

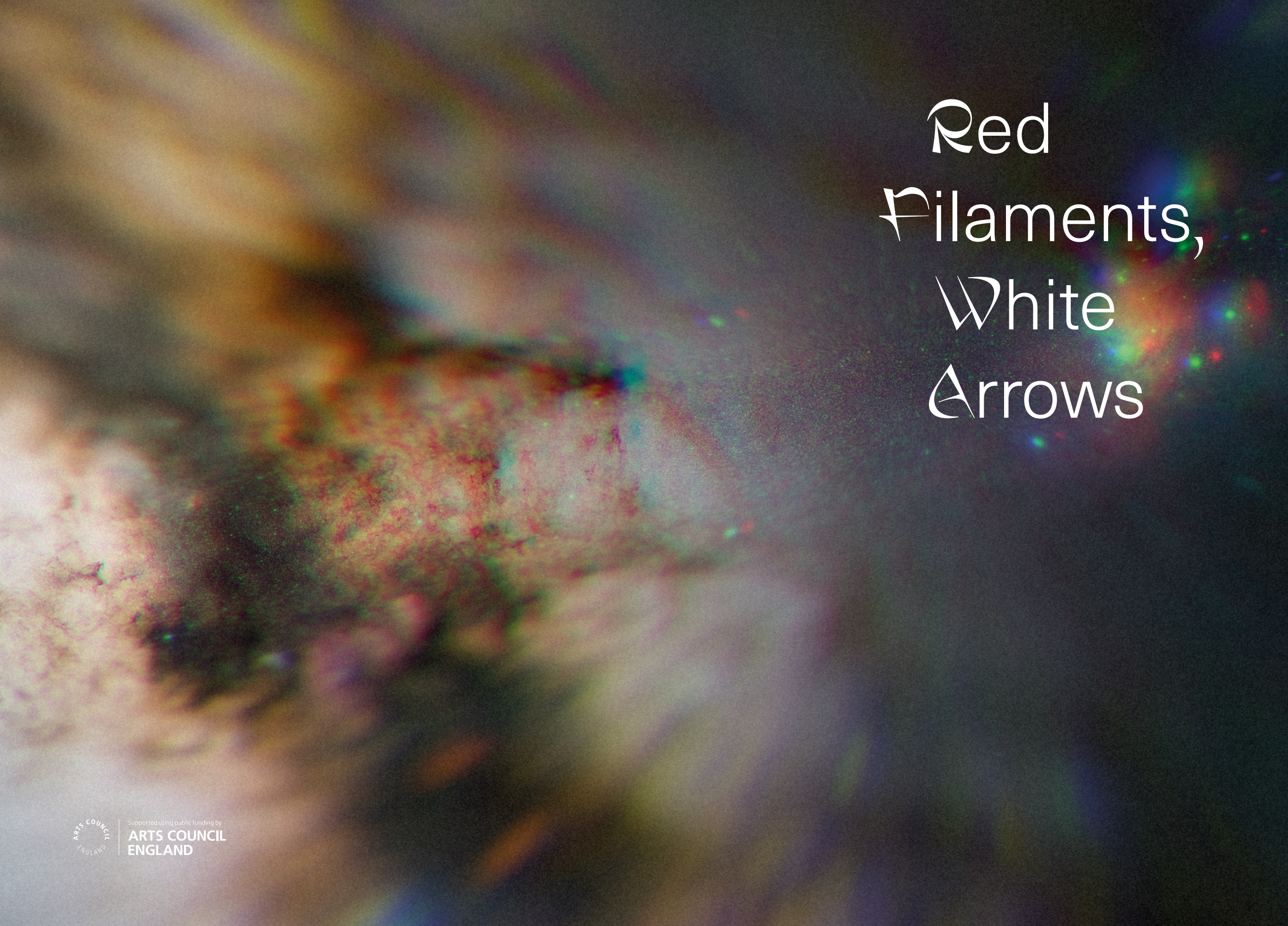
Melanie Jackson
Esther Leslie



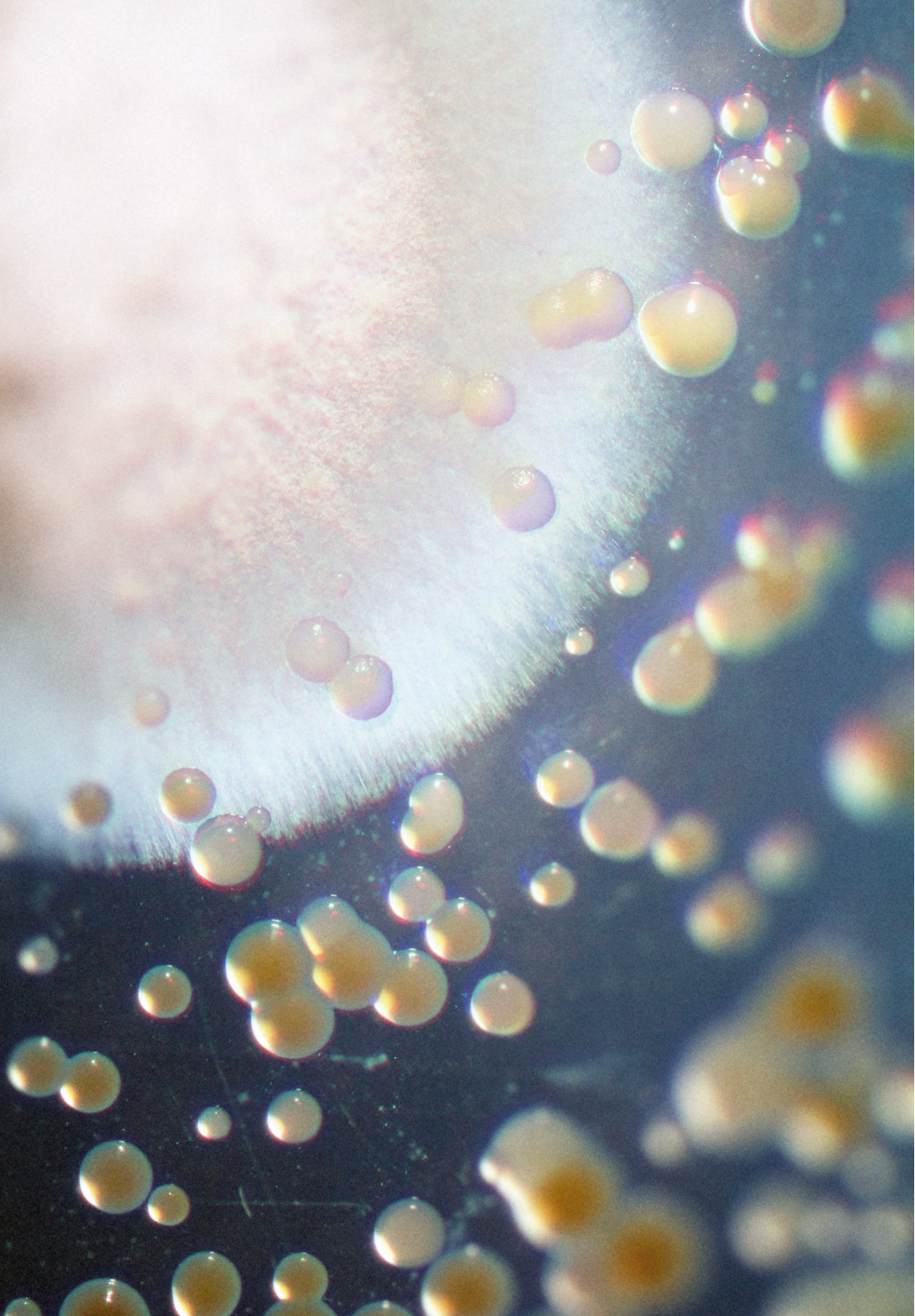
Deeper in the Pyramid



ISBN 978-0-9929176-5-4



Red Filaments, White Arrows



Firsts

Milk is an Ur-substance, an originary substance, a primal liquid. It is the first substance to enter the mouth, to touch the tongue, to fill the belly. Milk flows from one to another. It is the first fluid to be incorporated into the body ex utero. Milk is associated with beginnings – the beginnings of life, the beginnings of civilisations, the beginnings of the world in origin and creation myths. Milk helps us form our first words and catalyses a language of its own that is quickly adapted to a language of cogitation and communication, forming a social and cultural matrix of metaphor: skim, condense, homogenise, express, churn, curdle, culture, sour, combine, separate. Milk makes language. Milk is subject to language – the language of metaphoric excess to which milk lends itself so readily, but also the language of the dairy, of freshness, purity and quality, as well as the language of the dairy industry, of yield, and of optimisation. Milk is expressed in a digital language, parsed through the digitisation of analysis, of becoming data, of digitalisation solutions for ordering, manufacturing and packaging processes. Milk has been given over to another new language lately, the language of bioscience and code, as milk starter cells are genetically fermented in vitro and milk becomes the basis for improved milk derivatives, developed through a collation of food science, microbiology, biomathematics, microbiology and clinical research.

Situating milk as infinitely available, fresh, white, aseptic and central to the adult western diet became a driving quest of modernity, articulated in enough contexts to make of it a narrative, a story to be told. The mass industrialisation of milk was a mode of industrial metaphysics: an abstraction from its associations with female human and non-human animal lactation, as it was transformed into an industrial staple. It is a fluid that flows through contemporary distribution networks and helped to bring them into being. How does the mechanisation of milk position the cow as source of the milk? As doubly sacred – a product of pastoral fantasy and an emblem of the bio-politically invaded. The source of milk, whether bovine or human, has to be regulated, access to supply guaranteed, subjection to regulation and laws ensured. The availability of milk exemplifies the mass operations that often invisibly, or in peripheral vision, in the very corner of our eyes, guarantee the social reproduction of our existence.

TRANSLAT

Milk is many things, as might be expected of something that appears to have been with us, for us, of us, from our very beginnings. It is dispersed into multiple histories, for it has in each moment the capacity to be various, to be other to itself, to be always made anew. Milk possesses the ability to present itself variously and in each circumstance displays diverse properties. It can be liquid, solid, powder, emulsion. It can be poured, pressed, cast, extruded. It is formless, but can take on any form. It takes on shapes, the shapes of others, the shape of the vessel, or the shapes pressed into it when in solid form as butter or ice-cream. Milk is indexical. It evades shaping too. Milk is other to itself. Milk has no limits, spilling and flowing, dispersing, seeping. It condenses and evaporates. It hardens and drips. Milk acts as a liquid or a crystal or something in between.

Milk has had attributed to it 'a sheer material force'¹ and the complexity of its physical properties and its chemical composition means that the instrumentalisation of its qualities has never been an easy task. Though milk is a primal substance, it is also a matter that is ever invented anew, socially annexed, fraught. Milk has generated a busy activity of human and bovine transformations. It has lent itself to reformulation, regimentation, innovation – the rules of the nanny and the boss, the technologist and the venture capitalist; to every kind of flow that the economy demands.

The Mcflurry, Mr Whippy, Dairy Queen Blizzard, Cheese String, Dreaming Cow, Laughing Cow, Skinny Cow, Crusha, Marvel: These dairy icons perform both health and the abuse of health; an array of high calorie, high fat, low calorie, low fat, high sugar, sugar-free, highly processed glimmer with techno-scientific, multi-colour, hedonistic appeal. The excess forms are the product of aggressive marketeering, of low margin, highly complex modes of manufacture. These products are seemingly transgressive and yet are utterly pervasive, hyper-normative. Pitched at young people and children, they collaborate with a plethora of high energy, animated avatars and mascots in ecstatic reverie, weaning children from the breast and the bottle, in a sugary addictive lure. The dairy products directed at infants, or rather their mothers – in the form of formula milk – continue to proliferate in an ever expanding market and are one of the few products on the market said to be immune to economic cycles. Much as milk is venal, made venal, it is also good-humoured. Milk is playful. It is – its purity is – for ever associated with the realm of the child, with innocence. Milk is gentle. Milk is the opposite of wine, or has become so, Roland Barthes notes, in his *Mythologies*, through economic and historical circumstances.

¹ Peter Atkins, *Liquid Materialities: A History of Milk, Science and the Law*, Routledge, London, 2016.



Wine and the milk of the Dutch cow is a totem drink for the French, but milk is the 'true anti-wine'. In 'the basic morphology of substances, milk is the opposite of fire by all the denseness of its molecules, by the creamy, and therefore soothing, nature of its spreading.' Milk 'is cosmetic, it joins, covers and restores'.

It is 'calm, white, lucid, the equal of reality'.² Milk is everything and anything. It is reality itself. It is fantastic. It is all of this and all this can be found within it. Milk is a substance that can be shaped into any thing and any colour. It takes part in all areas of life. Milk appears in plastics, animal feeds, fertilisers, airport de-icer, bottle labelling adhesives, methane, ethanol, anti-wrinkle agents, shampoo, hand cream, floor levellers, leather finishes, paper coatings, concrete and cement. It re-appears as supplements and catalysts, emulsifiers and surfactants. Milk that has left an animal body re-enters the human body surreptitiously, as concentrates and isolates. In the form of whey protein, it is incorporated into the muscle mass of male bodybuilders, whilst the same substance is endowed with the power to diminish the bodies of female dieters.



Species distinction is lost in this matrix of the technical and cultural. Milk has flirted promiscuously with genders. Once there were milkmaids. Later there were milkmen. Now milk is entangled in mass operations: milk machines process milk, keeping it remote from human touch, except once it passes into the realms of consumption and is handled by an array of shelf stackers, till operators and consumers. Milk occupies

the refrigerator in serried rows like denizens of a white army, badged blue, green and red, according to percentage of fat content. It is standardised and rationalised and quantified. In this form it provides an emblem of a social quest for normativity. It is the concept of itself. But milk is not rendered inert. It has entered into all these reformings as if it were up for entanglement.

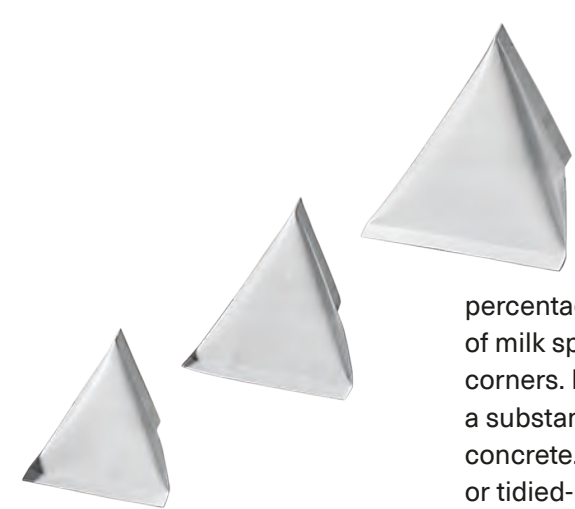
separation

Separation is a capacity contained within milk.

Milk separates. Skimmed milk is separated from cream, curds from whey. Milk separates itself if left to sit in a container for some time. The cream rises to the surface and can be skimmed off by hand, or the milk drained from below. Machines with centrifugal spin were invented to accelerate the process, with hand cranks and then motors added. This separation into parts is only one of the many separations in which milk is involved. Separation is at work in the distancing or abstraction of milk from the female mammal's body by various means. Separation abounds in the milk industry whereby calf is parted from the cow, and the milk is extracted from animal parents for human consumption. Milk extracted or abstracted is a liquid representation of an annihilation of nature over time. In producing cows' milk for humans, there is no seasonal cycle related to gestation. Rather there is the endless time of ever-increasing and ever-adapted milk yields. This is the time of the market, production and circulation. Production time is decoupled from the idea of limits and insists that what is profitable must be available at all times. Milk flows across the political body, its stream an emblem of the progress and perfectability of modern times. The animate properties of milk, its ability to separate and transform into a plethora of shapes and constituents sets it on a cascade of separations and recombinations, on extrusions, extractions and abstractions. Milk has passed through relationships with various technologies, tools and vessels: milking hands, clay, wood, metal, electrically powered machines, robots, and now there are separations of the liquid that is milk at the smallest scale, when it is rendered in relation to the microbe, the cellular and the genetic.

² Roland Barthes, *Mythologies*, Lettres Nouvelles, Paris, 1957





The contemporary abstraction, separation and technical processing of milk is mirrored in the aseptic geometries of plastic cartons, Tetra Pak pyramids and whey powders with their holographic mytho-scientific branding. There is packaging that stands geometric and slick with nothing but the fat

percentage content in large figures. Abstracted cows formed of milk splashes or a cartoon sketch curve round the cartons' corners. Much as it is abstracted and separated, milk is also a substance that comes in close and presents something concrete. There are countless hand-drawn bucolic scenes or tidied-up photographs on dairy packaging. These realistic images – of cows and fields, skies, clouds and mountain ranges – wish to persuade us that this milk is a gift of nature, Mother Nature. It insists that nothing came between the contents and the green grass, and nothing separates us off from nature. Representations on the packaging and the forms of the container reinforce sentimentalised versions of nature using historical techniques and mimetic representations, or they bask in the alienation created in commodity chains that lead from cows to humans, foregrounding the technologies of production and the triumph of invariant standardisation.

A separation occurs between nature and culture, as milk is caught up in the dairy industry. As commodity, milk is made into an exchange value and separated from its existence as use value. Separation may be conceived of as part of the process of individuation. In that regard, separation is our situation. We separate from our caregivers, having passed through the nexus that milk provides. A breast may be a world to the baby, one that may not be perceived as separate from the infant. Baby, world and breast are one. The milk might arrive in the baby's mouth in another way, through another object that is part of the world and perhaps part of the self. But there comes a time, when that breast, that bottle does not suffice, for the infant, or for the caregiver, and it is substituted by the glass, the cup, the vessel that is so discernibly separate and separating.

As much as it lends itself to separation, milk also mingles. This milk, which is object of industry, becomes a subject, an agent. Milk is bio-responsive. In breastmilk, the mammary gland creates watery, sweet colostrum for the first days of a baby's life, gradually adding fats and proteins. Later it fabricates sugars not to nurture the baby, but rather the bacteria that needs to be generated in the baby's gut. Maternal antibodies temporarily decline in this phase to assist the growth of the bacteria – and reinstate themselves when the bacteria reach an optimum level. Mammalian milk adapts to each phase of growth of the offspring.³

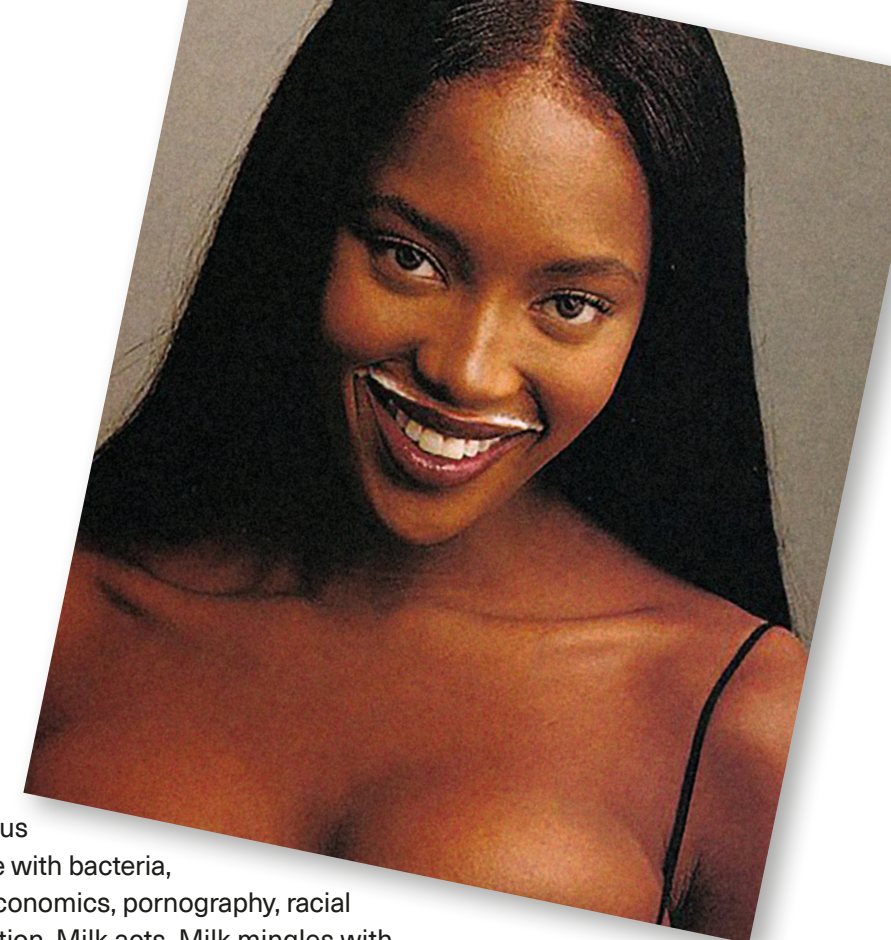
DEEPER IN THE PYRAMID

Milk is polymorphic with an inclination for promiscuous collaboration – whether it be with bacteria, with cartoon avatars, with economics, pornography, racial politics or genetic re-calibration. Milk acts. Milk mingles with people. It catalyses – as its lactic acid does when it triggers processes of transformation. Milk appropriates life to itself. It appears as an elemental fluid – like semen, like ojas, like soma. In Vedic literature, milk is seen as a virile liquid, a kind of female semen. Semen itself is called bright milk. Some people think that in extracting semen, men are milked, which in tapping their seminal fluid, saps them of their strength. Man-milk is another name for cum.

Milk is masculinised, made a property of the male. Peter, in the New Testament, writes of the pure spiritual milk of God, or, to take other translations, the verbal or rational, undeceitful milk, and this is craved by all Christians to nurture their life in Christ. This unadulterated spiritual milk is also identified in the course of Peter's letters as a seed or sperm, that is to say, the catalyst of belief becomes *seminal*.

This confusion of milk with sperm might be paralleled with the capture of enlivenment by the man in the philosophy of the Stoics. For them, the Logos Spermatikos, the seminal word of God, produces order in the chaotic flux of the world through its fecundation of inanimate, passive matter. Reason is something sown by a property of man. That milk and feeding on the part of a caregiver, a female one dispensing from her breast, might be the origin of language, is occluded.

RED FILAMENTS, WHITE ARROWS



↑
American milk advertisement, commissioned by the National Fluid Milk Processor Promotion Board, featuring Naomi Campbell, 1995. (detail)

3
Thierry Hennet, 'Lubor Borsig Breastfed at Tiffany's', *Trends in Biochemical Sciences* Volume 41, Issue 6, p508–518, June 2016



Milk seeps into our social fabric and freezes into language. Contemporary idiomatic language is replete with spilt milk, milk sops, milk runs and milk routes, milk and water, running dry, milking it for all its worth. These are all expressions of negativity, weakening and the routine of exploitation. These milky words signal something of our contemporary dis-ease with anything that evokes dependency. Dependency is an abject state in an age dominated by a capital form that despises welfare and thrives on precarity. Recent theories of biomedicine are beginning to countenance the idea that precarity (and specifically precarity under the conditions of late capitalism) is a condition that creates permanent change in the body's reception of insulin, making it more prone to obesity and diabetes. Stress produces excess cortisol which is associated with the production of certain types of body fat.⁴ Damage done to the mind, to the sense of well-being expresses itself on the body. This recognition of a connection between states of mind and states of the body replaces older theories that apportioned obesity to a cultural naiveté in how to cope with plenitude, or life in the land of milk and plenty. It was perceived as a problem of self-control. The former analysis supported the neo-liberal normative trend of hyper-individualism, making those who are sufferingsolely responsible for their own genetic capital. What might the soothing cup of milk, the intimate gulp of breastmilk, the indulgent dollop of frothy whipped cream on a hot chocolate, the pleasuring sugar-crammed ice cream do in the face of a stress-inducing uncertainty that persists?

There is a milky language that speaks to our emotions, our socialisation and our hopes. Can we extend this milky language to help us articulate what milk means, how it produces and generates meaning? Milk's opacity makes of it a screen that reflects back a cornucopia of meanings. To perceive the shapes within milk, the ways in which it has been shaped over time, is to give oneself up to its minglings, its combinations and recombinations with myth, social norms, social fantasy, cultural and practices. It means to conceive its expressability, its capacity to become images, to seep into language and be made metaphorical, to harden into phrases and concepts that order the world. To place milk in focus means to observe its capacity to be extracted and abstracted. It necessitates thinking about the ways in which an orientation towards separation – from the body, from milk suppliers – have fed into milk's becoming separated, or abstracted in the interests of capital, abstracted into data, into something limitlessly re-producible and separate from or other to itself. If we disrupt milk's turbid surface and explore the practices and properties intrinsic to milk preparation – of separation,

recombination and homogeneity – we can mobilise milk as a 'filter' through which to explore how relations between human and non-human entities, gender, representation, law, technology and abstraction are set in motion.

Milk is not captured fully in its contemporary blending with industrial dairy. It has been and remains a presence in mythic imagining. The Abrahamic religions overflow with milk's sweetness, its nurturing power and metaphysical transmissions. For a pre-modern order, milk was life giving and productive – think of the Greeks and Israelites as herders. Life, milk-sustained life, is linked to fate and destiny. According to biblical narrative, Moses lead his people toward the promised land of Canaan, where they would live in peace in a land flowing with milk and honey. A good land for dairy herds, life in Canaan became the very model of a life sweet and fulfilled. Mother Corn, a figure of indigenous Keresan people of the South West of North America, plants her heart in the Earth and the corn that grows is the milk of her breasts. In the story of the Nomadic people of West Africa, the Fulani are said to see the world begin in a drop of milk. A huge drop of milk made stone, which made iron, which made fire, then water, then air. Then came man, blindness, sleep and worry, then death to defeat worry – and then, possibly influenced by missionaries' ideas, came a saviour, Gueno, to overcome death.

In the Norse Creation myth, the human world commences as a product of ice and frost and water and milk. In Hinduism, the churning of an ocean of milk is part of the ever-continuing struggle between the Devas and the Asuras or the Gods and Demons, and the milk of the primal oceans churns into butter, which is used for ritual purposes, and eventually the churning produces the beautiful elements of creation, but also poison, a poison swallowed up by Shiva, turning his throat blue. In this way, the world is saved.

In Egyptian mythology, Hathor was depicted as a golden cow or a woman with the ears of a cow. She was pretty as a heifer and emanated beauty, fertility and love. The cow provides milk and is known as a great tender of its young. It was a symbol of motherhood, and Hathor was the Goddess of Motherhood, with names such as The Great Cow Who Protects Her Child and Mistress of the Sanctuary of Women. Her priests were oracles, forecasting the destiny of the new-born, and the midwives delivering them. The myth had an ill twist. Over time Hathor merged with another Goddess, Sekhmet, the war goddess of Upper Egypt. This hybrid form is intoxicated by annihilation, set on the eradication of all human life. She is held in sway, in nihilistic rapture, until she is tricked into drinking wine instead of blood.



↑
Auðumbla and Búri. From the 18th century Icelandic manuscript, NKS 1867 4to, Danish Royal Library

→
The Origin of the Milky Way
Jacobo Tintoretto c.1575

⁴
Rachael Kendrick, 'Metabolism As Strategy: Agency, Evolution, Biological Hinterlands', *Why We Eat, How We Eat...*, Ashgate, 2013





Unreliable Matriarchs

Milk is abysmal, of the abyss, breeching a gap between milk giver and child, between animal and human, between nature and culture, between self and other, between myth and world. Milk is a given but it is not always given. Milk for babies has always had to be supplied. How this supply occurs has manifested historically in many different ways, but it has also long been imagined. Separating the supply of milk from women's control, and from the breast, is envisaged in origin myths of the world. Indeed it is there in the origin myths that imagine the beginnings of time and space and account thereby for the emergence of the starry Milky Way. According to the foundation myth of Ancient Greece, the Milky Way was formed when the philandering Zeus held up his lover's baby to his wife Hera's breast as she slept, hoping to suckle a little divine milk for his part-mortal son. Hera awoke to find the usurper upon her and knocked it away. As she did so an arc of milky droplets reached far into space. In Roman myth too, the Milky Way forms from the milk spilt from Opis's breast, in her attempt to save her new-born son Jupiter from being devoured by his father Saturn, King of the Skies. She wrapped a rock in swaddling cloth to try to foil the hungry God, but when he forced her to nurse the decoy infant one last time, her milk splattered into the heavens, as her breast pressed against the rock's hard body.

Jupiter is taken away and brought up by the Nymphs. The Gods want control of the supply, to wrest it from the unreliable matriarchs. They want to steal away the milk that comes from bodies they would rather not have to rely on.

In Ancient Egyptian myth, the Milky Way was thought to be a pool of milk that flowed from the udders of a heavenly cow. It was deified in the form of Bata, a cow goddess. This cow surrounded by stars was associated with life. Hathor was another Goddess who was a personification of the Milky Way, this glittery pool of milk. But sometimes the galaxy was seen as a waterway in the heavens, a Great Nile in the sky, which was prone to flooding, just as was its earthly counterpart each year. In this form, the Goddess, also known as Mehturt, or Great Flood, manifested as a herald of imminent birth, of the breaking of the waters of the amniotic sac.

In these myths of antiquity, where our own galaxy is presented as in formation, spilt milk evades the lips of the babies, hits the heavens, creates a cosmos and is codified as milk of the abysmal, of death and destruction. Milk becomes stars, dead twinkling rocks far from the earthly home of suckling babes. What could give life denies it too. These myths found visual form in the paintings of the Renaissance, where the epic squirt of breast milk reaching far into the cosmos is rendered in splashes of oil paint, as in Tintoretto's *Origin of the Milky Way* c.1575-80) and Rubens' painting of the same imagined scene, from 1637. It was also in this epoch that Galileo Galilei fixed the stars through a lens. The Ancient Greek philosophers had thought that the Milky Way might be a vast collection of stars, too dim to make out individually. But proof came when Galileo pointed his crude telescope at the night skies in 1610, and was able to see that the Milky Way was composed of countless stars. Through his lens the smooth splash of the Milky Way was revealed as a cluster, as points – pixels of light.

The galaxy of billions of stars is our milky first home. It is a pool of cow's milk to the Ancient Egyptians. It is a creamy circle to the Greeks. It is the milky place out of which and into which we are made. Its oldest glitter was there at the beginning of time. This spilt milk is fizzing gases and solid rocks, not fluids. The splash is a constellation, is dots, an array, but only the lens can tell us that. These lenses reveal that the milk is everywhere, the galactic structures spill across the skies, so large they were never seen before. The Milky Way is one silver slipstream of turbulence, a galactic minefield. But it is also a silver screen, a place where time's beginnings can be plotted. It is where catastrophic futures are modelled. It emits bubbles, stretching 27, 000 light years from its centre. It spurts ghostly jets, after-images from a million years ago – these are still recordable. New wavelengths reveal the oldest shimmer from beginning of time. This vast white spillage is wrapped in a cocoon of dark matter. Is there more dark than gleaming matter?



The Birth of the Milky Way
Peter Paul Rubens, 1638



Saturn Devouring His Son
Francisco Goya, 1823





NIGHT TERRORS

They say the stars come out at night. The stars are the lights for dreams. Milk's busy activity is associated both with restful sleep and nightmare visions. The night time consumption of milk and cheese is associated with restorative rest; dreams of plenty, the land of Milk and Honey, as well as nightmares, terrors and peculiar optical disturbances. The potential powers of nurture and sustenance are cut through with spectres of the diabolical. Hippocrates described 'monstrous bodies that are seen in sleep and frighten a man indicate a surfeit of unaccustomed food.'

A vivid and sustained popular evocation of a cheese-based dream world is to be found in Winsor McCay's cartoon strips and animations from the start of the twentieth century: *Dreams of a Rarebit Fiend*. These put on show a world of nightmares laced with episodes of wish fulfilment, exaggerated scale and odd perspectives elicited by the night-time snacking of cheese in a proto-pizza form – the Welsh rarebit. This was an early junk food dish of spiced, melted cheese on toast with added beer. It was widely eaten and readily available in New York, as it became the fast-paced city of modernity, once the artificial lighting was in place in the 1890s and city dwellers drank and played till late into the night.



After eating a small amount of Klosterknopf, a fairly pungent goatmilk cheese:

I dreamt I was in a book store during a war, or an armed conflict of some kind – there were skirmishes and general danger rather than bombs and bunkers. We were warned not to stop at the tables of books, because one of the book sellers was a notorious mercenary, a kind of dystopic guerilla. But I had to look through the books.

