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Jackson, M. and Leslie, Esther (2023) Deeper in the pyramid: share of throat. UNSPECIFIED. ISBN 9781739343101.

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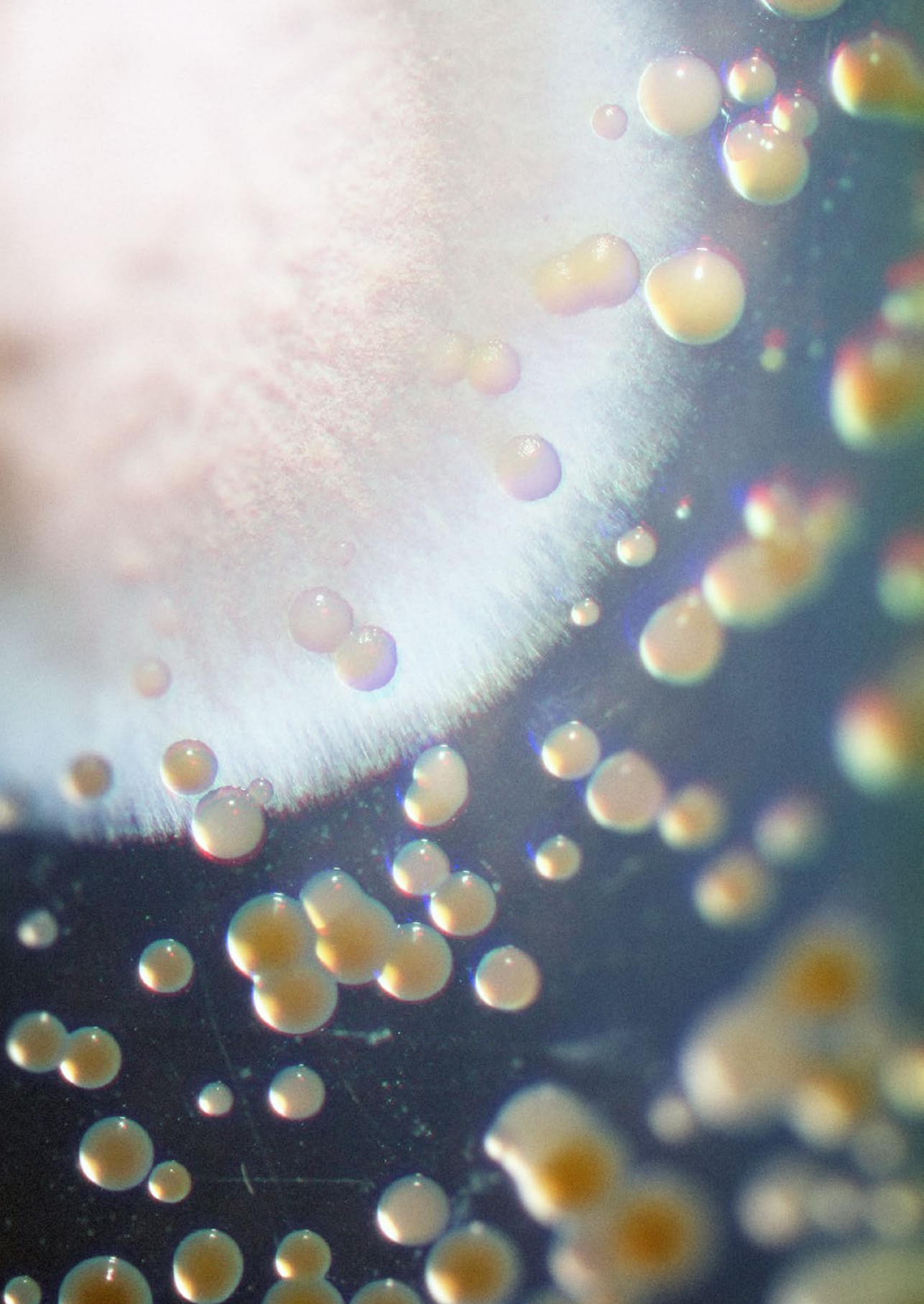
deeper
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share
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ISBN 978-1-7393431-0-1

& lineage formulae



firsts

Milk is an ur-substance, an originary liquid, a primal fluid. It is likely to be the first substance to enter the mouth, to flood the tongue, to swell the belly — once ex-utero. Milk flows from one to another. Milk, then, is associated with beginnings — the beginnings of life, the beginnings of what count as civilisations, the beginnings of the world itself, in origin and creation myths. Milk — or existence in proximity with milk — catalyses a language of cogitation and communication, forming a social and cultural skin of metaphor: skim, condense, homogenise, express, churn, curdle, culture, sour, combine, separate — and its extended forms extend the lactic language — to butter up, to cream off, cheesy, cheesed off, vanilla sex. Milk makes language. Milk is subject to language — the language of metaphoric excess to which milk lends itself so readily; the language of the dairy, which speaks of freshness, purity and quality; the language of the dairy industry, of yield and optimisation, percentages and quotas. 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 language more recently, 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. The cow is subjected to genetic analysis, improved, perfected.

In the modern epoch, 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. There is another twist happening now, a century on — as plant milks pick up the connotations of purity, nutritional power and incorruptibility.

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, forging milk routes and pathways and butter roads and freight. How does the mechanisation of milk reposition the cow who is the source of the milk? This cow is imagined and sacrificed at once — 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.

convertible

Milk is various, as might be expected of something that appears to have been with us, for us, of us, for a long time. It is diffused through numerous histories, for it has in each moment the capacity to transform, to become other to itself, to be always made anew. Milk 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 might be other to itself. It has no limits, spilling and flowing, suffusing, seeping. It condenses and it evaporates. It hardens and it drips. Milk might be 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 instrumentalisation of its qualities has never been an easy task. Though milk is a primal substance, it is also a fluid that is ever invented anew, for new social purposes. Milk has generated a busy activity of human and bovine transformations. It has lent itself to reformulation, regimentation, innovation. It has adapted to the rules of the nanny and the boss, the technologist and the venture capitalist; to every kind of flow that the economy demands. That cattle — and dairy products — might be a conduit of what capitalism requires was apparent from the very coining of the term. Cattle is the same word as chattel, and, in medieval England, meant personal property or estate, wealth, goods, anything that was a form of movable wealth. It became over time a word for money, or what is now called capital. Around this time, it comes to serve as well as a collective term for livestock or animals — who were subjected to headcounts, capita — for they were held as property, or reared to serve as food, or for the sake of their milk, skin, wool and other products. The cow's head provides a measure of wealth more generally and becomes a name for the piles of money



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

that merchants used. The words separate — from around 1500 cattle becomes the word for sellable livestock and capital becomes the abstraction that is money.

Milk is a substance that can be shaped into any thing and can take on any colour. It participates in all areas of life. Milk — its by-products of whey, casein and so on — appears in plastics for so-called fancy goods, such as knife handles, buttons or knitting needles. It is in animal feeds, fertilisers, airport de-icer, bottle labelling adhesives, methane, ethanol, anti-wrinkle agents, shampoo, hand cream, floor levellers, leather finishes, paper coatings, packaging films, concrete and cement. It can be used for bulking, sweetening and fortifying. 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 bodybuilders, whilst the same substance is endowed with the power to diminish the bodies of dieters.

Once there were milkmaids. Later there were milkmen.

Now milk is mechanically entwined, bound up 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. It was until recently badged blue, green and red, according to percentage of fat content. Now, in the interests of plastics recycling, the lids are enigmatically opaque — from above all is the same. Front on, the differences are revealed, but there is much apparent sameness. Milk 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 muddling and mixing.



iconic

The McFlurry, Mr Whippy, Dairy Queen Blizzard, Cheese String, Dreaming Cow, Laughing Cow, Skinny Cow, Elsie the Cow, Crusha, Marvel, Shaken Udder, Yoo Moo: 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. These dairy icons are flexible beings. They perform both the virtue of health and the compromise of health, parading for delectation an array of high calorie, high fat, or low calorie, low fat, high sugar, or sugar-free, highly processed, or organic, virtuous, vicey and indulgent, proteinous and life-extending.

Milk is frothed this way and that and it glimmers with technoscientific, multi-colour, hedonistic appeal. The excess forms of dairy are the product of aggressive marketeering, of low margin, highly complex modes of manufacture. These products are transgressive and pervasive, hypernormative. Some are 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. Bubble teas are a recent milky fad — itself an expansive speculative bubble — proliferating in wild colours on shopping streets across the globe: Panda Crystal Milk Brown Sugar Crème Brûlée Tea with Raspberry Popping Boba; or Coconut Mango Crush with Rainbow Tapioca Boba and Colourful Jellies. The dairy products continue to proliferate in an ever-expanding market and are one of the few commercial products said to be immune to economic cycles.

Curious novelty dairy 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. Demonic, gurning, otherworldly, 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. 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.



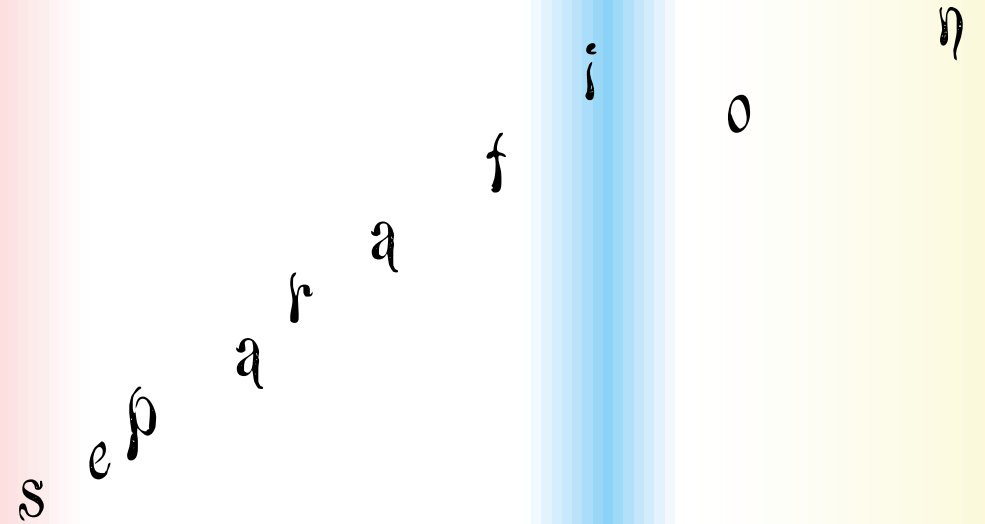
Dairy turns airy in ice creams that swell up with nothingness injected, and, as with microfoams in coffee, this airiness — or 'overrun', as it is known in the industry — not only changes the texture, but also seems to stand as evidence of milk's overinflated presence and excessive connotative ability in post-war culture — and its capacity for profit-maximisation.

Much as milk is made venal, it is also good-humoured. Milk is playful. It is — or its purity is — forever 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. Wine and the milk of the Dutch cow are totem drinks for the French, but milk is the 'true anti-wine'.² 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'. 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, through a microscope, in our dreams.

dumb cow

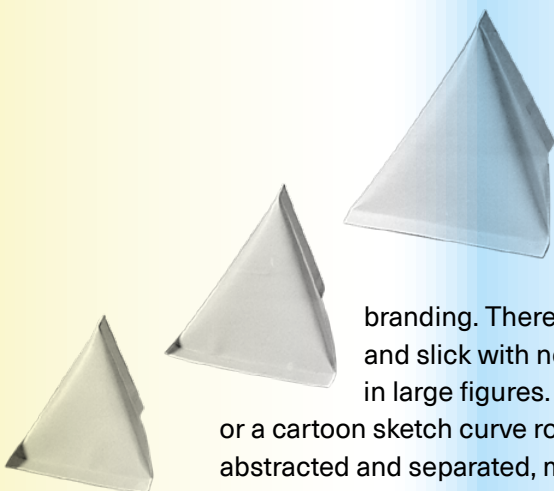
In the stage version of Frank L. Baum's *The Wizard of Oz*, from 1902, Dorothy's faithful friend was not a dog called Toto, but a cow called Imogene. This cattle creature, played by a pantomimic human, was easier to direct on stage than a canine. In the 1939 colour film, *The Wizard of Oz*, the cow was rejected in favour of a dog. (This dog, or its handler, it is said, was paid a higher wage than the Munchkins). The cow is often scorned. For marketing purposes, in advertisements, on packaging for ice cream or other dairy treats, those fun foods directed at children, the cow may be replaced by cartoony wily, smart-talking animals, who are apocryphal consumers of milk: cats, rabbits or mice. The cow is repressed, for it has come to be associated with what are deemed negative qualities: the passive, dumb and exploited. Replaced by cannier creatures, there remains only a vestigial hint of dairy's animal connections, and this stands as a sign of the interspecies promiscuity of milk. Milk is triggered by gestation — but like so many animals in comic books and animations — animal characters have no familial relations, and their interactions are around humans or other individual actors. What is absent from even the most bucolic scenes of the milk cow in the field is the calf. Calves are separated from cows at birth. We see nothing of the distress of this estrangement. The cow is ageless. The cow or its calf are a succession of replaceable units.

² Roland Barthes, 'Wine and Milk', in *Mythologies*, trans. Annette Lavers (London: Vintage, 2000), p. 60



Milk separates. Skimmed milk is separated from cream, curds from whey. Milk separates within 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 can be drained from below. Machines with centrifugal spin were invented to accelerate the process, using hand cranks and, later, motors. The separation into parts is only one of the many separations inherent in milk. Separation is at work in the distancing or abstraction of milk from the female mammal's body. Separation exists in the milk industry when calf is parted from cow, and 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 perfectibility of modern times. The animate properties of milk, its ability to separate and transform into a plethora of shapes and constituents allows it to cascade separations and recombinations, extrusions, extractions and abstractions. Milk has passed through relationships with various technologies, tools and vessels: milking hands, clay, wood, metal, electrically powered machines, robots. Nowadays, there are separations of the liquid that is milk at the smallest scale, rendered in relation to the microbe, the cellular and the genetic.



