

Third Nature: on Shu Lea Cheang's *UKI* and nature's infestations of technology

Matthew Fuller

m.fuller@gold.ac.uk

Theory, Culture and Society

Accepted article

ABSTRACT

Shu Lea Cheang's film, *UKI*, (2023) presents a 'sci-fi viral alt reality' diagnosing the present via elaboration into a future. The film, made in a game engine, narrates cunning and desire in the interlacing of Biotechnology, the state, hacking, ecology, the formation of waste and the invention of sexual practices. *UKI* proposes a way of thinking the interaction of technology and nature.

First Nature is that given by evolution. Second Nature, as the figure of speech goes, is arrived at through training, tools and technologies shaped by abstractions, such as capital or the scientific bifurcation of nature. Third Nature is brought about when First Nature starts to overspill and inhabit, even rework, the terrain of Second Nature.

This article maps this typology and works with *UKI* to assess the stakes of Third Nature.

Keywords:

Shu Lea Cheang, *UKI*, posthuman, nature, Sohn-Rethel, virus,

Overview

In her 2023 feature film, *UKI*, Shu Lea Cheang diagnoses aspects of the present, formed, for her, between the epidemic of AIDS and the pandemic of Covid, via its elaboration into a future. The film takes place at three sites: the labs of Genom corporation; a vast E-Trashville of broken computers, androids and digital junk where groups of beings rework the remains; and a diner where the infected exchange gossip and caress and hackers come together to break government and corporate broadcasts with news of resistance. But their pleasurable touches have a payload. Genom has a new product, a means of storing and transmitting data via human cells, one that benefits the user because it triggers a new kind of orgasm on performing a handshake to exchange data with another user. Bacterial cells are engineered to create this network. New complexes of media are brought together to test and trace it. Bodies themselves become technologies. And then a virus cooked up in a junked android found in E-Trashville starts to break out. The film points toward a developing and ambiguous kind of relation between First Nature, that which has evolved, and Second Nature, that of training, technologies and conventions that rely on the imposition and maintenance of certain kinds of abstractions, to produce Third Nature, where First Nature starts to overrun and rework the terrain of Second Nature.

This article aims to track the development of this proposition as it is manifest through the development and aesthetics of the film. Cheang calls the film a "sci-fi viral alt reality". Her

practice proliferates naming conventions, as it calls for the slow prototyping of capacities of perception in uncanny ways. UKI is part of her "viral love biohack" cycle of projects which work through themes of virality, and the movement of sensibilities of hacking from the technical to the biological; and as such move into questions of gender, sexuality and ecology (Medosch, 2013). These place the formation of organisms and experience as a question of techniques and modes of perception alongside the stubborn persistence of the organism as a site of difficulty, politics and pleasure. As such, the composition of the film itself says something about its disposition and its articulation of relations between nature and the nature of things.

Making UKI

Aside from the production of live scenes with a small group of actors UKI was largely constructed in the Unity game engine. Rather than being developed through primary characters, the film works through scenes or milieu, specific sites. The landscapes of E-Trashville, composed of broken circuit boards and electronic components; animations in the city; Genom's corporate communications and government health pronouncements, and the majority of the figures or characters in the film, all come as computer graphics, each with their own characteristic qualities.

Unity, as a game engine is less cumbersome than standard 3D animation software, allowing for the formation of a space and assembling a set of 'assets' relatively rapidly and provides a context in which the movement grammar is already set up, but its repertoire of camera views, lighting and interaction require adaptation to be harnessed for film.¹ UKI took over ten years to develop in different phases (with a break of two years for *3x3x6*, Cheang's contribution to the Venice Biennale in 2019) on a budget of one hundred thousand euros. Production was sustained through parcelling several pieces of development up into smaller projects. There is thus a substantial group of projects related to the film: *UKI Viral performance* (2009-2016)², *Enter the BioNet* a collective urban biogame (2011-2014)³, *Bodies of Planned Obsolescence*, (2015) a research video in the waste tips of Lagos, *UKI: Virus Rising* for the Gwangju Biennale (2018)⁴, *Welcome to BioNet* online project for Up Projects (2021)⁵, the *Red Pill* installation (2023)⁶ and a penumbra of texts and events parallel to the release of UKI including performances at LAS Art Foundation⁷ and a text from Genom in an anthology celebrating Donna Haraway's *Cyborg Manifesto* (Cheang and Fuller, 2025). This mosaic mode of production also meant a long phase of conceptual and practical development that honed and built up the style, resources and depth of the film. In turn, despite the canonical status of the 'feature film', UKI becomes a centre of gravity in a wider field rather than its end point.

What rushes at your eyes when you watch UKI? Multiple densities of texture and colour. Colour is generally saturated, sometimes over-ripe or deepened into something that could only be heated-up within a graphics processing unit rather than recorded outdoors. The

¹ Some of this work was carried out in Cinemachine and some assets were produced in Cinema 4D.

² *UKI Viral performance*: <https://u-k-i.co/UKI2009-2016/index.html>

³ *Enter the BioNet*, <https://vimeo.com/904865653>

⁴ *UKI Virus Rising*, <https://youtu.be/oEo5hAVK6G4>

⁵ *Welcome to BioNet* online gameplay, <https://u-k-i.co/welcometobionet/>

⁶ *Red Pill*, <https://www.museion.it/2024/01/take-the-red-pill/?lang=en>

⁷ Las Arts Foundation, UKI events: <https://www.las-art.foundation/programme/uki>

deep reds of the sky over E-Trashville push established associations of red, with alert, with blood, heat and intimacy, to contrastingly foreground the vast landscape of abandonware and junked instances of immaterial processing. The atmosphere is thick, and intensely artificial.