There was one called What People Miss When They Miss People, which was just an overly large, badly formatted spreadsheet in a paper yellow binding in which the entries from a long-running survey had been entered. There was also cheaply printed glossy novel called Baudrillard's Eyes, a kind of Californian 90s pastiche, but no stylistic flare so I left it. I think in the end I inevitably bought one of those bad semi-academic works on medieval buildings, which was really about freemasons and secret geometry. The dustjacket had been cut up and a section stuck into the back, along with the old paper pocket for the library receipt. People get urging us to move on due to the armed conflict. I think the tables were arranged outdoors, in a kind of desert.

RB, *The Interpretation of Cheese Dreams*
cheesedeutung.tumblr.com

McCay's *Dreams of a Rarebit Fiend* features those who consume the dish before bed. Each episode repeats the formula: Someone eats the rarebit, falls asleep and has vivid dreams. The episode closes always with the cheese-eater waking, sweat-soaked, cursing the cheese that sent them into madness...

One of the comic strips, from 26 October 1904, shows a man traversing a busy New York street. Each panel depicts how another limb, another part of his body is knocked off by the fast-moving traffic, with a horse-drawn carriage, a water wagon, a trolley bus, and lastly, an automobile, completing this progressive history of ever more deadly city vehicles. This last one crushes him to pieces. The final panel shows a woman awakening and gasping with relief that some boots are on the floor beside her. Her man has returned in one piece from a visit to the metropolis and she swears off eating the dish ever again.

Elsewhere, the melted cheese of the rarebit possesses an elasticity that seems to be conveyed to the dreams it is seen to produce – in a strip, on 28 June 1905, the wheels of a motor car are replaced by cheese rarebit. The rarebit is promised to be better than rubber for the task. But the cheese-wheeled car spins out of control, its wheels rotating and mutating into long strings of cheese that fill up with tangle after tangle the whole space of the comic strip frames. A car causes death in an episode from 12 December 1904 – a parson dies at the wheels of an automobile and arrives in Hell where he melts in a pit of hot Limburger cheese. His body entangled in strings of stickiness makes him appear like a ghost. The world which McCay depicts is a motile, mobile one and nothing seems stable, everything is prone to melt and to terrify. Cars and cheese collaborate in death, or rather use the night time to promulgate fright and irrationality. Occasionally the cheese does produce, even amidst the violence, a gratifying dream. In a strip from 6 December 1904, a homeless man, who is sat atop a box of explosive powder, is fired through the air, shattering a glass roof of the St. Ragis hotel. He lands, luckily, in a \$10,000 bed, but then, in the next moment, he is hosed down by a bellboy who misinterprets his call for a drink. After a dousing, he awakens in a pile of hay.





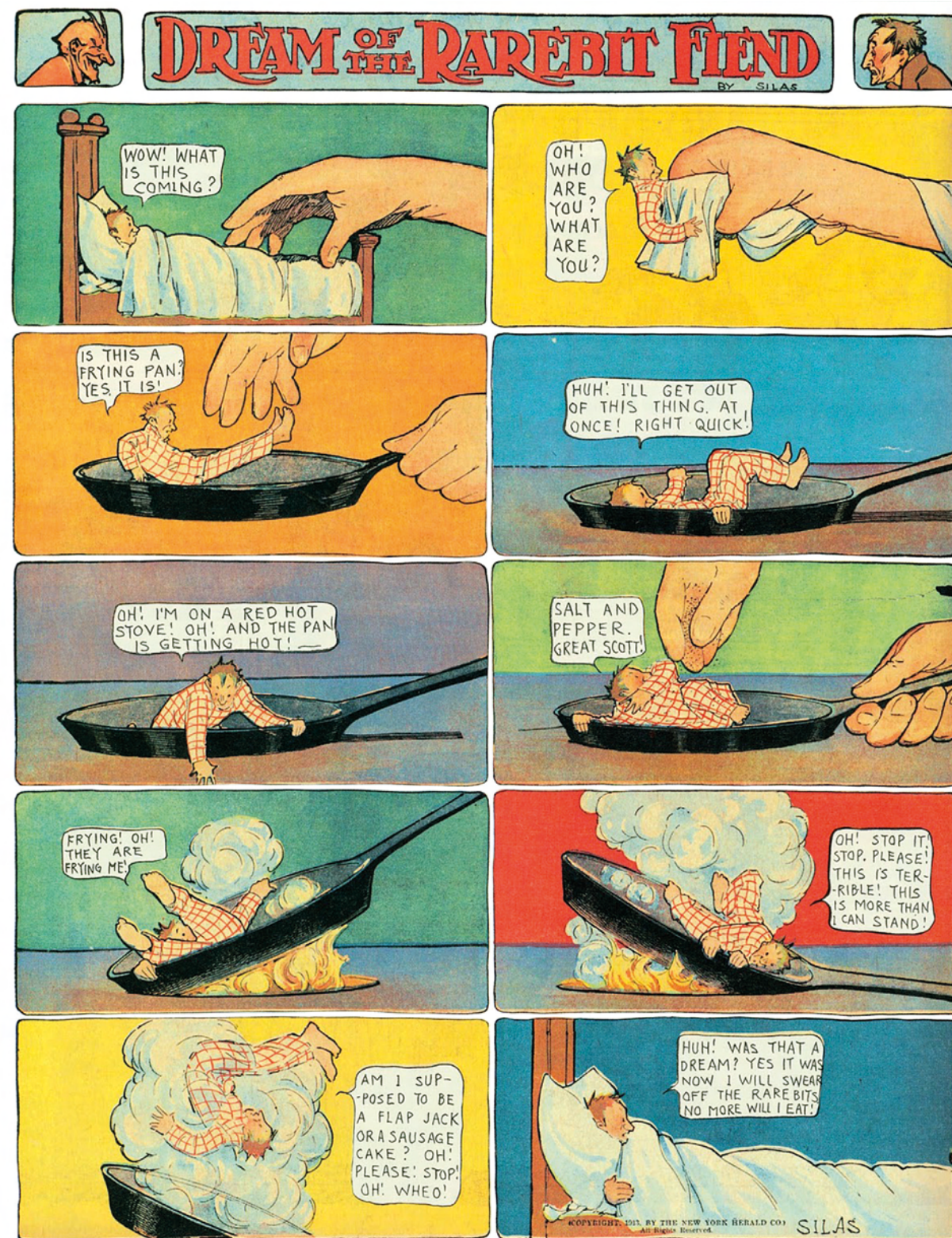
The elasticity of cheese produces endlessly imaginable scenarios from itself. Cheese can be anything, formed and reformable. So too can clay be formed in any and all ways. The first animations made using stop motion and clay appeared in 1908 and they dealt with cheese too. They were *A Sculptor's Welsh Rarebit Dream* directed by Edwin S. Porter in February, and *The Sculptor's Nightmare* directed by Wallace McCutcheon in May (stills shown to the left). In both of these stop motion animations a sculpture transforms. In the first, a genie of a lamp appears and grants a wish to a poor sculptor – clay slowly moulds itself into shape. First emergent from the clay is George Washington, then Abraham Lincoln, then Roosevelt. But this parade of presidents is only an effect of eating cheese at night. In *The Sculptor's Nightmare*, a sculptor is unfairly thrown into jail. Sleeping fitfully and desperate, four sculptures appear and begin to form themselves, and once they have formed they move: a wobbling head, a speaking mouth, a playing cat.

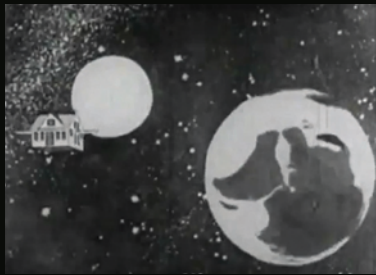
McCay's strips and cartoons were a product of the ending of his own dream of being a fine artist – and perhaps part of a nightmare in which his labour is required to be incessant, as incessant as the city, as incessant as the newspapers which appear day after day, as incessant as the vehicles on the busy New York streets, as incessant as morning milk appearing on the doorstep. McCay was an illustrator for the mass media, tossing out drawings to regular deadlines. He worked for the newspaper magnate William Randolph Hearst from 1911. Hearst incidentally was a rarebit fiend. His kitchen staff recalled his recipe for the favourite dish, its cheese and butter procured from his castle's own dairy.

Lunch would be about 1:30 p.m., dinner about 8:30 or 9:00 p.m., followed by a movie, and if the night would run, as it frequently did, for an hour or so later, the chances were better that even he would be in the kitchen either grabbing a snack of cold meat and cheese for himself, or making a Welsh rarebit for all comers. The latter dish he made with pride and some beer, but whatever the recipe, I know it was a favorite of all those who were fortunate enough to partake of it...

Marjorie Collord, *The Enchanted Hill Cookbook: The Favorite Recipes of William Randolph Hearst*. Blake Printing & Publishing, 1985

McCay's pace of production quickened in 1911, when he made his first moving animation, a cartoon version of *Little Nemo in Slumberland*, comprised of over 4,000 hand-drawn frames, fronted by a live-action sequence in which McCay,





dwarfed by great barrels of ink and towers of paper, bets his colleagues that he can finish the drawings within a month. He works like a man possessed and completes the task, bringing movement into the world of Little Nemo and his friends.

The *Rarebit Fiend* comic strip appeared daily in the New York Herald from 1904 to 1925, and, in 1921, McCay made two animations based it, *The Pet*, and *The Flying House*. In one, an outsize and insatiable beast masquerades as a domestic pet – engendering thoughts about the strange co-existence of wild and domesticated beasts with humans. In the other, there is a flying sequence where the householders transcend capitalism's emergent hold, with its illusions of rationality and security underpinned by a nightmarish inculcation into the de-stabilising debt-economy. The marauding beast trounces New York's newly built skyscrapers and the maverick householders literally fly their house into space to escape their mortgage debt and the suburban grid. They can only be stopped by state-military intervention with new forms of heavy machine artillery, followed by the dreamers' own salutary return to consciousness.

In the cartoons, McCay merges out-of-body dream experiences with the phenomena of mechanised flight and he melds a shifting horizon with corporate high rise architecture and involves the 'everyman', the little guys, in new formations of class and different modes of labour. On display are wish fulfilments, social embarrassment, shame, fear of dying of debt. The animation proposes that the fragile structure of reality might collapse altogether, sending humans insane. There is a constant awareness of social structure that involves 'getting ahead', both as a widespread imperative and a systematic impossibility. To get an advantage over others is an aspiration and a source of shame. Being engulfed by acts of social humiliation or an outsized gender or animal adversary occurs again and again. The cartoonist places himself in the strip as the character Silas – infringing on the fourth wall by inserting his own presence in the story, along with an internal narrative of anxious doubts. He makes his presence felt too in the manipulation of the picture frame through various distortions, punctures and collapses.

The characters in the animation sublimate their instinctive drives, as they materialise in a new world, where very different modalities and spatio-temporal experiences infiltrate everyday life. Numerous Americans at that time experienced a move from a primarily rural life to a mainly urban context. This led to very different relationships with animals, creatureliness and, consequently, a sense of their own animal origins. The repression and sublimation of instinctive desires

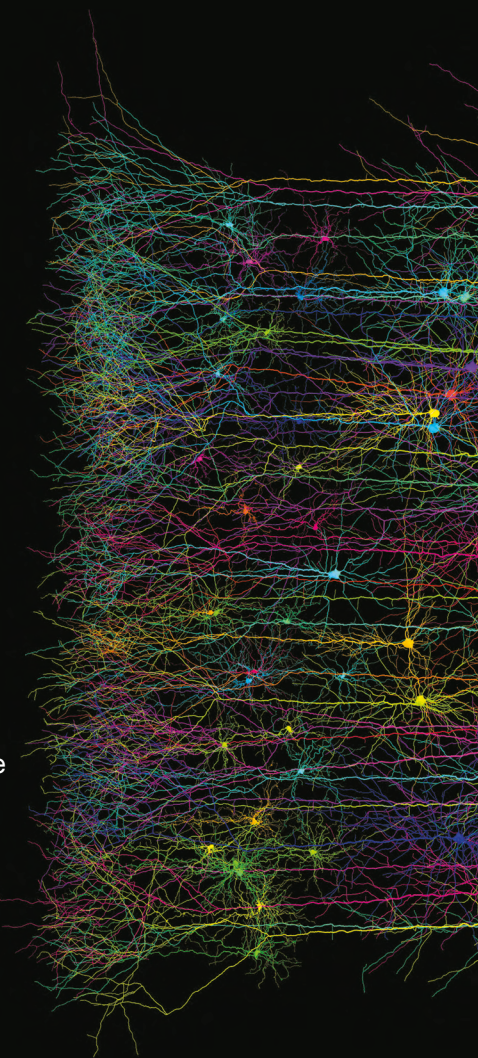
and modes of behaviour emerge in narratives where animals loom large over the body, as viewers learn to disavow them, in order to find acceptance in this newly emergent technologically-driven modern society. In one sequence, a face is invaded by a coterie of mutilating animals. In another, the yowling of a rutting cat drives a man to disassemble his own body in a self-destructive frenzy. He turns his own body parts into artillery, in order to feed a supply of missiles that might silence the beast.

In these skits, McCay invokes the structural forms of bizarre dreaming and hallucinatory intoxication: narrative disruption, gigantism, dissolution and the emergence of 'form constants', as Heinrich Klüver termed them, in the 1920s, in relation to mescaline hallucinations.⁵ These 'form constants' appear as geometric schemas – chessboards, filigree, honeycombs, lattices, fretwork, cobwebs, tunnels, cones and vessels. McCay unleashes a variety of disruptions in spatio-temporal relations and sets off a plethora of motions: spinning, undulating, fragmentation through centrifugal movement, translocations and shifts in perspective – sometimes rendering the world from above, from an aerial perspective that was a newly-found one. He conjures up transformations in visual and somatic perception, in emotions, interpersonal relations, motoric capacities. These formations are acted out in the social world and come up against the interpersonal, political and technological manifestations of the age, including new technologies and the machine-violence of the First World War.

Grid cells and place cells create a schema for motricity and vision – they plot complex geometric mental constructions that might be perceived as ur-forms, to enable motion through and visual perception of 3D space. A Grid cell is a place-modulated neuron whose multiple firing locations define a periodic triangular array covering the entire available surface of an open two-dimensional environment. They encode relative spatial distances and fields of vision. Some of the visual and spatial interferences laid down in bizarre dream forms are believed to be produced by an unconscious scrolling through these precursors of complex vision.

These curious phenomena figure as reduced forms resonant of an image yet to come. Effectively, these schemas could also be analogues of complex abstract thought. Pyramidal neurons are the building blocks for high-level functions like memory and consciousness.

One current theory is that memories are coded temporarily by the hippocampus throughout the day, and then at night, while we sleep or dream, the memories are transferred



5
Heinrich Klüver, 'Mescal Visions and Eidetic Vision', *American Journal of Psychology*, 37, 1926

to other parts of the brain via a process called memory consolidation. The motifs of geometry, of emancipatory abstraction and a more reductive shaping based on Platonic forms and data analysis, emerge through the flow of time – and materialise metaphorically, indexically and strategically in dairy form.

The affiliation of cheese with bad dreams is so entrenched in the popular imagination that, in 2005, the British Cheese Board commissioned a study to try to dispel the link. Two hundred participants agreed to eat a chunk of cheese about thirty minutes before bed time and recorded the type of sleep that had and what they dreamed about, if they dreamed at all. Not a single participant experienced a nightmare. The majority slept well and remembered their dreams. The study had an aim. 'Now that our Cheese and Dreams study has finally debunked the myth that cheese gives you nightmares, we hope that people will think more positively about eating cheese before bed', stated Nigel White in a press release titled *Sweet Dreams Are Made Of Cheese*. Still the British Cheese Board insisted on associations between cheese and dreaming and between particular cheeses and particular types of dream. Different regional products incubated different dream forms: Women who ate Stilton had unusual dreams; most people eating Cheddar dreamt about celebrities; many participants eating Red Leicester revisited their schooldays; all female participants who ate British Brie had relaxing dreams whereas males had cryptic dreams; two-thirds of all those who ate Lancashire cheese had a dream about work and more than half of Cheshire cheese eaters had a dreamless sleep.

The British Cheese Board concluded with a chemical analysis. Cheese precipitates positive dreaming because it contains the stress-releasing amino acid tryptophan. Tryptophan was first isolated from the milk protein casein by Sir Frederick Gowland Hopkins in 1901. He concluded that tryptophan, which could not be manufactured by the body and has to be obtained from the diet, is essential for animal life. It is the least abundant of the essential amino acids, but it is one of the most crucial, as it is involved in the formulation of niacin and the neurotransmitter serotonin. Serotonin regulates mood and appetite. In turn, it is essential for the production of the hormone melatonin which is needed to maintain circadian rhythms, and is required for sleep.

A range of milk products has appeared on the market in recent years: Lullaby Milk, Slumber Bedtime Milk, Nacht-Milchkristalle, all produced by milking cows before dawn, as the milk of that time is believed to be rich in melatonin, produced as it is in the hours of darkness. As the website for Nacht-Milchkristalle puts it:



So-called 'milk crystals' are rich in natural melatonin and are made from milk, which has been milked at night. Through a special method of cold processing, this night milk is turned into a powder – thereby making natural melatonin without any side effects available to you now. Milk crystals can be stirred into milk, water or your favorite beverage to drink before going to bed.

Disruption to the production of melatonin leads to anxiety, depression, insomnia, and prevents sleepers from entering into dream states. Probiotics can increase and regulate the levels of melatonin, tryptophan and serotonin. These trillions of probiotics form within bodies and on the surface of skin a microbiome with its own rhythms and the capacity to help digest food, regulate the immune system and support the metabolism. A probiotic microbe recently discovered in human breast milk led animals to grow unusually lustrous fur.⁶ Further observation of the males revealed thick skin bristling with active follicles, elevated testosterone levels and oversized testicles. Females developed higher levels of oxytocin. The enteric nervous system contains hundreds of millions of neurons embedded in a mesh-like pattern in the walls of the long tube of the gut, which measures about nine metres end to end from the oesophagus to the anus. This enteric nervous system, sometimes called 'the second brain', because of its semi-autonomy, deploys neurons to report on sensory and chemical conditions, control peristalsis and the churning of intestinal content and regulates the secretion of enzymes: 95 percent of the body's serotonin is found in the bowels.⁷

Researchers are starting to realise that gut microbes assist change not only in the gut, but in sexual reproduction, brain physiology and neurochemistry. The interplay between food, microbes and the gut has various effects on affect, motivation, and higher cognitive function. This association between microbes, the gut and brain chemistry is so profound that a field of study named psychobiotics is in formation. The interplay between eating and dreaming, eating and thinking, human and nonhuman entities is more intensive than the science of an earlier era ever knew, but Hippocrates did recognise, or intuit this, in the monstrous spectres that appeared in the night.

⁶ Moises Velasquez-Manoff, 'Microbes, a Love Story', *New York Times*, Feb.10, 2017

⁷ Adam Hadhazy, 'Think Twice: How the Gut's "Second Brain" Influences Mood and Well-Being' *Scientific American*, Feb. 12, 2010

Dreams, at least daydreams, are compensations. Ernst Bloch argued that dreams of hope are important to foster and preserve, since they represent our radical or revolutionary urge to restructure society, so that we can finally achieve something, someplace we might call home. Dreaming which stands still foreshadows no good. Dreaming ahead is excitingly alive. Dreaming the future moves us towards a future worth living. The vague awareness of a liberated life that takes shape blurrily in our daydreams is a stimulus for the real-world political action that seeks to concretise the wishes. Bloch focuses on the way that the underdog, the little person, develops inventive or wily means of getting by, not only to live, but in order to live a better life. He insists that there is good reason for the timelessness of traditional fairy tales, 'Not only does the fairy tale remain as fresh as longing and love, but the demonically evil, which is abundant in the fairy tale, is still seen at work here in the present, and the happiness of once upon a time, which is even more abundant, still affects our visions of the future'.⁸ The fairy tale is directed at a wrong that is still unrighted and is a resource of hope that is still unvanquished. Art too dreams red arrows of hope. Art that points us towards defiance and hope rather than a catharsis of pity and fear, notes Bloch, furnishes red filaments that lead the way out of the misery of alienation and towards the red-glowing future, a warm and revolutionary one.

⁸ Ernst Bloch, *The Fairy Tale Moves on in its own Time*, 1930



JUNK



Augustine says, 'by a most just ordinance of the Creator, both their life and their death are subject to our use... Dumb animals and plants are devoid of the life of reason whereby to set themselves in motion; they are moved, as it were by another, by a kind of natural impulse, a sign of which is that they are naturally enslaved and accommodated to the uses of others.'

Thomas Aquinas, *Summa Theologica*, 1273 De Civ. Dei i, 20.

OUROBOROS



The fairy tale was a dream of the Medieval age, as were the visions of Utopia. In Medieval utopian landscapes, such as Cockaigne, Schlaraffenland and Lekkerland, animals offer themselves up in consumable forms, with cutlery ready in their beaks or carving knives plunged into their backs, ready and waiting for the moment that will be feasted upon. These creatures are perhaps even ready to eat themselves, a culinary orobouros, a self-sacrificial eternal return. Foodstuffs made large, human sized, mobile and perambulatory, reoccur in folk history and fairytale. In Breughel's *Het Luilekkerland*, his lazy luscious land, houses are roofed with pies, a pig trots by with the carvery knife ready inserted into its flank for easy pickings. Although Cockaigne and Lekkerland are dream landscapes and fantastical forms, this motif of animal self-sacrifice is laid down in doctrine. According to Medieval exegesis, God's instruction to Adam to name the animals gave humans dominion over them. Through this divine mandate, the act of naming allowed humans to make use of what they named, in any way they saw fit. Thomas Aquinas interpreted this to mean that animals existed primarily for human consumption, reasoning that fish swam in schools only in order to help us catch them. This legitimised instrumentalisation of nature set in motion a pervasive Humanism that is only just beginning to be dismantled in the face of species and habitat extinction.

The constant threat of hunger dominated Medieval Europe. Sometimes the dream became a reality, in the feast. Eating in excess was in defiance of scarcity, a refusal to surrender to death. Public and collective feasting performed a ritual surfeit, a summons to hold inevitable oncoming shortages in abeyance. Feasting and carnival in Medieval Europe also coincided with the seasonal availability of food: Late autumn and winter, when little agricultural work could be carried out, were times for feasting on stores of food that had been gathered in the harvest.



9
Christina Normore, *A Feast for the Eyes: Art, Performance, and the Late Medieval Banquet*, University Chicago Press, 2015

The warmth of spring and summer opened up periods where abstinence was viable, and so it was punctuated by religious fasting. By the thirteenth century, the motif of community gathering also became a means to delineate social distinction – with courtly circles holding sumptuous banquets in ostentatious displays of grandeur, excess and power.⁹

There were not only copious amounts of food on the tables of the aristocracy – it took on animated form in great tableaux with scenes of pillage and shipwreck, battle sieges, military encampments and the portrayal of biblical stories. Edible architecture of epic proportions began to make its appearance on the banqueting tables of the wealthy. There were inversions and deceptions, with substitutions and mouldings of one food substance reconstituted to look like another. There were automatons, whales spewing fish, singing mermaids and cavaliers, a dromedary releasing birds from pies to swarm around the dining hall, only to be rounded up by a royal falcon. This spectacular, fantastical food presented something of which a working person could only dream. In the dream of the peasant too, the dream that is laid out the courtly love lyric of Medieval Germany, appear the girls and the boys of robust well-fedness and beauty, the boys and girls of milk and blood, healthy and beautiful their milky skin and ruby-red lips and cheeks. The German folk saying has it so: 'So schön wie Milch und Blut'.

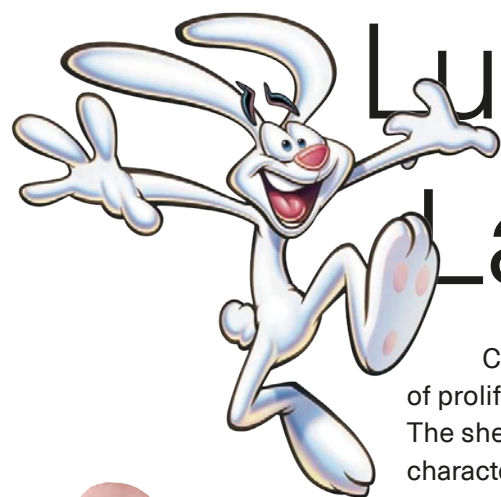
The Land of Plenty, the Land of Milk and Honey plays into the foundation myth of America and accompanies its promotional culture throughout the early twentieth century. Giant lobsters, vegetables, ice creams: again and again appear a rebellious, all-consuming, self-directed populace positioned outside or atop shops and malls or on billboards. These super-sized entities are assertions of the right to excess. In the quest for endless satiation, advertisers and businesses incorporate that which it sought to oppress, exploit and annihilate. Demonic forces are legible in the figures and mascots of consumer culture. South American plantation workers, enslaved African workers, underpaid domestic workers, Aunt Jemimas, Uncle Bens, Miss Chiquitas, the Land Lakes butter maiden, Rastus and his cream of wheat, are assimilated into logos to promote the products produced by their own underpaid or unpaid labour. The construction secrets of these avatars, when they take on the form of fibreglass and fur models, are revealing. As emptied out casts, moulds and shells, they speak clearly as ciphers of nihilistic excess.

At the present moment, the supply of food in industrialised nations means that urban supermarkets are permanently and copiously filled, and their food stores enjoy

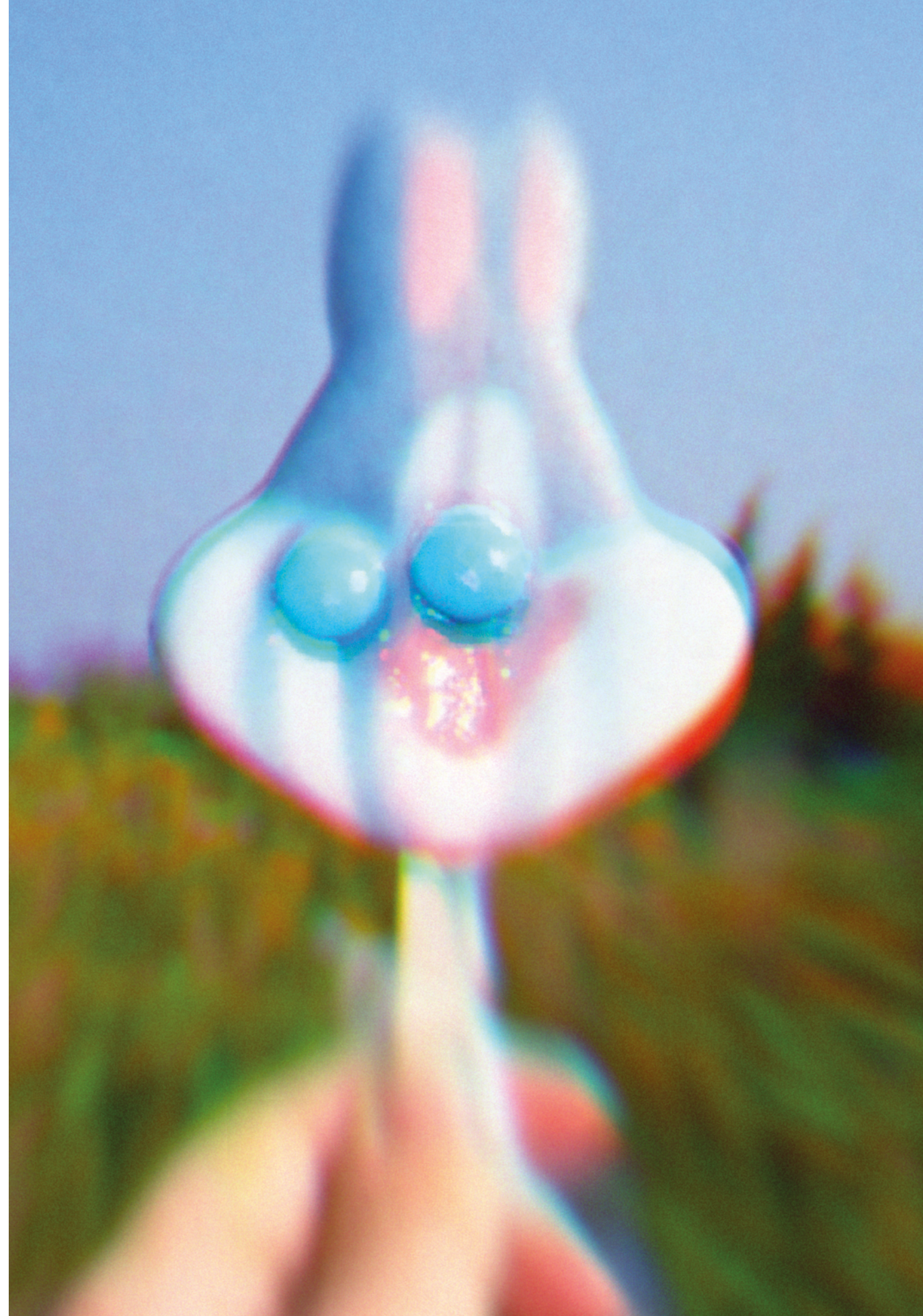


24-hour availability. Utopian fantasies of food without labour are partially facilitated through drone agriculture and robotic checkouts. The more there is automation, the more the remaining human labour is resented, poorly compensated and de-skilled. Humans are paid the meagrest of wages to oversee the banks of self-service checkout machines that fail, to attend to the jobs machinery cannot do around the crops, which are drip-fed with synthetic nutrients, or clean up around the robots that tend cows, every day of the year, for 90 hours a week in the intensive dairy farms in the pre-dawn darkness.

Luscious Land



Curious novelty food forms persist in a crowded heaven of proliferation. They find their way into every corner shop. The shelves and the streets and the subways vibrate with character, colour and action graphics. These animated foods gurn and fly from all directions in digital brilliance. Milk plays its part here. Milk's multiplicity is evident in the variety of forms that it is shaped into in today's modern, industrialised dairy environment. In frozen, liquid and powder forms, it is the matter of infinite innovation. Dairy turns airy in ice creams that swell up with nothingness injected, and, as with micro-foams in coffee, this airiness – or 'overrun', as it is known in the industry – not only changes the texture, but also seems to stand as evidence of milk's overinflated presence and excessive connotative ability in post-war culture. Milk teams up commercially with a bestiary of caricatured avatars and is doused in a dazzling spectrum of synthetic colours. It is frozen into colourful crystals with personality, in a crowded iced treats market, whose products bear ever fewer tangible relations to milk. Concoctions of partially reconstituted skimmed milk concentrate, sugar, vegetable oil, whey powder, dextrose, emulsifier (mono- and di-glycerides of fatty acids) and colour adopt the shapes of superheroes, cartoon villains, baroque architectonics and human body parts. For marketing purposes, the cow, used frequently as a metaphor for the passive, dumb, and exploited, is often replaced by wily, smart-talking animals and apocryphal consumers of milk – cats, rabbits, mice – leaving only a vestigial hint of its animal connections, a sign of the interspecies promiscuity of milk. These mascots are a link between human and non-human worlds and other possible worlds. Junk mascots and celebration foods are a reliquary for themes of transformation, the baroque, the bizarre and the grotesque. Demonic, gurning, otherworldly, these characters with rictus grins, popping eyes and hybrid body forms crowd the market. In novelty frozen-forms, milk adopts any and every shape, superheroes, cartoon villains, baroque architectonics, Platonic solids to human body parts. The ontologies of donor species collapse as milk re-forms into consumable biomass.







