst bacteria are framed mechanistically as agents that can be mobilised to construct a better self.

But what of the bacterial actors of *nimiia cétii*? How do they speak to this schism in our understanding of the probiotic? For me, *Bacilli subtilis* appears to be an especially apt choice of material in this instance. Often associated with the Japanese fermented soybean product natto, *Bacilli subtilis* is used as the starter culture for an array of fermented foodstuffs. Classed as an extremophilic organism, meaning it can withstand extreme heat and hostile environmental conditions, this bacterial strain is also frequently

used in the biotech industry. Consistent with the Martian themes of *nimiia cétii*, it has been taken on space flights to test the limits of life in extra-terrestrial environments. Surveying these experiments, Cooper notes that the instrumental value of extremophiles resides in this seeming indifference to material constraints.⁴² In other words, they would allow for the potential reproduction of life beyond limits, obviating the effects of ecological crisis. Given that it traverses these holistic and commercial applications of bacterial cultures, we might conclude that *Bacilli subtilis* is emblematic of some of the wider issues *nimiia cétii* presents.

Conclusion

Ultimately, this article does not seek to diminish nor underestimate the generative potential of thinking through microbial ontologies. Rather, I am concerned with how bacterial cultures animate life within and beyond the space of the skin, shaping subjectivities and social relations through inter-scaler entanglements. What the various responses towards ‘good’ versus ‘bad’ bacteria I have outlined suggest is that the ‘bacterial’ is not a stable category, at least as it intersects with the realm of culture. So, what are we to make of how *nimiia cétii* intervenes in this volatile landscape? How can these shifting conceptions of corporeality, subjectivity, and agency be read into the work’s content, as well as its materiality? Sutela appears to tread a fine line between a commensal understanding of bacterial agency and a mechanistic application of bacterial capabilities. On the one hand, *nimiia cétii* might trouble our understanding of creativity or cognition in ways that press against technocratic conceptions of the body, and perhaps also, the work of art. Yet on the other hand, the slick visuality of the film leaves it open to more formalist readings, whereby bacterial interdependence itself functions as an abstraction.

Moreover, we might wonder to what extent *nimiia cétii*’s currency hinges on its digital form. In my introduction, I noted that the film’s abstract rendering introduces a semblance of flatness, whereby the project’s collaborative architecture is reformatted to a superimposed synthesis of form. As has been widely rehearsed with respect to the aesthetic comportments of post-internet art, the digital image tends to invoke a metaphors of fluidity and fungibility; qualities that carry additional resonance in the context of bio-materialism’s historical trajectory.⁴³ In simplest terms, this medium grants

Sutela's work a certain smoothness, which is seemingly at odds (or perhaps not) with its relational sensibility. Apparently self-organising and self-regulating, it belies a sense of somatic precarity in favour of seamless interconnection between organisms. This prioritisation of digitality tends toward cybernetic equivalence, not least because the corporate setting in which this meeting of the organic and the machinic took place grants *nimiia cétii* a peculiar historical resonance. This presents us with a conundrum, whereby Sutela's work risks iterating the very antinomies it claims to rail against.

This article has explored how a dissolution of the body into microbial relationality risks an abstraction, which dovetails with highly ambiguous efforts to extract value from living systems. By shifting our attention towards the biopolitical in this way, we can apprehend how an instrumental reckoning with the probiotic might be complicit with neoliberalism's subjugations and distinctions. Similarly, any meeting of art and bio-materialism cannot help but fall into this zone of ambiguity. This tense relay between polarities is emblematic of wider tensions animating discourses of interdependence and conceptualisations of the subject conditioned through ecological crisis. What is clear is that *nimiia cétii* is both symptomatic of and responsive to this conjuncture. Though I do not wish to claim this serves a reparative function, it might allow us to surpass a fetish of relationality to better assess the range of political values that append to discourses of relationality and the differential materialities that underpin them.

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Notes

- 1 The audio component of *nimiia cétii* comprises a spoken version of the script, recorded using Sutela's voice, accompanied by musicians Miako Klein on the contrabass recorder and Shin-Joo Morgantini on the flute, with sound production by Ville Haimala.
- 2 Jenna Sutela, 'The Making of *nimiia cétii*', Somerset House, 5 September, 2018, <https://www.youtube.com/watch?v=NaoZV7jPo10> (accessed 4 June 2024).