The hyperfluid nature of much computer graphics in film, whose rhetorical integrity is often based around high resolution and high contrasts between modelled textures juxtaposed in the same image, (for instance, hair, skin and eyeballs in the image of a face having quite distinct textural qualities that are overplayed in the service of realism) relies on vast computing capacities in rendering farms. By contrast *UKI* was made with PCs, yielding a visual texture in which the pixel is not quite brought to the fore but is part of the composition. The quantised image, in a relatively quick and dirty form, is apiece with the inhabitation of E-Trashville; a continuum also described by access to computing power and an attitude of amused disdain for its seductions and what they elide. Instead: movement, vividness, and the palpable composition of the image structure.

In the diner, the light has more of a cathode tone. Looking at real actors, bodies and their seams are under heightened attention. Drag is of the essence. The composition of queer bodies through clothes, gestures, glances, embraces, the varied conatus of sensation, politics, solidarity, joint hacking practices, political action, the re-reading of news; all that is formed here seeks patches into other times and wellsprings of contestation and imagination.

Sound arrangement is by the late Aerea Negrot, the performer, DJ and opera singer who offers techno both at boiling point and subtle intensity. The DIY ethos extends here in the re-use of sound assets from Cheang's film *IKU* (2000) whose producer allowed them free of cost, so long as they were, he jokingly demanded, remixed backward for *UKI*.⁸ Echoing the soundscapes of digital media, ring tones, notifications, screechy hardware handshakes from old modems, radio interference and bursts of squelching noise, E-Trashville yields ancient iPhones, a Raspberry Pi, a TECSUN R-911 shortwave radio, and other iconic pieces of hardware. In both these senses there is an interplay, not simply an indexical one, (where what is seen is also heard) between the visual and sonic composition of the film as sounds become part of the junk-pile.

This citational aspect extends to classic works of media art. Echoes or direct incorporation, of projects by Vuc Ćosić, Stelarc, Tetsuo Kogawa, Ioana Vreme Moser, Kongo Astronauts Collective and others appear on the screen or are heard in the soundtrack, and several figures are portraits of individual artists.⁹ (Incidentally—and by distinct contrast to Cheang's ethics of attribution—media and performance art is an unattributed resource for another recent film, David Cronenberg's *Crimes of the Future* (2022) in which work by Stelarc, Orlan, Marco Donnarumma, Petr Pavlensky and others, are restaged with minor variation and without attribution.¹⁰) *UKI* also draws on collaboration and consultation with biotechnologists, and from science fiction such as Greg Bear's renowned early reflection on nanotechnology *Blood Music* (Bear, 1985).

⁸ Cheang made this remark during a post-film panel discussion, ICA London, 15 December 2023.

⁹ For instance, the film includes portraits of Adriana Knouf, Andro Andrex, Liz Rosenfeld and others.

¹⁰ Marco Donnarumma, *Anygdala* (2018), Stelarc, *Ear on Arm* (2008), Orlan, *The Reincarnation of Sainte-Orlan*, (1990-onwards), including forehead horns, Petr Pavlensky, *untitled action regarding the suppression of Pussy Riot* (2012) Gina Pane, *Action Psyché* (1974).

Through this, the film convenes a gathering of sources, reworkings and connections in a highly collective way, creating an individuated line through what is acknowledged as being a common set of resources, idioms, and inspirations. Outside of this project, Cheang's work has often involved the iteration of events involving multiple collaborations, or frameworks to which performers contribute individual elements in a common thematic.¹¹ Across these different levels of formation *UKI* is thus profoundly dialogic, made in relation to multiple practices, citations and material opportunities engendered in scenes and communities of practice. This process of the film's elaboration echoes aspects of its plot, where sites of transfer and transformation are key.

Moments of transfer and transformation

After an initial few seconds, *UKI* opens with a torrent of immense animated blood cells pouring through a blood vessel. Some scenes later, a military plane flies low over Golden Gate Bridge releasing a mist. A caption notes American military tests of the 1950s, spraying San Francisco with two kinds of bacteria to see how they perform. Biological warfare tests where the public are unwittingly exposed to bacteria and other materials exemplify a governmental mentality which address the population as a natural resource (Cole, 1988). But the city is a ground for more than one kind of experiment. The three sites of the film are each involved in transfer and transformation of materials that are informational, biological and political. The dispositions of each of these sites, and their specific repertoire of capacities and imaginaries is what creates the plot as they tangle together.

Genom is a biotechnology corporation. A series of scenes involve archival images of scientific activity, petri dishes, test tubes, microscopes. Over this footage the voices of four scientists discuss options for storing and transmitting data via engineering DNA in bacteria to enter and transform human red blood cells. This product emerges as BioNet. Users are motivated to join the network because a simple handshake between them, whilst spreading the bacteria, allows for a new kind of strong orgasm without inconvenient psychic complications.

Genom starts to create mass uptake of this product. Meanwhile, seemingly acting against them, government edicts prohibit movement. Red rain, the installation mechanism for BioNet, intermittently pours from the sky. The government slogan "Stay Home, Stay In" appears on digital billboards. As BioNet's transfer mechanism of orgasm-inducing handshakes spreads, the government starts a campaign to have women stay home to raise children. Whilst the communicative style of the state is palpably authoritarian, it pliantly allows the platform to expand operations, regardless of their social consequences.