Beastly Bodies

Milk is enmeshed industrially in various operations that shape it metaphorically and abstract it from the producing body. But the producing body of the milk giver is no simple entity. It is monstrous. It refuses. It takes on other shapes. For example, humans have engaged and imagined other milk suppliers, which take on the figure of nonhuman caregivers. In myth, a nanny goat called Amalthea – tender goddess – was said, in some accounts, to have nursed the baby Zeus. Her horn, the *cornu copeia*, or horn of plenty, is said to have been donated to the caregiving Nymphs who had facilitated the transfer, in gratitude for their provision of honey, as well as milk. Other versions of the myth of Zeus have him suckled by a sow, fed ambrosia by a dove and nectar by an eagle. A she-wolf fed Romulus and Remus, the abandoned twin offspring of Mars and Rhea, whose story recounts the founding of Rome and the Roman Kingdom. Goats often let the Gods and heroes of Antiquity suckle: Dionysus, Asklepios, God of medicine, Aegisthus, killer of Agamemnon. Telephus, the son of Heracles and Auge, while exposed on Mount Pathenion, was said to have been suckled by a deer as portrayed on the 1st century CE fresco at Herculaneum – his name is perhaps derived from a dug and a doe.¹⁰

The altar of the Pergamon transposes this milk provider to a lion. Aeolus and Beotus, the sons of Melanippe, were exposed by king Desmotis, but saved by a suckling cow before becoming heroes. Hippothoon was twice exposed and twice fed by a mare, while the abandoned Miletus was suckled by she-wolves under Apollo's command. The grandfather of Habis, King of Tartessos, exposed his grandchild five times in different environments and every time Habis was breastfed by animals – pigs, hind and doe. Cyrus I of Persia was said in some accounts to have been nursed by a wild dog. With this milk, came characteristics, transfers of personality, qualities that marked out these babies as chosen ones.¹¹

Brigid, a Celtic Goddess or a Saint, the patron saint of Ireland and protector of dairymaids, cattle, midwives, Irish nuns and new-born babies, mingles with milk in many ways and her milk is miraculous. Some say her mother was a milkmaid and Brigid was born out of a milk pail, or at least doused in warm new milk, or *lemlacht*, on the threshold of the home, at sunrise, as her mother returned from milking. She drank only the milk of a white cow with red ears, a faery cow, as an infant, and when she grew up, she, in turn, gave away the animals' milk so freely, dispensing butter to the poor from a dairy that endlessly replenished itself. Brigid's milk was as freely given as the cows that gave their milk to her. Brigid could also turn water into milk or beer. Brigid's festival on 1 February is named Imbolc,



↑
Romulus and Remus (detail)
Peter Paul Rubens, 1616

¹⁰
Apollodorus, *The Library*, with an English Translation by Sir James George Frazer, F.B.A., F.R.S. in 2 Volumes. Cambridge, MA, Harvard University Press; London, William Heinemann Ltd. 1921

¹¹
Giulia Pedrucci, *Breastfeeding Animals and Other Wild "Nurses" in Greek and Roman Mythology* Università degli Studi di Bologna, 2016



but its etymology is obscure – perhaps it stems from the Old Irish meaning ‘in the belly’ and may be a reference to the pregnancy of ewes, or to the Old Irish for cleansing oneself, or to a proto-Indo-European root that means both milk and cleansing.

Animals are expected to donate their milk to humans, yet unlike humans, an animal who desires the milk of another species is cast as an outcast and a thief. A persistent and widespread rural story tells of how the snake steals cow’s or goat’s milk straight from cow’s udder, having slithered up its hind legs. It is as if the Devil himself stole milk. The legend, for that it is, of course, as a snake cannot even digest milk, extends to the human world with the fear that snakes are attracted to breastfeeding women. A black snake waits until a mother is sleeping. It will latch onto the breast, while pressing its tail into the baby’s mouth, to muffle its cries. The snake will steal the milk. The baby will die of malnourishment. Milk snakes earn their name from this imagined milk theft.

Between myth and rumour, Wild Peter, who appeared in North Germany in 1724, was covered with thick hair, said to have grown as a result of him suckling from a bear – he imbibed with the milk his nursing mother’s characteristics. Carl Linnaeus shared this belief in the transfer of characteristics through milk – he professed that to suckle from a lioness would confer courage.¹² In Egypt, donkeys were not favoured as wet nurses for it was believed that donkey’s milk transmitted the animal’s characteristic stupidity and obstinacy.

Hindu laws of Manu and the teachings of the Jewish Torah restrict milk from one-hoofed animals. But the Talmud ascribes bravery, strength and endurance to the goat and the milk of a white goat is especially beneficial. The Hottentots were said to tie babies to the stomach of a goat to nurse. Others believed that goats were libidinous beasts and some recommended donkeys instead as wet nurses, for the donkey represented morality. Hippocrates, Galen, Aretaeus and Alexander of Tralles all recommended the milk of asses – considering it the best antidote against poisons and disease. Galen had it brought directly to an ill patient’s bed sides, as he believed that, as with semen, air would contaminate it.¹³ The warmth of milk in the teat was deemed to contain its invigorating spirit, a belief that persisted in science into the eighteenth century and in folklore beyond. The practice of cross-species feeding extended into the modern age. In 1816, the German physician Conrad Zwierlein published *The Goat as the Best and Most Agreeable Wet Nurse*, a treatise recommending wet nursing by goats, which was dedicated to vain and coquettish women, who would not feed their babies, and sick and weak ones, who could not.



↑
(top image) *Peter the Wild Boy*
published by C. Johnson,
after unknown artist, late 18th century.

¹²
Londa Schiebinger, *Nature’s Body: Gender in the Making Of Modern Science*. Rutgers University Press, 2013

¹³
Samuel X. Radbill, *American folk medicine : a symposium*, ‘The role of animals in infant feeding’ Berkeley : University of California Press, 1976

Recent research into cockroach milk, a pale yellow liquid that seeps from the brood sac of a Pacific beetle and crystallises in the gut of the embryonic beetle roach, proposed it as a protein-rich ‘superfood of the future’. Three times richer in calories than buffalo milk, an extremely protein and calorie rich milk, four times more nutritious than cow’s milk, a relation between human and non-human milks is extended the insect world, and researchers attempt to reverse-bioengineer it for mass production, possibly as a supplement. This dense food is not designed for wealthy mouths:

It’s important to point out that this dense protein source is definitely never going to be for those trying to lose weight, and probably isn’t even required for most western diets, where we are already eating too many calories per day.¹⁴

Whereas in the pre-modern period the animal aspects of breastfeeding were acknowledged, such that images of interspecies nutrition were available without concern or horror, the modern period introduces a series of separations and divisions of class and status. Attendant on this is a philosophy of Humanism dependent on hierarchies of beasts and humans, as well as within humankind, which render these other hierarchies problematic. The very act of breastfeeding, of women feeding babies, begins to appear as an animal act, suitable only for those who live amongst animals and are themselves considered more animal-like. Why would a woman of status wish to turn herself into a *Milchkuh*? At other times and on other women’s breasts, animals have fed – puppies, kittens, piglets and monkeys – to toughen up the nipples and improve the milk flow, to relieve engorgement, to prevent conception, or, as in the case of Mary Wollstonecraft on her death bed, with puppies at her breast sucking out her milk that was thought to be tainted, to divert poison milk from the lips of the newly born.

This extended the theory prevalent in Europe that the first milk, colostrum, was diseased. In Thomas Newton’s 1577 translation of Guilielmus Gratarolus’ *De Literatorum et eorum qui magistratibus funguntur conservanda praeservandaque valetudine*, colostrum was warned against: ‘the thicke and curdie Milke... commonly called Biestings, is very dangerous’.¹⁵ In 1577 too, the translation of Konrad Heresbach’s *Four Bookes of Husbandry* evidences an early use of the word ‘colostrum’ in English. The book warns: ‘you must be sure to milke out the fyrst milke called Colostra... for this, except some quantitie be drawen out, doth hurt the Lambe’.



¹⁴
Jacinta Bowler, *Scientists Think Cockroach Milk Could be the Superfood of the Future, Move Over Kale*, 25 JUL 2016, sciencealert.com

¹⁵
Samuel X. Radbill, *American folk medicine : a symposium*, ‘The role of animals in infant feeding’ Berkeley : University of California Press, 1976



Knowledge of the benefits of colostrum was emerging by Wollstonecraft's time. In 1737, Henry Bracken stated in his *Midwife's Companion* that 'The Colostrum or first Milk is a medicinal Nourishment which Nature hath prepared for the Purpose that it should moderately nourish'. But in 1825, in the first paediatric guide to be published in the USA, Dr. William Dewees advised that in the eighth month of pregnancy a woman place a young but sufficiently strong puppy to her breast to toughen and accentuate the nipples, prevent inflammation and improve the flow of milk. Piglets were used for the same purpose.

Into this epoch, there are various peoples across the globe who do not initiate breastfeeding until a few days after birth, to allow the colostrum to pass through, passing the new-born sometimes to another lactating woman to feed, or sometimes to a cow or goat.¹⁶ An account from a foundling hospital in Aix in France would have its readers believe the goats were enthusiastic feeders of human babies:

The cribs are arranged in a large room in two ranks. Each goat which comes to feed enters bleating and goes to hunt the infant which has been given it, pushes back the covering with its horns and straddles the crib to give suck to the infant. Since that time they have raised very large numbers in that hospital¹⁷

Abandoned syphilitic children suckled from mercury-infused goats and other creatures. Teats, not nipples, were for their mouths. Today's plastic bottles have teats rather than nipples too, linking these artificial feeding mechanisms to cross-species wet nursing, which has now become, for the most part, an alien practice.

Aristocratic Milk

In eighteenth century Europe, breastfeeding was unfashionable amongst the aristocracy and rising middle classes. Ladies believed it would ruin their figures, spoil their health and interrupt the endless rounds of card games, social visiting and theatre trips. For royal brides, or others bound by duty to issue as many heirs as possible, breastfeeding was discouraged in case it made future pregnancies less likely. Aristocratic nipples were considered 'vestigial' as male nipples were – as if they had evolved to transcend the use in base, more animal acts. Later research, by contrast, has found that nipples are as fundamental to human life as limbs, ears, and all other shared organs – they precede in utero sexual differentiation and appear on the bodies of all mammals.

In Paris, wet nursing often involved a separation of birth mother from baby, for the wet nurses might live in the countryside around Paris and the child would be raised by the wet nurse and her family for as long as eighteen months. This led then to another separation, more broken bonds. A painting *Farewell to the Nurse*, by Etienne Aubrey, from around 1776-77, depicts the agonised scene of an aristocratic couple reclaiming their child from the arms of the wet-nurse and her family, much to the child's distress.

The practice of wet nursing died out in Europe in the nineteenth century, as a fear spread that the milk of the poor might pass on syphilis, tuberculosis or cholera to the children of the wealthy. Some had rejected it earlier, convinced by the arguments of Carl Linnaeus and Jean Jacques Rousseau on the moral necessity and natural law of a mother breastfeeding her own child.



↑
A woman breast feeding two puppies whilst two Mexican peasants implore her to feed their baby, which is lying on the floor on a bed of straw. Chromolithograph after A. Utrillo.

¹⁶
Katie Hinde, *Colostrum through a Cultural Lens* in SPLASH! milk science update: February 2017, International Milk Genomics Consortium

↑
Farewell to the Wet Nurse
Etienne Aubrey, 1777

¹⁷
Deborah Valenze, *Milk: A Local and Global History*, Yale, UP, 2011

Does not the child need a mother's care as much as her milk? Other women, or even other animals, may give him the milk she denies him, but there is no substitute for a mother's love. The woman who nurses another's child in place of her own is a bad mother; how can she be a good nurse? She may become one in time; use will overcome nature, but the child may perish a hundred times before his nurse has developed a mother's affection for him. And this affection when developed has its drawbacks, which should make every sensible woman afraid to put her child out to nurse.

Emile, Or, *On Education* (1762)

In the tenth edition of *System Naturae* from 1758, Linnaeus attributed humans to a class of animals defined by the capacity of the female of the species to suckle: mammals. This designation as 'mammalia' underlined the role of feeding from the mammaries and replaced a previous term from Aristotle according to which many creatures were classified, quadrupeds. For Linnaeus, breastfeeding was a natural law, and wet nursing – and bottle feeding – an unnatural vice.

William Cadogan was another influential advocate of breastfeeding and his 'Essay upon Nursing and the Management of Children from their Birth to Three Years of Age', from 1749, admonished those mothers who refused to feed their own babies, passing them out to wet nurses or using artificial means. He was a physician to the Foundling Hospital in London and considered that his own observations of infants, as one of the 'Men of Sense', qualified him to speak on what was the best course of nutrition. Indeed, his hospital run by enlightened physicians would allow the world to emerge out of the darkness of female custom. Cadogan understood the 'Lower Class of Mankind' to be confined by their poverty, their 'Want of Superfluity' within the 'Limits of Nature'. It is the rich who suffocate their young under a 'Load of Finery' and stuff them with dainties until they are sick.

The Foundling Hospital may be of more Use to the World, than was perhaps at first imagin'd by the Promoters of it; it will be a Means not only of preventing the Murder of many, but of saving more, by introducing a more reasonable and more natural Method of Nursing. In my Opinion, this Business has been too long fatally left to the Management of Women, who cannot be supposed to have proper Knowledge to fit them for such a Task, notwithstanding they look upon it to be their own Province.

William Cadogan

The notion of bosom friends is an old one. In Elizabethan English, it might as easily have been used of two male intimates as two women, but it seems to find a powerful form in eighteenth-century France, when it becomes highly fashionable for two, usually aristocratic, women to become known as inseparable, to become confidantes of each other, amidst the changing and fickle love relationships that occur between the opposite sexes. A high profile example of such bosom friends was the pair Marie Antoinette and Yolande-Martine-Gabrielle de Polastron, who became the Duchesse de Polignac upon marriage in 1767. They clung together like breasts cleave, when they are lifted up and pushed together by the power of corsetry. They could not be divided, despite their ongoing relationships with men. Such intimacy led, of course, to aspersions of lesbianism or moral corruption. These beauty queens were also dairy queens – if milk flowed not from their breasts, it streamed from the architectural follies, the only architectures they were allowed to commission.¹⁸ The devoted women played together at Versailles and elsewhere with faux-peasant fashions and pleasure dairies. As the country whirled into revolution, Marie-Antoinette – known as Madame Deficit – copied another queen of France, Catherine de Medici, who, childless and unpopular, had the first of her pleasure dairies built at Fontainebleau. Marie-Antoinette's was at Rambouillet and, here, she and her bosom friends could play at being milkmaids and consume milk products from a sixty-five piece Sèvres porcelain service. One of its forms was the 'breast cup', flesh-coloured, tipped by a pert nipple in pink. It was handleless and designed to be cupped in the hands. Rumoured – falsely – to be cast from Marie-Antoinette's own breast, it became a symbol of her suspect lasciviousness. She also had the peasants' wooden dairy churns and buckets copied in perfect porcelain mimesis.



↑
With your kisses, excite my desires, I am, my darling, at the height of pleasure. 18th-century pornographic portrayal of Marie Antoinette and the duchess of Pequigny. Louis Binet. From Marie-Jo Bonnet, *Les Deux Amies* (Paris: Éditions Blanche, 2000).

←
Marie Antoinette's Sèvres porcelain 'bol sein' breast cup, 1788

18
Meredith Martin, *Dairy Queens: The Politics of Pastoral Architecture from Catherine de' Medici to Marie-Antoinette* (Cambridge, MA: Harvard University Press, 2011)



Other aristocratic women indulged in the craze of the pleasure dairy. One was Madame de Pompadour, who, ensconced in the court, became a bosom friend of the king. As a courtesan of King Louis XV, she was known more unkindly as a royal whore. For pleasure, she sponsored pastoral festivals and set up model working dairies for royal entertainments. She was responsible for designing porcelain drinking vessels for milk, such as the *trembleuses*, made by Sèvres too. Rather than be associated with the fertile, health-sustaining properties of milk, she was frigid and sickly. To cure her various ills, she consumed vast quantities of milk. Her face was covered by a white mask of makeup made of milk to disguise her blemishes. It was said that she suffer from *fleurs blanches*, white flowers, used as a slang term for a disease known as leucorrhoea, derived from the white discharge visible in menstrual blood.



The Milk Marketing Board held an annual 'Dairy Queen' contest throughout the 1950s and 1960s. The 'crown' was awarded by a member of the British royal family. A Queen's prize in 1965 included £100 and six dresses. She acted as ambassador of the industry and was expected to make appearances throughout the year at publicity events promoting milk. Pictured here at Regents Park Zoo feeding cows milk to elephants.





In the pleasure dairies, the women of the elite indulged in a public fantasy of being nurturing, in touch with nature, maternal, fertile – every quality that France needed to regenerate itself without suffering the agonies of revolution. It did not work. And for these elite women, a separation of significance came with it. It was that of their heads from their bodies, as the new regime overturned the hierarchy: 'au reste, après nous, le Déluge'.

These women were the dairy queens, the milk queens and milk princesses, or Alices in Dairyland, who later, in the twentieth century, find a consumerist form as winners of yearly pageants organised by dairy associations across the world to find modern day 'dairy queens'. This latter-day queen has no pleasure dairy, but is rather a figure exuding health and beauty an assumed result of the consumption of dairy goods, on a permanent milk round of promotional trade events, school visits, press conferences and the like. The rural-themed architectures had promoted the consumption of milk and also located female power within pageants of pastoralism, whilst simultaneously setting in train the mass-industrial production of both ceramic and dairy produce. Raw milk and raw clay are crafted, industrialised, and have both been simultaneously technologised but also hint of a folkloric space, and a pre-industrial past.



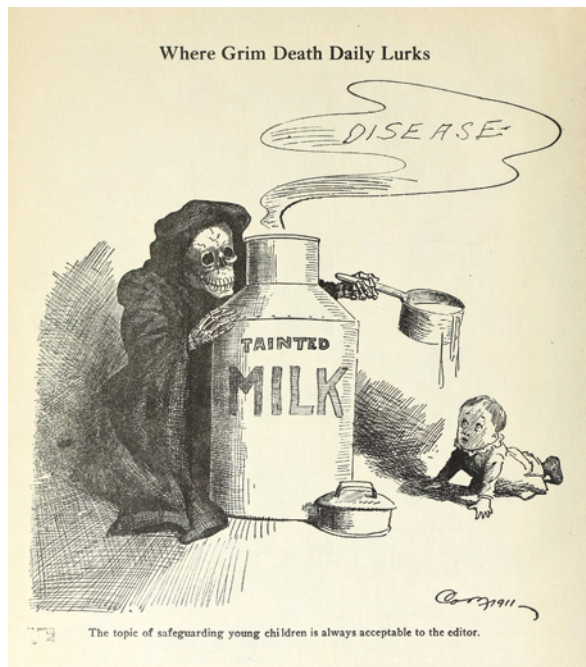
The French draughtsman Honoré Daumier made several images of women nursing. In 1848, he entered a sketch into a state-sponsored competition. The aim was to define the painted face of the Republic for a picture replacing the portrait of the old king at the Hotel de ville. Daumier's sketch, *The Republic Nourishes and Instructs Her Children*, is of a classically dressed woman in white robes, seated inside a space with two children feeding from her exposed breasts, while a third reads at her feet. It is almost a direct transposition of Delacroix's *Liberty at the Barricades* (1830), with the armed defenders of the Republic depicted as (atypically older) suckling children. In Daumier's sketch, Liberty is now tethered to a chair, flag rolled up at her side. The image submits that it is the duty of women to nurture the citizens of the state. No longer bare breasted in the throes of revolutionary struggle, they now have reproductive duties to the state. Captured in this official art – to be enlarged to more than four metres square – are instruments of the state, milk-laden breasts, which have become metaphorical.

It is no coincidence that in the new Republic actual women were no longer able to institute feeding networks and informal networks of wet nursing became illegal.¹⁹

¹⁹ Mathilde Cohen, 'Regulating Milk', *The American Journal of Comparative Law*, 14 September 2017



Welfare

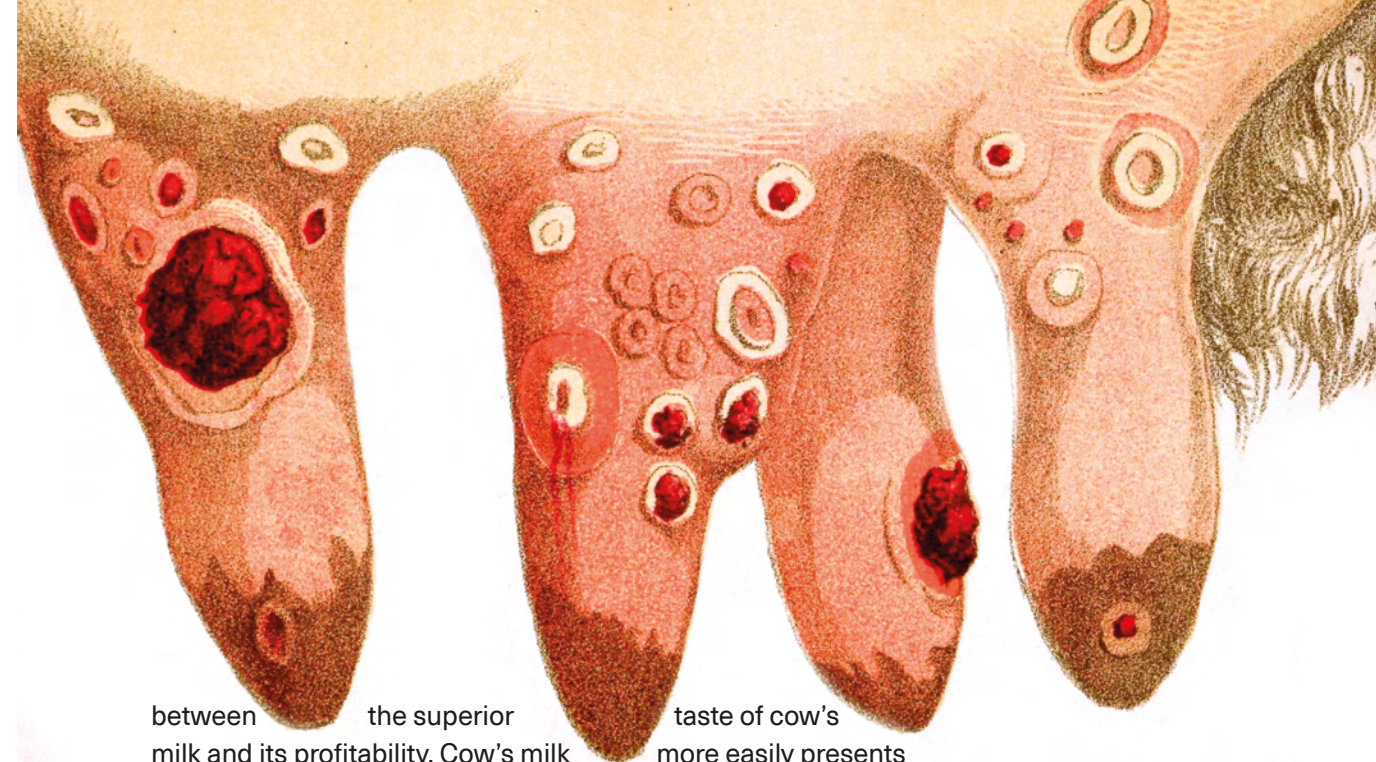


By the late seventeenth century, enclosure of grazing lands had impacted upon animal husbandry in the countryside in England at least. There were fewer milk cows. The country labourers at this time turned to ale as a beverage and butter and cheese as a foodstuff. Until the mid-eighteenth century, milk – rarely drunk by adults – might as well have been the milk of ewes or goats.²⁰ Then in the cities, where a divide between town and country was fast establishing, city dairies emerged. Here cattle were kept in cramped conditions, not able to graze, and fed on brewers' grains, cabbage and bean shells. Milkmaids would sell milk from pails slung across their shoulders and carried through the dirty streets. Sometimes the cows were driven through streets and milk sold straight from their udders, to counter claims of dilution or to avert pollution.

Over time, as the nineteenth century passes on, issues of milk supply become crucial in the context of deprivation and displacement. Instead of the state dispensing metaphorical milk in the shape of welfare to its citizens, the state and private industry combine to control the supply of milk to those who are becoming undernourished within the ravages of the industrial capitalist system. Milk's fortunes are entwined with those of national health. Milk became institutionalised as an essential foodstuff for the general population over the course of the following centuries and its properties were extolled by government as an essential part of the diet. William Prout, the London physician who developed ideas of nutrients through his chemical analysis in the 1820s, alighted on milk, 'the only article actually furnished and intended by nature as food', which he decreed to be composed of the three necessary ingredients for healthy life, for milk alone, and the mechanism by which milk is secreted, 'were designed, and made what they are, by the great Creator of the universe': 'In milk, therefore, we should expect to find a model of what an alimentary substance ought to be – a kind of prototype, as it were, of nutritious materials in general'.

Industry and the market came rapidly to deliver this ever-so natural and simultaneously divine substance to the masses, in ever newer and improved versions.

In the nineteenth century, animal milk – cow's milk – comes to the fore as a substitute for mother's milk for the mass population. There was apparently a happy coincidence



between the superior taste of cow's milk and its profitability. Cow's milk more easily presents a predictable and constantly manageable flow that can be subjected to technical analysis and comm-odification, and thereby incorporated into the necessary systems of economy and policy that are emergent.

The imperative of 'purifying' milk became a driving principle of the modern era and it is in milk that public health battles occur. Nowhere was bacteria pursued more aggressively than in milk – which nurtures when drunk directly from the body and had a tendency to poison when removed from it – the milky environment perfect as it is for nurturing all scales of life, including those not congruent with human life. In milk a battle against disease, against microbes, took place. Louis Pasteur fought microbes in milk in the laboratory, as part of a war that seemed to parallel the one being fought by Napoleon in Russian territories and elsewhere. Healthy people are needed to defend the country and so the twin sciences that emanate from the dairy, that of Pasteurisation and vaccination, develop industrially and are incorporated into effective public health policies.

Hygiene is the result of this laboratory work – with Pasteurised milk becoming more widely available from the 1890s – and it makes possible the mass deaths of millions of healthy men in the muddy, rat-infested trenches of the First World War, for had the war on the microbes not been won, then the war in the trenches could not have proceeded. The war on microbes kept alive so many bodies, even in the heat of battle, where before so many had succumbed, so that they might, subsequently, die in excessive numbers on the battlefield.

²⁰ Francis McKee, *The Popularisation of Milk as a Beverage during the 1930s' Nutrition in Britain: Science, Scientists and Politics in the Twentieth Century*, Routledge, 1997

The terms *vaccine* and *vaccination* derived from the latin *Variolae vaccinae* (smallpox of the cow), the term designated by Edward Jenner in 1796. He used it to describe the protective effect of cowpox in cows against smallpox in humans, noticing that dairymaids had become immune to smallpox after their exposure in the milking shed.

Some were suspicious of Pasteurisation, a process first tested by Pasteur on wine in 1864 to stop it spoiling and souring, just as some may have wondered at Pasteur's own mastering and acceleration of lactic fermentation. He showed lactic yeast to be a living agent responsible for lactic acid production, and he demonstrated that the yeast cells grow like plants if fed properly. Sceptics thought the processes of heating milk and cooling it might just extend the life of dirty milk in order to increase profits. Harlow Davis, an American health commentator at the start of the twentieth century, thought milk's power resided in its ferment, which was an 'occult influence' in mother's milk that could not be replaced by any other animal. For the sickly though, cow's milk, fresh and still warm from the udder, might suffice. It would convey the vitality, 'the electricity or animal magnetism, which is in reality a form of liquid life; and all of such life-element is lost by evaporation after the milk has cooled'.²¹ In the face of such folklore and such suspicion, cow's milk needed to be elevated, to be an object of faith. Research institutes and the Medical Research Council did their work, funded by the Empire Marketing Board. Nutritional advantages, especially for children, were declared. The possibly of reliable supplies of clean milk without tubercle infection was established.

The UK railway network developed in response to the demand for Pasteurised fresh milk. By the end of the nineteenth century, it could be sent from the countryside in closed milk churns and delivered to the customer's door. In 1870, nine million gallons of milk came to London by train. In 1890, 40 million gallons came. In 1900, 53 million gallons. The Great Western Railway came to be known as *The Milky Way*, because it bore so many milk churns, as it coursed ever-increasing amounts of milk to the capital from the farms of the South West.²²

21

Francis McKee, *The Popularisation of Milk as a Beverage during the 1930s' Nutrition in Britain: Science, Scientists and Politics in the Twentieth Century*, Routledge, 1997

22

Edward John T. Collins, Joan Thirsk (eds.), *The Agrarian History of England and Wales*, vol. 7, 1850-1914, Cambridge University Press, 2000



the Old & the New

These are establishments organised in big towns, or in their vicinity, which process very large quantities of milk brought in by rail. As soon as the milk arrives the cream is skimmed and sold fresh, while the skimmed milk is sold at a low price to poorer purchasers. To ensure that they get produce of a certain quality, these establishments sometimes conclude contracts with the suppliers, obliging them to adhere to certain rules in feeding their cows.

Lenin, V, *The Development of Capitalism in Russia*, 1899

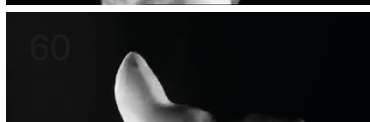
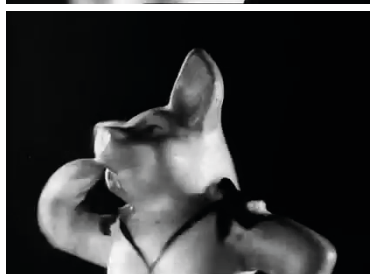
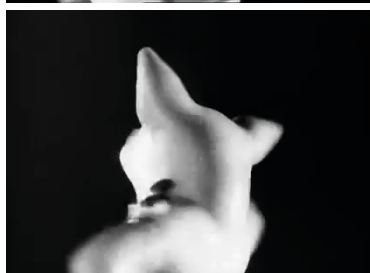
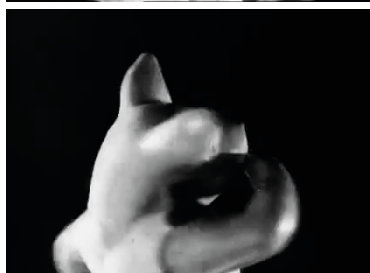
The aristocratic pleasure dairies were a mirror-opposite of the home butteries where female churners with big arms laboriously made dairy products day after day. Milking and churning was for a long time women's work in Northern Europe. Sometimes, for example on Icelandic farms, children would help with the work of shaking pots or swinging bags of sour cream until it clotted into butter. By the thirteenth century, butter became a trade commodity, and still it was processed by women, with mothers handing skills and cows onto daughters. In time, this place of labour was abolished as the creamery came into being. Milk was commandeered by the creameries and brought into what was known as 'the whole milk system'. The home was requisitioned and the role of transforming milk into something edible became the work of men and machines.

Farmers conveyed their whole milk supplies to the factory or creamery daily or at regular intervals. Machines lightened the labour of processing milk and of turning it into other things. The cream separator – in separating cream and whey – signifies the separations that come to take place: labour separated from the home, from women, from the intimate hand. Men took over much of the production in the factories and industrialised farms. The logics of separation set in. Home and work separated. Women and labour separated. Cream and milk conveniently, automatically, efficiently separated.

Amalgamating the dairies, Lenin notes, performs a role analogous to that of elevators in commercial grain farming. By sorting grain in relation to its quality, the elevators turn it into a product that is not individual, but is generic. That is to say, milk, like corn, is adapted fully to exchange.

Commodities must be standardised, while at the same time, differentiated. Milk is abstracted. As abstraction, it is a commodity and adapted for quantification. But it is also specific milk, milk of varying qualities. There is creamy milk and the rest that is less creamy, or watery or spoilt. The small producer and his 'milkmaid wife', as she comes to be called, belittlingly, notes Lenin, are left to look after the cattle in the field, diligently, and so they bear the 'brunt of the hardest and roughest work of tending the milk-yielding machine'. But the cream they and she produce will not be theirs.

Capital possesses the latest improvements and methods not only of separating the cream from the milk, but also of separating the 'cream' from this 'diligence', of separating the milk from the children of the peasant poor.



Milk enters into the endless time of expanding milk yields. Industrialisation produced the decline of the home dairy and the rise of the buttery and amalgamated dairies. In order to move beyond the capture of the cream by the wealthy, Sergei Eisenstein devised his cream separator sequence in his film *The General Line* or *The Old and the New* from 1929. The nurturing qualities of milk are transferred to the actions of collectively-operated and owned machinery. The cessation of suffering will not occur as a result of the ritualistic chanting of priests or from trickling candle wax, but from the forceful eruption of cream from a glossy cream separator. Martha Lapkina, who desires to collectivise her village, has obtained this extraordinary device from the local Communist Party. In its centrifugal motion, the cream is drawn off, in seconds, not by the rich and not by hard graft. The machine acts, for the benefit of the workers. It spurts out ecstatically, a version of milk as cum shot, but conceived in a revolutionary context in which a redistribution of property or properties is imagined possible. The cream separator is tangible proof of the superiority of collectivisation.