The contemporary abstraction, separation and technical processing of milk is made tangible in the aseptic geometries of plastic cartons, pyramidal or rectangular in shape, and whey powders for athletes and infants, 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 represents something more palpable. There are countless hand-drawn bucolic scenes and photographic vignettes 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. 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, fore-grounding 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, is also an agent. Milk is bio-responsive. Breastmilk — for one — is a fluid created by the human body that science in emulsions has presumed to have optimised and exceeded. It is not until the twenty-first century that the full complexities of human milk begin to be apprehended, meaning its simulation is somewhat overhyped. Milk is subtle, responsive,

biodynamic. Despite claims and efforts to improve on the fluid, no such task has been accomplished. 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 in the growth of the offspring.³

sour relations

For what might milk be blamed? Julia Kristeva rejected its inherent capacity to form a skin, to become like us, and insist that we partake of it, an insistence perceived as part of the inexorable law of the family.

When the eyes see or the lips touch that skin on the surface of milk —harmless, thin as a sheet of cigarette paper, pitiful as a nail paring — I experience a gagging sensation and, still farther down, spasms in the stomach, the belly; and all the organs shrivel up the body, provoke tears and bile, increase heartbeat, cause fore-head and hands to perspire. Along with sight-clouding dizziness, nausea makes me balk at that milk cream, separates me from the mother and father who proffer it. 'I' want none of that element, sign of their desire, 'I' do not want to listen, 'I' do not assimilate it, 'I' expel it. But since the food is not an 'other' for 'me', who am only in their desire, I expel myself, I spit myself out, I abject myself within the same motion through which I claim to establish myself.⁴

This is no froth of melancholy, not spumy self-indulgent blubbing. It is disgust. This is the memory of the primal scene of mother and father. This is normal conformity. Milk corrupts. It makes abject. Milk makes a cover over itself — peeled back, touching the lips, clinging to them, like a flapping skin tear or tag or the flayed dermis, it shows too much that should not be known. There is too much we cannot extract ourselves from. It clings.

³ Thierry Hennet, 'Lubor Borsig Breastfed at Tiffany's', *Trends in Biochemical Sciences*, Volume 41, Issue 6, pp.508–18, June 2016

⁴ Julia Kristeva, *Powers of Horror: An Essay on Abjection*, trans. Leon S. Roudiez (New York: Columbia University Press, 1982), pp.2–3

incorporation

We exist on a liquid planet. In watery seas a lot of plastic waste floats. This waste stems from fishing nets abandoned in the sea, dumped tyres, nautical coatings, the residue of commercial activities, the breakdown of synthetic textiles. It all degrades into smaller particles, subject to wave action, abrasion, UV radiation, photo-oxidation.

It becomes microplastics — 5 millimetres to 100 nanometres large — or it began as the same, as the microbeads of cleansers or the glitter in cosmetics and marine paints. From the sea, it works its way to land, into the atmosphere and into human bodies through ingestion, inhalation and through direct skin contact. Small as these microplastics are, they pass across cell membranes. And some finds its way into breastmilk. Breastmilk's ingredients now include polyethylene, polyvinyl chloride and polypropylene, according to a research study that used Raman microspectroscopy to analyse breastmilk samples from 34 mothers who had given birth in Rome a week before. Of note is the minuteness of the plastics. Already polychlorinated bisphenyls, organochlorine pesticides, polybrominated diphenyl esters, phthalates and phthalate metabolites, per- and polyfluoroalkyl substances, phenols and metals have been found in human milk.⁵

poly morph

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 circulates through 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 Biblical New Testament, writes of the pure spiritual milk of God, or, to take other translations, the verbal or rational, un-deceitful 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.

⁵ A. Ragusa, et al., 'Raman Microspectroscopy Detection and Characterisation of Microplastics in Human Breastmilk', *Polymers* (Basel), 2022 Jul; 14 (13): 2700.

This confusion of milk with sperm might be paralleled with the capture of enlivenment by the man in the philosophy of the Stoics. Here, 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.

Milk defined us as mammals — those who suckled on mammary glands. It was supposed that this made us mammalian humans and so placed at the apex of the Great Chain of Being, above those other sucklers and those who did not even suck. More recently proteinoid fluids quite similar to milk have been found in other species — even if the mode of delivery to the young is quite different (for example, in large sacs in which the young swim). Milk is of insects — flies, spiders, cockroaches, beetles. It is of great white sharks, male emperor penguins and male and female flamingos, who produce bright pink milk with anti-oxidant carotenoid pigments for their young for nine months, their own feathers fading as they give over sustenance. Ant milk is shared across the colony through trophallaxis, a social sharing of liquid food either mouth to mouth or anus to mouth. The milk feeds the ant pupae who secrete a richly nutritious substance from the fluid that is consumed by adults — if it were not, the pupae would become infected. This fluid is a social fluid. It nourishes young larvae, who attach to pupae with their mouthparts, sucking as they form. This milk develops the bonds of eusociality.⁶

Milks are not always dispensed through breasts. The milk of a blue whale, fatty and protein-rich, with a fishy odour, is like loose, runny cheese, bestowed through two heavy mammary glands that are much longer than a metre and held within its body.⁷ Platypuses, for one, sweat milk.⁸ It has been said that the first milks were dripped through chest pores to hydrate eggs with parchment shells that were laid on waterless ground. As this happened, the fluid also cleansed the eggs, expelling pathogens. Human milk came to ward away pathogens too. Its sweetness is a by-product of its antimicrobial powers called into use after the agricultural revolution that pressed humans into villages and close proximity with other animals.



⁶ Ori Snir, Hanan Alwaseem, Søren Heissel, Anurag Sharma, Stephany Valdés-Rodríguez, Thomas S. Carroll, Caroline S. Jiang, Jacopo Razzauti and Daniel J. C. Kronauer, 'The pupal moulting fluid has evolved social functions in ants', *Nature*, 2022 Dec; 612 (7940): 488—494

⁷ Margaret E. Gregory, S.K. Kon, S.J. Rowland and S.Y. Thompson, 'The Composition of Milk of the Blue Whale', National Institute for Research in Dairying, University of Reading

⁸ Fiona Macdonald, 'Platypuses Sweat Milk, "See" With Electricity, And That's Not Even The Weirdest Thing', *Science Alert*, 29 March 2018



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.⁹

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. Francisco de 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, 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 observed 'it is as if one's eyelids had been cut away'. 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.¹⁰

Goya's painting was conceived at the time of a 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, of men dragging their wives' corpses, of children in misery. The signature on the painting of the butcher's counter is in red, as if written in blood.

⁹ Jacinta Bowler, 'Scientists Think Cockroach Milk Could be the Superfood of the Future, Move Over Kale', *sciencealert.com*, 25 July 2016

¹⁰ John Berger, *Why Look at Animals* (London: Penguin, 2009)

diet

Leopold Bloom, protagonist of James Joyce's *Ulysses*, was onto something when he mused, to himself, in his usual rambling, streaming way:

Coming from the vegetarian. Only weggebobbles and fruit. Don't eat a beefsteak. If you do the eyes of that cow will pursue you through all eternity. They say it's healthier. Windandwatery though. Tried it. Keep you on the run all day. Bad as a bloater. Dreams all night. Why do they call that thing they gave me nutsteak? Nutarians. Fruitarians. To give you the idea you are eating rumpsteak. Absurd. Salty too. They cook in soda. Keep you sitting by the tap all night.

And elsewhere:

**We are
fed
by some
Mater Mary Mercy
cordial of the
Dripping Nipples,
and in time
we will think
that milk's
a queer
arrangement.**

James Joyce, *Finnegans Wake*

mouth feel

There is something strange in the words of milk. For unknown reasons, there are similarities in the name for it in different languages: Gothic miluks from the fourth century; German Milch; Icelandic mjölk; Tocharian malke; Slavic melko; Russian moloko; Polish mleko. But etymologists have argued for different roots to words that sound alike within one language: Milch, milk, and melken, to milk, it is claimed, have no common origin. The verb form draws from the Greek amélgo, to draw, pull, and from the Latin mulgēre, 'to milk'. In addition, Old Irish mlegon means drawing, or milking, and seems close to the ancient vocabulary. Any definitive origins are confused and mingled and cloudy. And these words swirl around, but how is unrecorded. The Old Chinese word for milk, 'lac', is believed to be borrowed from eastern Indo-European. It evokes the Latin lac/lactis and Greek gála/gá lactos. The Slavic word for milk leads back to other words for wetness or dampness, swamp, puddle and fog. Perhaps in German, a word for cloud is contained in the word for milk — but it is murky. An etymologist concludes, tartly: 'Over a huge territory, people used the m-l-k word for 'milk' and 'milking', which often turn out to be partly unrelated, with most of them being of obscure origin.'¹¹

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 a duck, like a fly in milk, milquetoast, milking it for all its worth. These are all expressions of negativity, weakening, failure and the routine of exploitation. These milky words signal something of our contemporary disease 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 neo-liberal 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. 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 normative trend of hyper-individualism, making those who are suffering solely 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 or the pleasurable 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, and cultural 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 has its own language — or rather the dairy industry develops one. It contains such coinages as: mouthfeel improvement; heat and shear tolerance; melt characteristic; instant thickening; moisture management.¹²

dibision

Milk separates — the tolerant from the intolerant, the activist from the consumer. Dairy monitors in the USA panic about protest extending to the farm. The Animal Agriculture Alliance in the USA warns of animal rights activists. These activists, they insist, misunderstand how animal welfare is their goal too — and do so because their aim is to eliminate animals from the food chain and to give animals the same rights as humans. They alert their farmers to tactics — undercover videos, hidden cameras live streaming over Wi-Fi, drone surveillance and protests around the farm or at associated companies, such as the dumping of manure on the lawn in front of Starbucks' headquarters to protest against the extra charges for milk alternatives.

¹¹ Anatoly Liberman, 'The sour milk of etymology', OED Blog, 11 May 2022

¹² Taken from Tate & Lyle dairy promotional materials on company website.

The message: protect your farm. Do not let your cows' representation be stolen. There is a war on. In September 2022, over one hundred supporters of Animal Rebellion in the UK, demanding removal of animals from the food chain, halted the supply of fresh milk across large areas of England by climbing on lorries and milk silos and loading bays. One target was Arla Aylesbury, which processes 10% of the UK supply. In October 2022, more than a hundred people from Animal Rebellion were arrested for stealing milk and using it to cause damage to high-end shops in London, by pouring it in the aisles of supermarkets, on carpets and display cabinets.

Milk drinkers, those who are complacent about the dairy chain of exploitation, are separated from those despised as 'animal nutjobs', 'woke tofu munchers', those who care too much for the wrong species. Milk is troubling.



milky myths

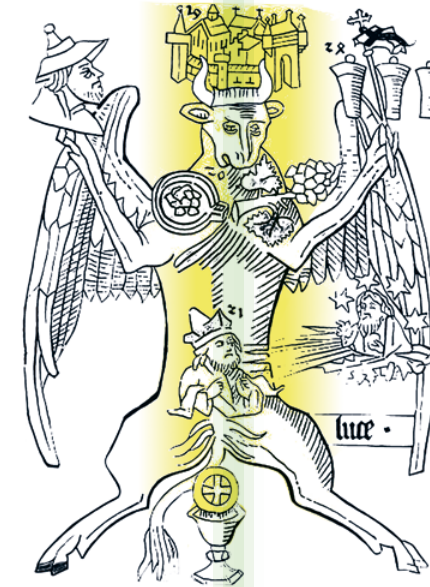
Milk is not captured fully in its contemporary blending with industrial dairy. It has been and remains a presence in mythic imagining. The Abrahamic religions overflow with milk's sweetness, its nurturing power and metaphysical transmissions. For a pre-modern order, milk was life-giving and productive — think of the Greeks and Israelites as herders. Life, milk-sustained life, is linked to fate and destiny. According to biblical narrative, Moses led 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 that is 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 a story from nomadic people of West Africa, the Fulani are said to witness the world beginning in a drop of milk. A huge drop of milk produced stone, which made iron, which made fire, then water, then air. Then came man, with 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 forms part of the ever-continuing struggle between the Devas and the Asuras or the Gods and Demons, and the milk of the primal oceans is churned into

butter, which is used for ritual purposes. Eventually, the churning produces all the beautiful elements of creation, but also poison, which is swallowed by Shiva, staining 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 a twist towards death. 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 holds sway, in nihilistic rapture, until she is tricked into drinking wine instead of blood.



Milk is never far from magic, or magic's nemesis in religion. The *Malleus Maleficarum*, manual for the witch burners from 1486, includes a chapter on how 'Witches injure cattle in various ways'. It states that 'on the more holy nights according to the instructions of the devil and for the greater offence to the Divine Majesty of God, a witch will sit down in a corner of her house with a pail between her legs, stick a knife or some instrument in the wall or a post, and make as if to milk it with her hands. Then she summons her familiar who always works with her in everything, and tells him that she wishes to milk a certain cow from a certain house, which is healthy and abounding in milk.