Two other sites triangulate and rework what is generated by Genom and the state. The first of these, outside the city, is E-Trashville, a vast waste dump of electronics. It is inhabited by mutants, replicants and transgenic creatures of fantastic kinds, gathered in four groups: Les Mutants, S.I.C.K. (Saint Insane Cookie Kool), Laboral and S.O.B. or Soul on the Beach. Laboral are waste scavengers, pounding components to extract metals. The S.I.C.K. are coders, able to restart junked technologies. Les Mutants are strange creatures of hybrid

11 Such collective forms of working include the series *Mycelium Network Society* (2017-on), *Moving Forest* (2008-2012), *Sleep* (2018-on), and the *UKI* 'live code live spam' events developed with participants in the PostPorn scene in Barcelona, that played an important role in the development of *UKI*, held at Hangar. For documentation see Shu Lea Cheang's website at: <http://mauvaiscontact.info/>

biological forms mutated by toxic trash, gene-transfer and bacterial creativity. S.O.B. are arch-scavengers with hacked-together survival suits to filter air and information. These groups trade goods and skills in an uneasy collaboration.

When Reiko the junked android is found by S.O.B., the SICK try to jump-start them in exchange for meat cut from a mutant cow by Laboral. (Reiko first appears in *I.K.U.*, a 2001 film reworking the imaginative landscape of Ridley Scott's *Blade Runner* for queer purposes.) A new processor is installed, but goes awry. As a result, Reiko sneezes. Copiously. This sneeze produces UKI the virus, and the virus spreads out into the world. Under its influence, BioNet exudes glitches, producing a non-binary version of human. Crucially, the UKI virus spills the format of the data orgasm beyond Genom's proprietary control.

The second site is The Diner, modelled on Edward Hopper's painting *Nighthawks* (1942). As Red Rain pours down outside, a large digital billboard, with adverts from Genom and the state is visible through a window. The habitués of the diner find it a place of respite and restauration, sheltering from the turbulence of the city. One reads an actual newspaper, others drink cocktails or coffee and chat with Magic the bartender or swap gossip. Some flirt, sign up to BioNet, exchange handshakes, recover after demonstrations.

Another group using the diner are three hackers, coming and going in different guises. They use complex DIY electronics to hack the billboard, leaving slogans of political resistance. With another device they summon radio signals, including a speech by Angela Davis and retell moments from movements including Black Lives Matter, ACT UP, the Hong Kong protests of 2019, Polish pro-abortion demonstrations, the actions against the imposition of an oil pipeline at Little Rock, and elsewhere. The hackers frequently change appearance, swapping orgasm data with other regulars. This is a site of transfer and transformation of media, politics, solidarity and of gender.

One regular in the diner, Anna, is persuaded to sign up to BioNet by Dandy, one of the hackers. Anna, already infested by Red Rain, is also pictured in another version of a painting by Hopper, *Morning Sun* (1952), an image that became totemic of the isolation of Covid during lockdown. By the end of the film Anna becomes Allan, their codes transformed by the mutant version of BioNet unleashed by the UKI virus.

Preconditions: cyborgs and viruses

Here it is worth considering two figures reworked by UKI, the cyborg and the virus as the one transforms into the other. The cyborg as a figure of the technical imagination tended to be exemplified in combinations of cybernetic hardware and biological organism (Clynes and Kline, 1960). The hardware is grossly visible, like the figures of Soul on the Beach with their survival suits of trashed hardware. The organism might depend on the hardware, might be fundamentally modified by its relation to it, but the organism part can be differentiated from the cybernetic elements of the cyborg. This condition is changed by biotech which sinks the ideation of mechanism in at the genetic and cellular levels, the situation becomes more ambiguous, something Donna Haraway (1991) mobilises in *A Cyborg Manifesto* and subsequent work. Cyberfeminist theory, art and media practices (Seu 2023) further develop this formation, something that sustains the idioms through which Cheang's film develops. The figure of the cyborg is further elaborated in the pharmacopornographic era which operates at the level of the cell, organism, and image formed in agglomerations of media systems. Paul

Preciado proposes the pharmacopornographic era in *Testo Junkie* (2013) to indicate the way in which medicines, media and biotechnological systems recode and selectively enable and intensify certain modes of being in the present. The book marks out the complexes of biological, chemical and mediatic formation in which subjects are formed and in which some experimentally engineer themselves through processes that are both exhilarating and fraught. It is a crucial document of trans formation in which biology is not destiny but something to be hacked—using organismic propensities or components which are normatively worked into one gender formation to produce another—and in which the molecular firepower of the pharmacological industry is to be learned and reworked alongside the scripts of societal and subjectival formation.

The virus and virality is an accompanying element. Viruses are marginal figures, mere fragments of DNA with a flimsy coat of protein. They are nevertheless able to hijack and reroute far more complex beings, or to merge with them, creating new composites. In this they have provided an image for the imaginations of activists, artists, provocateurs, technologists and marketeers and those attempting to understand the ways in which biological and technical systems interlace (Parikka, 2016; Sampson 2012). Viruses sometimes spread unpredictably but are also epidemiologically modellable and counter-actable. Their capacity to produce immense effects with very slender means via their environment, which they adapt, make them an object of study and imitation: both as explanatory analogues to other problematics and as direct sources of biomimetic inspiration. Viruses' ability to gestate in the conditions of harshest control, provides an image, occasionally, of hope, but also of explanatory mayhem. The virus is a dubious figure, but one that can be embraced with a certain amount of mordant realism.