The peasant audience sees this proof with their own eyes, as they gaze on at the machinery, like an audience in the cinema, in a darkened room, glints of light flickering across their faces, their expressions moving from sceptical disbelief to a suspension of disbelief to a new belief, in the transformative powers of collectivised technology, in its speed, its multipliers, the numbers cascading across the screen, as yields rise. The cream separator spins in circles, the imagery of it intercut with images of the Volkhov Hydroelectric Dam and its circular flows of water and it echoes other images of the dynamism of Communist industry in the film, such as the spinning wheels of tractors. The image of the cream separator in full flow could be seen as a partner-image to the closing images of Eisenstein's *Strike*, from 1925, in which the workers' slaughter, after their uprising, is juxtaposed to the grisly butchering of cows. With the cream separator, the workers' body is not brutalised any longer by the state. Cream comes to it with ease. There is no mention of cows' suffering for this bounty and indeed the sequence is followed by shots of a well-bred bull bought as a result of the economic success of the dairy collective. Before the bull is bought, Martha lies asleep, on top of the collective's profits, and she dreams of thousands of cows taking over the countryside, overseen by a massive bull. Milk rains from the skies, and this milk becomes cream, filling bottles to the brim. Once she wakes, Marfa purchases a bull – but before this act, the film shows images of healthy well-nourished newly

DEEPER IN THE PYRAMID

hatched chicks and suckling pigs. These animals play and enjoy life, until the moment of their butchering for the good of the collective. This butchery is mechanised, with spinning blades that strip the skins efficiently. A cycle from happy life to meaningful death, for the collective, is portrayed. Amidst this appears a whirling porcelain pig in a dress and with a bow, smiling. It is a ridiculous thing, far removed from nature, a commodity pig perhaps, but not even a useful edible one. It is a frippery that dances across the screen and vanishes, an antithesis to the pig that has been shown from birth to death, enmeshed in life and liveliness.

The cream separator sequence revels in fertility, bountifulness and ecstatic life. The milk comes slowly at first from the spigot, in uneven spurts, and builds to a gush, spurts, floods of white chaos propelled by a spinning mechanical motion. Its splurging is intercuts with images of the faces and bodies of the assembled peasants as the cream hits them. Some years later, Eisenstein cited at length the description of the scene from an article in the French magazine *Le Mois*.

Suddenly, right before our eyes, milk condenses and turns to cream! Eyes sparkle, teeth shine through breaking smiles. A joyfully smiling, peasant girl, Martha, stretches out her hands to capture the flow of cream, vertically streaming toward her; cream splatters all over her face; she bursts into a fit of laughter, her joy being sensual, almost animal in nature. One almost expects her to cast off all her clothes in a frenzy of passion to wallow naked in the flood of well-being produced by the spouting torrents of cream.²³

Martha is in ecstasy, beside herself, in the face of the cream. This is a political and a sexual response to the ejaculations. The milk is excessive. Eisenstein yokes it to revolutionary dynamism, pure pleasure annexed to collective advance. The milk gained in this way comes as sign of fertility, of new life, rebirth of the state, of humans, abundance in a new land of milk and honey. Perhaps the collective shares this ecstasy. Perhaps the ecstasy is real. Perhaps it is only propaganda, and Eisenstein is in a game with the Soviet authorities and the requirements of Stalinist Five Year Plans. In any case, this is modern milk. Modern milk is the milk of progress. Modern milk is mechanical milk. Modern milk never denies, never says no, is always there, and always more.

RED FILAMENTS, WHITE ARROWS



23
Sergei Eisenstein, *Nonindifferent Nature*, trans. Herbert Marshall (New York: Cambridge University Press, 1987), 40

Formulas



The Milk Marketing Boards of Scotland and England were established in 1931 and 1933 to stabilise the price of liquid milk. Milk was provided in schools, costless to the needy, and in this way any surplus milk supplies were used up, whilst a lifelong habit of milk drinking would be instilled. To further convince an adult population that milk was a worthy beverage, newspaper reports gave vivid descriptions of the aseptic nature of the modern dairy, a place free of dust with operatives who were as clean as surgeons, their cows groomed and cleansed.

In this period, the whole body of the animal – specifically the cow – can be taken possession of and integrated into the grid of supply and demand, circulation, quantification and standardisation. While cross-species nourishment in a direct and intimate sense becomes socially distasteful, it finds acceptable form once technology interposes, separating source and recipient, producer and consumer.

Formula milk is presented as a fix to problems of undernourishment and infant mortality – and will become a part of the quest for 'scientific motherhood'. The history of infant feeding was a triangulation between the promises of technology, commercial pressure, and the promotion of biology (or scientific knowledge of the body). The inadequate knowledge of women when it came to questions of infant nutrition, it would seem, could be augmented by the application of science. First invented by Justus von Liebig in 1867, 'Liebig's Soluble Food for Babies' was manufactured and sold in London by the Liebig's Registered Concentrated Milk Company. It was composed of cow's milk, wheat, malt flour and potassium bicarbonate. By 1883, there were twenty-seven patented brands of infant food on the market.

In the 1910s, evaporated milk began to be widely commercially available at low prices. Milk corporations funded clinical studies which suggested that babies fed on evaporated milk formula thrived better than breastfed babies, when their weight gain was compared. In North America particularly, some paediatricians promulgated the view that bottle-feeding was as good as breastfeeding based on progressive weight gain. The monitoring of growth then became a benchmark justifying the charts and weighing clinics. As infant welfare and health surveillance grew, there was a notional standard established on the basis of readings from these formula-fed babies. In today's climate – we are more concerned that these weight gains and formulae have contributed to diabetes and obesity in later life – and now feeding 'success' is as likely to be measured in achieving cerebral milestones.²⁴



←
Saint Bernard and the Virgin
Alonso Cano, 1657 - 1660

24
Lawrence Weaver, 'Feeding babies in the 21st century: Breast is still best, but for new reasons', 06 July 2009 HistoryandPolicy.org

Most of the medical profession adhered for some time to the idea that bottle feeding was better than breastfeeding. It was regularised. It overcame problems associated with rationing. It fed into the same atmosphere of salvation through technology that fuelled the Space Race and the 'white heat' of technology of the post war period. This knowledge was taken forward aggressively in projects of exporting Western infant products to be imbibed by colonised bodies.²⁵ Rationalisation of milk supply allows the penetration of exchange relations into new markets.

Breastmilk is the only fluid created by the human body that science has presumed to have exceeded. It is not until the twenty-first century that the full complexities of human milk begin to be apprehended. It is subtle, responsive, biodynamic: an adaptable, multi-purposed liquid, which is emulated and subject to optimisations. Despite historical claims and efforts to improve on the fluid, no such task has been accomplished.

Technological processes for separation allows for the ubiquity of formula milk. Formula milk is nowadays couched in the language of the technically advanced upgrade, genetically and bio-technologically optimised to emulate the smartness of breastmilk – mirrored in brand naming. These are resonant of growth and transcendence: 'Optimal', 'Advantage', 'Humana', 'Platinum' 'Gold'. There are promises of great futures and social advantage. In Asian markets, the anglicised brand names reflect the market confidence, regulation and corporate standardisation alluded to by suggesting Western origination – combined with aspirational technophilic fantasy: 'Smart Baby', 'Gene-Plus', 'Nu-Gene', 'Neo-Baby', 'Neo-Kid'.

In all this, there is an imperative of intelligence, improvement and insinuated is a transfer of smartness from substance to baby brain. Just like the smart phone, that is smarter than us and makes us smart, milk is smart – technically augmented – and makes for smart babies. There are also breast pumps 'featuring new iQ Technology'; the pitch is: the pump's memory chip makes it smart, but the name also plays on claims that human milk, like fortified formula milks, raise I.Q. scores.

Donna Haraway has underlined the ways in which milk is available for separation and recombination – as indicated in her lines on how 'breast milk is not nature to the culture of Nestlé's formula. Both fluids are natural-technical objects, embedded in matrices of practical culture and cultural practice'.²⁶ All too often a polemical distinction is made between natural and technical forms. A Humanist philosophy of science assumes that its inventiveness can exceed anything



²⁵ Thuy Linh Nyugen, *Childbirth, Maternity and Medical Pluralism in French Colonial Vitetnam 1880-1945* Boydell and Brewer, 2016

²⁶ Donna J. Haraway, *Modest_Witness@Second_Millennium.FemaleMan@Meets_OncoMouse™*, Routledge 1997

that nature has produced, but, at the same time, what we call nature is essentialised and rendered a source of specific value. What is key in this is that whatever is devised does not exist in a vacuum, but is drawn into a matrix of valorisation, which overdetermines its expressions. What the body produces 'naturally' cannot be shrugged off, however. There is a constant need to refer back to it – because what is found out, in the sophistications of analysis, which keeps apprehending milk's complexity afresh, is that there is always more to milk.



Medieval stories indicate how breast milk delivers sacred cognition from a visceral and bestial source, out of a visceral body denounced as part of an initiation into the sacred. The trope of breast milk as something transcendent is repeated in Medieval mythologies where St Bernard is sprayed with the Virgin's breast milk as an act of divine intervention. The story is told variously as one in which sustenance is provided straight into his lips, or in order to cure his infected eye, or to augment spiritual and cerebral insight, when it is applied directly to his forehead.

St Bernard's rapture about the Virgin and her milk was transmitted to his successor Henry of Clairvaux – who when summoned to suckle directly from the Virgin's breasts was filled with mental clarity – with sacred words – whereby cognition and godliness were dispensed in milk. Bernard called it the elixir of the 'science divine'. The cult of the lactating Mary persists as a contemporary phenomenon. The lactating Virgin can still be found in shopping centers across the Philippines and circulating internationally on eBay.

↑
La Virgen de la Leche
SM Mall of Asia, Pasay city
Mr. Marco Driz Dalma

facebook.com/LaVirgendelaLecheyBuenParto/photos

A woman with dark hair tied back is seated at a wooden table. She is wearing a grey cardigan over a black top. A black hands-free pumping bra is worn over her shoulders, with two clear plastic tubes extending from it. Each tube is connected to a clear plastic bottle filled with milk, which sits on the table. The background is a warm, yellowish wall.

Selves

Breastfeeding is not just about the provision of milk. It is also not just about intimate bonds. Like the act of reproduction, lactation is the enactment of a splitting, of a formation of self and part-self that is to become other. It disrupts the dominant motif of the bounded body, of sovereign individuality. Milk is a bridge between bodies: an emission from one and an incorporation into another. This can be evidenced in the relatively recent proliferation of the brelfie, the breast-feeding selfie – at once an image of self and not the self, of bodies joined in the transmission of milk.²⁷ Brelfies are both part of the phenomenon of narcissistic self-imaging triggered by the confluence of the camera and the Internet in the smartphone. They are also an act of conscious image making. These images of breastfeeding are neither metaphorical, idealised or pornographic, but normalising, various and self-authored.

Maternal nursing, as a bodily practice located at the breast, challenges notions of the bounded, autonomous individual. Lactational embodiment fits conceptually within the frameworks proposed by Elizabeth Grosz, who argued that 'women's corporeality is inscribed as a mode of seepage'²⁸ The maternal subject, Julia Kristeva reminds us, is 'the place of a splitting'²⁹ – simultaneously the self and not the self and the act of breastfeeding materialises this conceptual framing. In this light, the breastfeeding selfie can be understood as a site of both rupture and bridging, an evocation of a simultaneously split and dual subject.

Perhaps the site of giving milk, of the mother splitting herself, causes social anxieties. This anxiety is mobilised to validate the social separation of the breastfeeding woman from the public environment whether through shame, or through lack of paid maternity leave, which produces the need for the technological fix of the breast pump. Sometimes the breastfeeding woman is directed to separate herself and her baby from the rest of the world, by taking up a position in the toilets. Breast pumps are now designed so that women can continue to be optimally productive while using them – expected to work at the computer whilst lactating, even whilst away from home on business in hotels or while exercising. As milk is known better through the smartness of our technologies and analytical abilities, the essence is extracted and negated, as the messy body is constituted negatively as a source or vessel. Optimisation is not conceived of as an emotional and embodied issue, but a question of the quality of the fluid, a nutritional source for the brains of the intelligent adaptable workforce to come of the future, extracted remotely from the newly-freed bodies of a female workforce that need not leave its desks to do the work of reproduction.



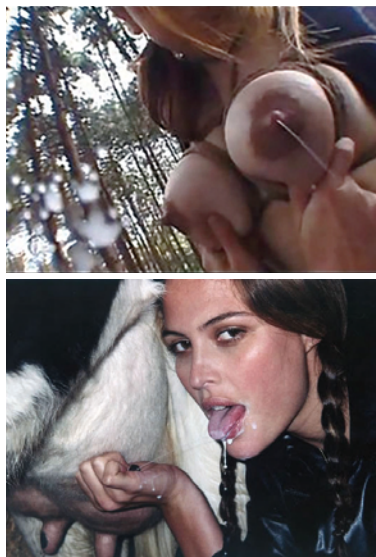
Hands Free Pumping Bra, courtesy of Simple Wishes.

²⁷ Boon and Pentney, 'Virtual Lactivism', *International Journal of Communication* 9, 2015

²⁸ Elizabeth Grosz, *Volatile Bodies: Toward a Corporeal Feminism* (Bloomington: Indiana University Press, 1994)

²⁹ Julia Kristeva, *Desire in Language*, Columbia University Press, 1980

³⁰ Luce Irigaray, *Le Corps À Corps Avec La Mère*, Editions de la pleine lune, 1981

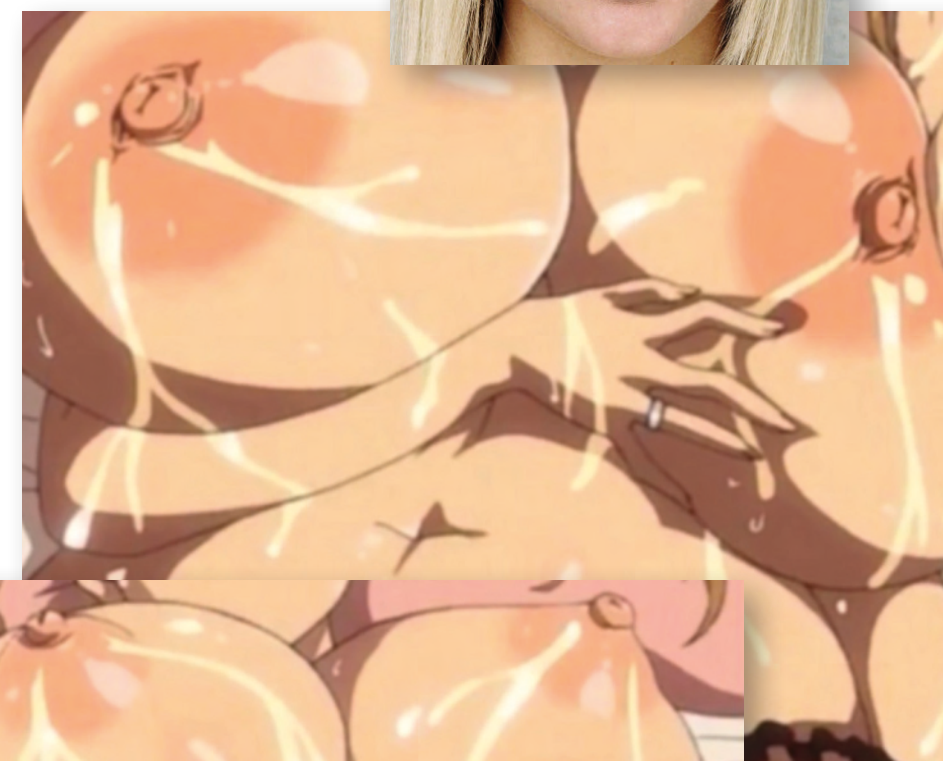


Luce Irigaray wrote in 1981, 'All Western culture rests on the murder of the mother'.³⁰ Lacan identified the mirror stage as an archetypal moment in the development of an individual's sense of self, through which an infant comes to perceive itself as a coherent whole by identifying with the reflection in a mirror. This feat of triumphant self-integration lends the individual, Lacan suggests, the thrusting 'impressiveness of statues'. It is the process which 'constitutes the ego' with the 'attributes of permanence, identity, and substantiality'. Irigaray noticed that this mythic developmental moment never actually involves a mirror. The identity of the child – who in Lacan's account is always imagined as male – is not actually formed in relation to an impassive reflecting object, but rather, in relation to an active reflecting person. And to her mind, it was far from incidental that this person-being-depicted-as-a-mirror is most usually a woman. That is, this mirror-person is a mother. We are a culture that despises vulnerability, dependency and welfare, and this erasure of the maternal, or her turning into a mere reflection, finds a parallel in the abhorrence of the 'bovine', the compliant, and the exploited. A contempt for interspecies dependency renders the co-dependent human relationship invisible.

Women are endowed with messy bodies, bodies that seep, bodies that are made problematic. Formula milk and expressed milk extract, separate, and attempt to recombine that problematic fluid into something more streamlined. Bodies become erased in the dynamic of technologically realised reproduction. Modes are sought of imagining breastfeeding and breast milk that obliterate intimacy and bodily exchange. This is why it returns as again and again as pornographica and as excessively visceral fantasy. There is a strange ambivalence about its visibility as a source of nutrition and comfort for babies.

As a seeping spurting image for adult sexual consumption, by contrast, in a return of the repressed, lactating breasts form their market niche in the pornographic index: Preggo/ Milky or Lacto-Porn. In Japan, maid bars proliferate in Tokyo and beyond, where cosplay waitresses act out servile European maid roles. As an extension of these, there is a well-developed milk maid based pornography and a pornographic collectables market replete with lactating figurines. Adult males can drink expressed breast milk in the Bonyu Bar in Tokyo, and, for a financial premium, drink directly from source. It has been reported in China that the corruption of the bureau-crazy manifests in the attendance of high ranking government officials at orgies held by businessmen. Here the officials accept bribes and the favoured activities include the drinking of breastmilk from young nursing mothers for \$800 a go.³¹

Once the milk is separated from the feeding baby – conceptually or for purposes of representation – it is available for pornography. Once it is separated from the breast itself, it fuses with ejaculate, to provide an image ubiquitous in Western advertising over the last twenty years, of a milk-soaked woman in an ecstatic pose.



↑
(top) Still from preggomilky.com

(middle) Detail: Terry Richardson's 2001 advertisement for clothing company Sisley

→
(inset) American milk advertisement, commissioned by the National Fluid Milk Processor Promotion Board

(next page) Anime Babes With Massive Milky Boobs pornhub.com/view_video.php?viewkey=ph56bb71e97dfd2

31
Chris Luo, 'Human Breast Milk Popular Tipple Among Shenzhen Rich', *South China Morning Post* 02/07/2013

Vessels



Milk is enmeshed in the biotech SF fantasies of Big Science. It is a substance to be remade and remarketed. It is separated from its container, the breast, which is separated from the body of the woman, and, consequently, the body of the infant. The container is ignored in most accounts of human history – the bag, net, rolled leaf or bottle in which things are held, in order to be brought home and stored. The vessel may be the first cultural device and thought of it leads Ursula Le Guin to affirm 'a carrier bag theory of evolution'. But this is not the same story of origins as is told in science fiction.

Where is that wonderful, big, long, hard thing, a bone, I believe, that the Ape Man first bashed somebody with in the movie and then, grunting with ecstasy at having achieved the first proper murder, flung up into the sky, and whirling there it became a space ship thrusting its way into the cosmos to fertilize it and produce at the end of the movie a lovely fetus, a boy of course, drifting around the Milky Way without (oddly enough) any womb, any matrix at all?³²

This origin myth rests on attacking, killing and heroic masculinity or 'the Story of the Ascent of Man the Hero'. If instead attention is given to the basket, the bag, the belly, which gathers things up, gather up us within the universe as bag, the universe a bag of stars, gathers up stories into books, if thought is given to the womb and tomb of things, then something might be said about what it is to be human.

If, however, one avoids the linear, progressive, Time's-(killing)-arrow mode of the Techno-Heroic, and redefines technology and science as primarily cultural carrier bag rather than weapon of domination, one pleasant side effect is that science fiction can be seen as a far less rigid, narrow field, not necessarily Promethean or apocalyptic at all, and in fact less a mythological genre than a realistic one. It is a strange realism, but it is a strange reality.³³

Some of the earliest existing vessels were containers for milk, as fat particles found in their clay and on tools attest. Clay and milk have a longstanding affinity. Tablets found in ancient Babylonia and Assyria with the earliest recorded writing, proto-Cuneiform, have pictographs of milk vessels pressed into them.



³² Ursula Le Guin, *The Carrier Bag Theory of Fiction, Dancing at the Edge of the World*, Grove Press, 1989

³³ Ibid.

These writing and image making systems are replete with the possibilities and problems of representation – where abstraction, index, mimesis, iconography and the real are interplay in dynamic simultaneity.

Ernst Bloch's *The Spirit of Utopia*, from 1923, includes a section titled 'An Old Pitcher, which meditates on a 'bearded man jug' – a *Bartmannkrug* – as made in Germany in the sixteenth and seventeenth centuries. These heavy brown jugs feature a bearded man on their neck and so take on a human form. They were well-distributed across Europe in their day, as a result of European colonisation and trade. The true lover of the pitcher – such as is Bloch – prefers the 'clumsy brown implement, with almost no neck, a wild man's bearded face, and a significant snail-shaped solar emblem on the curvature'. For Bloch, the man depicted on the jug is a wild spirit. He is a pointer to the afterlife and to the past. 'They speak to us, these old pitchers, from a time when they say the long-eared hare could still be seen dancing with the fiery man on Hessian fields before nightfall, and they preserve the old things, like farmers: literally' These jugs found their way into pubs in every German imperial city. In time, they disappeared, in the way that everything handcrafted had to in the age of industry. In evoking the Bearded Man jugs, Bloch evokes the past transported into the present at the moment of its loss. The jug offers the possibility of a different mode of being. This mode of being is not just a mode in which the world contains heavy stone jugs with bearded men for use or optical delight. It is, also, a mode of being articulated from the body of these jugs themselves. Bloch wonders what it looks like inside 'the dark, spacious belly of these pitchers'. He imagines we would like to occupy that space – just as a child might actually creep inside out of curiosity. Bloch loved the cloddish and crude, the brown heavy and inhabitable jug.



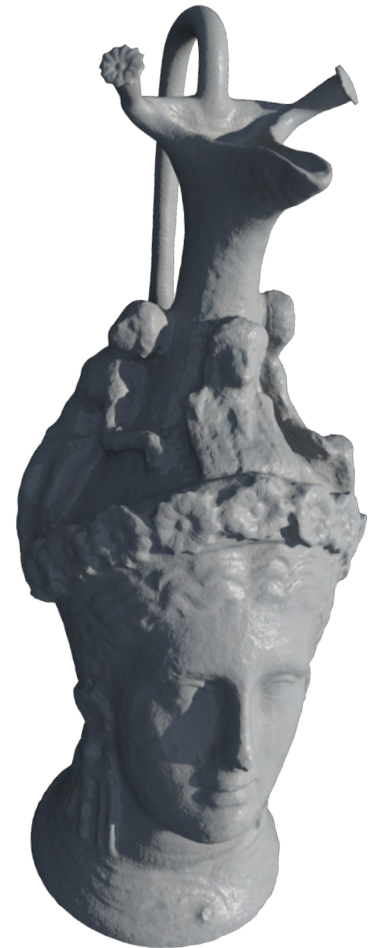
Whoever looks long enough at the pitcher soon begins to carry its colour and form with him. Not every puddle I step in makes me grey; not every railroad track bends me round a corner. But I could probably be formed like the pitcher, see myself as something brown, something peculiarly organic – some Nordic amphora, and not just mimetically or simply empathetically, but so that I thus become for my part richer, more present, cultivated further toward myself by this artefact that participates in me. That is true of all things that have grown, and here, in drinking pitchers, the people laboured to express their pleasure and their deeper sense of contentment, to affix themselves to these implements of the household and the public house. Everything that was ever made in this way, out of love and necessity, leads a life of its own, leads into a strange, new territory, and returns with us formed as we could not be in life, adorned with a certain, however weak, sign, the seal of our self.



The pitcher grows, like a plant grows. It takes in all that is in its environment. As the self is internalised in its form, so too is the self externalised in its form. This is the object or thing as product of a form of labour, element of a culture. The self is expressed in it, the self of the maker, the self of the user. It leads a life of its own – it leads us – but we are made with it in this journey. We are made again through clay, an inorganic form, a mud, composed of weathered granite rock, of decomposed feldspar, drawing water into its crystal structure. Bloch is outside and inside the jug.

In discussing the pitcher, Bloch makes reference to the folktale and fairy tale. For Novalis³⁴, the Romantic author, the fairy tale was the truly poetic work and of it he said: 'A fairy tale is truly like a dream image – without coherence – an ensemble of wondrous things and incidents.' The fairy tale is aligned to the Romantic aesthetic, for it is fragmentary, incomplete, associative. Through such multiplicity, such detailing, more than the sum of parts can be discerned. The features of the jug are the emblem of a variety, a patchwork, of living relations. Finding out the context of the pitcher is the same as travelling into its interior.

The jug or the pot or the pitcher takes on and takes in subjectivity. It takes this on in its pinchings and squeezings, its incisions and modelling, as the pot becomes a body in, for example, Amerindian practices. Some pots used by Amazonian peoples have round, wide-open eyes, and seem to speak of the ghosts that appear in local stories that bind the collectives. Such a pot might be a trap, a place where a human soul might rest in an animal-like body, a safe conveyor, then, to the other world.³⁵ In such a system of thinking, it is said that humans, animals and things, such as a pot, may share something that is eternal and might be named a soul, even if their bodies differ, though the body is what donates a perspective on the world. A body might be taken on and with it a perspective on the world. In a bear body, a human may see as a bear. Within a pot body, one might see as a pot. A mask is worn not as a disguise but rather as a revelation of the animal or the thing represented, its true face or inner essence. This thought is very old. A material that gleams or shines reveals its inner essence, but, as seems to be the case in Aurignacian skeuomorph manufacture and bead production amongst the earliest human settlers in Europe around 40,000 years ago, the form, the outer being, appears mutable, for various lustrous materials, which shared the common inner essence, were used to convey the appearance of shells or the teeth of different animal species.³⁶



34 Novalis, *Notes for a Romantic Encyclopaedia*, Das allgemeine Brouillon, 1798/99

35 Alberti, Benjamin and Yvonne Marshall, 'Animating Archaeology' *Cambridge Archaeological Journal* 19, 2009

36 Chantal Conneller, *Deception and (Mis) Representation: Skeuomorphs, Materials, and Form*, *Beyond Representation: Returning materials to archaeological theory*. Left Coast Press; 2013

The Platonic account of the origin of painting portrays a sadistic affair – bodies are captive, shackled and bound, and senses are tantalised by mere shadows and illusions. In Pliny's account of the origins of art, it is not painting to which we must look, but sculpture. In Chapter 5 of Book XXXV of his *Natural History*, a young woman traces her lover's shadow by the light of a lamp and her father builds up his image in clay: this is an act of love. 'Upon seeing this, her father filled in the outline by compressing clay on the surface, and so made a face in relief, which he then hardened along with other forms of pottery'. The sculpture is not a form of capture but an act of revealing. Her father works with the properties of clay to explore a set of relations, not an obdurate final form. It becomes a thing in its own right, a repetition and an act of discovery.

The vertical hierarchy of original and copy, as presented in the processes of mimesis, is countered. In discussing drawing, John Berger explores the way that each mark which leads to form is not important for what it records so much as what it leads the artist on to see. 'Each confirmation or denial brings you closer to the object, until finally you are, as it were, inside it: the contours you have drawn no longer marking the edge of what you have seen, but the edge of what you have become ...'.³⁷ Art in these examples leads into thought and into self-reflection, into a temporary identification between what is made and what the maker and the receiver is. It also exposes the process as never able to be completed, always to be done again, shifting, as we shift.

T.W. Adorno wrote an essay on his early encounter with Bloch's *Spirit of Utopia*, titled 'Handle, Pitcher and Early Experience'. He notes how Bloch manages to achieve a changed relationship to the object. This is made possible through the presentation. For one, there is the tempo of the text as it alternates between concrete observation and philosophical speculation. History, material uses, the passage of time and the reach of political geography have imprinted themselves on the object. Adorno writes:

In Hegelian fashion, Bloch's experience carries the content along with it. What counts for him as beautiful are no longer the relations of proportion of his pitcher, but that which, as its becoming and history, has conserved itself in it, what disappeared in it, what the gaze of the thinker, as tender as it is aggressive, brings to life.



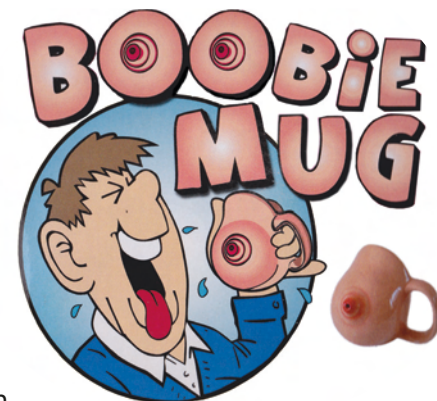
37
John Berger, 'Drawing', *Selected Essays of John Berger*, Bloomsbury, 2014

Adorno observes something about how the jug has absorbed the imprint of history, but history's traces are specifically brought to life, or enlivened, by an immersion in the object through its approach from different aspects, perspectives, directions – as multi-focal as a camera. This suggests a method, one which might move around its object, take in its different perspectives, from above and below, close and far, and make links and discontinuities, both plausible and strange.

A jug has something lowly about it. The word is simple. The word is blunt. The etymologist Hensleigh Wedgwood, whose family had such a significant relationship to clay and pottery, articulated the idea that the word jug might stem from the transfer of a woman's name, for Jug is a pet name or familiar substitute for the name Joan, or Joanna, or Judith. The clay that makes the jug is as yielding in the hands of the potter as the comely Joanna. Jug was a name given, sometimes disparagingly, to a maid-servant or a low-born woman, perhaps also a sweetheart or mistress.

In Hieronymous Bosch's paintings, everyday objects appear as ciphers of collective experience. Objects take on an animistic stance, there is a delirium of exchange between animate and inanimate matter. The vessel and the jug appear repeatedly, often inverted, sexualised and gendered. The jug exudes a sexual presence. This is underlined by the title and theme of Heinrich Von Kleist's 1811 play *Der Zerbrochne Krug* or *The Broken Jug* – the play draws on the double entendre in German for female chastity, virginity and its inverse, that of sexual experience. The 'broken jug' becomes an actual and metaphorical key to the plot device, revealing a sexual encounter (and consequently complicity in a crime).

It would seem that the jug that is the self, the jug that demands to be entered, the jug that pours milk and other fine liquids from itself, comes to be feminine, if lowly born, and, in the process, it might be seen to diverge from Bloch's muscular, soldierly, and coarsened authentic bearded jug. Perhaps Wedgwood, in affirming a female origin to the term, was justifying his relations' own re-ascription of pottery as delicate – and therefore feminine – if somewhat more refined, in connotation as in terms of its ceramic material. Josiah Wedgwood's first successful earthenware was made to impress a Queen consort in the 1760s and he was allowed to change its name from Creamware to 'Queen's Ware'. These coils of association give a context for the slang term of jugs for breast. Here we find the novelty ceramic, bargain-bin cousins of Marie Antoinette's breast-based vessels. Some of these include the innovation of allowing the drink to pass through the nipple into the mouth.



The finest pottery of all is said to be porcelain. Porcelain is always described as white and beautiful. Its beauty is annexed to its whiteness and its luminosity is best showcased in a homogeneous paste. Under the urgent instruction of the royal courts across Europe, potters struggled to emulate its fine glassy whiteness, once it was imported from China, until they cracked its chemical secrets, or settled for imitations. The power, the capacity to unlock the chemical formation of porcelain, became an imperative of national significance. Johann Friedrich Böttger was credited as the first in Europe to emulate this ceramic that appeared, as a contemporary enthusiast put it, 'milky white like a translucent fluttering narcissus'.³⁸ He was an alchemist kept captive by a King who sought to use minerals to increase his power. Together with Ehrenfried Walther von Tschirnhaus, a mathematician, physicist and philosopher, he sweated day and night in the toxic air of the furnaces at Albrechtsburg Castle in Meissen to discover the recipe. But, in England, Josiah Wedgwood was the one determined to produce not only the milky crockery, but also a market, which came about as a result of his canny techniques – of catalogues, door to door salesmen, money-back guarantees and the rest. He knocked a small inventor and competitor, William Cookworthy, out of the market, using the courts and patent battles to finally smash the company into the ground. Wedgwood's creamware generated a large market for fine white pottery. Wedgwood wrote in his letters of his pursuit of 'a white Earthenware body, and a colourless or white opaque glaze, very proper for Tea & other wares.' He blanched his creamware by including china clay and a small amount of cobalt which gave a bluish cast to the glaze, and he named it Pearl White.