And suddenly the devil takes the milk from the udder of that cow, and brings it to where the witch is sitting, as if it were flowing from the knife.’¹³ In 1538, the church reformer Martin Luther led a conversation on witches and their spoiling of milk, eggs and butter. For these crimes they should be burnt. The butter that they touch turns rancid and falls to the dirt of the ground. Conversely, he saw God at work in the provision of these goods: ‘Look at the cattle going into the fields to pasture, and behold in them our preachers, our milk-bearers, butter-bearers, cheese and wool bearers, which daily preach unto us faith in God, and that we should trust in him, as in our loving Father, who cares for us, and will maintain and nourish us.’¹⁴ From the pulpit, he notes, the common people must be fed with milk: ‘Keep to the catechism, the milk. High and subtle discourse, the strong wine, we will keep for the strong-minded.’¹⁵ From God’s loving hands, the milk of the land, but the witch snatches it for herself. The only witchcraft trials in Ireland were concerned with butter and milk witches. The Irish Folklore Commission records housed in University College, Dublin, relate numerous stories of butter-stealing witches who use either the evil eye or sympathetic magic to filch or spoil the butter — or they shapeshift themselves into hares to suckle milk directly from the cow. Such stories were collected well into the 1930s.

unreliable matriarchs

Milk is abysmal, of the abyss, to be found in the separation or cleft. But it also joins, 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

¹³ From *Malleus Maleficarum* Part 2, Chapter XIV ‘Here followeth how Witches Injure Cattle in Various Ways’

¹⁴ Para. LXXXVIII in Martin Luther’s *Table Talk*

¹⁵ Para. DCCCIII in Martin Luther’s *Table Talk*

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 sprayed 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 the bodies that they would rather not have to rely on.

In Ancient Egyptian myth, the Milky Way was conceived as 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 band of milky light, named by the Ancient Greeks, galaxías (γαλαξίας) or ‘milky’. 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 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 Jacopo Tintoretto’s *Origin of the Milky Way* (c.1575—80) and Peter Paul 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.

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



It is the milky place out of which and into which we are made. Its oldest sparkle 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?

cosmic mining

The motif of a vertical cosmos — sky, earth, underworld — was gradually secularised from the Enlightenment onwards. Yet excavation has often been cast in mythological terms. Heroic journeying into the deep became a central motif of science and the humanities; digging ever more deeply to recover the truth about the past, digging for the minerals to build a new future. Sigmund Freud drew on the new discipline of archaeology as a model for psychoanalysis, as an analogy of the mind. The mineral spaces of the subterranean environment support human life through a technologised infrastructure, and the modern city likewise supports selected lives through delivery and extraction systems. Mines, like modern cities, do not tend to sustain biological diversity — they draw radical abstractions and world reductions, reinforcing vertical stratification as a guiding organisational logic. The motif of mining has been carried over to the 'bioeconomy' whereby complex biological entities are harboured, extracted, mimicked, modified, synthesized as individually tradeable product lines.

What can be found in milk? What gold can be mined from its complex whiteness? Under an optical microscope, only fat globules can be seen. Under an electron microscope, tiny milk protein particles, or micelles can be seen. These make branched chains when yoghurt is made. They cluster for cheese. Heat disturbs them. Whether they bind or fall apart into curds and whey is dependent on temperature. Bacteria introduces changes as these microorganisms make lactic acid that coagulates the milk. To understand food microstructures

is to understand a science of substitution. The tongue has evolved to understand the size of particles as a type of experience, as a relation to a state of matter. Particles that are 1—5 μm in diameter are experienced as fat, because of the human experience of milkfat over millennia. All particles, whatever they are made of, seem like fat at this scale, and so allow for the replacement of cream by microparticulated milk proteins.

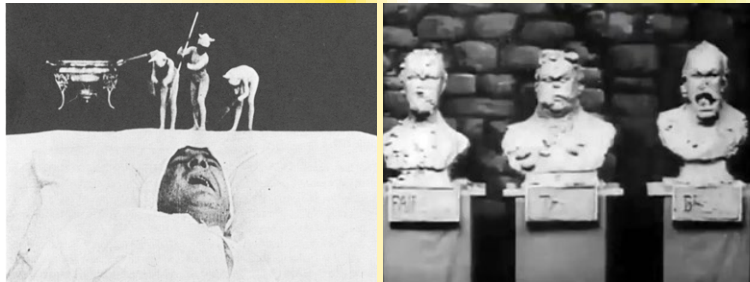
night terrors

Stars are the lights for sleep and dreams, such states as are induced by imbibing milk, whose busy activity is associated both with restful slumber and nightmare visions. The night-time consumption of milk and cheese is associated with restorative rest; dreams of plenty, 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 dairy-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 on a 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, then becoming a 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. 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, cussing the cheese that sent them into madness. One of the comic strips, from 26 October 1904, depicts a man traversing a busy 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 more suitable for the task than rubber. But the cheese-wheeled car spins out of control, its wheels rotating and mutating into long strings of cheese that fill, 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 under the wheels of an automobile and arrives in Hell where he melts in a pit of bubbling Limburger cheese. His body entangled in strings of stickiness makes him appear ghost-like. 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. The elasticity of cheese produces endlessly imaginable scenarios from itself.

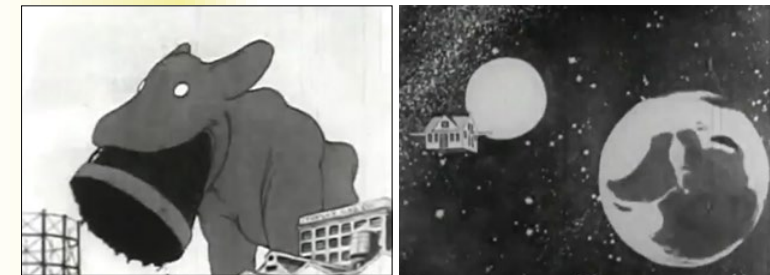


Cheese can be anything, formed and reformable. So too can clay be formed in any and all ways. The first animations made using stop motion and clay appeared in 1908 and they dealt with cheese too. They were *A Sculptor's Welsh Rarebit Dream*, directed by Edwin S. Porter in February, and *The Sculptor's Nightmare* directed by Wallace McCutcheon in May. 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 Teddy Roosevelt. But this parade of presidents is only an effect of eating cheese at night. In *The Sculptor's Nightmare*, a sculptor is unfairly sent to jail. As he sleeps fitfully and despairing, four sculptures appear and begin to form themselves. Once they have formed they move: a wobbling head, a speaking mouth, a playing cat.

McCay's strips and cartoons derived from the ending of his own dream of being a fine artist — and were perhaps part of a nightmare in which his labour was required to be incessant, as unremitting as the city, as relentless as the newspapers which appear day after day, as non-stop as the vehicles on the busy New York streets, as persistent as morning milk appearing on the doorstep day after day, marking time as repetition. 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. His son recalled:

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...¹⁶



The Rarebit Fiend comic strip appeared daily in the New York Herald from 1904 to 1925, and, in 1921, McCay made two animations based on 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 destabilising debt-economy. The marauding beast trounces

¹⁶ From an online post titled 'Hearst Castle Fare — What were they eating in the Castle?'

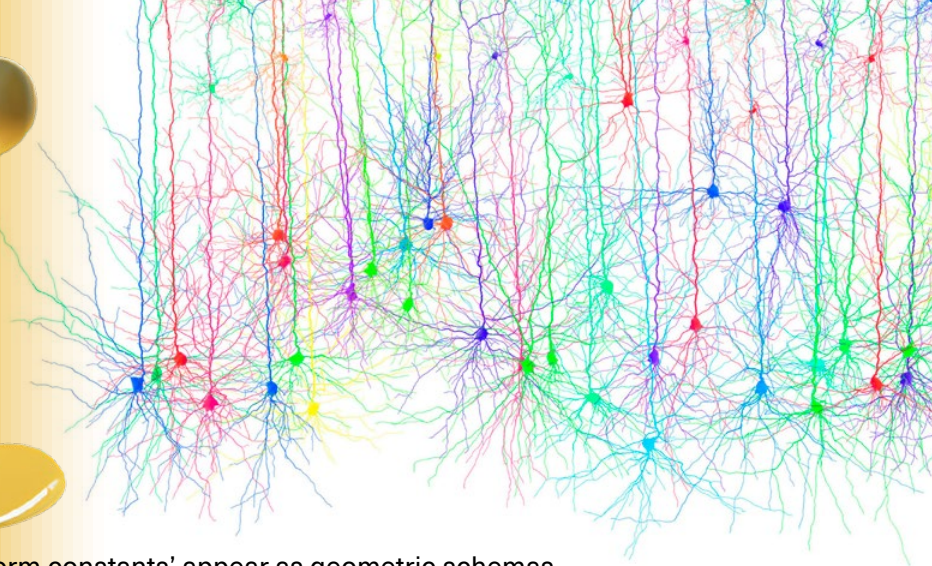
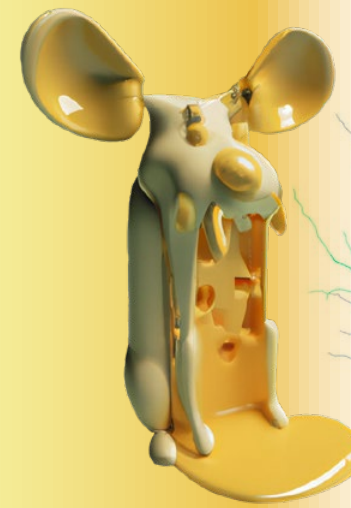
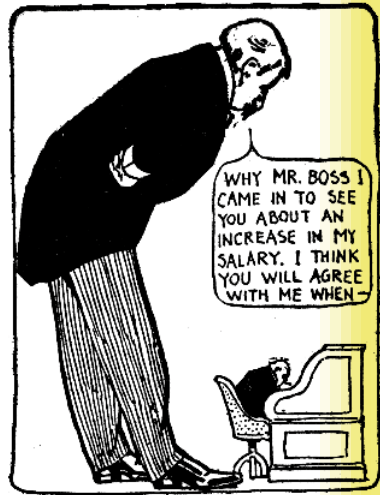
New York's newly built skyscrapers and the maverick householders literally fly their house into space to escape their mortgage debt and the suburban grid. They can only be stopped by state-military intervention with new forms of heavy machine artillery, followed by the dreamers' own salutary return to 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 developing modes of production. 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 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.

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.¹⁷



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.

cheese squares

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. It encodes 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

¹⁷ Heinrich Klüver, 'Mescal Visions and Eidetic Vision', *American Journal of Psychology*, 37, 1926.

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 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 they 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...

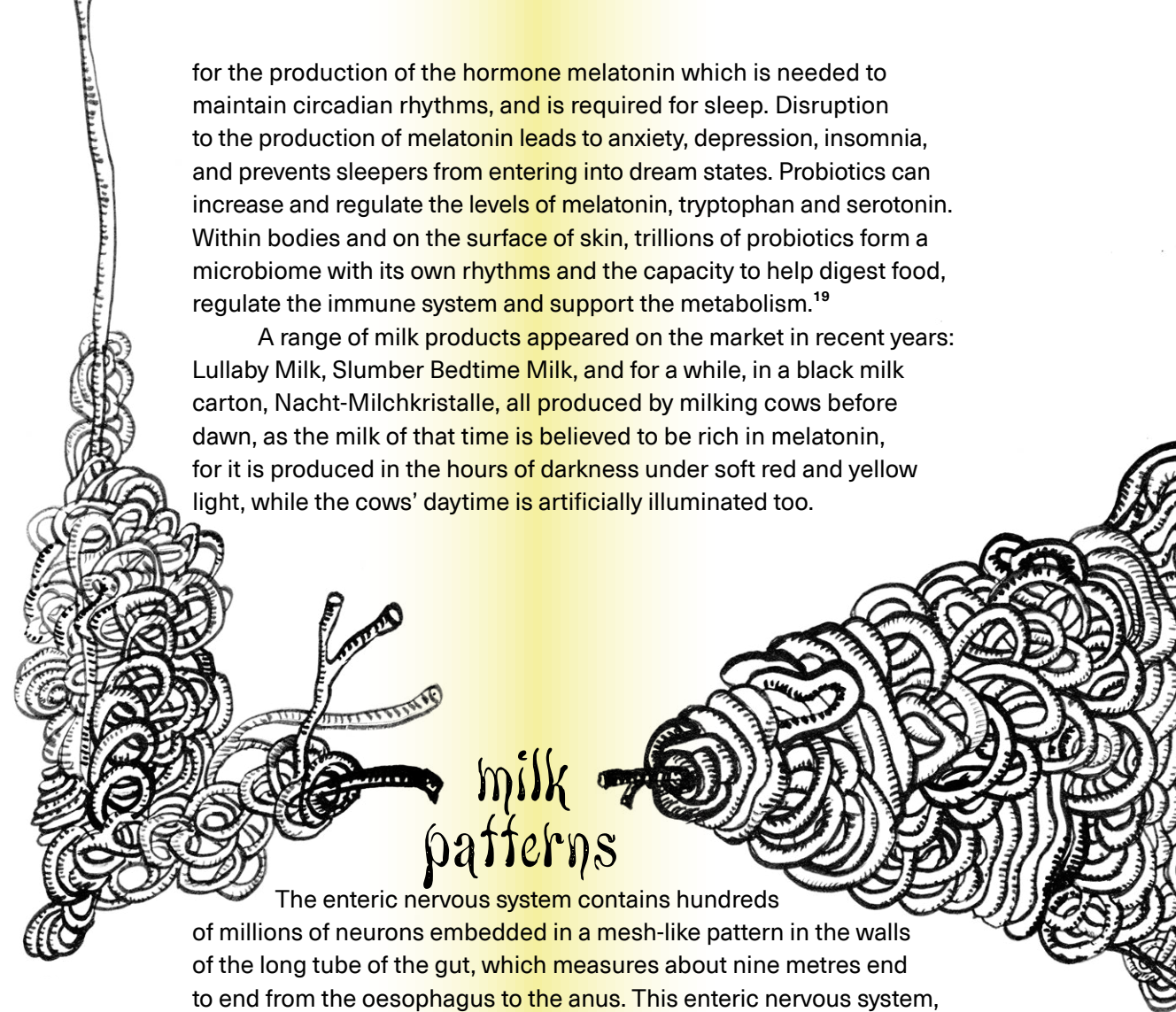
stated Nigel White, in a press release titled 'Sweet Dreams Are Made of Cheese'.¹⁸ Still the British Cheese Board entertained associations between cheese and dreaming and between particular cheeses and particular types of dream. Different regional products were seen to incubate different dream forms: 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 report 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 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

¹⁸ www.dreams.co.uk/sleep-matters-club/lets-talk-about-that-cheese-and-dreams-experiment

¹⁹ Moises Velasquez-Manoff, 'Microbes, a Love Story', *New York Times*, 10 February 2017

for the production of the hormone melatonin which is needed to maintain circadian rhythms, and is required for sleep. 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. Within bodies and on the surface of skin, trillions of probiotics form a microbiome with its own rhythms and the capacity to help digest food, regulate the immune system and support the metabolism.¹⁹

A range of milk products appeared on the market in recent years: Lullaby Milk, Slumber Bedtime Milk, and for a while, in a black milk carton, Nacht-Milchkristalle, all produced by milking cows before dawn, as the milk of that time is believed to be rich in melatonin, for it is produced in the hours of darkness under soft red and yellow light, while the cows' daytime is artificially illuminated too.