Two viruses in particular mark the trajectory of *UKI*. Cheang's work often refers to AIDS and the HIV virus. As she says, "I carry this virus around, not as an infection but as part of a generation of people."¹² Cheang is of the era of New York artists culled by the brutal societal response to AIDS in the eighties and onwards (Schulman 2012). She has since made a number of projects reflecting on that legacy, including her previous film *FLUIDØ* (2017) which speculates on an adapted HIV virus becoming a means of pleasure. The second viral presence is that of Covid. Here again, the viral is responded to tangentially. Face masks are beautifully loaded with decoration, government instructions are issued, hands are washed, people respond by protecting themselves from the Red Rain and taking part in mutual aid. In the cases of both these viruses, the evolved mixes with the designed in ways that change both categories, calling for a new way of describing the interactions of nature with its actual, rather than self-perfected, environments. What is identified by *UKI*, can be mapped by thinking through three versions of nature.

First, Second and Third Natures

First Nature is that given by evolution. By contrast, something that is, as the (English) figure of speech goes, 'second nature' to a person, is arrived at through habit, by techniques, tools and technologies and associated cultures and behaviours. Something becomes Second Nature to a

12 Shu Lea Cheang, comment during "Sci fi New Queer Cinema", Digital Culture Unit, Goldsmiths, 14th December 2023. The title refers to B. Ruby Rich's landmark essay, *New Queer Cinema*, (1992) and B. Ruby Rich, *New Queer Cinema: the director's cut*, (2013) including, "The I.K.U. experience: the Shu-Lea Cheang phenomenon".

person when they have trained and drilled sufficiently for a response such as a movement or an idea to arise without thought. Technology and the broader terrain of material culture perform an integral part in such naturalisation and can thus be called Second Nature. Third Nature is brought about when First Nature starts to inhabit and rework the terrain of Second Nature. This may be through something as straightforward as a virus on a syringe, the growth of lichen on a circuit board, or a biomedicine commodity (Thacker, 2004) getting reworked by an infestation. Indeed, with phenomena such as intensive farming, where architectural, medical, mediatic and other technologies are applied to animals the viral becomes a key part of Third Nature in the hyper-acceleration of mutation and transmission. Traversed by abstractions and imagination, but also habitual and cultural, Third Nature can also be transcendent or fantasmatic. Entities and dynamics in First, Second and Third Natures may produce loops and new circuits between them, as they do in UKI.

First Nature

First Nature is what is given, what is natural. This nature is open-ended and inventive yet constrained. It creates the grounds for subsequent natures, but also leaks this open-endedness into them, meaning that they are never able to be rationally and fully demarcated. To describe this, some of the salient features of First Nature can be recalled. It is:

Open-ended, an untotalisable system of systems, that is to say, of things partially describable as systems yet which are also fleshy, material, individuating and irreducible. It is unstable yet locally stabilised by interacting processes of autopoiesis, looping processes of self-production and of the conditions of that production.

Multidimensional and ecological, it consists of interlacing relations that never solely operate at just at one scale. Each living entity is addressed and involved at the level of its genes, molecules, cells, organs and bodily systems, organism and its immediate habitat and larger scale environment and the loops of the wider ecological cycles of which these are composed. In turn, these scales are addressed and involved as entities in their own terms. These interlocking, mutually interdependent yet structurally differentiated aspects both constrain and enhance each other.

Energetic, First Nature is always composed in relation to energy. The sun both provides the energy to drive the basic chemical reactions that form nature, and some means by which natural formations age and die, for instance by exposure to ultraviolet radiation. Energy is a life-force and scourge.

Evolutionary, First Nature is always opportunistic in that it must address what is immediately present, but it may be able to do this by staving off certain aspects of immediacy by its autopoietic capacities, where outer layers such as skins and membranes or cognitive systems such as brains and nervous systems provide a buffer between an inside and outside. The evolutionary condition of First Nature is expressed temporally and spatially, across different times and locations, some of which may entail irreversible changes. It is also conditioned by complex tangles of mutual aid and competition of multiple kinds.

Sensual, First Nature intimately entails transformative processes of undergoing, experiencing and cognising at multiple levels. Thus, it is profoundly aesthetic at its core. Undergoing is to be caught up in processes, to be situated in history and in spatial and relational location, always at multiple scales that build from the non-organic level. Experience entails processes of

learning, change, adaption that characterise all living entities. Cognition is an extended continuum that extends from the action of nervous or sensory systems of various kinds, to various cultures of reason and reflection and their technological and mediatic formation - as they move into Second Nature.

One of the underlying arguments of UKI is that Lynne Margulis's notion of symbiogenesis that is a fundamental part of First Nature should be recognised as an ongoing process. Margulis proposed a by now canonical account in which different kinds of bacteria merged to create eukaryotes (the taxonomic group whose cells contain a nucleus with a membrane, where DNA transmission occurs with protein development occurring in the cell's cytoplasm), with a different merger involving chloroplasts to produce green plants. In Margulis's telling, (Sagan 1967) symbiogenesis produces a greater condition of survivability and capacity for adaption through complexes of structural and functional traits (Clark 2020).