- 3 Jenna Sutela and Ben Vickers, 'Moving Consciousness Around the Body,' in *Jenna Sutela: NO NO NSE NSE*, ed. Stephanie Hessler (London: Koenig Books, 2020), 27–35, 31.
- 4 See Jenna Sutela and Kanon, 'Jenna Sutela, "YAMSUSHIPICKLE," 2021,' *Kanon Log*, 15 July, 2021 <https://medium.com/kanon-log/jenna-sutela-yamsushipickle-2021-7a2be6a6816> (accessed 4 June 2024).
- 5 Nicolas Bourriaud, 'Crash Test,' in *Crash Test* (Dijon: Les presses du réel, 2018), 7–21; Caroline Jones, 'Symbiontics: A Polemic for our Time,' in *Symbionts: Contemporary Artists and the Biosphere*, eds. Jones, Natalie Bell, and Selby Nimrod (Cambridge, MA: MIT Press, 2022), 13–49.
- 6 Myra Hird, *The Origins of Sociable Life: Evolution After Science Studies* (New York, NY: Palgrave Macmillan, 2009); Stacy Alaimo, *Bodily Natures: Science, the Environment, and the Material Self* (Bloomington, IN: Indiana University Press, 2010); Jane Bennet, *Vibrant Matter: A Political Ecology of Things* (Durham, NC: Duke University Press, 2010).
- 7 This point is articulated with particular acuity in Jenny Nachtigall, 'Toxic Relations: Aesthetics, Ecology (and their Discontents),' in *Hybrid Ecologies*, eds. Marietta Kesting, Maria Muhle, Jenny Nachtigall, and Susanne Witzgall (Zurich: diaphanes, 2022), 143–152.
- 8 See for example Stewart Martin, 'Critique of Relational Aesthetics,' *Third Text*, 21, no. 4 (2007), 369–386.
- 9 See Christopher Keep, 'Life on Mars?: Hélène Smith, Clairvoyance, and Occult Media,' *Journal of Victorian Culture*, 25, no. 4 (2020), 537–552.
- 10 Sutela and Vikcers, 'Moving Consciousness'.
- 11 Jenna Sutela and Cassie Packard, 'Interview with Jenna Sutela,' 11 September, 2023, <https://bombmagazine.org/articles/jenna-sutela-interviewed/> (accessed 4 June 2024).
- 12 The representational capacity of the telescope's projective lens has been central to narratives concerning the image of microscopy. See Ian Hacking, *Representing and Intervening: Introductory Topics in the Philosophy of the Natural Sciences* (Cambridge: Cambridge University Press, 1983), 186–209.
- 13 For a useful summary of such findings see Tobias Rees, Thomas Bosch, and Anna E. Douglas, 'How the microbiome challenges our concept of self,' *PLOS Biology*, 9 February, 2018, <https://journals.plos.org/plosbiology/article?id=10.1371/journal.pbio.2005358> (accessed 4 June 2024).
- 14 Jenna Sutela and Elvia Wilk, 'Bare Gut Life,' *Jupiter Woods*, 2018, <https://jupiterwoods.com/publishing/jenna-sutela-elvia-wilk-bare-life-gut> (accessed 4 June 2024).
- 15 The feminist implications of this enteric reversal are set out in Elizabeth A. Wilson, *Gut Feminism* (Durham, NC: Duke University Press, 2015), especially 45–67.
- 16 Sutela and Packard, 'Interview'.
- 17 Mary Douglas, *Purity and Danger: An Analysis of Concepts of Pollution and Taboo* (London and New York, NY: Routledge, 1966), 36.
- 18 Elizabeth A. Povinelli, *Between Gaia and Ground: Four Axioms of Existence and the Ancestral Catastrophe of Late Liberalism* (Durham, NC: Duke University Press, 2021), 86.
- 19 Typically associated with areas of oral, vaginal, and anal contact, thus straddling a liminal zone between the erotic and the phobic, bacterial transmission has long animated the racialised construction of women and femmes as reservoirs of risk and