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. It is now known that gut microbiota assist change in sexual reproduction, brain physiology and neurochemistry. The interplay between food, microbiota and the gut has various effects on affect, motivation and higher cognitive function. This association between microbiota, the gut and brain chemistry is so profound that a field of study named psychobiotics has emerged. 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 his recollection of the monstrous spectres that appeared in the night.

compensation

Dreams, at least daydreams, are recompenses.

Ernst Bloch argued that dreams of hope are important to foster and preserve, since they represent a radical or revolutionary urge to restructure society, so that humans might finally reach something, someplace they might call home. Dreaming which stands still foreshadows no good. Dreaming ahead is thrillingly alive. Dreaming the future moves the dreamer 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'.²⁰ 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.

junk ouroboros

The fairy tale was a dream of the medieval age, which also harboured 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 they will be feasted upon.

These creatures are perhaps even ready to eat themselves, a culinary ouroboros, a self-sacrificial eternal return. Foodstuffs made large, human-sized, mobile and perambulatory, reoccur in folk history and fairy tale. In Breughel's *Het Luilekkerland*, his lazy luscious land, houses are roofed with pies, a pig trots by with the carvery knife 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 human speciesism that is only just beginning to be dismantled, whilst in the face of animal and habitat extinction. The constant threat of hunger dominated medieval Europe. Sometimes the dream became a reality, in the occasional feast. Eating in excess was in defiance of scarcity, a snub to death. Public and collective feasting performed a summons to hold inevitable oncoming shortages at bay. 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.

The warmth of spring and summer opened up periods where abstinence was viable, and so this time was interspersed with 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.²¹ There were not only copious amounts of food on the tables of the aristocracy — it took on animated form in elaborate tableaux with scenes of pillage and shipwreck, battle sieges, military encampments and the portrayal of biblical stories. Edible architecture of epic proportions made an appearance on the banqueting tables of the wealthy. There were transposals and duplicities, with substitutions of one food for another, its substance reconstituted to fool and delight. There were automatons, whales spewing fish, singing mermaids and cavaliers, a dromedary releasing birds from pies to swarm around the dining hall, and then drawn together again by a royal falcon. Fantastic food is food of fantasy

for others. In the dream of the peasant too, the dream that is laid out in the courtly love lyric of medieval Germany, appear the girls and the boys of desirable robust well-fedness and beauty. These are 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', as beautiful as milk and blood.

Glas Gaibhleann is a cow of old folktales. Cream spilled from her. Her resources never dried up. She could fill with milk any vessel placed beneath her. The story of Glas Gaibhleann takes many forms. In one, a woman,



²⁰ Ernst Bloch, 'The Fairy Tale Moves on in its own Time', 1930

²¹ Christina Normore, *A Feast for the Eyes: Art, Performance, and the Late Medieval Banquet*, (Chicago: University Chicago Press, 2015)

jealous of the cow's bounty, placed a sieve beneath her. The cow excreted enough milk to make a lake. The grass on which she lay became ever more fertile. This cow could traverse Ireland in one day. She fed everyone who crossed her path. No-one would starve when the special cow was around. Some tried to capture her. They wanted to appropriate her cream. She was raided, just as the cattle raiders carried on their sport in medieval Ireland. But she always managed to escape. In time, this interaction with humans came to bore or annoy her. Some say she burst through rocks and landed with Balor of the Mighty Blows on Tory Island. Other say she leapt into the sky. A trail of her still remains. It is the Milky Way. Or the Bealach na Bó Finne, the Way of the White Cow.

The Land of Plenty, the Land of Milk and Honey, undergirds the foundation myth of America and accompanies its promotional culture throughout the early twentieth century. Giant lobsters, vegetables, ice creams: again and again a rebellious, all-consuming, self-directed populace appears positioned outside or atop shops and malls or on billboards. These supersized entities are assertions of the right to consume in excess. In the quest for endless satiation, advertisers and businesses absorb those who it sought to oppress, exploit and annihilate. In the figures and mascots of consumer culture appear South American plantation workers, enslaved Africans, underpaid domestic servants. Aunt Jemimas, Uncle Bens, Miss Chiquitas, the Land O'Lakes sweet cream 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 plainly as ciphers of nihilistic excess. Utopian fantasies of food without labour have been 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 constantly fail, and to attend to the jobs that machinery cannot do around the crops, which are drip-fed with synthetic nutrients, or to 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.

For some time, the supply of food in industrialised nations meant that supermarkets were permanently and copiously filled, and food stores



enjoyed 24-hour availability. Times change. In the United Kingdom, economic crisis from 2022 onwards and exit from a trading bloc, along with fuel, fertiliser and feed cost rises, have exposed a dependency on supply chains that are now breaking. It is not uncommon to see empty shelves and panicked headlines, as real-world glitches flicker in the fantasy of abundance.²²

Outside the bubble tea shops stand oversized cups of brightly coloured milk tea with boba floating implausibly in a solidified swirl of fibreglass cream. It joins the oversized ice creams — some of whom have engulfed a boy who eats away with an over-sized spoon. Elsewhere can be found their cousins, the butcher-pigs in hat and apron. These mascots are a link between human and non-human worlds and other possible worlds. Junk mascots are a reliquary for themes of transformation, the baroque, the bizarre and the grotesque.



²² e.g. 'UK sleepwalking into food supply crisis', says farming union, BBC, December 2022





beastly bodies

The ontologies of donor species collapse as milk re-forms into consumable biomass. 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 the 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 red and 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.²³ 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 bedside, as he believed that, as with semen, air would contaminate it.²⁴

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.



²³ Londa Schiebinger, *Nature's Body: Gender in the Making of Modern Science* (Rutgers University Press, 2013)

²⁴ Giulia Pedrucci, *Breastfeeding Animals and Other Wild "Nurses" in Greek and Roman Mythology*, (Bologna: Università degli Studi di Bologna, 2016)

Whereas in the pre-modern period 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 that is dependent on hierarchies of beasts and humans, as well as within humankind. 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? This is far from the mystical veneration of breast milk. Medieval stories indicate how breast milk delivers sacred cognition from a visceral and bestial source, out of a body denounced as part of an initiation into the sacred. The notion 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.²⁵ 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'.



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'. In 1577 too, the translation of Konrad Heresbach's *Foure 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 drawn out, doth hurt the Lambe.

↑
A woman breastfeeding two puppies whilst two Mexican peasants implore her to feed their baby, which is lying on a bed of straw. Chromolithograph after A. Utrillo, date unknown

25
Jutta Sperling,
'Squeezing,
Squirting, Spilling
Milk: The Lactation
of Saint Bernard
and the Flemish
Madonna Lactans (ca.
1430—1530)',
*Renaissance
Quarterly*, 2018

→
*Saint Bernard
and the Virgin*
Alonso Cano,
1657-60



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.

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. 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. There are, though, in this epoch, 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.

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 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', just as male nipples were — as if they had evolved to transcend any use in base, 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.



Embryos of both sexes have primitive structures that can develop into male or female reproductive organs: breasts and nipples start to form between weeks four and six. Two ridges named mammary crests or milk lines extend between the primitive armpit and the groin. At birth, boys' and girls' nipples and breasts look alike. At puberty the ducts of the male breasts shrink while female breasts and nipples enlarge and remodel. The capacity to feed through a nipple remains in all bodies — if sufficient hormones are present — e.g. increased estradiol and progesterone dosing to mimic high levels seen during pregnancy, followed by reduction to mimic delivery and then the use of a galactagogue to coax prolactin — lactation can be induced.

Wet nursing in the eighteenth-century France often involved a separation of birth mother from baby, for the 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.



Farewell to the Wet Nurse
Etienne Aubrey, 1777

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.²⁶



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 mammarys and replaced a previous term from Aristotle according to which many creatures were classified, quadrupeds.

²⁶ From Rousseau's *Emile or Treatise on Education*, 1763

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.²⁷

Wet nursing takes on other forms in the modern day, through milk banks for one. Human milk banks operate across the world, as a result of the promotion of breastfeeding by global agencies such as the WHO.²⁸ Brazil has the largest network, with more than two hundred human milk banks.²⁹ In 2022, the first milk bank in Nigeria was established in response to a rise in neonatal deaths and for babies who lost their mothers during delivery, as well as for those unable to produce adequate supplies.

In late 2022, there were reports on the growth of online breastmilk donations and sales in Australia. A bioethicist argued it should be redefined as a tissue and regulated like blood, for fear of it transmitting disease to infants. The question is: 'whether it is appropriate for human milk to be exchanged via markets — which might be permissible if human milk is exchanged as a food, but not if it is exchanged as a tissue'. Much of the milk traded as a commodity is not destined for babies' mouths but for cancer patients, athletes and bodybuilders.³⁰

²⁷ An Essay upon Nursing and the Management of Children, from their Birth to Three Years of Age, by a Physician.

²⁸ Fang et al, 'Developing Global Guidance on Human Milk Banking' (2021) 99 (12) Bulletin World Health Organization, 892

²⁹ Luciana Fragus, "'It Is Saving Lives': Brazil-Style Human Breast Milk Banks Should Be Set up in Australia, Says Expert' SBS Portuguese (13 June 2019)

³⁰ Neera Bhati, Julian Koplin, Ainslee Spadaro, 'White Gold on the Black Market: The Need for Regulation of Banking and Donation of Human Milk in Australia', Published online: 22 Nov 2022



dairy queens

The notion of bosom friends is an old one. In Elizabethan English parlance, 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 accusations 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. 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.

↑
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)

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. 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 make-up made of milk to disguise her blemishes. It was said that she suffered 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.

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'.



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



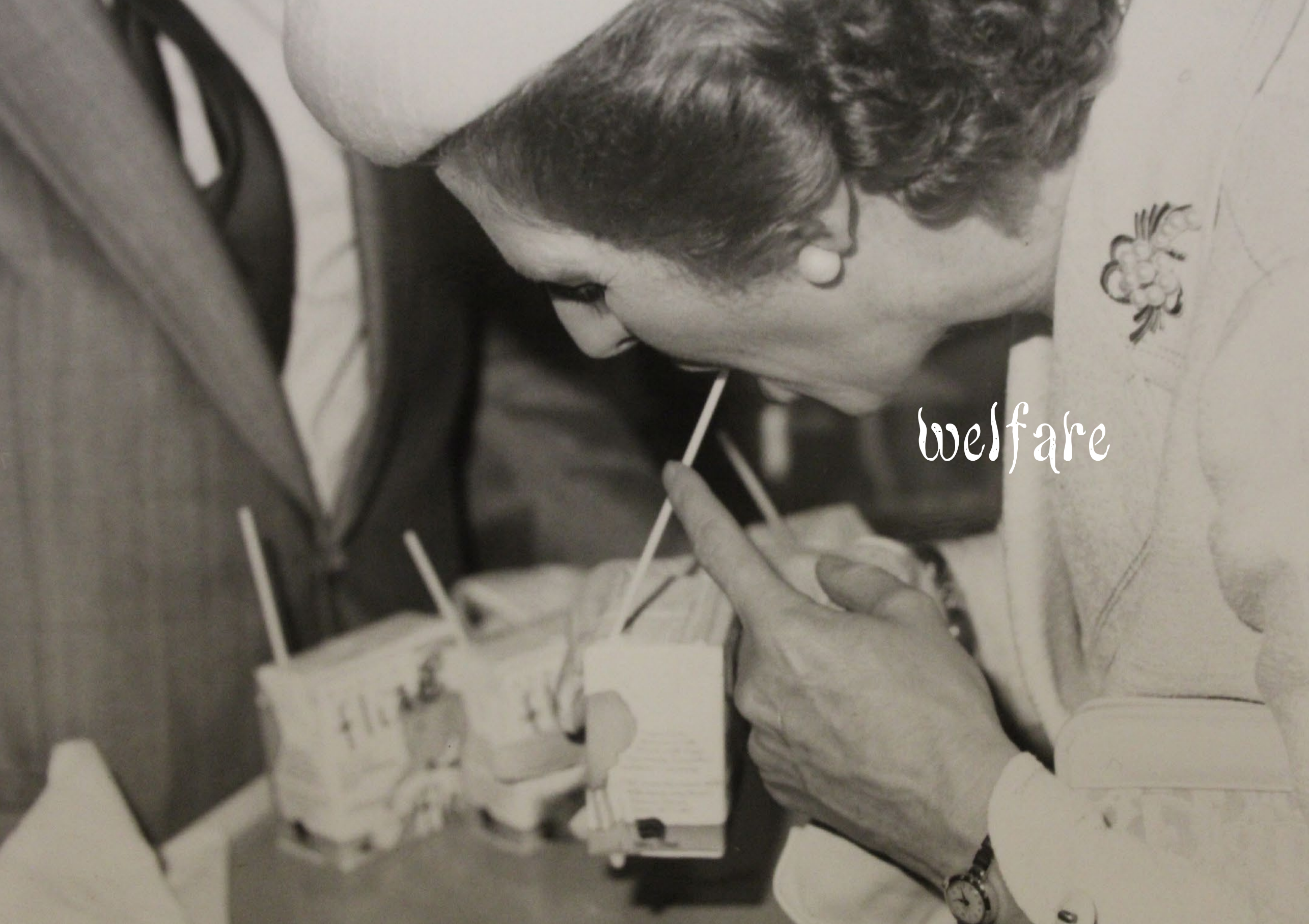
The Milk Marketing Board held an annual 'Dairy Queen' contest in the UK throughout the 1950's and 1960's. The 'crown' was awarded by a member of the British Royal family. A Queen's prize included £100 and six dresses. She acted as ambassador of the industry and was expected to make appearances throughout the year promoting milk. Pictured here at Regents Park Zoo feeding cow's milk to a young chimpanzee. 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 in order 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 preindustrial past.

bourgeois breasts

The 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 French 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.