In UKI, symbiogenesis occurs at the level of characters, "LES MUTANTS are born out of toxic trash remixes. Through generations of electronic-toxic pollution and environmental viral infection they have become transgenic creatures carrying mutated viruses within." (Cheang 2023, p.12). The plot hinges on such processes when UKI the virus combines with the engineered bacteria interfacing red blood cells, breaking Genom's control structure, creating an entity with new capacities.

In this view, each organism becomes part of the evolutionary terrain of other organisms. Not simply at the scale of the environment or of the organism, but also that of systems, organs and cells, the chemical loops, such as those of carbon or nitrogen in which they take part, and the viral and bacterial communities that pass through them. First Nature involves an expansive exploration of terrain and the conditions for life-formation that it offers. Since the development of technologies amongst humans, the terrain for First Nature also includes these, characterised here as Second Nature.

Second Nature

As the saying goes, something is acquired as second nature, when it is learned sufficiently to become a habit, a knack. Something is second nature to someone when they can use a system intuitively. As such it becomes the sought-after state of designers of contemporary technology. Second Nature occurs when technologies, in the widest sense, as a foundational constitutive aspect of humanity—as set out in the work of Leroi-Gourhan (2024), Derrida (1997), Stiegler (1998) and Hui (2020a; 2020b)—entrain and potentiate cultures to the extent that they become Second Nature, a terrain of habit, norms, the given, the unthought and the thought-through. Here, culture is inherently caught up in and built by artefacts, records, arrangements made possible by techniques. Second Nature is also what Gilbert Simondon (2017) calls the technological milieu, the ways in which a technology shapes its environment and in which technologies also provide ecological fields, symbiotic potential and contestation for each other.

Alfred Sohn-Rethel's (2019) discussion of another kind of Second Nature is helpful in marking one of the systems of co-ordinates for this transition. His formulation concerns the commodity form and the abstract time and space of capital. Things, in this reading, exist in their sensuous materiality, but also, and often determiningly, in direct relation to structurations of value. This duality, the root of the secondness in Sohn-Rethel's telling, makes the entity

irreconcilable with itself, and the real abstraction of the system of value is "translated from the unconscious functionality of mere activity into a form of consciousness" that generates and undergirds its own spatiotemporal reality. The commodity is the object referred to through the system of money, a system of Second Nature which may also speak amongst itself, and thus gain autopoietic self-consistency, via all the entities it refers to.

In its historical genesis, money confronts all pre-existing social forms and calls upon them to integrate into its autopoietic autovalorizing circuit. This includes the means of knowledge about First Nature which Sohn-Rethel describes as being understood as being driven by "autonomous causal necessities" (of which he gives the example of Galileo's observation of the movement of the planets.) These in turn provide a template for and vindication of the analogous "laws" of capital. To what extent the genesis of capital is more or less at the root of such epistemic formations deserves further enquiry, and is contestable even within Sohn-Rethel's account, due to the duality he observes between the sensuous materiality of use, and the abstraction of exchange under—a term he draws from Marx (1990, p.255) the "automatic subject" of capital—surely positing capital, with a variant set of axioms, as an early case of artificial intelligence. This aspect of Second Nature is traversed, modified and enhanced by another: the "bifurcation of nature" described by Isabelle Stengers (2008; 2023) in her reading of Alfred North Whitehead's (1920, 1985) work where, under the regime of modern science, nature is understood as being split into an objectively delimitable one, (amenable to redescription as property, or fixing into determinable and reliable technology, with concomitant subjects able to treat them as objects; or, as one might observe in this case, acting like a game engine which constructs the primary physics of the world where others can be imported as textures, colours, or secondary qualities) effacing a more fully prehending notion of a nature of experiencing entities and processes (Debaise, 2017). This bifurcation is an important qualifier and enabler of the kind of abstraction described by Sohn-Rethel. The mutual interaction of such forms of abstraction has been convincingly mapped by Alberto Toscano. (Toscano, 2008). For the idea of Third Nature, what, under the bifurcation of nature, is seen to be simply phenomenal and ephemeral, for instance erotics and pleasures, or the overlooked vectors of overspill, returns to be determining.

We may now wish to question whether there is any strong sense in the present in which some significant tendencies of capital feel constrained by the kind of reason that would be implied by an affiliation to science. (Something it seems to have exited in its neglect of climate damage and its avidity for the genre figures of recent politics that disavow reason in favour of certain feelings and feelings of certainty.) Nevertheless, it is in this description of a tensile formation that Sohn-Rethel's account is most potent, and in the attempt to ease the tension between money and everything else, to render them addressable within a calculus of equivalence, that capitalism, as a technology with a never fully actualised propensity to become a "self-moving substance", is driven onwards.

The operations of Genom within the UKI story are readily scripted to follow this drive as the automated subject speaks through other forms of subject which, like orgasm, may release or contain residues of use value. Equally, whether capital's absolute autopoiesis is ever achievable depends on how much it can liberate itself from the First Nature of Earth, whether it scorches Earth in the process of this attempt, or if it is rather revealed to be a provincial and limited attempt to comprehend, encompass and render interchangeable what it also reduces to

e-trash. What Sohn-Rethel's formulation of Second Nature, eternally trying to merge its split form based on a superiority of the commodity form, but unable to fully do so, allows us to map is how capitalism supervenes in Second Nature. Indeed, the commodity form intersects with and textures all three natures, but what UKI points towards specifically is both the waste grounds inherent to commodity technology, in E-Trashville, and the inevitable return of what is unsubsumable, either in the form of devastation (of First Nature and the cultures attendant to it) that takes the form of Third Nature, when the commodity form itself is inhabited by viruses, as when the BioNet is infested by the UKI virus. This in one sense is the argument of Cheang's film. But to get to a consideration of this, it is helpful to trace further aspects of Second Nature.