Just as milk has been subjected to varieties of purification, so too clay has been edged towards whiteness and purity. Porcelain is milk's analogue: white, purified, numinous, idealised. Raw clay, like raw milk, is subjected to processes of refinement, to smoothing out. It should be noted that porcelain is often the site of defilement – toilets, bathroom basins, receptacles for bodily waste. The lack of pores in porcelain makes for a bacteria-resistant smooth surface off which all shit will slide, and this inert material will not react with the water and air that daily beset it and so will never corrode or oxidise. This thing of mud made pure becomes an emblem of purity, even when brought up against impurities.

Like milk, porcelain adapts to standardisation, to the market and its demands. It shares the same ability of milk to take on form and accept colour. Porcelain multiplies in forms



38
Meissen Archives Christoph Heinrich Petzsch (1692-1756): '...semidiaphanum tremuli narcissuli, ideam lacteam' or 'appearing milky white like a translucent fluttering narcissus.'

at the behest of the market in commodities, which is not like the country one to which milk and cows were once taken, but is rather nebulous and all-pervasive. As with milk, porcelain's whiteness once achieved invites colour. The milk and milk jug are coupled in the imagination – and the jug in turn becomes a euphemism for the breast. The clay milk vessel is drawn toward representation. Cow creamers are just one mimetic form, if one that draws on an old history of pouring vessels stemming back to the Second Millennium BCE. The cow creamer appears in the early eighteenth century in Holland, made of clay, until the desires for distinction of the British gentry, who wish for milk in their tea, provokes the silversmith John Schuppe, for one, to fashion them in silver. In emulation of these, but at a cheaper price, the potteries of Staffordshire churned out ceramic copies.



From the jug, there emerge a panoply of forms to supply the market, which has many buyers with differing tastes and financial capacities: the clay cow creamer, the glass bottle, the milk bottle for pre-packaged milk, giving way to the milk carton tetra pack, plastic milk jugs, milk bags

– which seem to be too udder-like, too mimetic in an uncontrolled way, and, perhaps therefore, too reminiscent of an earthly origin. In any case, these last ones have proven commercially unpopular, in Europe, but milk bags made of linear low density poly-ethylene film, can be found in Eastern Canada, where the chemical firm DuPont introduced them in the late 1960s, and used to be prevalent in the Soviet Union and Eastern Bloc. This cheap form of packaging is common across the global South too.

The commercial milk vessels of the late twentieth century and beyond resist mimesis, and clay and milk are de-coupled. In Western markets, milk is now available only in one-use, autonomous, yet infinitely available, standardised forms. In throwaway cartons, milk signifies both a human ascendancy and the rinsed out, exploited and spent species of earth whose yields are optimised, but whose bodies are secondary. After years of being promoted as an essential component of the diet, associated with health and wellbeing, cow's milk is now a substance of controversy, linked with excess cholesterol, calcium loss, intolerance and obesity. A litre of milk currently retails at less than a litre of water.







Chicago Jazz Archive

Lightened as in light... gradual path of realization... Given the
light is wisdom, enlight... it is not gradual awakening...
crack of a lightning bolt...
"Lightning" can... a long... "lightening" and that
left behind. A young... surrounded by... for skin
straightened...

Grids,
Wheels
&
Carousels

Industrial Metaphysics

We drink the milk that glows so white that it seems to fizz, emanating beyond the contours of the vessel holding it, like when Alfred Hitchcock placed a light inside the glass of poisoned milk carried upstairs by Cary Grant in *Suspicion*. Such a milk of fantasy, of malevolent make-believe, pervades our dreams of milk. White milk is a lure – warmed, it coaxes us into sleep. But milk is subtle, supple, shifting, ever ready to become something other than itself. Milk’s uniform white colour – the white milk of our dreams, the white milk of manufacturing and advertisements – is achieved by separating its constituent molecules, before recombining them in complex new formations. This is an act of industrial metaphysics. The whiteness of milk might offer itself up as a palette, or as a canvas on which to test out colouring: milkshakes tinged pink or green, rainbow-coloured ice creams, the tonal array of yellow cheeses, the cereal milk turned chocolate brown. Milk has absorbed colours. It has also provided colour. Milk was the matter used for some of the first paintings – the models of boats and people and furniture exhumed from Tutankhamen’s tomb were painted in milk paint, milk mixed with lime and iron oxides and other earth pigments. Milk is white. Milk is every colour and so milk has also been black, black in the mind’s eye. As Paul Celan put it in his poem from 1944 titled ‘Death Fugue’: ‘Black milk of morning we drink you at dusktime, we drink you at noon-time and dawn-time we drink you at night, we drink and drink.’ Celan’s black milk is a perversity and a necessity. It is other to itself, wholly defamiliarised, a horror that must be imbibed without respite. For Elif Şafak, *Black Milk*, the title of her book on motherhood and writing, is a reference to postpartum depression and it ‘shows that mother’s milk is not always as white and spotless as society likes to think it is’. Out of that negativity, though, she claims, comes something generative: ‘out of that black milk I was able to develop some sort of ink’.

There is another world of black milk, as Marcus Wood calls it, the milk of the Black slave mother, milk that flowed from the breasts of the Mammy and the Mãe Preta into the mouths of white infants for four centuries in Brazil and North America, while their own children were compelled to go hungry or had to be fed on dirty water and animal milk.¹

In Gaston Bachelard’s *Water and Dreams: An Essay on the Imagination of Matter* (1942), water is presented as a dream liquid, cleansing, pure, as fluid as the imagination. But milk – opaque, catalytic, combinatory – flows in more directions than water. He expresses something of the complex fullness of milk and how that lends itself to a poetic annexation.

*I’m brimming over.
My breasts are overflowing!
Milk. Ink. Nursing time.
And me? I’m hungry too.
The milky taste of ink!*

Helene Cixous
Coming to Writing, HUP, 1992



↑
Monumento à Mãe Preta
Sao Paulo, Brazil, Júlio Guerra, 1953

¹
Marcus Wood, *Black Milk*, OUP, 2013

When a poet tells us of the secret of milk, he is not lying, not to himself or to others. On the contrary, he is finding an extraordinary totality. As Jean-Paul Sartre says, 'we must invent the heart of things if we wish one day to discover it.' Audiberti informs us about milk in speaking of its secret blackness. But for Jules Renard, 'milk is hopelessly white, since it is only what it seems to be'. Here we can grasp the difference between the dialectics of reason, which poses contradictions in order to cover the entire range of possibilities, and the dialectics of imagination, which would seize all that is real, and finds more reality in what is hidden than in what is visible.

Gaston Bachelard, *On Poetic Imagination and Reverie*, quoting *L'homme ligote* by Sartre, Spring Publications, 1971.

Beet Red
Baffron

Milk is a whole. Whole milk. Milk is comprised of an 'extraordinary totality'. In milk all contradictions can be contained. Sartre, in discussing Audiberti's line, insists that the 'secret blackness of milk exists' and that it is true that the word 'blackness' gratuitously destroys the essence of milk'.² The world exists, this milk exists, in its whiteness and blackness, and it is to be invented as such, imagined as such through the power of language or poetry. Out of milk arises all imagination – but not an expansive one for those who imagine milk to be white and only white and so without hope. Hidden in milk, beneath and inside that whiteness, is a multitude, another world or worlds, invisible things and knowledges. Milk fans out widely, from reason to imagination. Any understanding of a phenomenon, this one of milk, is achieved through a synthesis of the 'whole' entity. This entirety of the thing includes all that is magical, dreamlike, absurd and incredible, as well as all that is, all that is real and lucid. In milk there is blackness and whiteness and all that might be found in its spectrum of all possible and impossible colours.

There is more reality in that which is hidden than in that which is visible. For sure, milk, accessed by the imagination or by science, yields much of its reality that is unseen by the eye. A newspaper report on milk's constituents in 1929 established much that might be found in milk, through the newest photographic tools and scientific processes. In milk, hidden there, is everything pertinent from the earth's crust and its structures through to its military and media technologies.

The presence of these various elements was established by a number of processes, including drying the milk, burning it and applying electrical current in order to transform it into luminescent vapour. Spectra register on photographic plates as specific chromatic fingerprints

Alkanet
Fast Green FCF
ERYTHROSINE

Chlorophyll

emanating from each chemical element. Milk is made to reveal itself, its chemical fingerprints, through the new technologies. Through this it makes itself legible to a certain kind of photography. In its subjection to these procedures, milk is remade as an optical entity, and it becomes a subject of science, a fluid of the laboratory.

There were earlier versions of this incursion into milk in order to open out its opacity, to find what is hidden in it, what can be brought out of it. For one, Edward Hussey Delaval in his *Experimental Inquiry Into the Cause of Changes of Colours in Opaque and Coloured Bodies* used milk coagulated with boiling Oil of Tartar to explore the spectrum of colour. 'It passes', he notes, 'through every gradation of yellow, orange and red as it thickens'. As it dilutes it turns blue. 'Thus', he announces triumphantly, 'from one and the same liquor, the five first colours of Sir Isaac Newton's table are produced in their regular order, in proportion as the component parts are united into larger masses'. Milk provides the proof of Newton's shattered rainbow.

That milk is the substance in which chromatic ranges are monitored finds a parody-echo in today's plethora of frozen novelties. Matching the full colour spectrum of mineral crystals, milk ice crystal products cascade in kaleidoscopic colours, drawn out from their permitted additives. These chemicals allow for the production of Superman ice cream, in primary brilliance of yellow, blue and red, in banana, blueberry and strawberry flavours or Morelli's Blue Bubblegum ice cream sundae, scoops of blue bubblegum and vanilla, with 'authentic blue bubbly sauce, multi coloured chocolate beans and a bubblegum surprise'.

Aluminium Metal
Sunset Yellow FCF
Amaranth
Allura Red

Seven surprising elements have been found in cow's milk. They are substances never before identified in the lacteal fluid. One of them is strontium, which is the basis of the red fire of July Fourth celebrations. Another is titanium, an element that supplied the smoke screens of the World War, Vanadium, well known in building and commerce; lithium, which has lent its name to some kinds of springs, and silicon, one of the main constituents of the earth's crust, are among the finds. The others are rubidium, which makes silvery coatings on the inside of radio tubes, where it absorbs gas, thereby preserving the vacuum and the service of the tube; and boron, which is exhaled by volcanoes as boric acid. Discovery of these elements was made possible by recent developments at Cornell University in spectroscopic photography.

Miami Daily News-Record, Oklahoma, Thursday, April 4, 1929

Annatto
TARTRAZINE
Riboflavin
Saunderswood
Iron Oxide
Cochineal
Carbon Black

Anthocyanins

² The Writings of Jean-Paul Sartre, Vol. 2, NU Press, 1985

Turbo, turbidity, tobio, trouble

Milk offered the proof of Goethe's colour theory: that nature is suffused by a rainbow of infinite variations and the eye that sees plays its part in visioning. Milk is a turbid substance, as a result of the casein protein's fat content. The molecules that make up milk's turbidity scatter and deflect light uniformly throughout the visual spectrum. In his explorations of colour, Goethe replaced his own earlier interest in light with a concern for turbidity. Turbidity describes a cloudiness or the presence of particulates, which makes of a substance a medium. Without a medium, Goethe insists, there would be no colour. Turbidity produces the experience of colour, intensifies or decreases the hues perceived. Turbidity is no obstacle to colour – as had been thought by other colour theorists, when it was considered as a blockage, a fog, a fuzz that obscured seeing. Goethe glosses turbidity as 'turbo, turbidity, tobio, trouble' – this agitation makes vision, specifically the vision of colour, possible, in its particularity. In line with this, Goethe studied entoptic colours, colours made by the eye and dependent on medium and ambience and other circumstances of cognition – against the more objectively analytical procedures of Newton in relation to optics.

In pursuit of knowledge, Goethe undertook optical experiments, such as screwing up his eyes, twisting his head, staring at the sun, and diffracting the light, in order to make prismatic patterns play on the inside of his eyelids. His account of one such trial in *Theory of Colours* reads like a description of animation, as both process and product, written at a time before animated film entered the world:

If after breathing on a plate of glass, the breath is merely wiped away with the finger, and if we then again immediately breathe on the glass, we see very vivid colours gliding through each other; these, as the moisture evaporates, change their place, and at last vanish altogether. If this operation is repeated, the colours are more vivid and beautiful, and remain longer than they did the first time.

Goethe here evokes the principles of animation: repetition, movement, hues, transience, and transformation. There is a maker, who in this case literally breathes the life into the animation, and who roughens the surface of the glass with the wipe of a finger, intensifying the colours. But what occurs is also immanent to the materials: The colours slither, vaporize, transpose, and disappear. Goethe also observed this effect inside a carriage on a frosty day, when the breath misting the windows made a surface on which appeared 'the most vivid play of colours'. The effect was all the more vibrant if the background was dark. Goethe saw animation in nature. The screens onto which he breathed were panes of glass. The pirouetting colours and shapes that appeared on them were fleeting and could not be captured. Such animation is a delicate coproduction of self and world, subject and object, whereby the viewer is also the author. The misted haze of the glass, produced by the breath of the body, is the medium of colour. Turbidity hosts the colours that appear at the edge of spiritual and physical perception. What appears has its own liveliness, its own responsiveness to the world.

Turbidity, turbid media – air, dust, moisture, cloudiness – reaches across a spectrum from transparency to milky-whiteness. Turbidity completed is pure whiteness – and it is, as such, notes Goethe, 'the initial rudiment whence is developed the whole science of chromatics'. Turbid conditions affect the ways in which colours – or more exactly light and dark – are perceived. Turbidity colludes with light and darkness. Through a turbid medium, light is yellow and darkness is blue. Turbidity might also be a psychological quality, an element of mind. It plays on the mind, clouding thinking. Turbidity in Goethe's account is on the threshold between the physical and the spiritual realms, and as such affects any perception of colour. The medium of turbidity is the canvas on which colours appear. The opaque turbid medium allows the most brilliant colours to flash up – indeed engenders the process of chroagenesis, the formation of new colours. Visible and invisible, subjective and objective factors collude in the production of colour. Colours, produced by turbidity, affect the mind. A pure yellow, on satin, perhaps, was associated with light and playfulness. Blue could not escape the pull of darkness and obscurity.

Milk, of course, is yellow and blue. Some milk, such as that of Guernsey and Jersey cows has carotene in it and appears yellow to the eye. If the fat is removed, as occurs in skimmed milk, a bluish tinge results. Milk is troubled. By troubling it further in subjecting its orderly separations and partitions to conceptual turbulence, its homogeneity is disturbed and milk is revealed as fractured and active. The filtered becomes its own filter.



WHITE SUPREMACY

Pure white milk is an ideal-type. White milk is a stabilisation of something dynamic, a fixing into a single state of something in motion. It comes to us from the supermarket shelf where it waits, apparently radiant with an even whiteness glowing through its glass or plastic vessels. Pure white milk is an exemplar, a model, norm and, as such, it is a product of our fantasy, just as it is a product of industry. Pure white milk is, by and large, a product of fantasy, though industry plays its role in making it an actuality, through homogenisation. The processing of milk into an even whiteness illuminates and enlarges it as a white presence in the world. Milk's whiteness reasserts itself ever again, as if it were a transferable characteristic, its whiteness passing from glass to body. When Herbert Hoover made an address on the milk industry at the World's Dairy Congress in 1923, he decreed that 'Upon this industry, more than any other of the food industries, depends not alone the problem of public health, but there depends upon it the very growth and virility of the white races'. Milk continues to be a fluid adopted by nationalist supremacist fantasy as we accelerate to the present day where it re-emerges as a motif for the Far Right in the US.

Milk contains lactose, which cannot be absorbed intact. It must be hydrolysed into its constituent monosaccharides, glucose and galactose, to facilitate transport across the small intestine's epithelium. Hydrolysis depends on lactase, a brush border enzyme and those who cannot digest lactose lack lactase. Many adults lack lactase. In the first months of life, the new-born is able to subsist on milk, and so the small intestinal gene expression stimulates high level production of lactase, but this is followed by a switching off of lactase expression around the time of weaning. For many humans, a downward progression of lactase expression begins when they are toddlers and is completed between 5 and 10 years of age. For some humans that expression of lactase continues.

White supremacists pricked up their ears on hearing the idea that the genetic switch that creates lactose tolerance is prevalent specifically amongst adult white Europeans. They interpret this as a marker of genetic superiority, drawing on the article in the journal *Nature* with the strapline: 'When a single genetic mutation first let ancient Europeans drink milk, it set the stage for a continental upheaval'.³ The argument suggests:

During the most recent ice age, milk was essentially a toxin to adults because – unlike children – they could not produce the lactase enzyme required to break down lactose, the main sugar in milk. But as farming started to replace hunting and gathering in the Middle East around 11,000 years ago, cattle herders learned how to reduce lactose in dairy products to tolerable levels by fermenting milk to make cheese or yogurt. Several thousand years later, a genetic mutation spread through Europe that gave people the ability to produce lactase – and drink milk – throughout their lives. That adaptation opened up a rich new source of nutrition that could have sustained communities when harvests failed.

These lactase-persistent dairy farmers are proposed as the origin ancestors of those of European descent, and their descendants retain the ability, shared by a minority of the world population, to digest milk into adulthood. The capacity to digest milk is linked to a single nucleotide in which the DNA base cytosine changed to thymine, in a genomic region located closely, or 13,910 bases upstream of, the transcriptional start site of the lactase gene. The presence of the allele is associated with higher fertility. White supremacists have adopted this very image of flourishing and blooming of a white race drunk on its white fluids, strong and belligerent as it sows its seed and conquers lands. This race is not compromised by the need to ferment cheese to reduce its lactose, as evidenced in the much older dairy settlements of the Middle East.

³ Andrew Curry, 'Archaeology: The milk revolution', *Nature*, 31 July 2013



↑
Digital stills from the video feed of
HEWILLNOT-DIVIDE.US at the Museum
of the Moving Image, New York,
3 February 2017

On Donald Trump's Presidential Inauguration Day, 20 January 2017, actor Shia LaBeouf set up an art project outside the Museum of the Moving Image in New York City, titled "He Will Not Divide US". It was to be an ongoing livestream, meant to run for the next four years of the Presidency and designed to be a 'show of resistance or insistence, opposition or optimism' in the age of Trump. People were required to approach the camera and say 'He Will Not Divide US', but very soon after its commencement the livestream was taken over by far rightists. A throng of white supremacists gathered shirtless before the camera. They jostled and chanted calls of 'Down with the vegan agenda' (which has become a proxy term to harangue all humanitarian causes, all 'Social Justice Warriors'). As they sloganeered, they punctuated their calls by gulping from gallon cartons of milk, which dribbled down their chins and onto their chests. White milk cascaded down their white bodies. The Museum of the Moving Image permanently closed down the artwork on 10 February 2017, three years and 345 days before time, because it could not cope with the 'serious and ongoing public safety hazard' created by these occupations of space. The alt-right toast the new political era of Trump with industrial milk in its plastic bottles as trophy. They foreground industrial mass-produced milk as a liquid metaphor against a 'soft' leftist-liberal alternative, against an ethics of care, and for their own anti-Semitic, Islamophobic, xenophobic, racist agendas. They parade whiteness and affirm its domination and dominance. And they mock those who would take it seriously, by insisting that it is all a joke, a mockery, a trap set for 'snowflake' fragilities.

The milk meme continued in their provocations. Social media IDs of alt-Rightists flaunted emojis of glasses of milk included in or next to them. The 'politically correct' virtue of being tolerant was recoded as 'lactose tolerant'.





eyes wide



When groups of humans found that they could domesticate certain species of animals and use them and their products for human consumption, it meant they could live with their food sources, develop mutuality, and, finally, control them. Agriculture develops from this, and there emerge technologies of ploughing, irrigation, fertilisation and draft animals, used on permanent farmlands. The meanings of this co-development of animals and humans are myriad, developing across time. Goya's *Still life of a Sheep's Ribs and Head – The Butcher's Counter* (1810-12) portrays something of the plethora of potential relationships between animal, human and carcass. The sheep is in a liminal state between animal, corpse and meat. Its eye stares out of the canvas to meet ours in case we try to forget our mutuality. Eyes – these are windows to the soul, these things that lovers gaze into, these vectors to selfhood and otherness and master-slavish questions of recognition, these organs that soak up the sublime, and cannot turn away, as when Heinrich von Kleist saw Caspar David Friedrich's *The Monk by the Sea* (1810) and said 'it is as if one's eyelids had been cut away'.⁴

These eyes persist through ETA Hoffmann's *Sandman* story: The Sandman throws grit into the eyes of children if they will not go to bed and he takes their bleeding eyes and carries them to the half-moon to feed his children in their nest, their beaks hooked like those of owls and they peck with them at the eyes. Animals unleashed on our eyes, jabbing at them in revenge for all the death we brought to them. The tortured hero of the story, Nathaniel, is persecuted by eyes, including those of the beautiful automaton Olympia, whose innards are formed of clockworks and whose eyes have been fitted by Coppola, the Sandman, and this beauty plays the harpsichord and sings and dances with perfect rhythm, but speaks only the words 'ah, ah', and one day Nathaniel will see Olympia's eyes ripped from their sockets and lying on the ground, which will drive him into madness. Eyes that can be taken in and out are Freud's eyes of castration – or Oedipus's or Lear's. Eyes hurt others over distances. Here in Goya's painting is a lamb's eye and it stares into our eye, or eyes, or it does not stare, because, it, unlike us, can no longer see. And yet.... In such a vision, we might not be able to forget the various ways in which we exist with animals, as predators, as cohabitants, as friends, enemies, as our doubles. In such a vision we might see how animals have represented in human imagination, as John Berger puts it, messengers or promises.⁵ Goya's painting was made at the time of the war-induced great famine in Madrid. 20,000 people starved to death in 1811, and Goya conveyed something of the agony in his *Disasters of War*, with sketches of dark huddles of the half-dead, men dragging their wives' corpses, children in misery. The signature on the painting of the butchers' counter is in red, as if in blood.

⁴ Frederick Burwick and Jürgen Klein, *The Romantic imagination: literature and art in England and Germany*, Brill/Rodopi, 1996

⁵ John Berger, *Why Look at Animals*, Penguin, 2009

Troubled images

Milk is troubled. What milk so often becomes in representations is a motif of that which has been taken possession of – whether by a divine or sacred force, or rinsed out in industrial standardisation, or captured for bucolic fantasy. It becomes abstracted, abject, violent, ejaculated. Milk absorbs into its rainbow body the tensions of this white world, this colourless environment of process and punishments. Think of an image of troubled milk, milk in a glass, spilt milk, milk in a push-me pull-me between light and darkness and the troubling edge between them, their struggle, as Goethe puts it, that speaks, about obscurity, about whether obscurity is a non-knowledge, a knowledge of nothingness, or allows a new mode of seeing or the new to be seen at all. Turbidity speaks to the dark-lightness of photography.

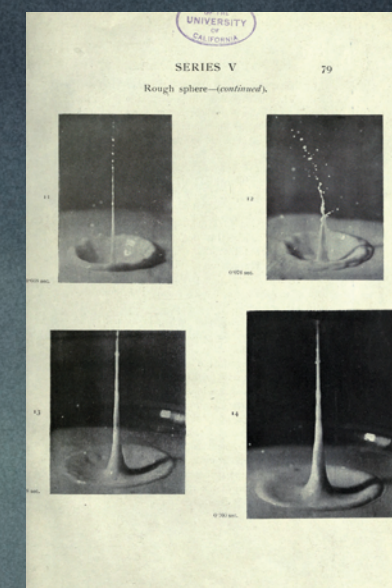
Milk communicates with the lens in pursuit of death and disease. Microscopes stare into raw milk, watching and counting bacteria and somatic cells, and, in this act, remind us that body fluids formed some of the earliest matter for the microscope. Inside this fluid, invisibly small, work away the smallest parts, the smallest things. In 1646, Athanasius Kircher magnified the blood of fever patients and found much of interest there.⁶ In 1658, in his *Scrutinium Pestis*, Kircher wrote of deadly microscopic 'worms' in the blood of plague victims – it is impossible that he could have seen the bacillus, but rather, was probably viewing pus cells or red blood cells.

Leeuwenhoek, the lens grinder, saw much through the microscope, including dental tartar, crystals of sodium urate that form in the tissues of gout patients, dogs, pigs, molluscs, amphibians, fish and birds, even his own sperm. In 1683, he saw the lymphatic capillaries, containing 'a white fluid, like milk'.⁷ As Leeuwenhoek and the other seventeenth-century

pioneers of microscopy looked into the body, they found it teeming with other forms of life. For some it confirmed belief in the power, majesty and the ubiquity of God. For others, it profoundly altered humanity's position in the cosmos. The cosmos was suddenly much larger and infinitely more complex, everywhere populated with life, previously unseen. Humans became less central. This new tool to explore the invisibly small made it visibly large. Over the eighteenth and nineteenth centuries, deciphering which of these worms were good (sperm) and which 'bad' (bacteria) became a quest. The molecularisation of life discovered under the microscope was so unexpected and so radical that, even in 1840s, when higher magnification microscopy revealed ever more detail, it still took decades to be universally accepted – and was still a novelty in 1903 when the Francis Martin Duncan program of films billed as *The Unseen World* screened at the Alhambra Music hall in 1903. *Cheese Mites* was the smash of the show. The image of the mites scuttling around on screen enlarged to the size of monsters created a sensation in the audience. Spectators were at once fascinated and revolted by what they saw. Technology opened onto an activity that existed whether humans knew of it or not.

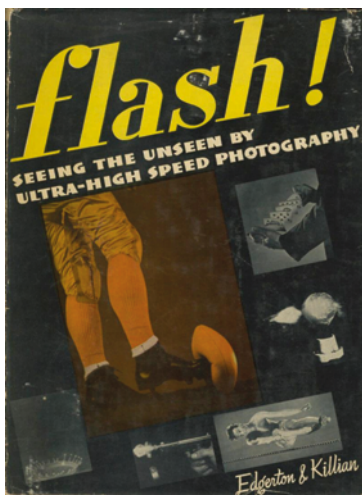
Milk met the camera as its perfect accessory.

From the early days of photography, there was an interest in photographing liquid, making a record of its shapes and trajectories. What could exhibit the powers of photography better than the freezing of fluid, caught as it splattered, spilt or gushed? But water lets light through and evades visibility. Milk, opaque, even in tone, pale, outlined itself before the camera, filling out its dribbled contours or leaping into its splashes or sprayed coronets and fronds. It is not a person stepping out, but material in movement that captures the imagination here. A horse's gait – and all animal locomotion – was analysed by Eadweard Muybridge, but what milk might do as it hits a surface was less unknown. A.M. Worthington observed and photographed for thirty years the collision of a milk drop on a surface, making visible evidence for the science of fluid dynamics. These observations were published in 1908 as *A Study of Splashes*. What was at stake here was the gaining of knowledge for a more violent activity, for the milk drop studies were providing information for ballistics research. Worthington, for one, was awarded the Order of Companions of the Bath for his services to warfare, as the droplet could be substituted by a bullet. Bullet trajectories, their flight behaviours and effects, could be mimed in milk. That which is associated with the establishment of life in its early days is re-routed for purposes of death.



⁶ John Edward Fletcher, *A Study of the Life and Works of Athanasius Kircher*, 'Germanus Incredibilis', Brill, 2011

⁷ *The Collected Letters of Antoni Van Leeuwenhoek / Alle De Brieven Van Antoni Van Leeuwenhoek*, Vol IV 1683–1684, Gebundene Ausgabe, 1951

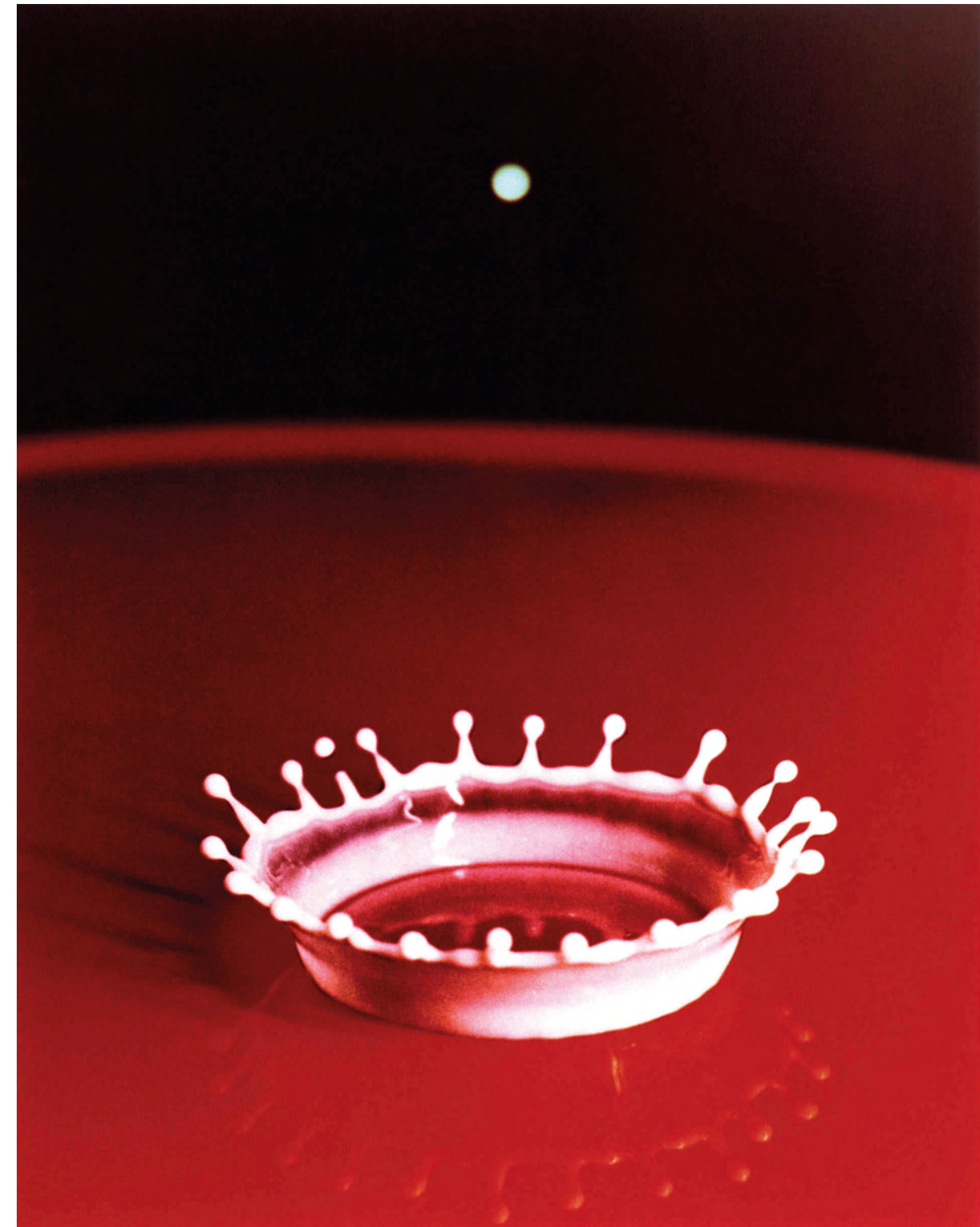


Such recordings suggest the extent to which photography might be badged a medium of death. These practices of milk and ballistics are brought together in a contemporary genre widely available on YouTube, which involves the shooting of plastic milk jugs, sometimes full of ice, jelly or maybe milk, from 300 yards or further, in US scrublands.

Papa Flash, Harold Eugene Edgerton, perfected the electronic flash and used this blitz of light to stop time. Time's interruption by light was an effect he had noticed accidentally while working under stroboscopic conditions at the General Electric plant in Schenectady, New York, in the 1920s. From the 1930s onwards, he used his techniques and devices of freezing time in order to capture a bullet as it passed through an apple or a card. He made his name through the capture of milk drops as they hit a surface. Milk's fluid action was captured in split micro-second stroboscopic shots from 1931 onwards. The white liquid flew up into crown-like shapes. A bodily fluid, milk leapt into new bodies, eccentric shapes. Milk, through the split-second camera, had a body. This recording of the bodily life of a nourishing fluid was in itself fascinating, as much as it was pedagogical. But it was intended for other ends, ends which were already established by Worthington's work.