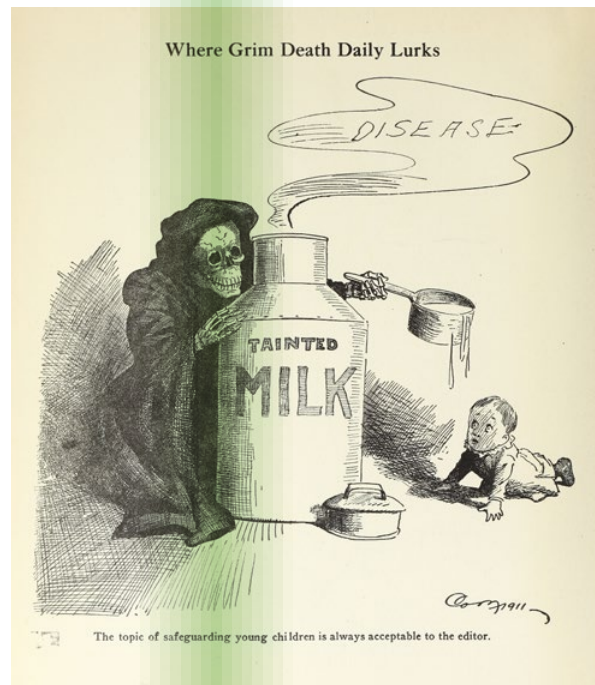
In Daumier's sketch, Liberty is now tethered to a chair, flag rolled up at her side. The image submits that it is the duty of women to nurture the citizens of the state. No longer bare breasted in the throes of revolutionary struggle, they now have reproductive duties to the state. Captured in this official 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.³¹





welfare

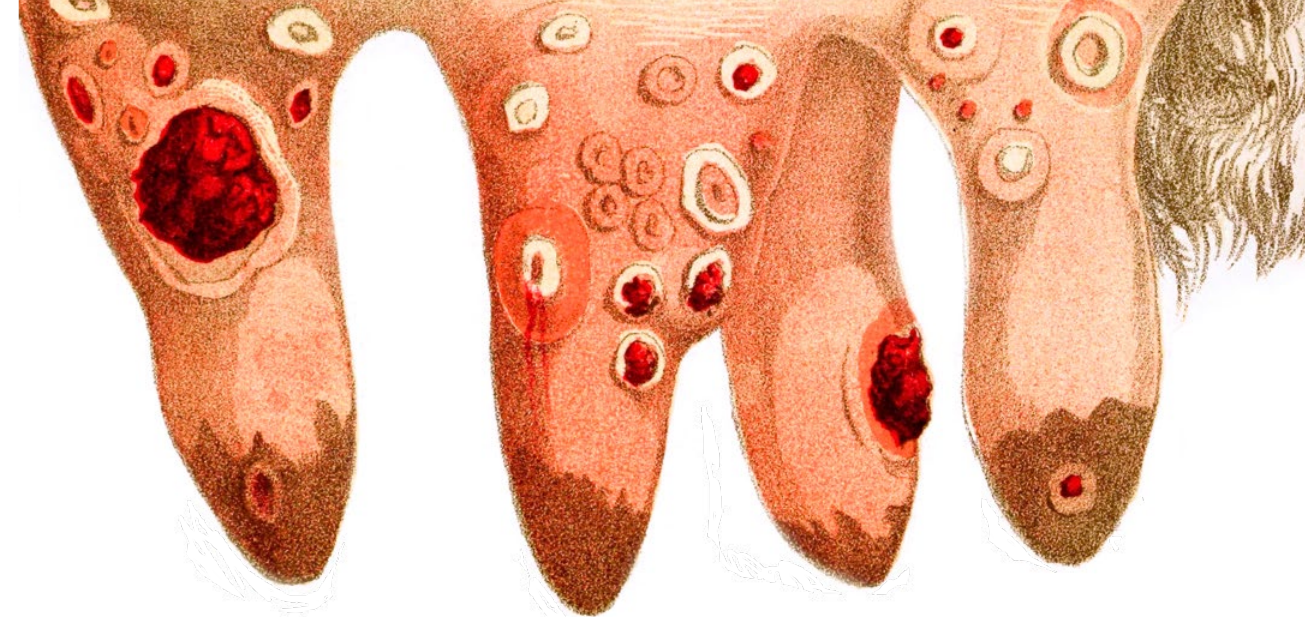
By the late seventeenth century, enclosure of grazing lands had impacted upon animal husbandry in the countryside, in England. There were fewer milk cows. The country labourers at this time turned to ale as a beverage and butter and cheese as a foodstuff. Until the mid-eighteenth century, milk — rarely drunk by adults — might as well have been the milk of ewes or goats. 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 attached to a pole slung across their shoulders and carried through the dirty streets. Sometimes the cows were driven through the streets and milk sold straight from their udders, in order to counter claims of dilution or to avert pollution.



The topic of safeguarding young children is always acceptable to the editor.

Over time, as the nineteenth century passed 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.

31
Mathilde Cohen,
'Regulating Milk',
*The American
Journal of
Comparative Law*,
Volume 65, Issue 3,
September 2017,
pp.469—526



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'.³² 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 commodification, and thereby incorporated into the emergent systems of economy and policy.

The imperative of 'purifying' milk became a driving principle of the modern era and it is in milk that public health battles occur. Nowhere were bacteria pursued more aggressively than in milk — which nurtures, when drunk directly from the body, and tended 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.

32
William Prout,
*Chemistry,
Meteorology, and the
Function of Digestion
Considered with
Reference to Natural
Theology*, 1834

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. 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 to cowpox in the milking shed.

Hygiene is the result of this laboratory work — with pasteurised milk becoming more widely available from the 1890s — and it makes possible the sending to war and, subsequently, the mass deaths of millions of healthy men in the muddy, rat-infested trenches of the First World War. 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.

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 exposed lactic yeast as 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'. 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 possibility of reliable supplies of clean milk without tuberculosis 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.³³

the old and the new

The aristocratic pleasure dairies were a mirror opposite of the home butteries where strong female churners laboriously made dairy products day after day. Milking and churning were women's work in Northern Europe for a long time. 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 at regular intervals. Machines lightened the labour of processing milk and of turning it into other things. The cream separator — separating cream and whey — emblematises 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, Vladimir 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.³⁴

³³ Francis McKee, 'The Popularisation of Milk as a Beverage during the 1930s', *Nutrition in Britain: Science, Scientists and Politics in the Twentieth Century*, (London: Routledge, 1997)



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, Martha purchases a bull.

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.

34
Vladimir Lenin,
*The Development
of Capitalism in
Russia*, 1899

Its splurging is intercut 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.

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.

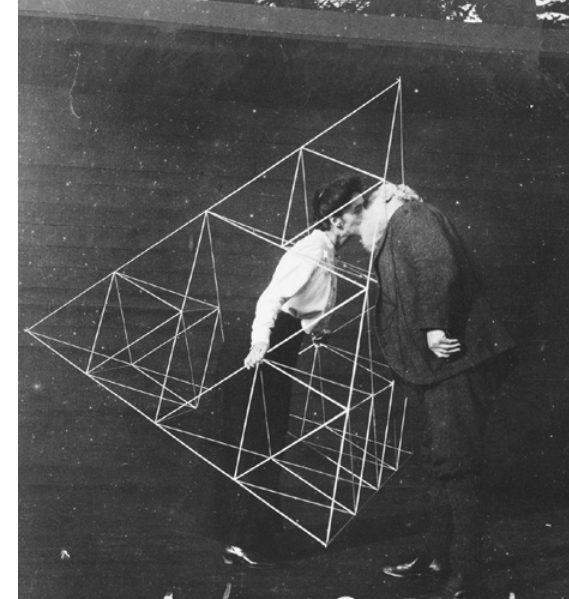


mock milk & pyramids

On 28 February 1961, a debate in the British parliament addressed issues concerning legislation of what was called 'filled milk'. Labour MP Geoffrey de Freitas led an attack on the government for a compromise around what he called 'mock milk', skimmed milk that had added vegetable fat to replace the fat removed to make cream or butter. He had heard some took it on medical instruction for reasons of health. The MP did not wish for the milk to be banned, he wished only that the public know that what it was receiving was not real milk, or what he called 'good old-fashioned milk from old-fashioned cows' in his 'cuppa', rather than 'modern vegetable fat'. The debate was emerging on what were called synthetic foods.

De Freitas recalled a battle from two years before over whether the label dairy ice cream could be restricted to ice cream made of milk — and by then the label ice cream was already available for desserts that had no dairy product in them at all. The 'synthetic food manufacturers', he insisted, held too much sway. Indeed, De Freitas' claims for transparency in these matters were not even as radical as the initial disputes around filled milk. In 1923, the United States Congress banned the interstate sale of filled milk, as a response to a strong lobbying of the dairy industry. Filled milk became controversial again in a 1935 court case against Carolene Products Co, and its invention Milnut, a canned blend of condensed skimmed milk and coconut oil, cheaply imported from the Philippines. The company survived and changed the product's name in 1939 to Milnot.

Recently global milk packaging and dairy firms reconceptualised this strategy of making more with less, and from those with less, as reaching 'Deeper into the Pyramid'. An economic principle, it works to insert itself into economies where new consumers are profiled as having a total spending power of between €1.80 and €7.20 per day — that mass of humans at the bottom of the economic pyramid — via a prescient geometry. The pyramid forms of the first disposable milk cartons in all their minimalist modernity are echoed in this new asset-stripped return, radically more pervasive than what can be creamed off from the over saturated market at the apex. Tapping into this market takes vernacular adaptation and styling. They may use alternatives to whole milk — such as whey or lactic acid and other low value milk and fat derivatives.



Modifying or tweaking the recipe again involves replacing a more expensive ingredient with a cheaper one such as local palm oil. Packaging and dairy firms work with government to implement regulations making it illegal to pasteurise milk at home or to supply 'loose' local milk, in the name of benevolence and hygiene.

formulas

Formula milk is presented as a fix to problems of under-nourishment and infant mortality — and a part of the quest for 'scientific motherhood'. The history of infant feeding is a triangulation between the promises of technology, commercial pressures, 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 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. 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. Rationalisation of milk supply allows the penetration of exchange relations into new markets.

Technological processes for separation allow 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', 'Pro-Advance', 'Advantage', 'Humana', 'Platinum', 'Gold'. There are promises of great futures and social advantage. Milks are directed at the lucrative Hong Kong market. It uses sophisticated myth-science and branding, with other-worldly Perspex and gold structures at points of sale etched with scientific diagrams of golden molecules and DNA. Its web and TV imagery convey a fusion of mystic, economic, genetic (and gender) supremacy.

In Asian markets, the anglicised brand names reflect market confidence, regulation and corporate standardisation 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 available globally '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, raises I.Q. scores.

A McKinsey survey in 2017 found that 53% of Chinese consumers expressed a preference for a foreign brand of infant formula. As birth rates grow, with the suspension of the one-child family in 2016, the market grows more. There is gold to be made. Specialised infant formulas are Ireland's major dairy export item to China and are sold to what is known as the super-premium end of the market, retailing in high-end stores, as well as online. This milk dust is gold dust. It has been a dust of death too. Milk powders have long been dogged by accusations that they exploit and harm the poorest of the world. The marketing companies create a need where none existed. They make the consumer-base guilty if they deny their children this best — and expensive — start in life. They hook them in, like drug pushers, with samples.

The world crisis of 2022 touched formula too. In December 2022, newspapers reported on unsafe infant feeding practices in the UK, such as overwatering formula mixes to stretch it out, or lengthening the gap between feeds. This was a result of the rapidly rising cost of the powders, which exceeded the value of the vouchers given to poorer parents to cover the feeding needs of a baby's first six months.³⁵

³⁵ 'Fears skyrocketing formula milk costs will force babies into hospitals with serious illness', *The Independent*, 6 December 2022





exposures

Women have 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 again and again as pornographica and as excessively visceral fantasy. 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. Once 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.