As a principle we should always pause to wonder whether any particular activity should be understood as a pleasure or a predicament. But becoming Second Nature is often marked by the transition from being a conscious implementation, often governed by training in a form of rationality and knowledge, to being an unconscious habit that relieves participants from the cognitive and physical load that might otherwise be entailed. In doing so, this transition may introduce them into other such terrains that have their own cognitive, experiential, mediatic, social and political entailments and determinations that may also become Second Nature. For instance, UKI includes many scenes in which Second Nature is reworked. It is encountered as debris in E-Trashville where it may or may not still be functional, or it might require forms of technical ingenuity to use, repair or repurpose it. Computer casings are used as the frame for a barbecue, an iPhone is used as a visor, a Stelarc style Third Hand¹³ is fashioned from a limb of Reiko. In Cheang's hands questions of gender and other strong conventions of the reading of nature that are socially encoded and often technologised play a crucial part in Second Nature.

The characteristics of First Nature given above are concerned with those aspects of First Nature that are alive in some way. This is an immediate distinction from the majority of Second Nature when technology is taken to be inert, a simple set of artefacts. Second Nature is also plural, with different forms and manifestations according to technosocial arrangement, but increasingly homogenised under conditions of a capitalism that lauds itself for operating 'at scale'.

A different aspect of Second Nature is distinct from the argument for originary technicity as the defining aspect of a species. Rather, it concerns the domestication of animals and plants and the dietary and cultural formations that are elaborated as living, cognising, experiencing, sensual beings are integrated into technologies. This tendency, alongside originary technicity, moves Second Nature into more or less deeper versions of history depending on the culture concerned. Second Nature looks different to a cow, pig, or chicken in a farm than it does to a human entering data on a screen, or to the transcendent subject of capital. As the brutalities of intensive farming merge the technological and the animal under the supervening power of capital in which technology becomes gruesomely determining, Second Nature increasingly provides grounds for Third Nature.

Recent viral and bacterial epidemics such as SARS, bird flu, HIV and others correspond to this shift (Quammen, 2020). The chances of spillover increase through the close packing of animals in farming, creating breeding grounds for mutation through variation and

13 Stelarc, *Third Hand*, 1980, http://stelarc.org/_activity-20265.php

for horizontal transfer of genes amongst viruses and bacteria. The predation for food of wild animals by humans, particularly of species whose immune systems allow them to harbour substantial amounts of viruses, such as bats, and the introduction of those animals into urban food systems increase these chances further. The destruction of habitats in First Nature causing movements of animals into disturbed terrain and their subsequent exposure to humans allows for zootropic diseases to move more easily across species. Ecological damage unseals interfaces to new vectors of transmission as species that are not usually in contact bleed, breathe, cough, and shit viral and bacterial material into each other. Mining for metals, not least for those required for manufacturing information technologies,¹⁴ deforestation, farming for meat and for sexuated reproductive materials such as milk and eggs, (Adams, 1990) the expansion and driving outwards of human populations considered, within certain administrative and economic parameters, to be surplus to societal needs; all such movements are decisions made by the automated subject of capital, in tensile composition with what is considered external to it, create these interfaces. At such points, further fissures into Third Nature are opened.

Third Nature

Third Nature comes about when the terrain of Second Nature is occupied and reworked by First Nature. There is substantial recognition of the negation of First Nature effected by Second Nature through pollution, depredation, and other forms of devastation. The emphasis here is how effects travel in the other direction. However, the two are deeply connected. One measure of this connection is simply quantitative: the earth now contains more anthropogenic mass, materials modified by humans and thus part of Second Nature, than biomass, the living materials generated as First Nature.¹⁵ This means that the available terrain for all species becomes smaller and more fragmented, but also that there will be increasing contexts of spillover from First Nature into Second Nature.

As animals are domesticated, turned into adjuncts of Second Nature, spillover intensifies. Histories of societies could be developed of the accommodations and adaptations that First Nature makes of their Second Natures. Rats in ships and sewers, weevils in grain stores, moths in textiles, bats in rooves, spiders in the corners of dwellings, worms amongst books, literal bugs in computers, bacterial build up in refrigerators, legionella in air conditioning systems, and so on. There are a myriad affordances to be had, but those species that may prosper in these contexts tend to be ruderal species, that thrive in disturbed ground (poppies, buddleia) or generalists, that are not dependent on a specific niche and thus able to adapt to many environments (humans, rats, crows). This is an emaciated and distended form of First Nature. Thus, Third Nature is a terrain of crisis in which entities respond to depletions of habitat through mutative adaptation, collapse and extinction, or movement of populations into new contexts (Fuller & Goriunova 2019). This terrain is in turn shaped by games of potentially deadly speculation and brinksmanship played by forms of capital.