Edgerton photographed the splash, precisely, with his flash. His burst of light illuminated the obscure gloom of time and made an image. And image after image, each one different, but each one rendering something of an obscure knowledge of what happens when a drop of milk hits a surface. His images capture the sense of shock by which they came into being, and his techniques were immediately adopted in the promotion of commodities, becoming the standard of advertising photography.⁸ One of Edgerton's milk-drop photographs, titled *Coronet*, was included in the Museum of Modern Art's first photography exhibition in 1937. That same year, Edgerton began designing studio strobes for Gjon Mili, who became a photographer for *Life* magazine. At the request of Kodak, Edgerton set up a booth at the 1939 World's Fair in New York City, complete with a baseball-shooting cannon that allowed visitors to take their own strobe pictures. In 1939, Edgerton also published *Flash! Seeing the Unseen by Ultra-High-Speed Photography*, a collection of his photographs. It was an instant bestseller. In 1940, MGM invited Edgerton to make a stroboscopic high-speed motion picture with comedian Pete Smith. The ten-minute short, *Quicker'n a Wink*, won an Oscar. However, 'Papa Flash' Edgerton did not consider himself a photographer, but a scientist that enjoyed the cultural frisson of these frozen shots.

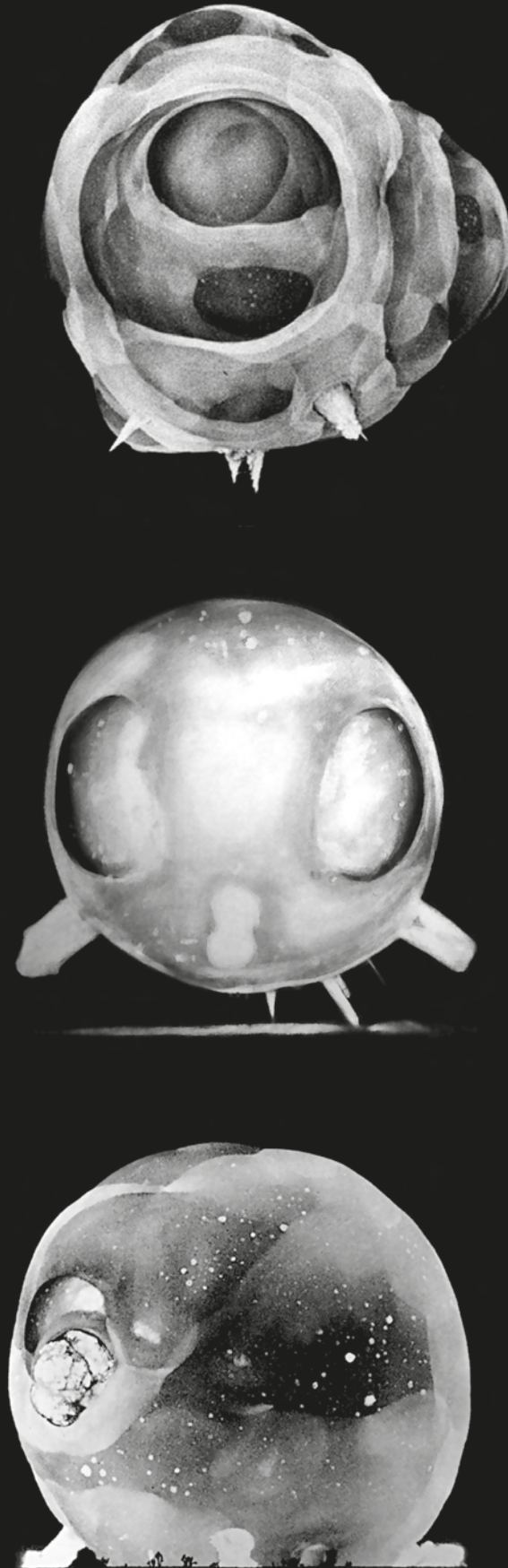
⁸ Kenneth Hayes, *Milk and Melancholy*, MIT, 2008



Nuclear

Edgerton's techniques later detonated and simultaneously photographed the H-bomb. In the years immediately following the Second World War, he created extraordinary visions of the unseeable. Having invented a camera, the Rapatronic, he photographed the massive expanding flash of the nuclear fireball in the first fractures of a second after discharge. To get the shot, camera trigger and bomb trigger had to be aligned, and the latter was based on his patent too. Edgerton's camera, with its non-mechanical, near instantaneous polarising shutter, took photographs seven miles away from the blast, one ten millionth of a second after ignition, with an exposure time of ten nanoseconds. The fireball was, within that tiny sliver of time, already 100 feet in diameter and it radiated the heat of three suns. Its blinding light was caught in a series of images displaying how the first micro-moments of an atomic explosion produced weird irregular baubles, mottled by variations in the density of the bomb's casing and augmented by protuberances caused by the speedy vaporisation of the wire support cables. The blinding irruption was stilled for the curious eye. A faraway event – operating obscurely – in a tiny sliver of time was caught by the camera. If the hot force melted the support cables of the nuclear device, along with the surrounding desert sand and the eyes of any close-by onlookers, it also provided an image of melt, of frozen novelties caught at a moment of flux.

In photographing the atomic explosion, Edgerton found a way to represent the sub-perceptual event of the unravelling of time and matter. The atomic explosion turned time and matter inside out. There was time within time and matter was inhabited by a sort of anti-form. Sand was sucked into the fireball and rained down as liquid which hardened into new nature. It made new crystals, light green ones called trinitite, atomsite or Alamogordo glass, made of quartz and feldspar. It rendered new visions of matter, of matter within matter, senseless baubles that had meaning in interstitial time and space, new bodies in old worlds. The nuclear explosion provided an image of melt, of uneven density, of sprinkles and frozen novelties caught at a moment of flux, worlds of turbidity, troubled worlds, a world troubled at the atomic level and all the way up. Edgerton's baubles are chilling. Each one a little different, each one a kind of death-head. These were not images that were seen. Edgerton's shots of explosions were seen by few, as he, or the military, kept them covert.





The atom bombs that were used in tests and the ones that were dropped on populations were often given names, like Big Boy or Fat Man, or names and dates, like newborns are, such as George, May 8, 1951, Charlie, Oct. 30, 1951, and Mike, Oct. 31, 1952. These nuclear clouds usually possessed oversized, pinkish, mushroomy heads and, together with their droopy, spindly bodies that hang below, they resembled, in a way, little babies, or maybe alien-babies or some sort of new and different nature or organic lifeform. But the nuclear body that is born here is not really its one. It is ours, our bodies that exist in the nuclear shadow.

The parameters of post-war culture might be set out, their edges represented by the hot bomb and the freezer dessert, the most deadly and the most innocuous. There is the 'make anything you like' ice-cream dream of consumerism – emblematised in the boundless varieties of frozen dairy treats, colourful crystals with personality, dustings, aromas and toppings, proposing a rainbow panoply of infinite possibility and a palette of luscious colours that Willem De Kooning, for one, happily incorporated, straight from the twenty-eight flavours on the ice cream counter at a Howard Johnson's restaurant. All this could be stored in the new freezers and refrigerators and proved that yours was a world of abundance, a real Milk and Honey land. And there is the looming nuclear threat that, if activated, could liquefy it all, could dissolve every upturned eyeball, every pane of glass, making each human a puddle of once-was-ness. The bomb had its own cream-iness, suggested in the testimony by William L. Laurence: 'The mushroom top was even more alive than the pillar, seething and boiling in a white fury of creamy foam, sizzling upward and then descending earthward, a thousand geysers rolled into one.'⁹ The bomb is angry foam, a wild milkshake with deadly intent. Images of this explosion proliferated and it did not take long for the nuclear mushroom cloud, with its boiling cloudy top and whirlwind tail, to sear its outlines onto our consciousness – and for it to sear worse onto others, as it came bearing a radiation that cannot be seen, but demands a certain kind of belief. In making images of the bomb familiar, familiar, in making pin-ups of them, they were taken into human lives as aesthetic events and domesticated.



⁹ Calder M. Pickett, *Voices of the Past: Key Documents in the History of American Journalism*, Columbus, 1977.

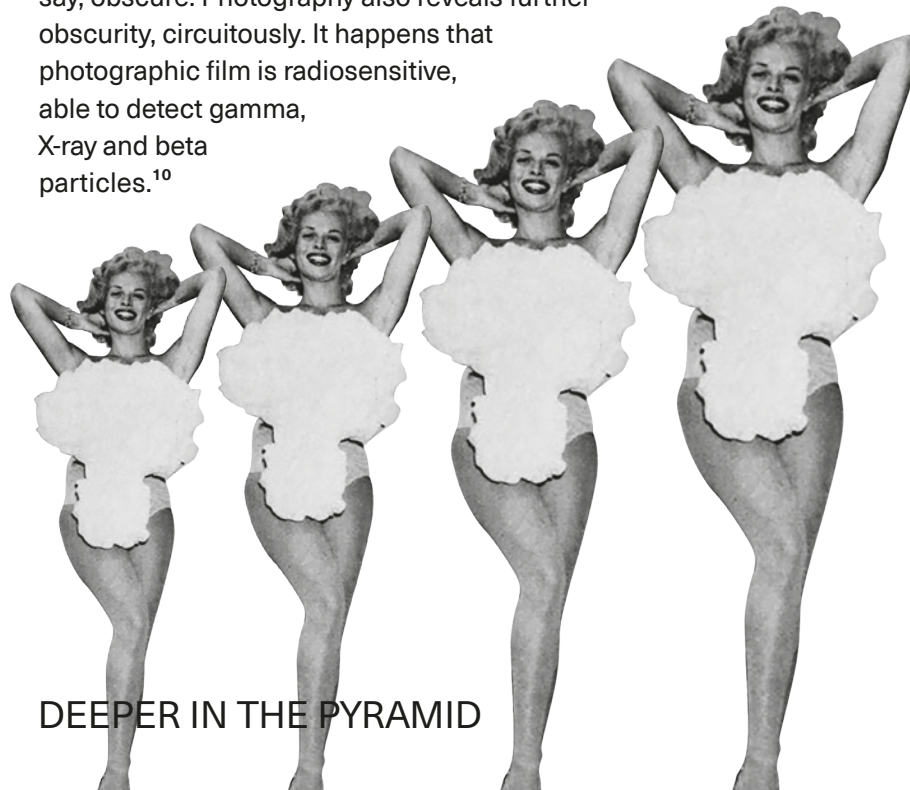


There were about twenty men, and they were all in exactly the same nightmarish state: their faces were wholly burned, their eye sockets were hollow, the fluid from their melted eyes had run down their cheeks. (They must have had their faces upturned when the bomb went off; perhaps they were anti-aircraft personnel.)

John Hersey, Hiroshima

The looming nuclear threat, if activated, could melt it all to liquid, could liquidise every upturned eyeball, every pane of glass, making every human a pool of once-was-ness. And if that does not happen to everyone, then some time later the Downwinders will sip the toxic milk in the contaminated zones and die that way. Perhaps the pin-up icon of this is a showgirl, such as Lee Merlin, Miss Atomic Bomb 1957, from Las Vegas, wearing a cotton mushroom cloud bikini, in the sandy desert, arms flung into the air. She is fluffy and menacing at once. Her bikini was named by a French engineer after the Marshall Islands atoll where an atom bomb test took place in 1946, but the logic of naming is obscured. Perhaps it stems from the explosive force of the bomb being analogous to the devastating force of the outfit on the male libido. A rival two-piece swimsuit was called the Atome. A bikini was the appropriate garment for a hypersexual, curvaceous, larger-than-life woman who might be called a bombshell. Her breasts are weapons.

In Edgerton's atomic shots, photography captured the internality of the explosion. It monitors something that was meant to be hidden away, covert and covered, that is to say, obscure. Photography also reveals further obscurity, circuitously. It happens that photographic film is radiosensitive, able to detect gamma, X-ray and beta particles.¹⁰



DEEPER IN THE PYRAMID

In 1946, Kodak customers began to complain about foggy camera film stock, when they received their developed prints.¹¹ Eastman Kodak established that farms in Indiana had been exposed to fallout from the highly secret Trinity nuclear test in New Mexico in 1945 and materials from the farms used in the cardboard packaging had contaminated the films. Kodak kept silent. The detonations continued, in the Pacific and in Nevada from 1951. Kodak knew because the company monitored radiation levels and they caught a spike in snowfall that measured 25 times the norm some 1,600 miles away from the test site. They complained to the authorities and an agreement was brokered that the film industry would receive exclusive information in advance of any nuclear testing, but no one else would be informed. Film-stock was protected. Livestock and lives were not.

This radiation entered the food supply. As the report from the National Cancer Institutes phrases it: 'As in the case of the weapons testing in Nevada, the dominant contribution to dose from radioiodine is from I-131 transmitted from ground deposition on pasture through the food chain in milk'.¹² There was an acknowledged increased risk, especially for children, of contracting radiogenic thyroid cancer, a disease that often manifests as what are called small, occult tumours, and these arrive through the 'milk pathway'. This was known by 1953, but the tests did not stop and the farmers and public were not warned until the early 1960s, while film manufacturers were provided with 'maps and forecasts of potential contamination, as well as expected fallout distributions which enabled them to purchase uncontaminated materials and take other protective measures'.

In 1957, in Northern England, there was a fire at the Windscale nuclear facility, where Pluto-nium was manufactured for bombs. The fire burned for three days and, in this immense heat, radioactivity was released. It is estimated that around 240 additional cases of thyroid cancer occurred as a result, but it is unclear how many deaths were brought on in total. There were reports of dead sheep in the fields and there were cases of leukaemia and stillbirths, but the secrecy around what had occurred meant that few conclusions were drawn. There were no evacuations, but there was a fear that the milk was contaminated. Polonium had settled on the grass and the cows had eaten it. Milk from a radius of around 200 square miles was collected and destroyed for a month.



↑
Staff at MMB Egremont Creamery pour radioactive milk into a chute on the start of its journey to the Irish Sea, following the Windscale Incident, 1958

11
Richard Lee Miller, *Under the Cloud: The Decades of Nuclear Testing*, Two Sixty Press, 1991

12
Exposure of the American People to Iodine-131 from Nevada Nuclear Bomb Tests, National Research Council, 1999

GRIDS, WHEELS AND CAROUSELS

25

10
Sameer Prasad, The Detection of Nuclear Materials Losses, *Decision Sciences*, Vol 26, Issue 2, March 1995



And let this complicated milk be welcome

power power power

let's exalt this

MILK MADE OF REINFORCED STEEL

MILK OF WAR

MILITARIZED MILK

Filippo Tommaso Marinetti wrote *The Poem of the Milk Dress*, in 1937. It was published by propaganda office of the Società Nazionale Industria Applicazioni Viscosa (SNIA Viscosa). Dedicated to Il Duce (Mussolini), it was a celebration of the new fabric Lanital, fashioned from casein proteins, from an industrial excess of skimmed milk. Italian milk ripped from the domain of nature and made into an industrial force, better than nature, modernised, displaced from farm to factory, revitalised. Giacomo Balla's "Futurist Manifesto of Men's Clothing" 1914 manuscript advocated clothing be re-crafted from "new revolutionary materials,"; paper, cardboard, glass, tinfoil, aluminum, rubber, fish skin, hemp, and gas. Lanital was futurist milk.¹³ The milk of the autarchic fascist future that had been made real by the invention of this artificial fabric of blazing whiteness. It was a transformed substance for the new Italy of electrical power-system grids, motorway networks, future fabrics and ultralight, brilliant, lasting new metals and glass. The poem was accompanied by Bruno Munari's photomontages of human intestines and stomachs with industrial boilers, flowing milk, flowing tanks and aerial squadrons. Lanital, the army and the state marching towards new horizons. (In actuality, when it got damp it gave off a sour milky smell, it grew weak and lost its shape over time).

Marinetti's poem sings praises to 'the ideal European milk' which responds to the command uttered by Mussolini 'Milk divide yourself'. The milk yields to factory process – the poem describes how casein is separated, cajoled into solid masses, then spun into luminous threads and these filaments are industrially woven, or gridded, into fabrics. Lanital is described as a 'hard man', a solidified cheese form, whereby cheese, analogy for the moment of human origin, a fixing by the male seed of the uterine blood into an embryonic person. The processing does not stop there. The human must be collectivised. Lanital becomes a heroic nation.

¹³ Jeffrey T. Schnapp, 'The Fabric of Modern Times' *Critical Inquiry*, Vol. 24, No. 1. (Autumn, 1997)



Border Force

The existences of humans and domesticated animals are woven together in the emergence of civilisations – for alongside permanent farmlands come writing systems, mathematics, monumental buildings, such as pyramids and palaces, and territories that need protecting. Co-relational to theories of animal domestication are representational art and an abstracted alphabet, which are the nexus of one evolutionary cultural trajectory that resulted in the Western European canon. The excesses of supply generated by intensive agriculture are seen to have catalysed professional specialism, social hierarchy, gender division, organised religion and global trade networks. Refinements in terms of how supply is managed through the systems of capitalism, have implications for the relationship of humans and animals and results in separations, separations between people and animals and between people themselves, made concrete in the containers of habitation and work.

A cross section of today's social structure would have to show the following: At the top, the feuding tycoons of the various capitalist power constellations. Below them, the lesser magnates, the large landowners and the entire staff of important co-workers. Below that, and in various layers, the large numbers of professionals, smaller employees, political stooges, the military and the professors, the engineers and heads of office down to the typists; even further down what is left of the independent, small existences, craftsmen, grocers, farmers e tutti quanti, then the proletarian, from the most highly paid, skilled workers down to the unskilled and the permanently unemployed, the poor, the aged and the sick. It is only below these that we encounter the actual foundation of misery on which this structure rises, for up to now we have been talking only of the highly developed capitalist countries whose entire existence is based on the horrible exploitation apparatus at work in the partly or wholly colonial territories, ie, in the far larger part of the world.

At the base of this great monolith, below the exploited workers of the world, come the final co-habitants of the city: animals. Below the spaces where the coolies of the earth perish by the millions, the indescribable, unimaginable suffering of the animals, the animal hell in human society, would have to be depicted, the sweat, blood, despair of the animals.

Max Horkheimer, *Dawn and Decline* (1926-31), Seabury Press, 1978

In the final lines of his extended metaphor, Horkheimer notes that the 'basement of that house is a slaughterhouse'. At its top is a cathedral, a place where moralists and philosophers, pursue discussions on the uppermost floors, with no knowledge of the true height of the building in which they sit. These intellectuals have not explored its basement, its basis, its lower floors. Ignorant of what is happening, vague in their sense of the world and its parts, they prattle about 'man in general' rather than the 'concrete individual'. In the basement is raw material, not deceased but on its last legs, and still sentient enough to feel despondency, as dead meat, worked skin, milk, butter and cream, this animal material climbs up

the storeys. Horkheimer's image illustrates the ladder of industrial imperialist life, loaded up inside a tower, each floor, as it descends, more removed from social power and wealth. The image is one of a skyscraper, though it might be understood as an image of an economic pyramid. In the lower floors exist the masses of exploited workers of the world, and beneath them, in the gloomy cellar, the herds of animals who line up for their use and killing. Humans and animals share the building, but their territories are separate. Separation is the structure here. Humans are separated from those who are not of the same status, thinkers from doers, workers from capitalists, just as animals are separate from humans.

The slaughterhouse enlarged its operative capacity in the early twentieth century. The hellishness of the slaughterhouse intensified with the invention of twenty-four hour disassembly lines. The swiftness of the labour entails that animals are heated, stripped, taken to pieces while still alive. The slaughterhouse and meat packing industry performs an allegory of capitalism's aptitude to destroy nature. A spatial separation is at work in the meat industry. Nature used to be killed in the city where it would be consumed. Now it is more likely to be exiled from the city and to return only once dead and under plastic. Over time, the slaughterhouse of the city moves further out (and in New York, at least, the meatpacking district made way for art, which prompts a veneer of re-humanisation of a location). New factories are built for these purposes, remote and deserted.





↑
Cows with cannula, pictured, in their sides that are cut directly into the cow's digestive tract, and fitted with a plug. The 8-inch (20cm) holes allow to see how food is being processed, and to analyse the animal's energy efficiency. Microbes are also bred in the stomach for pharmaceutical applications.

¹⁴
allweathermarker.com/assets/1/31/eng_ffaswinebrochure.pdf

¹⁵
Max Horkheimer, 'Zum Commerce', *Gesammelte Schriften, Vol. 12: Nachgelassene Schriften 1931-49*, S. Fischer, Frankfurt/Main, 1985, p. 308. See also the chapter 'Gastric Juice for Sale' in David P. Todes, *Pavlov's Physiology Factory: Experiment, Interpretation, Laboratory Enterprise*, Johns Hopkins University Press, 2002

¹⁶
Max Horkheimer, *A Life in Letters...* University of Nebraska Press, 2008

¹⁷
Berger, *Why Look at Animals* Penguin, 2009

'Grow Finish Units' is the appellation of unmanned pig production factories. These are prevalent in the Great Southern Plains of the USA. Inside enormous drab structures, thousands of pigs feed off corn grown from nitrogen made of oil and gas. They receive this nourishment through automatic feeders. An industry brochure from the industry states:

In the finishing building, pigs gain 1.5-1.7 pounds a day for approximately 20 weeks until they reach a finished weight of 260-280 pounds and are ready to be shipped to a plant / packaging operation.¹⁴

At a specific moment, a truck turns up to take the pigs to be killed. They leave behind their overcrowded, highly-stressful barren concrete pens, where they become sickly and belligerent towards each other. Through the arrangements of such an industry, animals are disaggregated from humans. They also become alienated from each other.

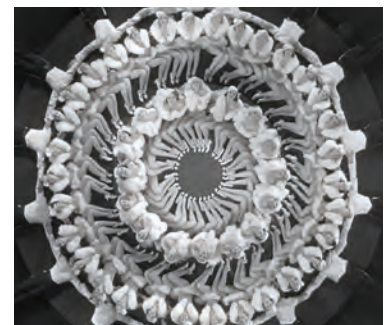
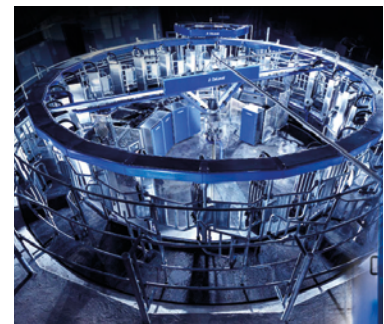
But while there are separations between humans and animals, there are also extractions that bring human and animal together again, even if in a one-way relationship. In notes written in New York in 1945, Horkheimer articulates his revulsion at learning about an invention allied to Pavlov's experiments in conditioned reflexes. He mentions 'The Medical Brief' on the Pavlov Pouch Dog, a dog with an artificial opening in its stomach and oesophagus. The dogs bolt down pieces of meat and these bits fall back out through their throat into the feeding bowl again, to be wolfed up again. In the course of this, large quantities of gastric juice are produced in the dogs' anticipatory stomachs. This is collected for commerce to be sold as appetite juice, a remedy for dyspepsia.¹⁵ In a strange segue, Horkheimer notes that he was given a stylish pig's leather tobacco pouch as a Christmas present. An object from his everyday life, one made of the remnants of an animal, prompts in him a memory of this perversion of animal digestive functions. In that same year, Horkheimer wrote to Ned R. Healy, a Member of Congress, to beseech that he vote for a bill inhibiting vivisection on living dogs. 'The vivisection laboratory is the practising ground of the death camp', he writes.¹⁶ Everything rehearsed on animals is later practiced on humans.¹⁷ This is nowhere clearer than in the dairy industry in its pioneering of genetics, fertility treatments, algorithmic decision making and data analysis. The technosciences of hormone and genetic 'therapy' were pioneered in the investigation of milk and lactation. Chemical affectivity from insulin to oxytocin and mothering, replication and social reproduction is rehearsed on cows.

Cattle are controlled by the presence of a grid, a structure that their hooves find hard to traverse. It hems them in, but subtly. Around the cow has grown another grid. The cow has been fitted into a grid, in order to take possession of the body of the cow. That is to say, the cow and all its products have been thoroughly rationalised. Liquids and gases can flow. Solids keep their shape. Gases can be compressed. As liquid, milk can drip freely, but in our social practice milk is caught up, shaped, formed in to standardised objects and directed along specific pathways. As milk flows it maps out a geometry of capitalist power.

Bourgeois society attempts to plot out straight lines in its social forms, even as the crowds themselves repeatedly refuse or fail to follow the grids, bumping into each other instead and agitating in open spaces, atom-like. The patterns of the masses permanently disintegrate. Those who experience such collapse find evanescence to be a buzz and they enthusiastically submit themselves to the frenzy of city entertainment. And, likewise, even in freeze-framed photographs of milk coronets, of milk splashed on a surface and caught by a fast camera, it is possible to see something of milk's unruly, exuberant self-shaping. The patterns are unpredictable. The milk that sprays into the skies of pre- and early modern myths and paintings makes a heaven full of randomness. The crowds that pervade the modern city scene may not act in the same ways as the crowd simulator packages foresee, the pre-programmed predictable ways. There is overspill and there are sudden rushes and what triggers these movements is hard to discern. A society that prizes a certain sense of rationality strives to eliminate unpredictability and randomness. The skyscraper described by Horkheimer with its strict separations according to a vertical rule is an example of a distribution that follows the guidelines set by capital: the poor here, the rich here, ideological agents here.

More permanent, fixed patterns are achieved within capitalist modernity notes Siegfried Kracauer, in 1927, in *The Mass Ornament*, also in relation to the entertainment forms that distract the randomized masses, now subject to consumer analysis. The ornament that Kracauer refers to is not some kitsch china milkmaid statuette on a sideboard. It is a thing of geometry. It is a geometric patterning to which bodies conform. Geometrics asserts itself in an urban space that is subjected to the power of choreography, presented as spectacle, but akin to militaristic display: troupes, troops, revues, parades. Kracauer observes the dance displays in the popular revue shows, where troupes of women, such as the Tiller Girls, constituted an 'ornament' made out of countless bathing suited bodies.

G
r
i
d
s



This entertainment form flourished in German cities from the mid to late 1920s. The revue was formatted of short scenes or numbers, maybe sixty in an evening, with sudden changes of mood, stage set and theme. They were huge affairs, for example, in the 1926-27 season, nine revues played nightly in Berlin to eleven thousand spectators.¹⁸ All over the world, in identical stadiums, in Australia, India, the US and Germany, 'performances of the same geometric precision' took place, with displays of 'girl clusters whose movements are demonstrations of mathematics. The patterns formed are purely ornamental, 'a linear system'. They signify nothing but themselves. They 'have no meaning beyond themselves' Kracauer explored capitalism's tendency to make culture topological.

The ornament, detached from its bearers, must be understood rationally. It consists of lines and circles like those found in textbooks on Euclidean geometry, and also incorporates the elementary components of physics such as waves and spirals.

The ornament presents itself as rational, mathematical. The ornament is a closed system without substance, morality or sexuality. Furthermore, these ornaments of bodies indicate an imbalance in power relations. These are not self-animated entities. Choreographed precisely, the women's bodies are the bearers of patterns that they did not themselves determine. Kracauer makes an analogy between the dancers and their patterns and the patterns formed by the mass audience, sat in their ranks, directed in flows to their workplaces and sent home again through straight streets, on straight trains and trams. The masses are all facing in one direction, marshalled by the rhythm of the event. Such revues indicate an embrace of the geometric on the part of the masses. The audience affirms the events and their own regularity, finding it to be good entertainment. 'The bearer of the ornament is the *mass*'. They bear it but they do not construct it: 'Even though the masses bring it into being, they do not participate in conceiving the ornament'.

The milk that is made orderly within modernity is no less mythic than the milk of other times, the milk of the pre-modern, but it is presented as rationalised, a scientifically permeated fluid. It flows in the grid and stays there. It is marshalled and made known. It is quantified and qualified. Kracauer makes the claim that capitalism 'rationalises not too much, but rather too little', because it does not encompass humans in this rationality. It is the rationality of the grid, of the system. This is a limited rationality, one of economic principle, which works only from

the perspective of those in the upper floors of the economic pyramid. Capitalism is trapped within new myths, new fetishes and irrationalities, for those who operate the system are loathe to acknowledge its actual wellsprings, neither in the origins of life-giving, nor the importance of care and entanglement, nor in the source of labour that produces value.

In the mass ornament, the human element is expunged. Patterns are what are significant. Shapes, constellations, aggregations: all this is data. This is why Kracauer is adamant that this state of affairs be conceived non-humanly, in terms of 'aerial photographs of landscapes and cities. Similarly, in 1927, Kracauer writes a review of the 'neues Bauen' exhibition of new types of flats in Stuttgart and observes that the modern 'American' developments of Mies van der Rohe and others are not designed to be seen from their facades by people at street level, but rather are seen ideally by pilots, from above.¹⁹

The aerial elevation is the significant one. The buildings present themselves as on a plan, shapes in the landscape (and inside, too, they do this, for a new spatial language is created as traditional divisions between rooms are dissolved into a single formation to maximise light and facilitate mobility). The house is a grid. Housing forms a grid. The city is a grid. Likewise, the masses as ornament best present their contours to a viewer overhead. The ornament is superior to its object. It is imposed from above. Subsequently, under the Nazis, these patterns were appropriately perceived from above by a mechanical eye that broadcast the spectacular nature of the events in which the bodies participated in stadia to masses in cinemas. Today the masses carrying mobile devices are captured in a data grid formed by the trilateration of lines bounced off GPS satellites.

In general, the capitalist epoch elevates the geometric, the mathematical, the abstract, the inorganic. The production process itself is an ornament that arranges humans into interrelating patterns, while abstracting from their humanness, removing their autonomy or decision-making powers. Capital seeks its end in its own reproduction. It is an apparently closed system that 'does not encompass man'. It negates innate human reason in the promotion of abstractness. Kracauer makes a distinction between abstractedness and abstraction. Abstractedness 'is an expression of rationality gone obdurate', whilst abstraction is a state to be welcomed. Abstraction, as a part of human rationality is an historically achieved and welcome state. Abstraction can circumvent language, disrupt mimesis and identification. It does not allow meaning to crystallise in familiar ways, in ways that allow the old stories to re-emerge. It becomes its own reality. It heralds new possibilities,



19
Kracauer, 'Das neue Bauen', in *Schriften* 5:2, Frankfurt/Main: Suhrkamp, 1990

18
Peter Jelavich, *Berlin Cabaret*,
Harvard University Press, 1993

imaginary states beyond representation. Abstractedness, on the other hand, is politically reactionary, leading to the consumption of ornamental patterning, operating under false rationalisation rather than a more imaginatively and cognitively emancipatory reason. Abstractness 'is the expression of rationality grown obdurate'. It is unachieved rationality. It is trapped in mythology, because it has not attached the exercise of reason to human self-understanding, but rather abandons it to the logic of the economic system. Nature (including human nature) returns to the realm of the unknowable and impenetrable. It is bare nature, nature unknown. Mathematical abstractness and mysterious nature form the co-ordinates of the capitalism that Kracauer detests. Excluded is self-motivated, self-reasoning organic life. This organic life will continue to find itself captured within the grid, within the patterns that are proscribed for it.

In 1930, in *On Employment Agencies, The Construction of a Space*, Kracauer analysed the effects of these institutions on the people that used them. In them, the unemployed waited in a stuffy mist for innumerable hours. Occasionally, the situations vacant were read out. The people haunting these agencies made patterns that were as directed and banal as those of queues and they were requested to respond 'unquestioningly', as the door plate at an entrance put it, to the bark of the hall porter who had to ensure a smooth flow. The unemployed are prodded like cattle: stand here, wait there, move here, listen to this, hope, but not too much. In the corner of one employment exchange, Kracauer notices a canteen which 'offers milk for sale as the main liquid refreshment'. Another notice nearby insists that milk should not be drunk without food. 'A glass of milk, drunk down at one go into an empty stomach, forms there a clump of cheese that is difficult to digest' and so sandwiches are piled up on the counter to solve the problem identified. Kracauer observes that the images of the lump of cheese and the empty stomach are a graphic demonstration of how the human beings in these spaces stand nakedly and emptily, like the walls, as an object of hygiene.