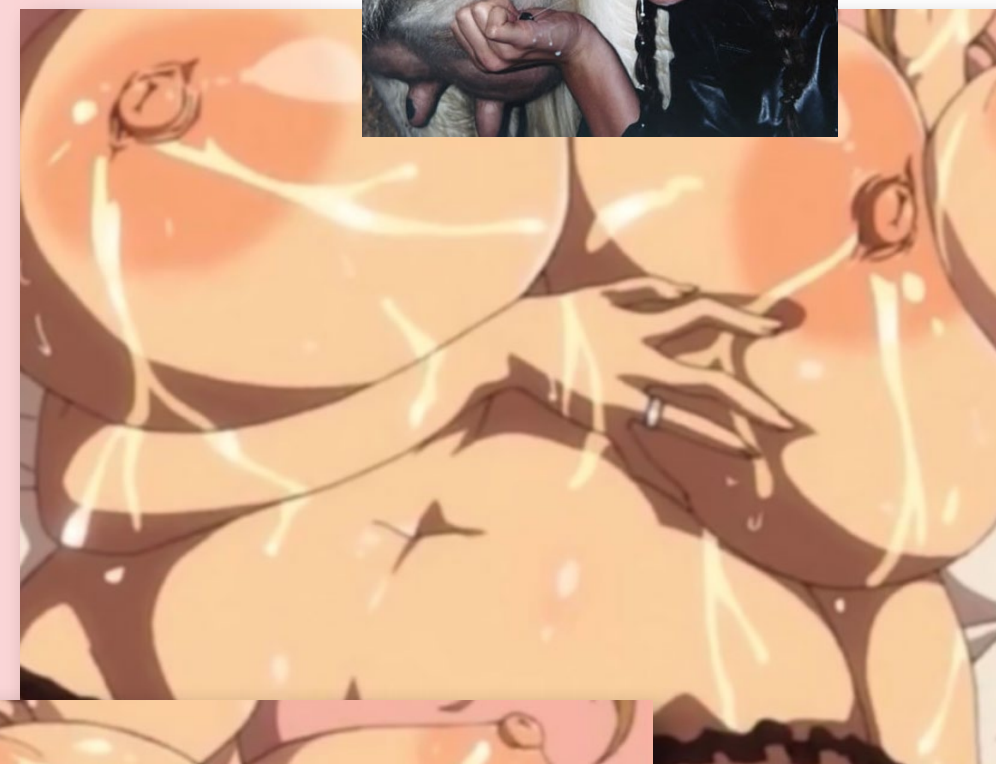
In Japan, around the turn of the millennium, maid bars began to proliferate in Tokyo and beyond, where cosplay waitresses acted out servile maid roles in flouncy pink or black dresses with white petticoats and aprons, perhaps in a room something like a cute pastel-coloured nursery melded with a Victorian parlour. Ice cream and milk is on the menu. Maidreamin is one of the largest chains that employs 'maid cast members' who 'serve masters and ladies around the world every day', with Healing Panda, Dreaming Kitty and Bunny in the Forest Parfaits.

At night, the maids transform into 'party girls'. These extend into milk maid pornography and a pornographic collectable market replete with lactating figurines. Adult males may drink expressed breast milk in the Bonyu lactation bar in Tokyo, and, for a financial premium, drink directly from the source. In 2013, newspapers reported that wealthy people, in high-pressure jobs and with poor health, in southern China, had developed a taste for breastmilk — hiring their own wet nurses to live in their homes and supply them with milk through a pump or directly.³⁶ It was also reported that high-ranking government officials attended at orgies held by businessmen, where they accepted bribes and indulged in drinking breastmilk from young nursing mothers for \$800 a go. All this occurred in the wake of a contaminated formula milk scandal, in 2008, when it was found that Sanlu Group's milk and infant formula was contaminated with melamine in order to increase diluted milk's nitrogen content, so that it would appear to quality control richer in protein.³⁷ It damaged the kidneys of infants. In 2021, some news sources reported on the smashing of an online breast milk sales network in China.³⁸

³⁶ www.bbc.co.uk/news/blogs-news-from-elsewhere-23161765/ Chris Luo, 'Human Breast Milk Popular Tipple Among Shenzhen Rich', *South China Morning Post* 2 July 2013

³⁷ 'Timeline of China's tainted milk powder scandal'. *USA Today*. 22 September 2008

³⁸ www.globaltimes.cn/page/202108/1232766.shtml





our bodies, ourselves

Breastfeeding is not just about the provision of milk to an infant. It is also not just about producing 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 an 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 breastfeeding selfie — at once an image of self and not the self, of bodies joined in the transmission of milk. Brelfies are part of the phenomenon of narcissistic self-imaging triggered by the confluence of the camera and social media in the smartphone. These images of breastfeeding are also neither metaphorical, idealised or pornographic, but normalising, various and self-authored. Nursing, as a bodily practice located at the breast, challenges notions of the bounded, autonomous individual. The breastfeeding selfie might be understood as a site of both rupture and bridging, an evocation of a simultaneously split and dual subject.³⁹ Perhaps the site of giving milk, of the mother splitting herself, causes social anxieties. This anxiety is mobilised to validate the social separation of breastfeeding from the public environment. 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 — expected to work at the computer whilst lactating, even whilst away from home on business in hotels or exercising.

As milk comes to be known better through the smartness of our technologies and analytical abilities, the essence is extracted and abstracted, 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 of the future, extracted remotely from the newly freed bodies of a workforce that need not leave its desks to do the work of reproduction. Luce Irigaray wrote in 1981, 'All Western culture rests on the murder of the mother'.⁴⁰ Jacques 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'.

³⁹ Elizabeth Grosz, *Volatile Bodies: Toward a Corporeal Feminism* (Bloomington: Indiana University Press, 1994)

⁴⁰ Luce Irigaray, *Le Corps À Corps Avec La Mère* (Editions de la pleine lune, 1981)

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 reflection, is paralleled in the abhorrence of the 'bovine', constructed as compliant and exploited. Furthermore, contempt for interspecies dependency renders the co-dependent human relationship invisible.



→
When the text prompt "breastfeeding" is typed into an AI image generator —it prudishly covers the breast to satisfy its 'decency' policy, and substitutes it for a strange hybrid vessel. The dataset they train it with is clearly limited — the infants hands and the mothers faces are also crude fleshy approximations.



The image shows two ancient clay vessels, possibly jugs or pitchers, with human-like faces carved into them. The faces have large, round eyes, a nose, and a mouth. The vessels are made of reddish-brown clay and are set against a dark background. The word "vessels" is written in a white, cursive font in the upper left corner of the image.

vessels

Clay and milk have a longstanding affinity. Some of the earliest existing vessels were containers for milk, as attested by fat particles found in their clay and on tools. Pottery vessels from the 54th century BCE have absorbed traces of dairy fat into their walls. Neolithic farming groups in Central Europe of this time are named after the material they worked and its styling — Linear Pottery Culture, referring to the decorative bands on their pots. Residual traces of fat inside allow the dating of when some of these farmers began to dairy farm and ingest animal milk — introducing new food commodities into their diet and beginning to live and work with animals in new ways.

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, for example, in practices by indigenous peoples of the Americas. 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.

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 sees. 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 early 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.

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...⁴¹

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.

good jugs

T.W. Adorno wrote an essay on his early encounter with Bloch's book *Spirit of Utopia*, titled 'Handle, Pitcher and Early Experience', a reference encoded there to Bloch's evocation of the inside of a Bartmann jug, a space he would like to occupy. Adorno notes how Bloch manages to achieve a changed relationship to the object, the jug. Adorno observes something about how, in Bloch, the Bartmannkrug is shown to have absorbed the imprint of history. 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.

History's traces are specifically brought to life, or enlivened, by Bloch's immersion in the object, written up as an approach from different aspects, perspectives, directions — an approach that is as multi-focal as a roaming camera or montaged film might be. This suggests a method for approaching an object — in this case milk, or vessels, one which might move around its focal point, take in its different perspectives, from above and below, close and far, and make links and discontinuities, both plausible and strange.



bad jugs

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 in England, 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 Hieronymus 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 'broken jug' becomes an actual and metaphorical key to the plot device, revealing a sexual encounter (and consequently complicity in a crime). The play draws on a double entendre in German for female chastity, virginity and its inverse, that of sexual experience.

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. 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 than an ordinary jug, a rough bit of pottery for domestic use, 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 the name of his production 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.



⁴¹ John Berger, 'Drawing', *Selected Essays of John Berger* (London: Bloomsbury), 2014



The finest pottery of all is said to be porcelain. Porcelain is often described as white and fine-grained. Its beauty is annexed to its translucent whiteness — its name derives from the old Italian for a cowrie-shell, with which it shares a glossy surface.

Under the urgent instruction of the royal courts across Europe, potters struggled to emulate its 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'.⁴² 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

42
From the Meissen Archives, citing Christoph Heinrich Petzsch (1692—1756): '...semidiaphanum tremuli narcissuli, ideam lacteam' or 'appearing milky white like a translucent fluttering narcissus'.

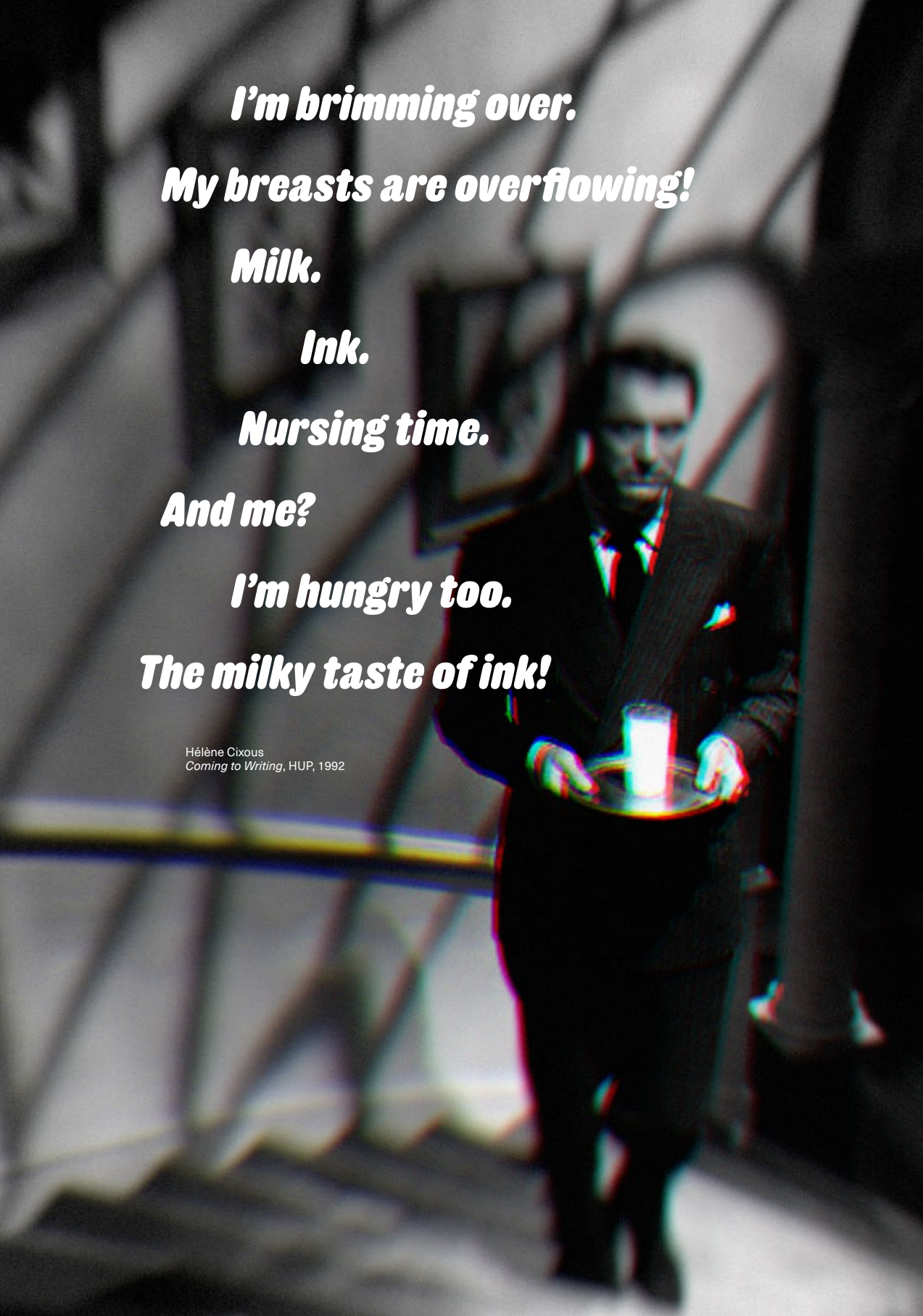
of 'a white Earthenware body, and a colourless or white opaque glaze, very proper for Tea & other wares.' He blanched his creamware by including china clay and a small amount of cobalt which gave a bluish cast to the glaze, and he named it Pearl White.

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 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.

kaleidoscopes
& carousels





I'm brimming over.

My breasts are overflowing!

Milk.

Ink.

Nursing time.

And me?

I'm hungry too.

The milky taste of ink!

Hélène Cixous
Coming to Writing, HUP, 1992

industrial metaphysics

We drink the milk that glows so white it seems to fizz, emanating beyond the contours of the vessel holding it. This is the milk that blazed when Alfred Hitchcock placed a light inside a glass of milk carried upstairs by Cary Grant in *Suspicion* — a poisonous milk. 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 noontime and dawntime,
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'.¹ 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, 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



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

1
Elif Şafak, *Black Milk: On Motherhood and Writing* (London: Penguin, 2013)

2
Marcus Wood, *Black Milk: Imagining Slavery in the Visual Cultures of Brazil and America* (Oxford: OUP, 2013)

in Brazil and North America, while their own children were compelled by their mothers' oppression to go hungry or to be fed on dirty water and animal milk.²

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.

*When a poet tells us of the secret of milk, the poet 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.*³

Milk is a whole. It is whole milk. Milk is comprised of an 'extraordinary totality'. In milk, all contradictions are held. Sartre insists that the 'secret blackness of milk exists' and that it is 'true that the word 'blackness' gratuitously destroys the essence of milk'. 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.



³ Gaston Bachelard, *On Poetic Imagination and Reverie*, pp.8-9. See also Jean-Paul Sartre, 'N-Dimensional Sculpture,' in *The Writings of Jean-Paul Sartre*, Volume 2: *Selected Prose*, ed. Michel Contat and Michael Rybalka (Evanston, IL: Northwestern University Press, 1974), p.170. Matthew Beaumont, 'A Psychoanalysis of Milk: The Case of Alfred Hitchcock' explores the resonances of black milk in Audiberti, Bachelard, Sartre and others: *Critical Quarterly*, 63: 2, 2021

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 1929 newspaper report on milk's constituents mined milk, through the newest photographic tools and scientific processes.

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.*⁴

In milk, hidden in 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 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.