Things such as Red Rain, are imagined by their authors as a simple intervention into a neutral space in which they will have direct, unmediated and unmodified effects, or in which the recipients of any bad effects are deemed negligible. All Earth is empty if your project (a

14 See, Harwood, Wright, Yokokoji, *Tantalum Memorial*, 2008, <http://yoha.co.uk/tantalum>

15 Joana Moll, *A Silent Opera for Anthropogenic Mass*, Transmediale Festival, Berlin, 2023.

mine, a war, a platform) has sufficient investment momentum. Technologies however, do not land in an empty space, but in an ecology that is already thickly populated. The new structure may format things and dynamics to its designed, and iteratively perfected, mode of operation at one scale. But it will be infested, inhabited and reworked at other scales. These infestations may, by and large, be ineffectual or negligible. They may even generate further opportunity. They may be easy (that is, conceptually or economically cost-effective) to deal with by means such as disinfectants and other hygiene procedures, content moderation, appropriation, security measures, and other means of stabilisation that may themselves require further cascades of iterative action and stabilisation to hold in place. (It is not accidental that the preferred form of market for Silicon Valley or multinational mining companies, for instance, is the monopoly in which they understand themselves to be enacting universal laws, as of Newton, or are interpreted as accidentally prefiguring planned economies.) Despite these stabilisations, such ventures may, alternately or simultaneously, become means of ploughing assets into the ground.

But sometimes the infestations tip the balance and forms of previously parasitical relation force adaptation to themselves, generate symbiotic, symbiogenetic or commensal relations. Certain situations may occur in which the intervention itself generates a looping process of feedback which swallows it up. UKI maps several ways, at different scales of how individual artifacts or systems are reworked, by smelting, adapting or hacking, through virus, bacteria, medicine, or their adaptations in E-Trashville. But it also does so through a fundamentally erotic imaginary.

Another Third Nature

In UKI, queerness is a given. Sexualities inhabit, rework, and compound the three natures. Erotic energetics find new sources of capacity in experimentally derived pleasures. Preciado's (2013) notion of the pharmacopornographic indicates the way in which bodies may be exploratorily recomposed at the level of cells, organs, organisms and (media) ecologies via technologies such as hormones, surgery, and reappropriation, by social, sexual, cultural and mediatic practices, and the way in which each of these are in turn interlaced with medial, economic and cultural formations at every scale. This complex of formations affords capacities for repurposing at the scale of gene, cell, organ, organism and ecology that can be carried out at imaginary and sensual levels also entailing possibilities for political resistance and technical, social, sexual and political invention and mutuality.

One of the ways in which this is carried out in UKI is its deployment of novel sexual practices that erotically reinvest and rework the different scales of being and the imaginaries and roles to which they are afforded. If the twentieth century bequeathed us fisting as a newly invented erotic action,¹⁶ the twenty-first century so far has offered numerous candidates including worming, a nominally Japanese style of erotic eye-licking and other "paraphilias"—a term that dubiously relies for its authorisation on the precarity of such a naming and, in order to name something 'para', the idea of a putative centrality that it relies upon—that inhabit the mediation of sexual practices as rumours—fuelled perhaps by an exoticising understanding of Japanese culture as a site of erotic deliciousness formed in the interplays between inhibitions

16 See Cheang's celebration of fisting in the *Foucault X* sequence of *3x3x6* (Taiwan pavilion, Venice Biennale of Art, 2019, curated by Paul B. Preciado) and in the ongoing series of queer porn shorts, *Fist Club*.

and invention—and then become real whilst being denied by internet fact-checkers (Mikkelsen, 2013). Worming seems to have started life as an imaginary practice, a rumour that then became real as people tried it out, and is exemplified in UKI as a moment of transfer of the virus from one layer of technology to another. Imaginary amorousness, another kind of re-enchantment of the world, is a potent vector for technology, as Cheang reminds us, "Recall the Love Bug virus that crippled thousands of computer systems in 2000."¹⁷

A Closing Proliferation

First Nature is open-ended, multidimensional and ecological, energetic, evolutionary, and sensual. As it infests Second Nature to induce Third Nature these five qualities are loopingly (re)introduced in haphazard or cunning ways across the whole terrain. In *UKI*, Third Nature plays out at the level of gene (UKI virus), cell (bacterial transmission of BioNet), organ (limbs as sites of data transfer), organism (organism as node of a network, of BioNet or the UKI virus) and ecosystem (Red Rain as transmission mechanism and e-Trashville as 'novel' ecology), with different effects in each. Each quality is manifest in a site with specific qualities and constraints, generating specific individuations. As a cross-section of the present diagnosed by its extrapolation into a future, UKI envisages the kind of planet of processes that we begin to recognise we inhabit.

The compartmentalisations of nature, are, in these individuations, subject to spillage. Relational agency is only partially structured by Second Nature. In different vocabulary, Sohn-Rethel's figure of the commodity as a form of Second Nature captures some of this capacity of overspill but is not able to stabilise it, and even provides new vectors of infestation. Indeed, such attempted bifurcations actively invite forms of blowback from First Nature into the Second, and vice versa. This engenders concatenating chains of overspill between bifurcated subject-object relations, creating the symbiogenetic Third. Nature, once split, begins to proliferate.

References

- Adams, Carol J. (2015 / orig. 1990) *The Sexual Politics of Meat, a feminist vegetarian critical theory*, London: Bloomsbury.
- Bear, Greg (1985) *Blood Music*, NYC: Arbor House.

17 Shu Lea Cheang, *Mutating Virus Mutating Self*, talk to Network Society, Shanghai, 2023. Event website online at: <https://mp.weixin.qq.com/s/RsSaq52-deOYwVItePpxKQ>.

Cheang, Shu Lea and Fuller, Matthew, (2025) "Sex : Genetic Engineering", in Zach Blas, Melody Jue, Jennifer Rhee, eds., *Informatics of Domination*, Durham, NC: Duke University Press.