- vectors of policing. See Neel Ahuja, *Bioinsecurities: Disease Interventions, Empire, and the Government of Species* (Durham, NC: Duke University Press, 2016), especially 71–100. This linking of the erotic and the phobic as it relates to the microbial is equally present in discourses surrounding virality. See Leo Bersani, ‘Is the Rectum a Grave,’ *October*, 43 (Winter 1987), 197–222, 211–212.
- 20 Nicole Shukin, *Animal Capital: Rendering Life in Biopolitical Times* (Minneapolis, MN: University of Minnesota Press, 2009), 204.
 - 21 *Ibid.*, 46.
 - 22 *Ibid.*, 16.
 - 23 Heather Paxson, ‘Post-Pasteurian Cultures: The Microbiopolitics of Raw Milk and Cheese in the United States,’ *Cultural Anthropology*, 23, no. 1 (February 2008), 15–47. See also Michel Foucault, *History of Sexuality. Volume I: An Introduction* (New York: Pantheon Books, 1978); Bruno Latour, *The Pasteurisation of France* (Cambridge, MA: Harvard University Press, 1995).
 - 24 Such measures included the construction of sewage systems, inoculation campaigns, disinfection measures during live births, and the sterilisation of milk, for example. Latour, *The Pasteurisation of France*, 55.
 - 25 See Hird’s discussion of ‘micro-ontologies of sex’ in *The Origins of Sociable Life*, 91–109.
 - 26 See Jenna Sutela and Elvia Wilk, ‘Slime Intelligence’, *Rhizome*, 16 August, 2016, <https://rhizome.org/editorial/2016/aug/16/slime-intelligence/> (accessed 4 June 2024).
 - 27 On the diverse valences of speculation applicable to social amoebae see Aimee Bahng, ‘Plasmodial Improprieties: Octavia E. Butler, Slime Molds, and Imagining a Femi-Queer Commons,’ in Cyd Cipolla et al., *Queer Feminist Science Studies: A Reader* (Seattle, WA: University of Washington Press, 2017), 310–326.
 - 28 Memo Akten, ‘The Making of *nimiia céiii*’.
 - 29 See for example David Joselit, *After Art* (Princeton, NJ: Princeton Architectural Press, 2013).
 - 30 Pamela M. Lee, *Think Tank Aesthetics: Midcentury Modernism, the Cold War, and the Neoliberal Present* (Cambridge, MA: MIT Press, 2020).
 - 31 Fred Turner, *From Counterculture to Cyberculture: Stewart Brand, the Whole Earth Network, and the Rise of Digital Utopianism* (Chicago, IL: University of Chicago Press, 2006).
 - 32 Richard Barbrook and Andy Cameron, ‘The California Ideology,’ *Science as Culture*, 6, no. 1 (2009), 44–72.
 - 33 Jenna Sutela and Guy McKinnon Little, ‘In Conversation with Jenna Sutela’, *Tank Magazine*, 2019, <https://tankmagazine.com/tank/2019/talks/jenna-sutela> (accessed 4 June 2024). With members including Steve Jobs and Steve Wozniak, this hobbyist group has been seen as central to the development of the personal computer.
 - 34 For an overview of these evolutionary paradigms see Bruce C. Clarke, ‘Planetary Immunity: Biopolitics, Gaia Theory, the Holobiont, and the Systems Counterculture,’ in *General Ecology: The New Ecological Paradigm*, ed. Erich Hörl (London: Bloomsbury, 2017), 193–216.
 - 35 Melinda Cooper, *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era* (Seattle, WA: University of Washington Press, 2008).
 - 36 Audre Lorde, ‘Epilogue (1988),’ in Bárbara Rodríguez Muñoz ed. *Health* (Cambridge, MA: MIT Press, 2020), 126–128.

- 37 María Puig De La Bellacasa, *Matters of Care: Speculative Ethics in More Than Human Worlds* (Minneapolis, MN: University of Minnesota Press, 2017). What must be underlined is that this notion of more-than-human care has been at the heart of Indigenous belief systems for millennia.
- 38 Ibid, 161.
- 39 Pierre Dardot and Christian Laval, *The New Way of the World: On Neoliberal Society* (London: Verso, 2014).
- 40 See for example initiatives such as the Human Microbiome Project (2007–2016). On the tropic function of these somatic cartographies, Donna Haraway's cautions regarding the Human Genome Project (1990–2003) remain salient. See Haraway, *Modest_Witness@Second_Millennium.FemaleMan_Meets_OncoMous* (London: Routledge, 1997).
- 41 No author, 'Why Zoe?' *Zoe*, <https://joinzoe.com/why-zoe> (accessed 4 June 2024).
- 42 Cooper, *Life as Surplus*, 40.
- 43 See Kerstin Stakemeier, 'Exchangeables: Aesthetics Against Art,' *Texte zur Kunst*, 98 (June 2015), 124–143; Cadence Kinsey, 'Fluid Dynamics: On the Representation of Water and Discourses of the Digital,' *Art History*, 43, no. 3 (June 2020), 510–537. An internalisation of digitality at the level of genomic exchange was a notorious aspect of 1990s Bio Art, which often adhered to an instrumentalist conception of life's inherent 'programmability'. For an introduction to this historic context see Nell Tenhaaf, 'Production and Reproduction', in *Women, Art and Technology*, ed. Judy Malloy (Cambridge, MA: MIT Press, 2003), 363–375.