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

Annatto

ERYTHROSINE

Chlorophyll

'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'.

INDIGOTINE

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.

Aluminium Metal

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 Bubble-gum ice cream sundae, scoops of blue bubble-gum and vanilla, with 'authentic blue bubbly sauce, multi coloured chocolate beans and a bubble-gum surprise'. It makes possible Wall's Soft Scoop Rainbow Strawberry & Vanilla Ice Cream and Ben & Jerry's Rain-Dough Cookie Dough Twist Ice Cream — which all in turn make possible 'great gifts for kids', such as Squishmallow Gladly The Rainbow Ice Cream plush, a 'Soft and Squishy Food Stuffed Animal Toy'.

turbo,
turbidity,
tobio,
trouble

Milk offered the proof of Johann Wolfgang von 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. 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.⁵ 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 homogenous 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. Industry plays its role in making it an actuality, through homogenisation.

⁵ Frederick Burwick and Jürgen Klein, *The Romantic Imagination: Literature and Art in England and Germany* (Leiden: Brill/Rodopi, 1996)



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 is a fluid incorporated into white nationalist supremacist fantasy - it re-emerged as a motif for the Far Right in the US in the Trump Era.

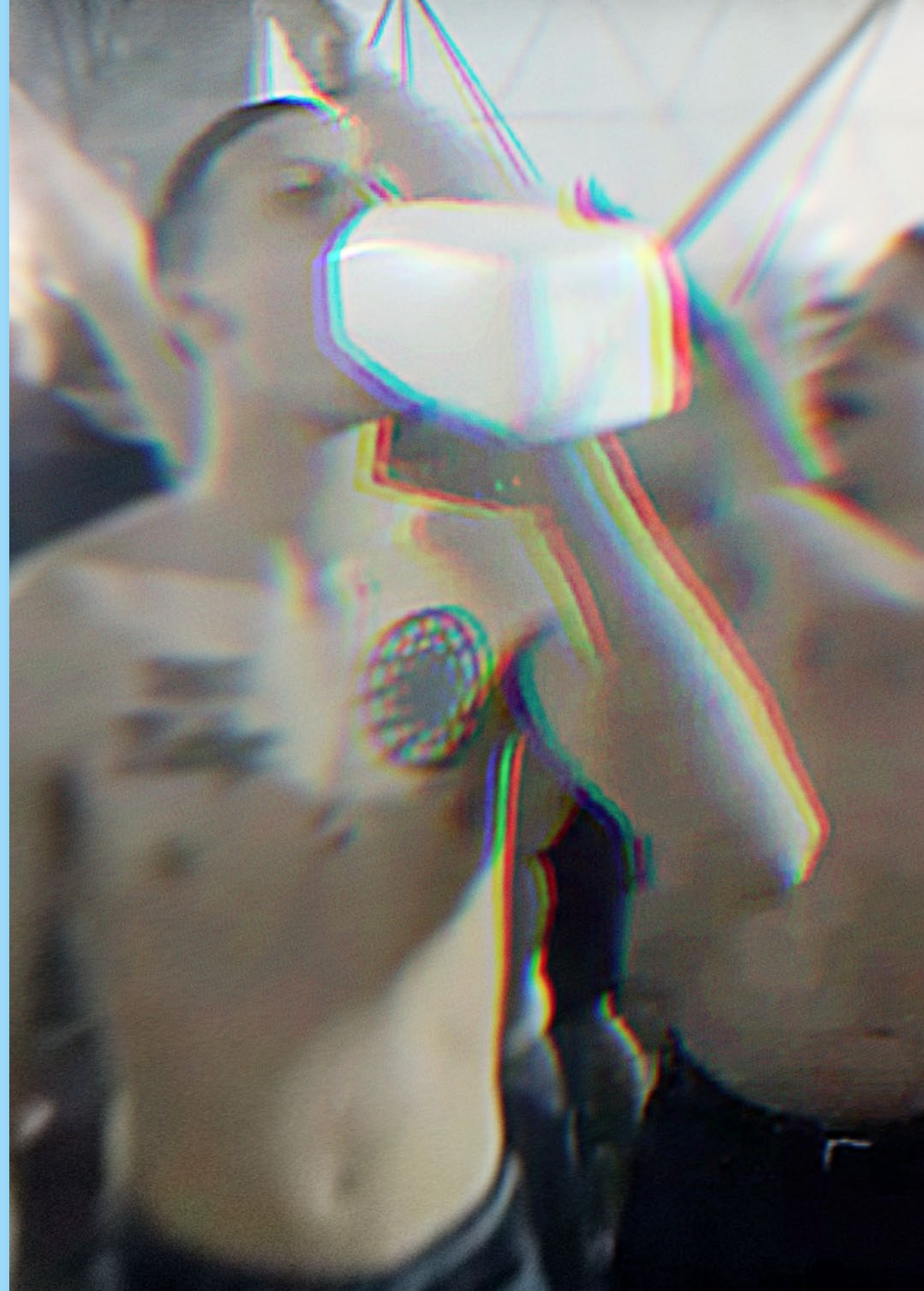
Milk contains lactose, which cannot be absorbed intact. It must be hydrolysed into its constituent monosaccharides, glucose and galactose, to facilitate transport across the small intestine's epithelium. Hydrolysis depends on lactase, a brush border enzyme, and those who cannot digest lactose lack lactase. 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. An 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'.⁶ The argument suggests that:

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.

⁶ Andrew Curry, 'Archaeology: The milk revolution', *Nature*, 500, 20—22 (2013)





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.

The fascists on 4Chan take this evolutionary development as a sign of belonging to an original European body that then spreads West, bringing agriculture and civilization with it. For those of other ethnicities, the hate speech insists: 'If you can't drink milk, you have to go back'. Back somewhere, to East Africa, perhaps, where the cattle breeders have a similar mutation, inconveniently for the fascists. The fascists chug their milk and send images of their milk-splattered bodies across the web. This is the ideal, iconic milk of social media, memes and gifs. The milk emoji tags white supremacist digital communications, and the hashtags #MilkTwitter and #SoyBoy celebrate traditional gender norms and the 'good old days' of white-dominated patriarchy.

On Donald Trump's Presidential Inauguration Day, 20 January 2017, an artist collective, including Luke Turner, 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, designed to run for the next four years of the Presidency as 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 white bodies.

The Museum of the Moving Image permanently closed down the artwork on 10 February 2017, three years and 345 days before its scheduled end, because it could not cope with the 'serious and ongoing public safety hazard' created by it. The alt-right toast the new political era of Trump with industrial milk in its plastic bottles as trophy.

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

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 antisemitic, 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'.

milk shaking

In May 2019, in the United Kingdom, milkshakes became a political symbol. Bought from fast food chains, they were thrown at figures from the far and alt-Right, as they walked around cities, campaigning in advance of the European Union elections.

The milkshake throwers in the UK are inside a fog of networked things, the froth of social media and endless information, the foam that turns toxic in our hostile environment of anti-immigration and unsafe spaces. The milkshake throwers mobilise a social turbulence by agitating within it further, using their turbid liquid to play back the memetic language. Lactose against intolerance, attempting to create new atmospheres, environments whose hostilities are firmly circumscribed, whose recipients are clearly marked out. They get from these iced desserts their just desserts. All shook up. All shaken up. The violence of a splash, of a splat, of a spillage, of a spray is beautiful matter for the camera. These shapes immediately communicate something else — become reshaped as bullets, as trajectories, as something made solid and usable in war. This action is so perfectly renderable on media, of any type — a splat across the screens, onto the dark suits of those who dress their thuggishness in the costume of respectability.



baby



In the *Three Essays on the Theory of Sexuality* (1905), Freud attributes the predilection for sucking in adult sexuality to 'the child's lips', which, in the earliest days, 'behaved like an erogenous zone; presumably the stimulation by the warm flow of milk was the cause of the pleasurable sensation'.⁷ Sociologically we are all babies and ex-babies in our unconscious relationship to each other, and in our arrest in development, in so far as the unconscious is holding us back in any way. A usurped baby becomes an adult 'ex-baby' still full of the rage and the conflict and rejection that occurred in the nursery. Grace Pailthorpe believed it pervaded everything as a 'virus of hate', infecting interwar Europe; in her 1941 essay 'The Cradle and Politics' she recognized the ways in which fascist politicians galvanised and harnessed the 'childhood fears and furies' of the masses. She insisted that Hitler and Mussolini would 'never have become insanely dictatorial had they had, as children, ample opportunity to vent their infantile rages'. She later wrote that the Nazis' 'physical and verbal attacks on the helpless Jews were projections of their own unconscious animosity towards the baby who, in infancy, it was imagined, possessed all the good things in life'. Does this infantile dependence on milk trigger in these ex-babies a desire to control it, take control of it, own it, exploit it and the body that produces it, and the other bodies that it feeds?

Freud will insist that the child rejects milk, becomes disgusted by it, at least at that point when a skin forms on it:

*The same child who once eagerly sucked the milk from his mother's breast is likely a few years later to display a strong dislike to drinking milk, which his upbringing has difficulties in overcoming. This dislike increases to disgust if a skin forms on the milk or the drink containing it. We cannot exclude the possibility, perhaps, that the skin conjures up a memory of the mother's breast, once so ardently desired. Between the two situations, however, there lies the experience of weaning, with its traumatic effects.*⁸

⁷ Sigmund Freud, *Three Essays on the Theory of Sexuality*, 1905 Edition, trans. Ulrike Kistner (London: Verso, 2016), p.42

⁸ Sigmund Freud, 'The Paths to the Formation of Symptoms,' in *The Introductory Lectures on Psycho-Analysis*, trans. James Strachey (Harmondsworth: Penguin, 1976), pp.412—3

But this unconscious tangle of emotional-psychological needs renders us stuck in the losses of the past, and marks us as lacking something we can never regain, but can only substitute, forever condemned to suck on a withered teat. Ernst Bloch made cosmic and large these personal miserable dramas. It is not our little failings that are repressed and yet matter too much, but rather we carry within us a wellspring, a flowing, gushing promising fountain of milky desire towards the future, an embryonic webwork of desires for the new, for the Novum, for the not-yet-conscious. Here is not the dream that is nightmare from which we struggle to awaken, but rather the daydream, the dream that walks with us through life, should we allow ourselves to hope. Future-oriented possibilities germinate in the present. Milk will be delivered tomorrow and it will be creamier and sweeter than ever before.

troubled images

Milk is troubled. Milk provides a motif of that which has been taken possession of — whether by a divine or sacred force, or has been rinsed out in industrial standardisation, or captured for bucolic fantasy. It is 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 nothing-ness, or allows a new mode of seeing or the new to be seen at all. Turbidity speaks to the dark-lightness of photography.

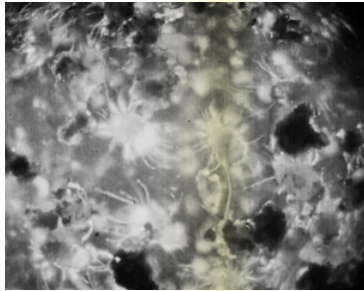
Milk communicates with the lens in pursuit of the traces of death and disease. Microscopes stare into raw milk, watching and counting bacteria and somatic cells, and, in this act, remind us that body fluids formed some of the earliest matter for the microscope. Inside this fluid, invisibly small, work away the smallest parts, the smallest things. In 1646, Athanasius Kircher magnified the blood of fever patients and found much of interest there. 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.

Antonie van 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'. 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.

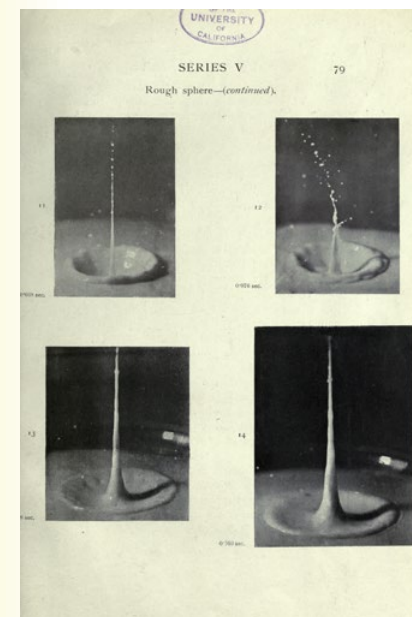
For others, it profoundly altered humanity's position in the cosmos. The cosmos was suddenly much larger and infinitely more complex, everywhere populated with life, previously unseen. Humans became less central. This new tool to explore the invisibly small made

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 it was still a novelty to see dairy products enlarged, when, in 1903, Francis Martin Duncan's programme of films, billed as *The Unseen World*, screened at the Alhambra Music Hall in London. *Cheese Mites* was the star of the show. The image of the mites scuttling around on screen, inflated to the size of monsters, was a sensation for the audience. 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 were efforts to photograph 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 crashes against a surface was less known.

A.M. Worthington observed and photographed for thirty years the collision of a milk drop against something hard, 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 switched with 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. These deathly practices of milk and ballistics are brought together in a contemporary genre widely available on YouTube, the Milk Jug Challenge, which involves long range shooting of plastic milk containers, some-times full of ice, jelly or milk, 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. 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*, was celebrated. However, 'Papa Flash' Edgerton did not consider himself a photographer, but a scientist who enjoyed the frisson of these frozen shots.

nuclear

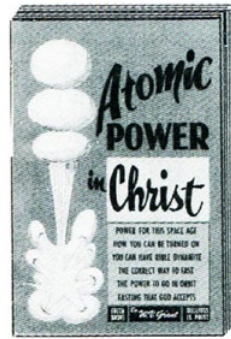
Edgerton's techniques later detonated and, simultaneously, photographed the explosion of H-bombs. In the years immediately following the Second World War, he created extraordinary visions of what could not be seen by anyone. Having invented a camera, the Rapatronic, he photographed the massive expanding 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 new-borns 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, for 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 deadliest 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 creaminess, 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

⁹ William L. Laurence, 'Eyewitness Account of Atomic Bomb Over Nagasaki', War Department, Bureau of Public Relations, released 9 September 1945



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.