Clark, Bruce, (2020) *Gaian Systems*, University of Minnesota Press, Minneapolis.

Cheang, Shu Lea, *UKI script*, unpublished ms. 2023.

Clynes, Manfred E. and Kline, Nathan S., 'Cyborgs and Space', (1960) in, Chris Hables Grey, ed., (1996) *The Cyborg Handbook*, London: Routledge, pp.29-34.

Cole, Leonard A., (1988) *Clouds of Secrecy: The Army's Germ Warfare Tests over Populated Areas*, Totowa, NJ: Rowman and Littlefield.

Debaise, Didier, (2017) *Nature as Event: the Lure of the Possible*, trans. Michael Halewood, Durham, NC: Duke University Press.

Derrida, Jacques, (1997) *Of Grammatology*, trans. Gayatri Chakravorty Spivak, Baltimore: Johns Hopkins University Press.

Fuller, Matthew (2024) "Take the Red Pill", Museion Museum, online: <https://www.museion.it/2024/01/take-the-red-pill/?lang=en>

Fuller, Matthew and Goriunova, Olga, (2019) *Bleak Joys, aesthetics of ecology and impossibility*, Minneapolis, University of Minnesota Press.

Haraway, Donna, (1991) "A Cyborg Manifesto: Science, Technology and Socialist-Feminism in the Late Twentieth Century", in, *Simians, Cyborgs and Women: The Reinvention of Nature*, London: Routledge, pp.149-181.

Hables Grey, Chris, (1996) ed., *The Cyborg Handbook*, London: Routledge.

Hui, Yuk, (2020a) "Writing and Cosmotronics", *Derrida Today*, 13.1, pp.17-32.

Hui, Yuk, (2020b) "Machine and Ecology" *Angelaki*, 25:4, pp.54-66.

Leroi-Gourhan, André (2024) *André Leroi-Gourhan on Technology, Evolution, and Social Life, A Selection of Texts and Writings from the 1930s to the 1970s*, ed. Nathan Schlanger trans. Nils F. Schott, Chicago: University of Chicago Press / Bard Graduate Centre.

Marx, Karl (1990) *Capital: A Critique of Political Economy*, vol. 1, trans. Ben Fowkes, London: Penguin.

Medosch, Armin, (2013) "Greening the Network Commons", *The Next Layer, art, technology and social change*, 6/10/2013, online at: <https://webarchiv.servus.at/thenextlayer.org/node/708.html>

Mikkelsen, David, (2013) "Japanese Eyeball-Licking Craze", *Snopes.com*, Aug 8, 2013, online at: <https://www.snopes.com/fact-check/in-the-public-eye/>

Parikka, Jussi, (2016) *Digital Contagions: a media archaeology of computer viruses*, Second Edition, Basel: Peter Lang.

Preciado, Paul B., (2013) *Testo Junkie, Sex, Drugs, and Biopolitics in the Pharmacopornographic Era*, New York: Feminist Press.

Quammen, David, (2020), *Spillover, animal infections and the next human pandemic*, 2nd. ed., London: Vintage.

Rich, B. Ruby, (1992) 'New Queer Cinema', *Sight & Sound*. September

Rich, B. Ruby, (2013) *New Queer Cinema: the director's cut*, Durham, NC: Duke University Press.

Seu, Mindy, (2023) *Cyberfeminist Index*, New York: Inventory Press.

- Sagan, Lynn, (1967) 'On the Origin of Mitosing Cells', *Journal of Theoretical Biology*, 14, pp.225–274.
- Sampson, Tony, (2012) *Virality, Contagion Theory in the Age of Networks*, Minneapolis: University of Minnesota Press.
- Schulman, Sarah, (2012) *The Gentrification of the Mind, witness to a lost imagination*, Berkeley: University of California Press.
- Sohn-Rethel, Alfred, "The Formal Characteristics of Second Nature", trans. Daniel Spaulding, *Selva Journal*, July 20, 2019, online at: <https://selvajournal.org/the-formal-characteristics-of-second-nature/>.
- Simondon, Gilbert, (2017) *On the Mode of Existence of Technical Objects*, trans. Cecile Malaspina and John Rogove, Minnesota: Univocal Press.
- Stengers, Isabelle, (2008) "A Constructivist Reading of *Process and Reality*", *Theory, Culture & Society* 25: 4, pp.91-110.
- Stengers, Isabelle, (2023) *Making Sense in Common, a Reading of Whitehead in Times of Collapse*, trans. Thomas Lamarre, Minneapolis: University of Minnesota Press.
- Stiegler, Bernard, (1998), *Technics and Time, 1: The Fault of Epimetheus*, Stanford University Press.
- Thacker, Eugene, (2004) *Biomedica*, Minneapolis: University of Minnesota Press.
- Toscano, Alberto, (2008), "The Culture of Abstraction", *Theory Culture Society*, 25: 57.
- Whitehead, Alfred North, (1920) *The Concept of Nature*, Cambridge: Cambridge University Press.
- Whitehead, Alfred North, (1985) *Science and the Modern World*, (orig. 1925) London: Free Association.

Acknowledgements

Thanks to Shu Lea Cheang. Thanks also to The Centre for the Study of Developing Societies in Delhi, Steven Cairns at the ICA, London, and Florian Cramer at the Willem de Kooning Academie, Rotterdam for hosting discussions that helped develop this article. Thanks also to the article's reviewers.