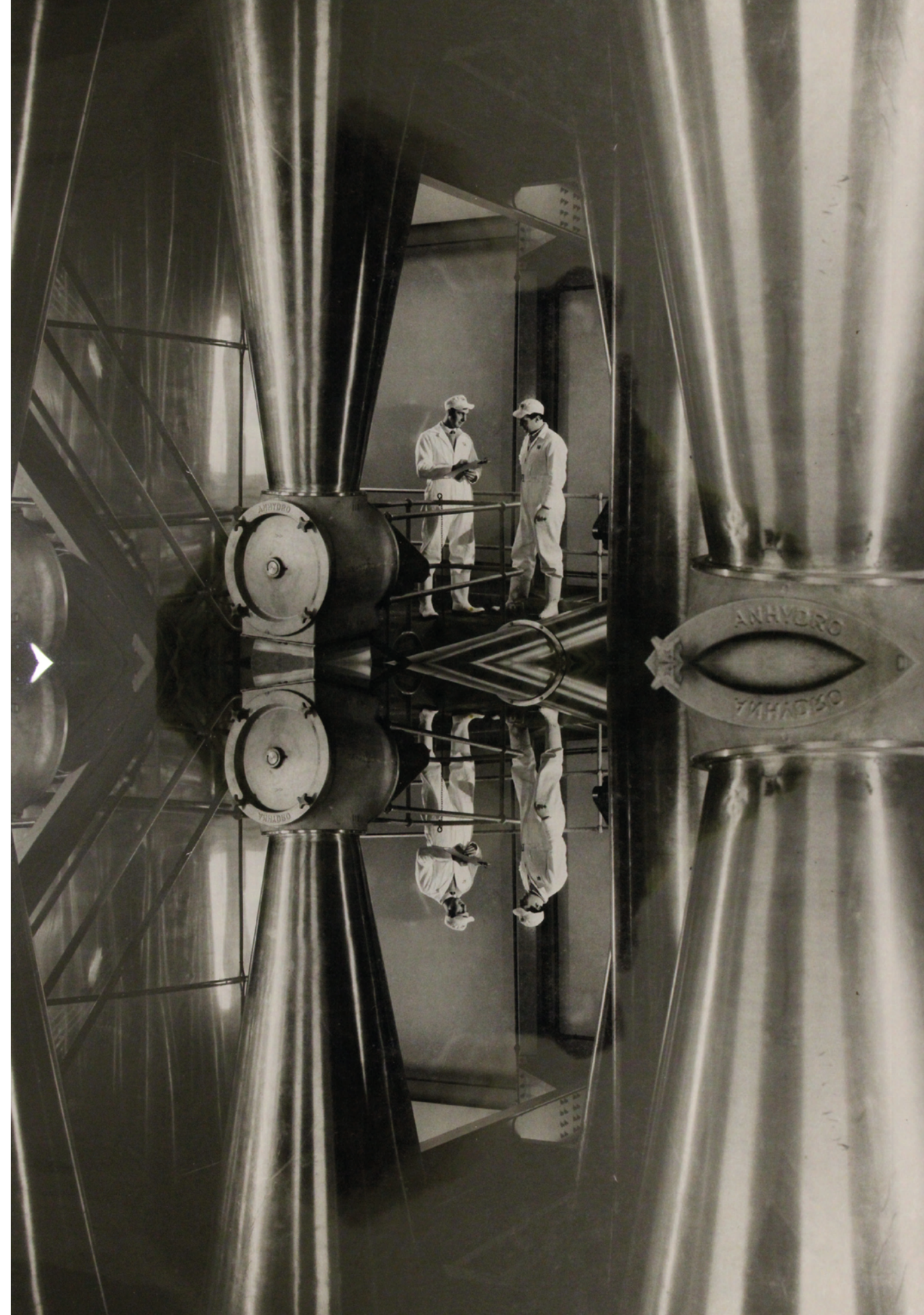
The human being is a receptacle for the minimum needed to keep him or her functioning as a system. This is a system that may yet call on him or her. Until then, they stay within those walls, not disrupting the flow, a part of the grid.

No aura graciously shrouds the bodily elements, rather the bodies step without extenuation into the shrill light of the public sphere and the human beings who belong to these bodies are still merely systems that with the introduction of milk after the preceding meal will already function.

Kracauer



Producing powdered milk with the latest spray drying technology, Milk Marketing Board 1935





Electrics

Abstractions

In the UK, the Electricity (Supply) Act of 1926 recommended that a national 'gridiron' supply system of high tension transmission lines, be created. The Central Electricity Board installed a synchronised, nationwide AC grid, running at 132 kV, 50 Hz. Coils of cables linked grid towers together and, just before the Second World War was declared, a national grid was installed and functioning. At this point, fewer than one in ten farms were connected to an electrical supply. War gave an impetus to develop national self-sufficiency in food supply and increased central government control over electricity supply. In these years, agricultural output increased as a result of government subsidies for wheat and the success of the Milk Marketing Board, but it was in the twenty years after the war that the output growth grew most rapidly. Technologies began to be adopted. In 1939, 90% of dairy herds were being hand-milked, even though machinery existed. This changed through the 1940s and 1950s to 85% milked by machine, machines powered by electricity. Pylons came to straddle the landscape. Sometimes they cut across farms. Still in the years after the war not all farms were linked to the grid. There was a protracted drive to hook up the remaining farms, to plug the cows and their farmers into the electrical network, to make them more productive, to make them consumers of electricity from the supplier. Access to the grid was heralded as a revolutionary move, and yet many farms could survive on their own generators or burning wood or peat. Milk was to benefit from the grid of electricity. Milkmen were issued with electric carts, replacing horse-drawn ones, and bypassing petrol engines. In August 1967, the UK Electric Vehicle Association put out a press release stating that Britain had more battery-electric vehicles on its roads than the rest of the world put together. By this point, the fifty-year quest for rural electrification was coming to a close. By 1972, 97% of farms had been connected to the National Grid.²⁰

Edison had imagined that the electricity system would be locally generated and distributed, but it was not to be. In the United States Roosevelt created the Rural Electrification Administration as part of the New Deal in 1935 and electricity came to farms through rural co-operatives. Elsewhere, in most industrialised countries, large-scale electricity generation and distribution – a grid – came to dominate.



The Milk Marketing Board promotes its use of innovative technology by computerising the production cycle.

20
Sherry-Brennan and Peter J G
Pearson, Spatial governance and energy
transitions, England and Wales Working
Paper 2015/2 October 2015.



A grid is a squared formation, a network of lines that cross each other to make squares within squares. The grid does not allow for deviation. The grid is fixed. Milk flows into the grid. This liquid milk enters the grid and is abstracted for economic purposes. In the grid, milk is conceived as an ideal substance in a generous grid that distributes to all and everyone. Every dairy producer will echo in their own context what the leading producer of dairy produce in New Zealand states: 'Fonterra is a global, cooperatively-owned company with roots firmly planted in New Zealand's rich land, working to unlock every drop of goodness from the 22 billion litres of milk we collect each year and sharing it with the world'.²¹

The vision is bucolic – roots planted, the rich land, drops of goodness – but it is also immense, operating in vast quantities that, by needs, industrialise processes and straddle a world market. This vast quantity is translated into graphs and grids that plot production, prices, sales, volumes, months, interest, profits, and futures.

The grid extends into the development of financial instruments called dairy derivatives, which target the future. A report from New Zealand elaborates on 'Dairy Futures' which are 'designed to manage risk and smooth out the volatility' to which in particular the milk powder market is exposed. Milk is too lively, too unpredictable on the global markets. Financial instruments – like drying out processes – will limit the spillage, the overboiling or overflows. Financial instruments integrate milk across the international markets. These instruments will increase 'liquidity' in the market, even if what they trade is dry as dust. All this they do by acting to 'create price certainty, transparency and a forward view of market sentiment'. Grids and graphs plot movements up and down in the global sales of dairy outputs, and traders hedge their bets or dash in and pull out at just the right moment. The Dairy futures traders are separated into two groups: the hedgers, who seek to mitigate risk by creating price certainty (processors, producers), and the speculators, who aim to make profits by predicting market moves. They are aided in their efforts by consulting the Global Dairy Trade reports on world auctions, which predict the fate of Whole Milk Powder, Skim Milk Powder, Anhydrous Milk Fat, Butter, Butter Milk Powder, Cheddar, Lactose, Sweet Whey Powder and Rennet Casein.

Milk's futures are traded, like everything else. But is there something in milk that allowed the very conceptualisation of this financial system. An Indian textbook on financial derivative from 2009 explains the form of the derivative in accordance with the Indian Securities Contract (Regulations) Act from 1956. To make it graphic for its student readers, it concludes its introduction with an example:

*A very simple example of derivatives is curd, which is derivative of milk. The price of curd depends upon the price of milk which in turn depends upon the demand and supply of milk.*²²

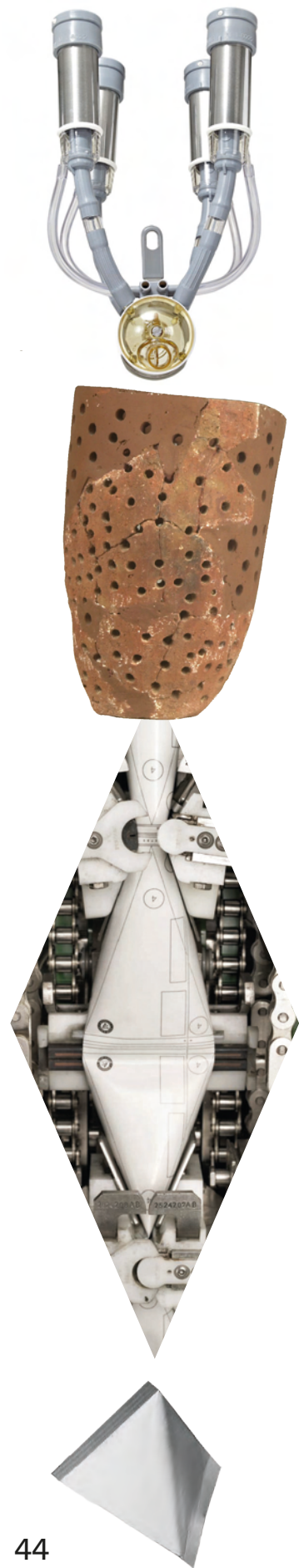
From milk and its multiplicity to a whole system of supply and demand, or capitalism.



Geometry

The concept of the 'Milk Grid' was used specifically in relation to India's national network of milk provision, which was established in the 1970s and transformed the country from a 'milk-deficient nation' into the world's largest milk producer by 1998. This program, also dubbed 'the White Revolution' and 'Operation Flood', was reanimated in 2015, as part of a project to stimulate liquid milk trade across South Asia. This was in order to push out the imports of milk powders from elsewhere. The grid is a powerful image describing a network that goes from cow to kitchen and covers an entire territory. It was modelled on the grid-like network of operations pioneered by the Milk Marketing Board in the UK, which oversaw an integrated structure, from mechanised milking sheds, to tankers, to railway distribution – everything was incorporated and expanded in its grid.

The grid is an abstraction that functions in a phase space, illusorily working within an impossible time-space conceived without contradictions. The milk grid extends from a motif of milk management in modernity, enmeshed



with ideas of 'progress', to the standardisation of operations, from insemination, gestation, feeding, to extraction purification, bottling and processing to the precision of the bottling plant, the outputs of cubes or triangles of cheese, and so on. The grid produces geometric forms and the more everything is standardised, the sharper the angles, the more Platonically ideal the shapes.

Modernity in dairy production involves the shift from hand crafted processes (first technologies of clay to make sieves, and vessels) to wood and glass (churners and pats), to metal and mechanical processes in the nineteenth and twentieth century, to robotics and digitised operations of the twenty-first century. Robotic systems can now milk, clean and feed the beasts, process and package the produce. Every eventuality must be corralled into the milking carousel. Every udder captured by the robot. Every drop of milk passes through the analysis machinery and, if fit for purpose, into the package without contamination by anything. In the contemporary optimised dairy operation, there is no human contact between cow and human other than when milk enters the mouth. There are geometries of milk that have emerged to ascertain quality at the level of milk's micro and macrostructure. In testing butter, for example, penetration and compression tests deploy a range of geometries – cone, needle, cylinder, sphere and plate. A cone enters the butter at a constant speed or with a constant load, to establish product hardness or firmness.

The packaging firm Tetra Pak added an additional Platonic geometry, with its white tetrahedral milk packs and their hexagonal geodesic supermarket stacks. These entered the dairy market in 1952 in Sweden – tetrahedron-shaped 100ml cartons of cream, swiftly followed by larger ones containing milk and the worldwide proliferation of its factories. The Tetra Pak is generated from a never-ending column of streaming pure aseptic milk. The innovation that created their success was based on the observation that a tube of milk can be poured endlessly and bisected laterally to create a pyramid form, never contacting air, hand or machine. It is a promise of a standardized, aseptic, readily available sustenance, not dependent on any duty of care or species interaction. In its sterility, regularity and rigidity, it is as far away from a mammary gland as imaginable.

Milk is rationalised, and in the process becomes an emblem of rationality as it flows through the grid. Tetra Pak's Platonic pyramid cartons morphed from solid form as packaging into conceptual strategy and economic principle. Tetra Pak currently sells 500 million packages a day. The ideal form of the milk carton emerges into a subprime market of milk. Western markets are turning against cow's milk as a degraded

substance and are adopting niche alternatives – raw milk, plant milk, organic milk. The Platonic forms and messages of health are now pitched elsewhere, in other countries where small increases in wealth increase the demand for protein and milk and aseptic packaging is one that wins confidence amongst 'tomorrow's middle class', as Tetra Pak president and chief executive Dennis Jönsson's noted, in a line that speaks as well to the derivatives market's speculators.²³ Tetra Pak's recent corporate strategy: 'Deeper into the Pyramid'. It works to insert itself into developing economies – to that mass of humans at the bottom of the economic pyramid – via a prescient geometry. The minimalist modernity is now conceptualised as an economic principle that will insert its white arrows into the economic pyramid and try to use a new asset-stripped return, radically more pervasive than that creamed off from an exclusive market. 'A large proportion of Ali's customers earn between Euro 1.80 and Euro 7.20 a day, putting them firmly in the Deeper in the Pyramid consumer category that the Boston Consulting Group has identified as the 'golden opportunity' for international companies'.²⁴

Tetra Pak acknowledges that tapping into this market takes adaptation. The question is how to make products that are 'affordable, available and attractive to consumers



on limited incomes... without adding unsustainable costs.' They use alternatives to whole milk – such as whey or lactic acid and other low value milk derivatives. Modifying, or tweaking the recipe can involve replacing a more expensive ingredient with a cheaper one. Tetra Pak also work with govern-

ments to implement regulations making it illegal to pasteurise milk at home, or to supply this 'loose' milk.

Tetra Pak has over the years developed blocks and bricks and, more recently, a bottle shape for ambient milk, which is formed in the Tetra Pak machinery from a continuous line of packaging, while the milk flows into it, in a constant stream, just like all the others.

How do you get all the convenience of a bottle shape into a carton package? Tetra Pak took on the challenge and the result is Tetra Evero Aseptic – a modern carton bottle whose shape harks back to the milk churns and bottles of the previous century. Consumers love its air of authenticity...



²³ arena-international.com/liquipack/-tetra-pak-emerging-markets-to-drive-dairy-industry-boom/1296.article

²⁴ Tetra Pak 104, *Deeper In The Pyramid* 2015: 3



the Old Moloko

BEAUTY
Begins in a
MILK BAR



The state wanted milk distributed. The state took action. As part of the emergent milk grid, milk bars were introduced to the UK in the 1930s, with a new raft following in the 1950s and 1960s. The Temperance Society encouraged the spread of Milk Bars to the United Kingdom from colonial Bangalore, as challenger to the pub and by the end of 1936, there were many in existence. A newspaper report from February 1937 evidenced the popularity of the milk bar.

In his newly-rented first-floor Fleet Street office 17 months ago, an ex-miner, the Hon. Hugh D. McIntosh sat ruminating on the possibilities of selling milk to the nation in a new way. Across the road was the 'Cheshire Cheese' hostelry, famous haunt of journalists. Thought McIntosh: 'Why not sell milk across a bar, like beer?'

Britain's first stool-and-counter milk bar was born a few weeks later. People laughed at the idea of selling milk in Fleet Street. By the end of the first week they were gasping. The bar was packed out. Reporters who had never before been heard to call for anything weaker than Burton, were passing their tankards up for strawberry shakes.²⁵

'All are under the paternal eye of the Milk Marketing Board', observes the article, as it went on to discuss the rapid spread of the institution.

Milk is mobile. Advantage was taken of the technologies of speed. In the nineteenth century, milk was sped from the countryside to the city by train. This new vehicle of the 1930s was a prefiguration of the ice cream vans, Misters Whippy and Softee, who would come to entice children in the 1950s with their Pied Piper chimes. The addition of electricity, in the vehicle, as in the bars and kiosks, was a crucial aspect, for it allowed the milk and other dairy products to remain cool or frozen, but also made possible the proliferation of forms through the technologies of blending with electric whisks: phosphate drinks, egg drinks, malted drinks, sodas, water ices, milk shakes, 'fancy' drinks.

²⁵
thereshposh.com/NMB/emails/email
_001/nmb_opens_1937_report.html



The Milk Bar was a place designed for a newly cash-rich demographic; independent young people with disposable income. Milk Bars and ice cream parlours were a means to monetise a new social group – emerging teenagers – and to encourage the drinking of milk which was a cheap, readily available protein. The Milk Bar introduced sleek lines and international modernity to the high street: ‘futurist temples of cleanliness, with bright stainless steel, polished marble, glass and myriad reflecting surfaces’.²⁶ The word ‘milksoy’ was then in common parlance and association of it with the milk bars would have made them unpopular for the targeted demographic. A leader column on milk bars in *The Times* in 1936 noted:

‘Parlour’ springs to the mind, a suggestive word. But a new venture could hardly prosper under a device with fusty and effeminate associations. The first men who stood at milk bars to consume one of the fifty varieties of non-alcoholic shakes were already victims of taunts from the public house, where ‘milksoy’ has naturally revived as a term of abuse.’²⁷

They were established to present an alternative to drinking alcohol. The first milk bar in London, on Fleet St, in 1935, was officially opened by Canon Dick Sheppard, a man of the church and temperance advocate. Connotations of the effeminate and the childish were cut away by the aseptic interior, and through the use of language, the nomenclature that masculinised the spaces. They were named after ‘bars’ rather than the parlours or rooms. Milk concoctions, all 4d a piece, were given names like ‘Bootlegger’s Punch’, ‘Blackberry Cocktail’, and ‘Goddess’s Dream’, in order to associate them with a hint of risqué adult behaviours.²⁸

The Second World War put a halt to the trend in milk bars, but they re-emerged in the post-war period. Millions of pounds of public funds were spent on campaigns to convince adult men to drink milk and identify it as part of their staple diet – removing it as far as possible in the imagination away from an udder, or a breast, or any form of intimate reciprocation or dependency. The milk bars drew the opprobrium of Richard Hoggart, as he scanned the everyday culture of working class youth. Hoggart identifies the milk bar as a place that drew out the pernicious influence of certain impulses of American culture on the British working-class. The juke box boys are ‘ghoulishly pale’ in the unforgiving fluorescent lights of the milk bar. American hits play on the jukebox and the youth affect an ‘American slouch’. For Hoggart, this is all

‘a peculiarly thin and pallid form of dissipation, a sort of spiritual dry-rot amid the odour of boiled milk’. These boys are living inside ‘a myth-world compounded of a few simple elements which they take to be those of American life’.²⁹ Perhaps Richard Hoggart had seen the same films as Roland Barthes, for Barthes in *Mythologies* (1957) commented on how the avenging hero in American films downs a glass of milk before drawing his Colt and killing. Beneath the bright ‘palliness’ of American culture, Hoggart detected a shadier and discriminatory undercurrent, something sinister in the underbelly of the American Dream. It is not mass culture in itself that concerns him here, but rather its discriminatory edge.

By virtue of milk’s very whiteness and homogenisation, under the pall of bright white lighting that is only punctured by jukebox illumination, the milk bar has an undertow of malignness. Milk promises nurture – what better symbol of nurture and care than milk? But there is something in the milk bar that offers no sustenance. Milk is abstracted from its source – no hint of the vestigial animal in these industrialised, homogenised, de-gendered fluid remains. It must be augmented with additives to further remove it from any kind of mutuality and to position it as a technical substance.

Milk bars were also established in the Soviet bloc, particularly in Poland (*bar mleczny*) – where they provided low-cost, dairy-based meals, and traditional Polish dishes, usually vegetable-based, for working people, ensuring productivity was maintained through the working day. These had a longer history, going back to the nineteenth century, but they came into their own in the Communist era, when the restaurant trade was cut back, denounced as capitalist or decadent.

Anthony Burgess’s *A Clockwork Orange*, published in 1962, merges the Soviet or totalitarian milk bar with something resembling the post-war setting of England, and thereby outlines a predicted near-future. Burgess visited Russia in 1961 and learnt basic Russian in preparation. He may have encountered the fact that there is an old Slavic word for milk-drinkers, *Molokan*, which refers to members of outsider Christian sects who were so named because they ate dairy foods during fasts. Burgess was intrigued by the internationalism of Russia’s dandified violent gangs of youth, enacting their ritualised performances of violence – so close in spirit and appearance to the youth cultures written about at home. The book’s curious language and its hyperviolent events gushed from of him in only three weeks. The opening paragraph describes a milk bar:

²⁹ Richard Hoggart, *The Uses of Literacy*, Penguin, 1958.



↑
‘Is Your Man Getting Enough?’
The Milk Marketing Board commissioned a series of iconic male celebrities to drink milk ©The Dairy Council.

²⁶
‘Milk bars’, *The Times* (London), 4 September: 1936

²⁷
ibid

²⁸
Francis McKee, ‘The popularisation of milk as a beverage during the 1930s’ ed David Smith, *Nutrition in Britain: Science, Scientists and Politics in the Twentieth Century*, Routledge, 2013

The Korova Milkbar was a milk-plus mesto, and you may, O my brothers, have forgotten what these mestos were like, things changing so skorry these days and everybody very quick to forget, newspapers not being read much neither. Well, what they sold there was milk plus something else. They had no license for selling liquor, but there was no law yet against prodding some of the new veshches which they used to put into the old moloko, so you could peet it with vellocet or synthemesc or drencom or one or two other veshches which would give you a nice quiet horrorshow fifteen minutes admiring Bog And All His Holy Angels and Saints in your left shoe with lights bursting all over your mozg. Or you could peet milk with knives in it, as we used to say, and this would sharpen you up and make you ready for a bit of dirty twenty-to-one, and that was what we were peeting this evening I'm starting off the story with.

Glasses of milk (*moloko*) appear as a motif throughout the novel. In these milk bars targeted at teenagers, milk is laced with synthetic stimulants. It leads Alex and his droogs to switch into heightened states of euphoria or ultraviolence. The milk with knives in it occasions a choreography of violence – it takes on a balletic formality in the course of the story.

And, my brothers, it was real satisfaction to me to waltz – left two three, right two three – and carve left cheeky and right cheeky, so that like two curtains of blood seemed to pour out at the same time, one on either side of his fat filthy oily snout in the winter starlight. Down this blood poured in like red curtains.

Violence is a synaesthetic pleasure. It is an end in itself, separated from cause and effect, pain, empathy. Sex becomes rape, stripped of any sense of mutuality. Language slides around, grammatically unsettled: 'the old in and out'. The only mutuality here is between Alex and the reader. The visceral and material stimulus of classical music likewise abstracts bodies, symbols, and objects into a stream of affect:

Oh it was gorgeousness and gorgeosity made flesh. The trombones crunched redgold under my bed, and behind my gulliver the trumpets three-wise silverflamed, and there by the door the timps rolling through my guts and out again crunched like candy thunder. Oh, it was wonder of wonders. And then, a bird of like rarest spun heavenmetal, or like silvery wine flowing in a spaceship, gravity all nonsense now, came the violin solo above all the other strings, and those strings were like a cage of silk round my bed. Then flute and oboe bored, like worms of like platinum, into the thick thick toffee gold and silver. I was in such bliss, my brothers.

The novel is set in the near future, in a non-specific European country. Alex speaks in a fictional and futuristic register called Nadsat. Readers have to learn the argot as they progress through the narrative. As Doctor Branom explains in the text, Nadsat is 'odd bits of old rhyming slang ... A bit of gypsy talk, too. But most of the roots are Slav. Propaganda. Subliminal penetration.' As readers read, they acquire a new functional vocabulary. They participate in the novel in an active, interpretive way. The acquisition of argot is joyful, visceral. Language is learnt materially as readers are exposed to it. The first several chapters are spent learning how to decipher it. Through the active desire to understand the excitement of this speech, readers build a rapport with Alex. It is an extraordinary equilibrium whereby Alex addresses the readers as kin, as he builds a relationship through the exuberance and stylistic inventiveness of his language, whilst he performs a total lack of kinship or identification with his victims. Indeed, he shares his brutalisation of them with the readers as if sharing a common aesthetic experience. As Alex's argot is learnt by the readers, they are materially changed by the reading of it, as Burgess himself was affected viscerally and emotionally by the writing of it. In his introduction to the novel, Blake Morrison recalls two quotes from Burgess on the act of writing out the violence. The first was stated in 1972 in an interview when the furore was raging about Stanley Kubrick's film interpretation of the novel: 'It was certainly no pleasure to me to describe the acts of violence when writing the novel.' The second is from his 1990 autobiography, *You've had Your Time*, and is more nuanced: 'I was sickened at my own excitement at setting it down.' He had also written to friends in 1961 'The whole thing's making me rather sick. My horrible juvenile delinquent hero is emerging as too sympathetic a character.'

For the reader, who invests a certain amount of time in learning the language of Alex's world, something else is absorbed: a fascination in the actions of those who operate in an environment that is becoming familiar, but remains transgressive, a satisfied glee in working out the riddle of language, in being a part of an alternative linguistic community whose slang we understand and begin to share. The synthetic additives in milk ease Alex into a state of aesthetic reverie. The synthetic additives of Nadsat allow the reader to experience this violence as an aestheticized, abstracted act, and so the reader becomes more attuned to reading the ultra-violence as an aesthetic experience. For the young people disenfranchised by the torpid culture surrounding them, with their parents fearful of going out of doors and lulled to sleep by worldcast programmes, language and their suspension from normative social behaviour is facilitated both by synthetic 'vesches' and this hybrid tongue that collapses actions into abstractions. Brute acts are sublimated into aesthetic acts. This is the central work of the book and its power lies in what to with this paradox of being simultaneously sickened and excited, repulsed yet trained. The violence is a counter to the banality and torpor of the cultural scene. Devastating as it is to the individuals around Alex, when the imperative of non-violence is embraced scientifically as a form of social control, or politically as leverage, it becomes monstrous. There is no longer the imperative of self-regulation or ethical change. Violence and non-violence become tools for a government committed only to self-preservation, with no apprehension of their responsibility to represent.

Beyond any added fruit or syrupy elixir, in the Korova Milk Bar, the synthetic chemical additives heighten the effects of the phantasmagorical, the violent or the sexual. The Korova Milk bar operates in a legal loophole, but, as is made clear again and again throughout the novel, the government here is not in power to nurture its citizenry. It is in power to remain in power and its choices are no more morally driven than Alex's, though their effects are wider reaching.

In an article from 1972 titled 'Hot Pot and Tay', Burgess describes a series of vernacular working-class dishes from his home county of Lancashire. He articulates something of their origin, their resistance to austerity and Southern pomposity, their visceral nature, joy and sociality. 'Tripe is popular – thick seam – and eaten raw with pepper and vinegar. Cowheels are taken in the same way, with much succulent and dribbling bone chewing.' A paean to feasting on the colourful, rich diverse forms of fauna and flora, he speaks of spicy sausage, savoury ducks, black puddings, best end of neck, ox kidney

and oyster, hake, rock salmon and cod, pickled cabbage, thick potato, cauliflower and gherkin, currants, raisins, spice and candied peel.

The offer at the Korova milk bar, in contrast, is formed by a nexus of capitalisation, hedonism and faux-paternalism – and there is no bonhomie to be found. In its film form, the Korova Milk Bar is populated with sculptures of women instrumentalised as furniture and milk taps, based on sculptures by Allen Jones. The scenery foregrounds misogyny and sexual violence as spectacle, and resolutely shifts the identification of milk from maternal supply to sexualised consumption. The soundtrack melds classical music with the first commercial use of a moog synthesizer by composer Wendy Carlos (born Walter Carlos). The soundtrack soars between analogue and electric form, between abstraction and narrative, historic and future form.

In the wider British world in which *Clockwork Orange* appeared, the daily deliverer of milkman came to represent excessive sexual prowess, when more than 40,000 milkmen delivered pints of milk from their electric floats to the front doorsteps of around 18 million homes – which constituted around 99 per cent of households. Each morning with his milk, the milkman was imagined to also provide sexual services to the housewife, her husband safely far away at work, earning 'the bread'. 1971, the year in which the film of *Clockwork Orange* appeared, was the year in which the English comedian Benny Hill had a Christmas number one novelty hit record, crammed with sexual puns: *Ernie (The Fastest Milkman in the West)*. 'Now Ernie loved a widow, a lady known as Sue/She lived all alone in Linley Lane at number 22/They said she was too good for him, she was haughty, proud and chic/But Ernie got his cocoa there three times every week'.

The 1975 British comedy 'The Amorous Milkman' has the strapline 'He gave 'em much more than a pinta!' and later on VHS release 'If only your pussy could talk'. This conflation of milk, sperm, breasts, and sex permeated the soft porn industry where an oft-repeated scenario involved a housewife in her short synthetic negligee and a milkman.







Synthetics

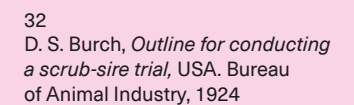
A year before *A Clockwork Orange* was published, Burgess reviewed a book written by his friends Hilda and Meir Gillon, *The Unsleep*. In an attempt to harvest extra life, a future population begins to take SYNTH; a drug that relieves them of the need to sleep. It 'extracts' time. Darkness and civil breakdown follow. The synthetic intervention into circadian rhythm and social habit leads to violent, self-destructive rupture. With too much wakefulness, crime and delinquency increase and police have to be established. An epidemic of unconsciousness is produced by nature, as punishment for transgression against the laws of sleep. For Burgess, it is not the synthetic aspects that trouble him in the story, or any notion of disturbing a reified 'nature', but rather the tendency for state regulation to take possession of self-regulation. In its own drive for self-perpetuation, the state accelerates and corroborates violent excess. The synthesised drugs are not in themselves the problem, but the fault lines of the state apparatus are revealed, once they are unleashed. These are the themes that continue to dominate discourse today, though rather than the Janus face of cold war totalitarianism and liberalism, it is now neo-liberalism, venture capitalism and fundamentalism that jousts with biopolitics, and will guide the new technical advances that make all kinds of augmentations and adaptations to the human and other bodies feasible.

Under the new regimes of synthetic biology and genetic augmentation, in the presence of smart tech and smart drugs, powerful fantasies of human extension spawn. Embodiment is reimagined, de-gendered, augmented, time-extended. Reproduction is conceived in microbial terms, through cloning and IVF, as a lateral thing. Flesh, skin, milk can be grown in vitro in forms of genetic engineering. 'Cellular agriculture', 'biofabrication' or 'laboratory cloning' (depending who is doing the marketing), offer ways to emancipate and transform, and to instrumentalise biology at an infinitesimal scale. In the current moment, it is not only synthetic mood-changing drugs that can be added to milk, but milk itself can be synthesised in the laboratory. The focus of current dairy research is to genetically modify the body and diet of the cow itself in order to 'milk' drugs for humans – the cow takes the form of a living bioreactor. Alternatively, scientists can extract DNA from bovine starter cells, insert them into yeast in vitro, and brew it away in large fermentation vats, where it is put into action as the new working class. Muufri, later renamed Perfect Day, a Californian synthetic biology startup company, made efforts to be the first to produce cow-free milk. In the 1970s, it became possible to manipulate the genetic code of yeast so that it could secrete certain proteins.



Milk – like skin – is fully abstractable from its source. The body is no longer required, in these industrial processes that remain still on the fringes of the economy. In effect, the cow's body is no longer needed once the genetic sequence has been obtained, though the marketing speaks rather idealistically of cows being released to roam free. Producing milk or leather

The application of artificial breeding techniques to improve livestock is now routine in the dairy industry. Given the advances in embryo transfer technology from the 1970s onwards and the development of sexed semen identification in the 1990s, the dairy industry became enmeshed in dairy genetics. Companies specialising in cattle genetics provide catalogues containing an almost limitless assortment of semen from sires at all pricing points for a worldwide marketplace. There is no longer a need to have live bulls at the dairy. Instead a phial or 'straw' of frozen sperm arrives.



31
motherjones.com/environment/2017/01/
yeast-animal-free-milk-perfect-day-cow-
synthetic-biology/

*Also referred to as ‘artificial breeding’, the impact of AI has dramatically improved the milk production in dairy cows primarily through the improvement of udder traits. In tandem with the improved milk production and revenue per cow, dairy farmers now routinely use AI as a tool to improve and maintain reproduction efficiencies in their herds throughout the year. The consistent inflow of fresh cows into a dairy herd is one of the most critical elements of maintaining optimal cash flow and profitability for the dairy operation.*³³

Genetic animal ‘improvements’ are often tied into alliances of scientific, government and corporate policy. In similar fashion, humans identified as ‘under-capitalized’ and thus biopolitically ‘backward’, are targeted. The language of optimisation and improvement permeates economics, the food industry, agriculture, and overseas development programs. Humans that do not eat large amounts of meat and dairy, for example, may not be considered ‘optimal’ eaters.

Dairy is the industry that pioneered the application of big data, assisting milk’s accelerated abstractions into chemical components, economic actions and bodily manipulations. It has provided a model for other industries to generate their algorithmic futures. Big data has been implemented in dairy farming more than in any other industry, and combined with the financialisation of species and individual worth pioneered in the field of animal science through quantitative analysis. Animals can be given a single value figure – (NM\$)2 or Lifetime Net Merit. In the case of (NM\$)2, the number is denominated in dollars because it is indexed as an estimate of how much a bull’s genetic material will affect the potential revenue from a dairy cow. Fluid, fat, protein ratios of the milk, and quality of the ensuing progeny are predicted by gene markers and heritable traits and as well as pedigree records and market conditions. Body size, udder condition, feet leg and body ratios, – cheese merit, fluid merit, daughter calving ease, productive life, daughter pregnancy rate and stillbirth rate, robotic milking ease and udder size are all deduced through complex calculations of big datasets. There is an air of rationality gone wild, cold logic mixed with hi-jinx whimsy and mythopoesis in the naming of bulls with highest Lifetime Net Merit Scores:

Charlesdale Superstition-Et, Badger-Bluff Fanny Freddie, Ensenada Taboo Planet-Et.³⁴ One bull called Pawnee Farm Arlinda Chief, who had 16,000 daughters and 500,000 grand-daughters and more than 2 million great-granddaughters, and whose genes account for 14 percent of all DNA in Holstein cows, sent a mutated gene through the popular breed, which led to 500,000 spontaneous abortions and cost the dairy industry some \$420 million in losses. This was however counterbalanced by the increase in milk supplies that his genetic data brought about over 35 years.

Genetics has been applied to the increasing of milk yields. Milk yield per cow has more than doubled in the last half century: Many cows create more than 20,000 kg of milk in each lactation. This increase in milk yield has been accompanied by a decline in the rate of conception for lactating cows. The cow body might make milk, but no calves.

It is reported that, ‘in the U.S., calving intervals increased from less than 13.0 months to more than 14.5 months and the number of inseminations per conception from 2.0 to greater than 3.5 from 1980 to 2000 in 143 U.S. commercial herds.’³⁵ In addition, dairy cows suffer from more metabolic diseases such as mastitis, laminitis and acidosis, difficulties resultant primarily from the rise in stress that attends increased milk production. The cows are exhausted. The dairy industry has, for decades, acknowledged that the average productive life span of a milk cow is less than four lactations. Perhaps, so the hope goes, more data can bring the fix and the weaknesses eliminated genetically, in the creation of a superbreed that can withstand anything.

In contemporary agriculture, the mining of vast datasets of bioinformatics are key to determining which plants and animals will proliferate. Data analytics not only facilitate complex abstracted financial exchange and market policy, but also transform the matter we put into our mouths and incorporate into our own flesh. Drivers of genomics and biotechnology present financialised imperatives as animal ‘improvements’, yet there is a disconnect from these as abstracted actions and the transformations that are then acted out on bodies. Genomics and biotechnology ‘are fetishised by animal or “meat” scientists and policy makers as the means by which to reinvent capitalism as a new more efficient and environmentally benign project often under the banner of the knowledge based bio-economy . The latter in its very enunciation pretends to portend to ideas and not somehow also to material, bodily repercussions’.³⁶

Genetic manipulations materialise as abstracted chemical and biological events that take place under the threshold of perception, yet are manifest as physical changes that are incorporated within the systems of the donor and consuming bodies. Sexual and social reproduction are now separated at the nanoscale for operational rationalisation and recombined for economic maximisation through complex algorithms and datasets. The work pioneered on the bodies of cows has become associated with high tech stock market trading, where great swathes of money flow through speculative abstractions.

³³ John Hibma, ‘The History Behind Artificial Insemination’, 21 July 2017, farmingmagazine.com/livestock/artificial-insemination-history/

³⁴ Alexis C. Madrigal ‘The Perfect Milk Machine, How Big Data Transformed The Dairy Industry’, May 1, 2012

³⁵ DM Broom, P Oltenacu, The impact of genetic selection for increased milk yield on the welfare of dairy cows, *Animal Welfare*, Volume 19, Supplement 1, May 2010, pp. 39-49(11), Universities Federation for Animal Welfare

³⁶ Richard Twine ‘Addressing the animal industrial complex’, *The politics of Species*, Cambridge University Press 2013

Jackman Snowman X Epic Superstition

Galvanise Valention Jevon Jace

Planet Taboo X Ramos

Badger Bluff Fanny Freddie

Morgan Bookem X Snowman Oman

Dimension Renegade Impulse Paramount

Supersire Robust Socrates X Ramos

Cashcoin Observer X Harmony

Ensenada Taboo Planet-Et

Nitro Nendrix Tbone Louie

August Zeus Collection Prophet

Disso Observer Et

Bosephus Wonderment Pronto Denmark

Pawnee Farm Arlinda Chief

Robust X Planet Shuttle

Socrates X Zero Man

Miles X Zenith

Zeus Planet Shottle

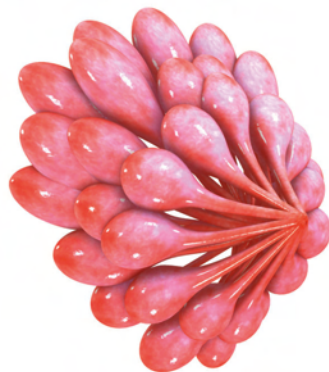
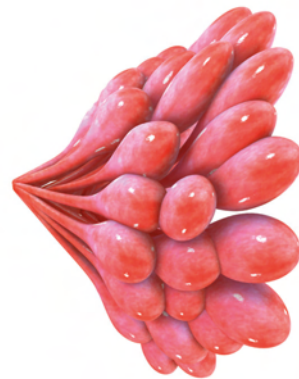
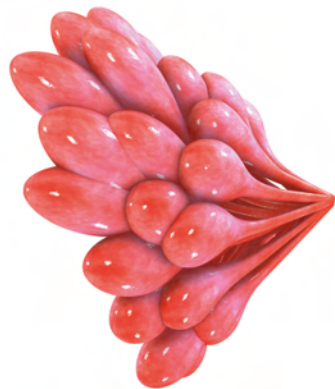
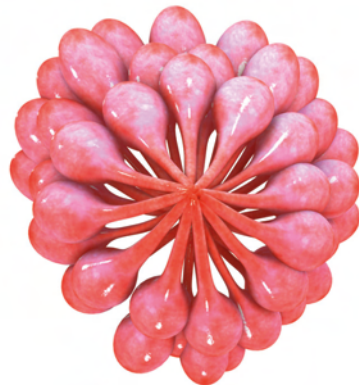
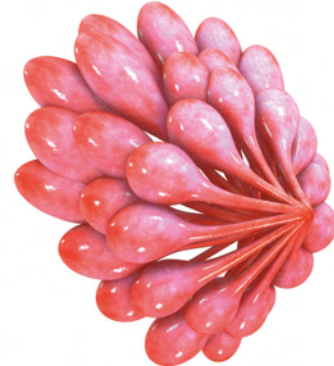
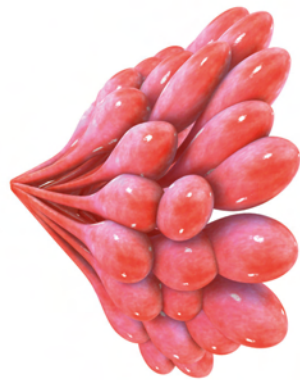
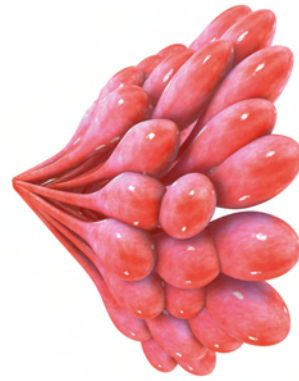
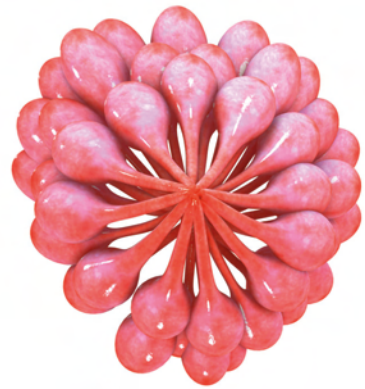
Defender Mogul X Man

Shotgun Shuttle Man Manat

Goldchip Goldwyn Shottle Champion

Police X Plane Die-Hard





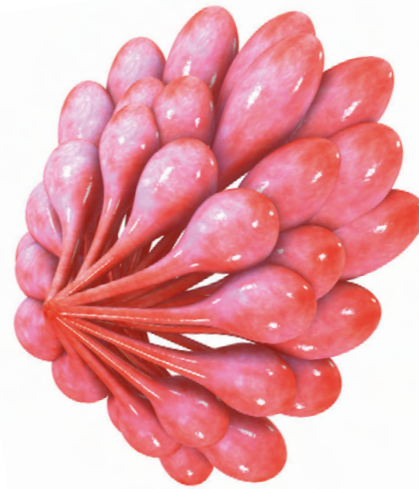
Ferment

Synthetic biology fulfils a fantasy of growing anything at all; circumventing politics and creating self-generating life that intends to bypass the messy matter of sentience, or animal suffering. It also throws up the spectre of erasure, and the eradication of animal bodies altogether. The nexus of nature and technology offers a physical and imaginative emancipation of a generative new materiality that defies bounded perceptions of body/gender/species, but what seems to be a point of change is also a continuity that can be perceived in the changing forms of milk over time.

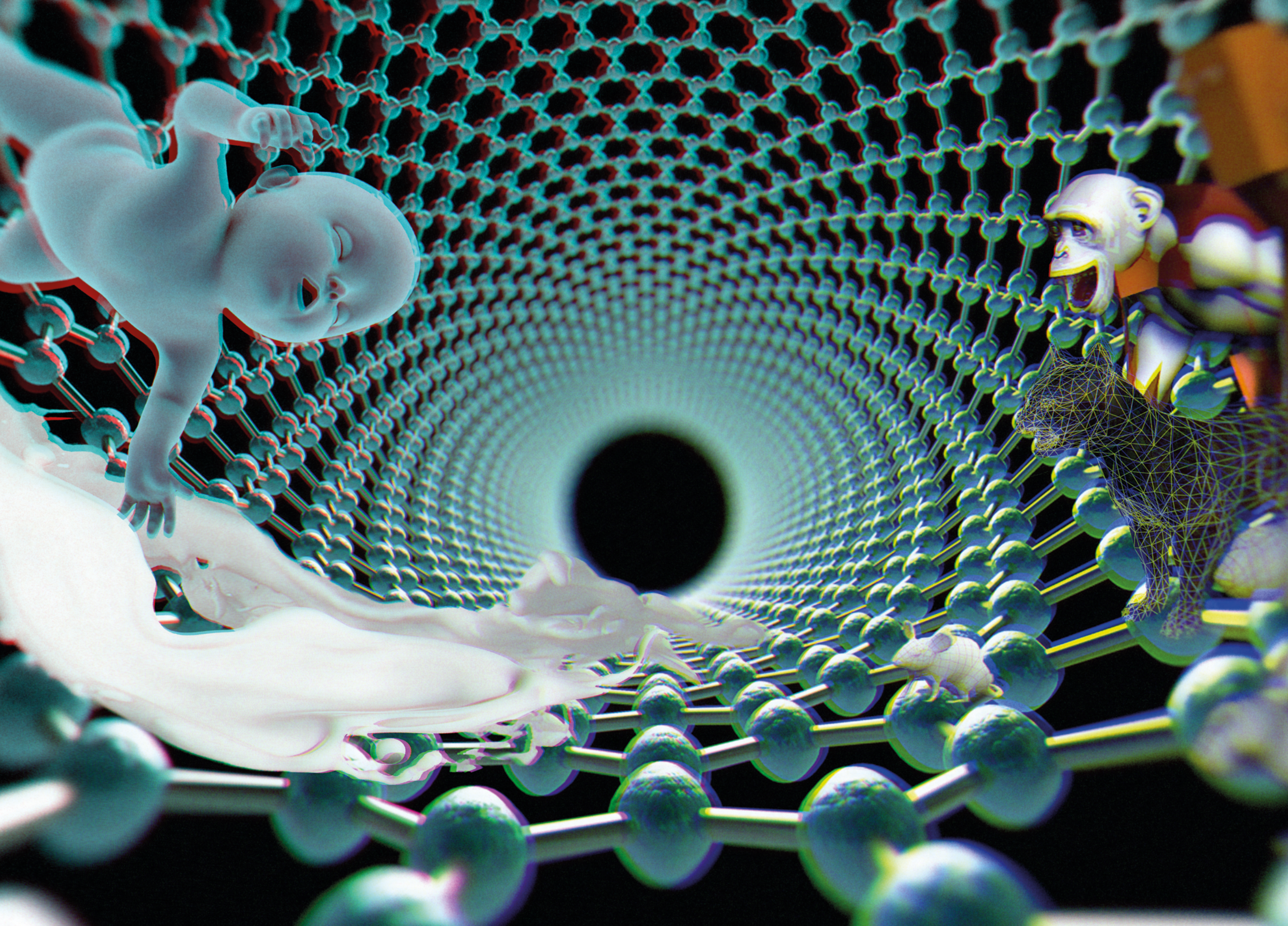
Milk is a liquid latent with the power of annihilation as well as the provision of life, and its shapings are driven by the attempt to wrestle control of supply, to entrap the milk-giver, to take its milk from it and to remake that milk as something else, as anything else, even as something so different to itself, it barely registers as milk at all.

The force of history, the bio-medicalisation of the body, the intervention of politics into the very start of life: all that is clear. Milk's components have now been more closely identified: casein, whey, lactose. Each of these has multiple uses. Milk is still mobilised as a cipher of the nature, as rendered in the work of lactivists, militant advocates of the normalisation of breastfeeding.³⁷ It is, though, a highly technical, technologised fluid, and one of the most technologized fluids on the planet. Milk's capacity is to be extendable, to issue in various ways.

The capacity to informationalise enters into the human body too, grafted onto our own data centres, in order to be rearticulated on screens. The body which is conceived as a location of tiny happenings that are constant and yet accessed only by machineries – after the stethoscope, MRI, and then bio-feedback processes, whereby the body receives through electrical sensors information about its processes. The body is quantified, voluntarily and as play, in gamification procedures that measure steps, calorific intake and the like. In that circumstance, might one configure new lifeforms, of unlife forms, including techno-bodies. The body can be re-conceptualised as an arrangement of bacteria, viruses, and eukaryotic cells in nonlinear coexistence, further combined with the biodigital tools and its set of technologies as part of cybernetic capitalism.



³⁷ Charlotte Faircloth, *Militant Lactivism?: Attachment Parenting and Intensive Motherhood in the UK and France*, Berghahn Books, 2013



By the purchase of labour-power, the capitalist incorporates labour, as a living ferment, with the lifeless constituents of the product. From his point of view, the labour-process is nothing more than the consumption of the commodity purchased, i.e., of labour-power; but this consumption cannot be effected except by supplying the labour-power with the means of production. The labour-process is a process between things that the capitalist has purchased, things that have become his property. The product of this process belongs, therefore, to him, just as much as does the wine which is the product of a process of fermentation completed in his cellar

Karl Marx, *Capital*, Vol. 1, Chapter 7, 1867

Today, microbial agents figure as major players, indeed even usurpers of human agency, colonizers of human subjectivity. We are the ferment, or we are fermenting. We are this on Marx's account, when he spoke of proletarian ferment, and also of a specifically feminine ferment: 'Anybody who knows anything of history knows that great social changes are impossible without the feminine ferment.'³⁸ Marx saw a fermentation as the site of a struggle:

Fermentation is the excess surplus labour appropriated by capital, but it is also the ferment of a revolutionary class as it chaotically resists social oppression. Fermentation is a doing or a being done to. Fermentation is a form of agitation and energy. Fermentation is a chemical process of breaking down yeasts, proteins or other micro-organisms. We ferment food in our guts. We ferment revolution. Class struggle is a ferment. Expropriation is a ferment. The revolution of the future may be at one and the same time political and biochemical.

In response to the emergence of synthetic biology, science fiction curves its fantastical imagination towards the new biology. Its heroes and losers are the products of recombinant DNA, genetic modification, victims of totalitarian governments or corrupt corporations who, in the off-grid clinics down seedy alleyways use synthetic biology for social control or for profit or as part of a new class war that extends into the molecules of the body. Biology and its manipulation and mutation are explored in speculative fiction where the cell becomes the king, the key, the currency, the part to be managed.³⁹ Hormones, smart drugs, whatever form wherever, invades bodies as molecular prostheses.⁴⁰ Floods of new drugs – synthetic steroids, synthetic legal and illegal psychotropic drugs – slosh around in a world that has unleashed endless media material through internet channels, infinite content that produces discontent and which seeks to manage that with the prescription of more mood-enhancing drugs, and more self-help website in a techno-capitalism that is ever seeking new lines, new flows, and that values transformation as a reason for being.

Separation is a powerful thing. Conceptual separation is a powerful thing. The conceptual separateness of the body as distinct and bounded entity may be negated with the conjoining of the lateral reproduction of bacteria, viruses, eukaryotic cells with biogenetic manipulations – all co-existing within the framework of cybernetic capitalism. What body will still make milk and how and under what conditions? What patterns can we discern? What troublings might allow for recombinations?

³⁸ Marx to Kugelmann In Hanover, 1868, Marx and Engels Correspondence, International Publishers 1968

³⁹ Paul Di Filippo, *RIBOFUNK: The Manifesto*, 1996

⁴⁰ Paul B. Preciado, *TESTO JUNKIE*, feminist press, 2008

Traps

Can we identify domesticated animals as trapped – albeit over time and space, intergenerationally? Is the fully roboticised milk production line a transformed representation of its maker, the hunter, and the prey animal, its victim, and of their mutual relationship? Capitalism depends not just the exploitation of labour and knowledge, but the expropriation of land and its resources, and the co-option of bodies and body parts as bioreactors. Is the in-vitro mammary gland, which operates as a bioreactor, a form of entrapment? Is the new science of cellular agriculture a form of entrapment? The depletion of species and environmental loss of the present is identified as an acceleration of the burden of human entrapment in dependent relationships, rather than a consequence of the human entrapment of and instrumentalisation of nature, first through industrialisation and then through technoscience, which still seeks to offer positivist solutions for degradation, as it simultaneously quickens it. Like many experimental cellular farming technologies, technoscience is offered as a foil to try to combat the spectre of collapse and destruction, by utilising a frenzy of growth and regeneration. What to think of a distinctly vampiric, indeed, masculine obsession, posed by the renewed interest by venture capitalists in parabiosis, the transfusion of young blood into old people's veins?

The entrapment of biological materials under the threshold of perception, which in turn creates a perceptual shift, offers both the potential of transformative power and an acceleration of depletion. In exploiting and expropriating, technologising and instrumentalising, powerful desires are mobilised, and yearnings for eradication, the apocalypse, total and complete capture or annihilation ensue.

Ours is a social climate that oscillates between a political economy of nostalgia and paranoia about a technoutopian euphoria and exaltation in the face of extinctions. Extreme transhumanist fantasies of jettisoning the body altogether and uploading consciousness onto new improved substrates permeates this climate in a further repression of the long-promulgated Cartesian mind-body split.

Reproduction is never left alone. Reproduction and the sustenance of life are endlessly augmented. But there is one very present, tangible way in which reproduction and life sustenance is affected today. Over 1000 UK midwives are from EU countries and their future is now uncertain, in the context in which there is already a national shortage of around 35,000. Fertility Network UK recently collated evidence that there were restrictions being imposed on access to NHS-funded IVF in some areas of England: 'England pioneered IVF approaching 40 years ago, but that achievement is meaningless if only those who can afford to pay for IVF benefit from it'.⁴¹

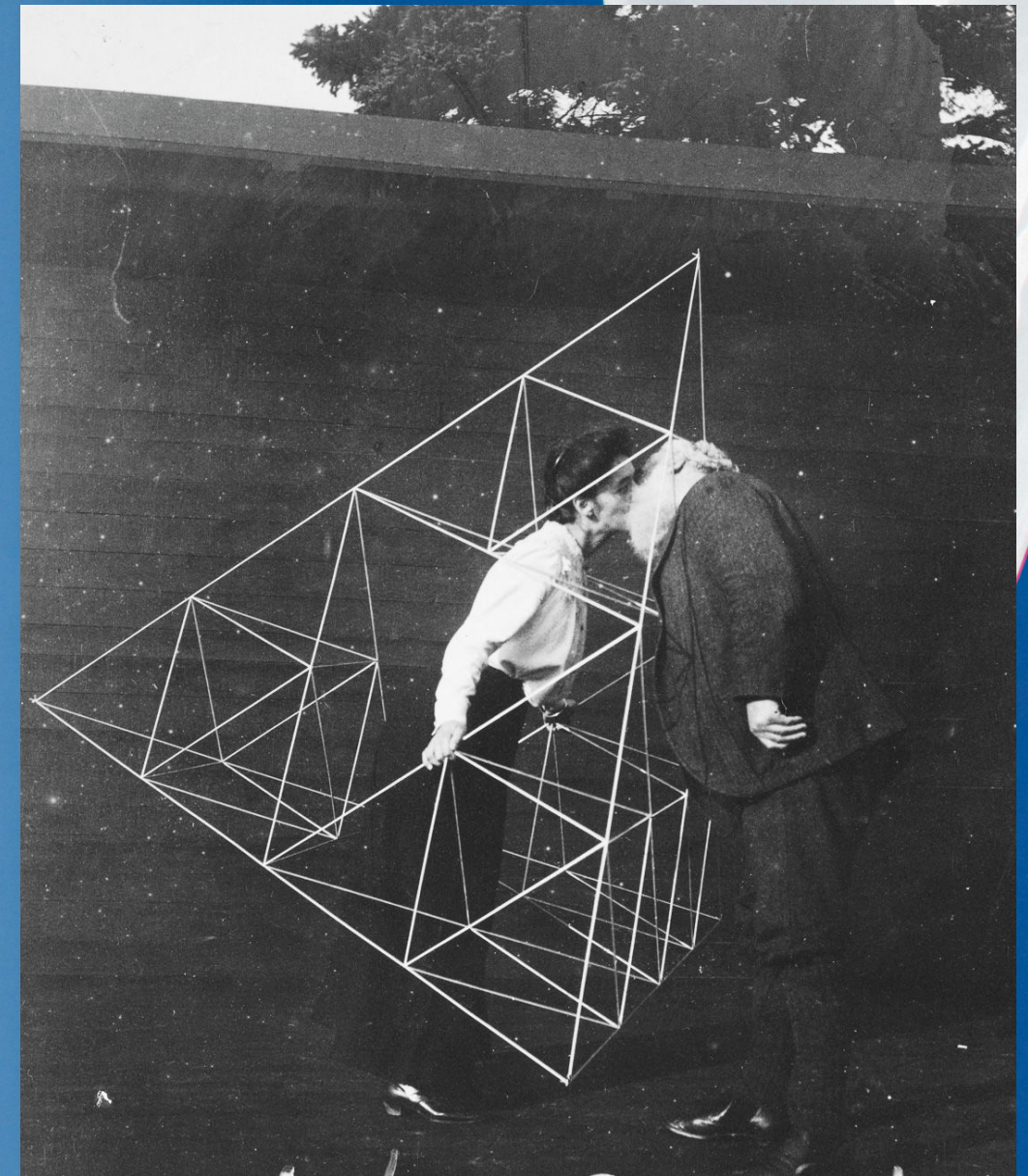
This is a climate with disdain for dependency, the flesh and vulnerability. It corroborates with a neoliberal market driven economy which draws on pseudoscientific fantasies of genetic and geopolitical advantage. In an age of the surveillance state and corporate data extraction, to be bodiless seems to represent emancipatory freedoms. It is an arena for unrestrained depravity, of ungended, unracialised, unembodied, multiple selfhood. Likewise for those who want to disavow their flesh, and hive-mind their intelligence onto some more robust substrate, singularity seems like an attractive proposition. But what we really know is, within our lifetimes at the very least, to be without a body is quite simply to be dead. There is no more present, efficient and fast acting way for a state to perpetrate ultraviolence on the bodies of its citizens, than the removal of a public health service.



Alexander Graham Bell kisses his wife Mabel Hubbard Gardiner Bell inside a tetrahedral framework (Oct 16, 1903) researching the technology needed for a powered flight.

41

Sarah Marsh, 'IVF cut back in 13 areas of England to save money, new data shows', guardian.com, Sunday 6 August 2017





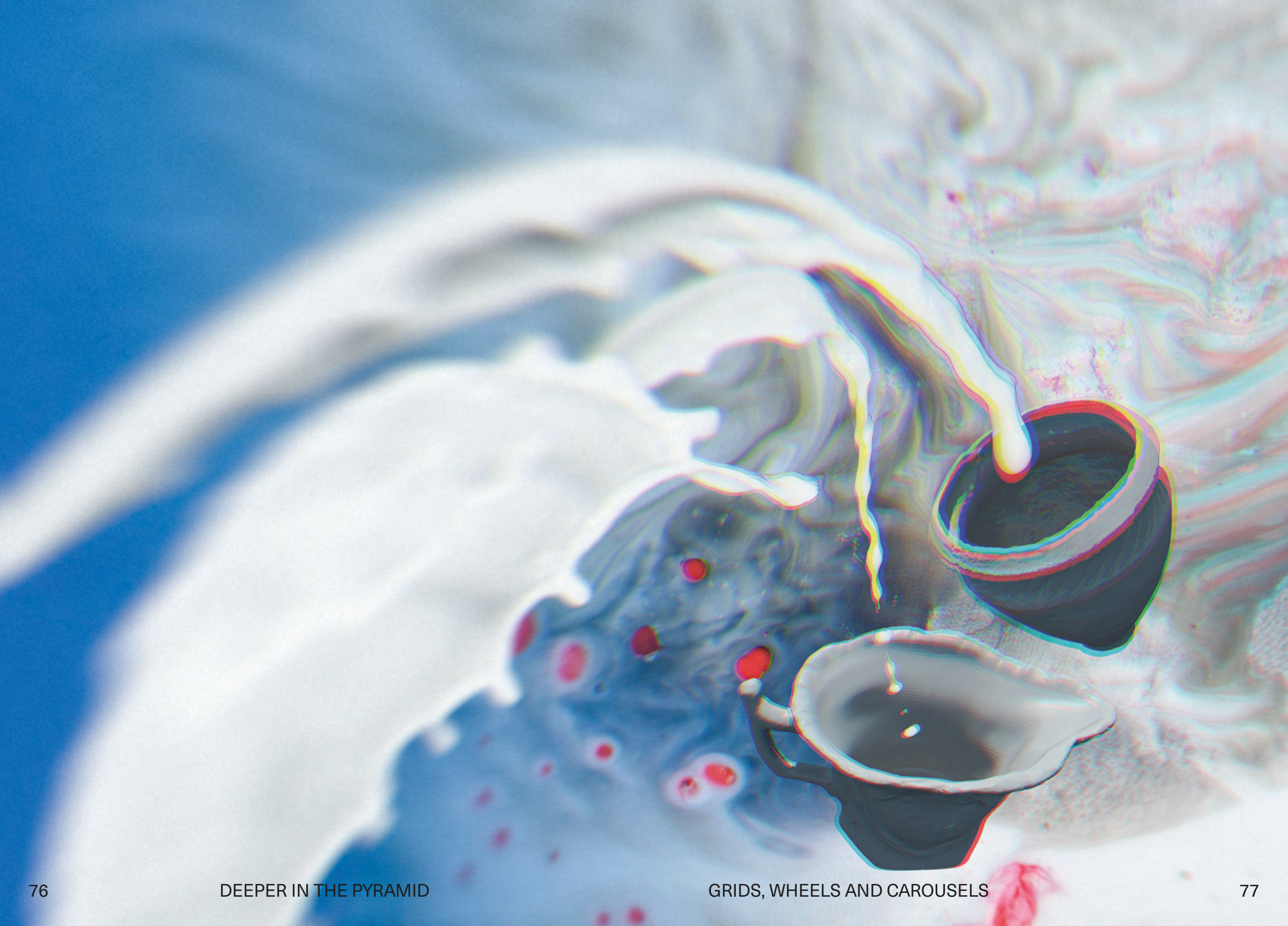
poly morph

If the ice cream dream of consumerism, but also its melt and mess and excess, permeated the mid-century, it too melts away into a different location of infinite form, colourful confection and rainbow possibility, at every fingertip, but only and not quite there. The i-Screen extends the ice cream. This is the surface through which everything passes, and the past is conveyed into the present as a resource, endlessly plunderable. Through it, individuals are constantly stimulated by electronic signals, super-exploited by the technological machine but they also learn to become adept at inhabiting various modalities, times, experiences, places, modes of attention, all passing through the one portal – where love, commerce, work, play, crime take place sequentially or simultaneously. Never has more information been so constantly produced and monitored and analysed. Our dreams are dreamt by computers. The psychedelic outputs of Google's 'Deep Dream' artificial neural network tends to pepper everything with eyes. Our optic disturbances are its. In this screen dreamtime, we experience cuts, jumps, incongruities, bizarre physics, strange splicings of bodies, genetic oddities.

Milk and photographic representation meet again in the digital age. The affinity of the lens and turbid fluid is extended for the commercial screen where the desideratum of digital real world simulation is the convincing reconstruction of fluid dynamics. Computer generated imagery (CGI) renders fluid simulations which delight in liquid rapture, from originary drips, splashes, swarms, swathes, streams, falls to spills of fluid, floods, storms and waves of annihilation. Emulation of milk in CGI is reputedly the first thing everyone learns to do.⁴²

Milk acts again as a kind of primal, or primary, fluid. Spilt milk becomes emblematic of both tragedy and of ecstasy. Captured by photographs or rendered digitally, milk takes on a body. It solidifies into forms. These are forms that we know are in a state of suspension and that will collapse and drown in a microsecond. This solidification and collapse appears to be thematised in the representations themselves. CGI extends the capacity of milk to adopt any form. It exploits its presence as liquid and animate, while rendering it as solid and infinitely shapeshifting. Milk acts like unfired clay in the digital world. The frozen coronet of Edgerton's milk is donated an illusory capacity for movement and plasticity, combining in its phantasms the liquid and the crystal aspects of contemporary screens. Milk becomes anything, substituting for bullets, charging horses or billowing dresses, but what it becomes specifically is a substitute for semen, for the ejaculate and its splash, as advertising always knew, when it played with milk-cum moustaches on young women's faces.

⁴²
See, for example, helloyoucreatives.com/post/3307413119/cgi-milk-we-think-its-the-first-thing-everyone.



Red Filaments, White Arrows

3	Firsts	
7	Separation	
12	Milksops	
13	Origin stories	
16	Unreliable matriarchs	74 Polymorph
20	Night terrors	71 Traps
30	Junk ouroboros	67 Ferment
34	Luscious land	56 Synthetics
40	Beastly bodies	47 The old moloko
45	Aristocratic milk	43 Geometry
47	Architectures of the dairy	39 Electrics / Abstractions
54	Welfare	33 Grids
58	The old & the new	29 Border force
62	Formulas	21 Nuclear
66	Selves	16 Troubled images
70	Vessels	14 Eyes wide
		10 White supremacy
		7 Turbo, Turbidity, Tobio, Trouble
		2 Industrial metaphysics

Deeper in the Pyramid is published by Banner Repeater, London, Grand Union, Birmingham and Primary, Nottingham. © Melanie Jackson and Esther Leslie 2018. Designed by Modern Activity

Grids, Wheels, Carousels

ISBN 978-0-9929176-5-4