And should anyone caught up in the froth and foam of nuclear annihilation survive, then some time later the Downwinders may 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. In 1946, Kodak customers began to complain about foggy camera film stock, when they received their developed prints. 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'.¹⁰ 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 Plutonium 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.



mighty milk

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 Societa 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, aluminium, rubber, fish skin, hemp, and gas. Lanital was futurist milk.¹¹ 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 the forming of cheese becomes an analogy for the process of human conception, when a male seed fixes the uterine blood into the solid outlines of an embryonic person. The processing does not stop there. The human must be collectivised. Lanital becomes the stuff of a heroic nation.

↑
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

¹⁰
Exposure of the American People to Iodine-131 from Nevada Nuclear-Bomb Tests', Review of the National Cancer Institute Report and Public Health Implications, Institute of Medicine (US) Committee on Thyroid Screening Related to I-131 Exposure, National Academies Press, 1999.

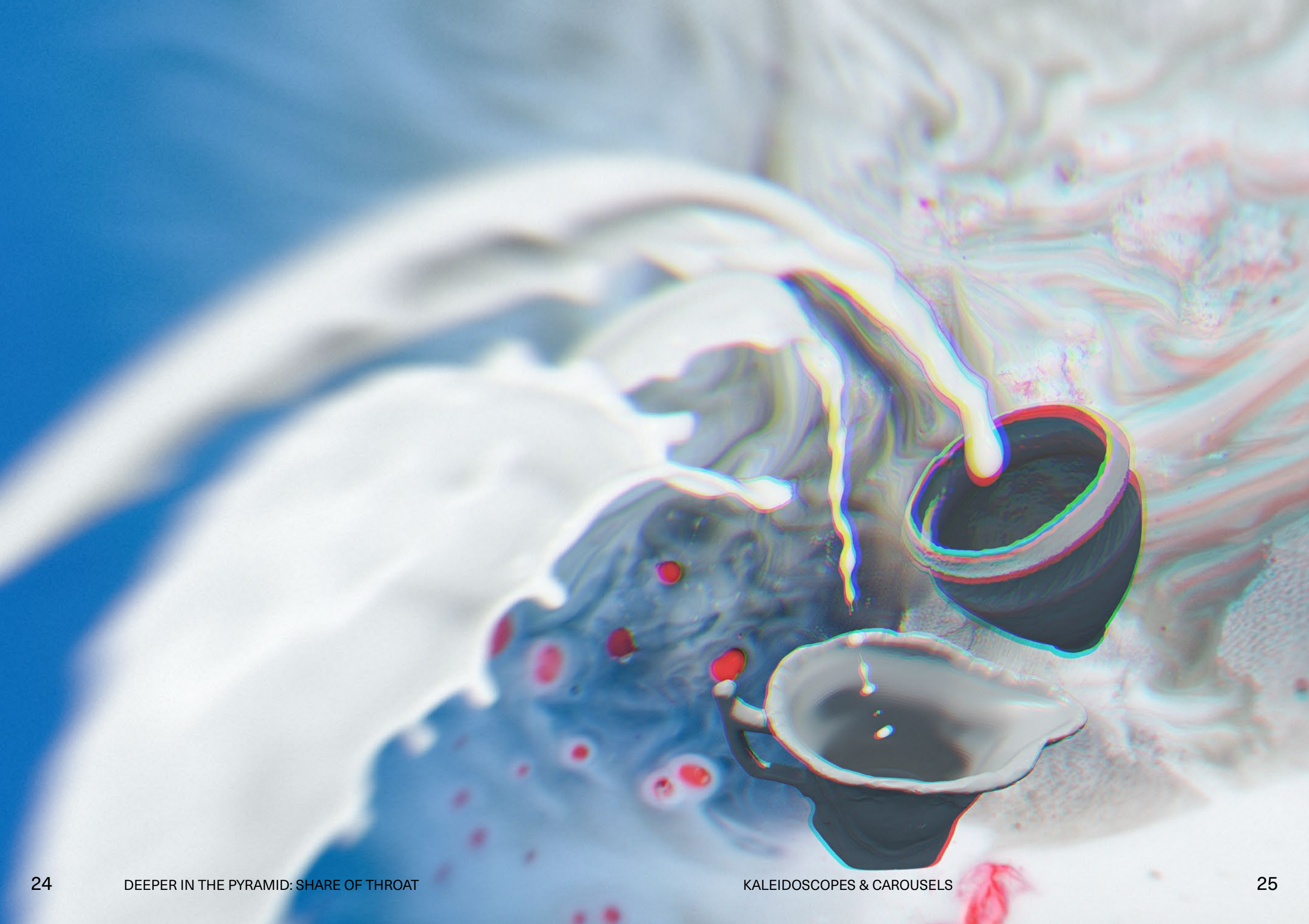
¹¹
Jeffrey T. Schnapp, 'The Fabric of Modern Times', *Critical Inquiry*, Vol. 24, No. 1. (Autumn, 1997)



simulate

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 ordinary 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.¹² 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. Such solidification and collapse seem 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.

¹² See, for example, helloyoucreatives.com/post/3307413119/cgi-milk-we-think-its-the-first-thing-everyone





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.¹³*

In the closing lines of this extended metaphor, Max Horkheimer notes that 'the basement of that house is a slaughterhouse', and to describe this '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'. In its foundation is it deathly. At the other end, under its roof is a cathedral. Here depicted is the hierarchy of industrial imperialist life stacked up inside a tower, each layer or floor, as it descends, disposing over less and less capital and social power. At a certain point, the floors are populated by those whose existence is a living hell, or something closer to death. There in the lower floors the exploited workers of the world, and below them, in the dark basement, the animals who line up for their execution. This is an image, of co-habitation of humans and animals. Humans and animals share the building. But their realms are separate. Even the humans are separated off from those who are not of the same status. This co-habitation of human and animals provides no cheer, no cosy evenings stroking the cat by the fireside.

In one building, where humans and animals, all stratified, co-reside, there is architectural reference to two other forms — the cathedral and the slaughterhouse. Both are forms that deal with death — one sublating it with the promise of eternal life in heaven — and here the intellectuals of ideology are the priests who speak upwards, mediating souls into that never neverland. At the base of it is the slaughterhouse, here figured as a Hell. The form of the skyscraper — here an image of hierarchical society, in which the worst abuse is hidden away in the depths — makes it possible to think the disastrous co-existence of multiple species and an internally divided species. This is urban existence in its newest form within the exploitative matrix of capitalism. It has incorporated the priest of old into its modern bureaucrats of the intellect — the philosophers who know nothing of the floors beneath them and speak, Horkheimer notes scornfully, of 'man in general' rather than the 'concrete individual'. At the base of the building is raw material, not dead but dying and still sentient enough to despair. Its fate is to service those above. As dead meat and worked skin, presumably, it ascends up the levels to end up on plates or as shoes, wallets and the like. From the windows up high, on the upper floors, there is 'a really beautiful view of the starry heavens'. Here nature is contemplated. Nature is a beautiful object for the 'beautiful souls' who gaze at it in peaceful moments. Down below, in the slaughter-house, the abuse, rather than admiration, of nature, goes on but remains unrecorded and unseen. As site, the slaughter-house provides an enactment

¹³ Max Horkheimer, *Dawn and Decline* (1926-31) (New York: Seabury Press, 1978)

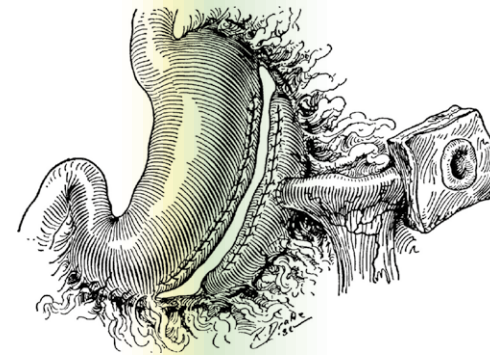
and an allegory of capitalism's nature-destroying capacity. In its historical development, it is possible to see a further spatial separation at work. In time, the slaughterhouse of the city is moved further out — indeed in New York, at least, where Horkheimer moved in 1934 to escape the Nazis, the meatpacking district eventually made way for art, which generates a patina of rehumanisation. 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.



under wraps

New factories are built for these purposes, remote and deserted. 'Grow Finish Units' is the name for 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. A 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. 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.¹⁴ 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.¹⁵

Indeed, Horkheimer's image of the skyscraper of social and species hierarchy releases a shocking truth about the dominant, significant relations of humans and nature in the cluttered industrial city. It is a truth that exceeds itself and its time. To write of slaughterhouses of suffering in the years around 1933 and the ascension to power of the Nazis, can, after 1945, come to seem prophetic. If the categories shift a little, and the status of the lower level of humans is downgraded to 'subhuman', then the indescribable, unimaginable suffering of the animals can be imagined as that reality to come, when people are treated as animals here, in the newly built slaughterhouses that are called concentration camps.

¹⁴ Max Horkheimer, 'Zum Commerce', *Gesammelte Schriften*, Vol. 12: *Nachgelassene Schriften* 1931-49 (Frankfurt/Main: Fischer 1985), p.308. See also the chapter 'Gastric Juice for Sale' in David P. Todes, *Pavlov's Physiology Factory: Experiment, Interpretation, Laboratory Enterprise* (Baltimore: Johns Hopkins University Press, 2002).

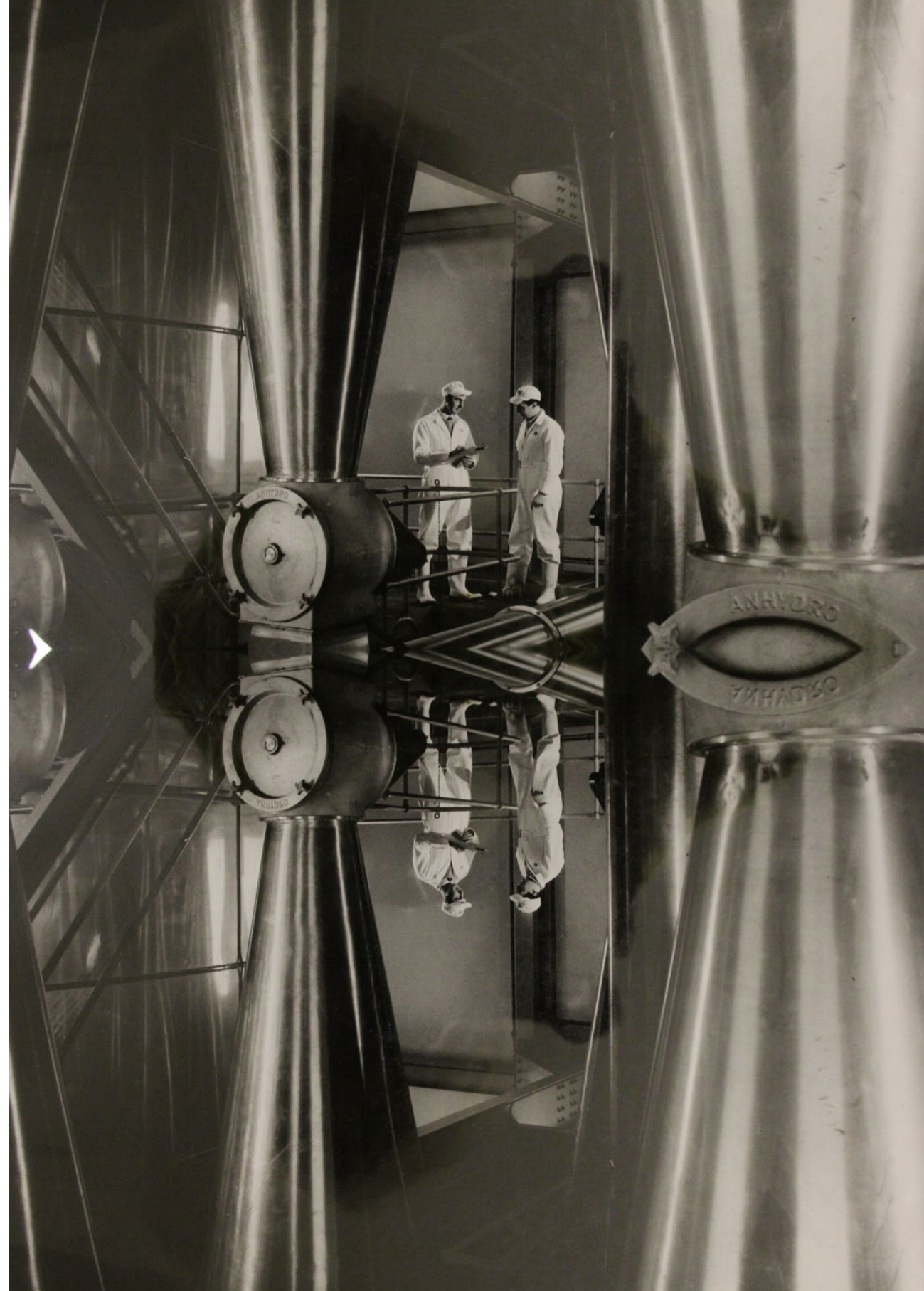
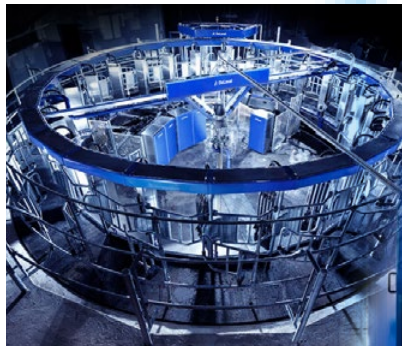
¹⁵ Max Horkheimer, *A Life in Letters* (University of Nebraska Press, 2008)

guinea pigs

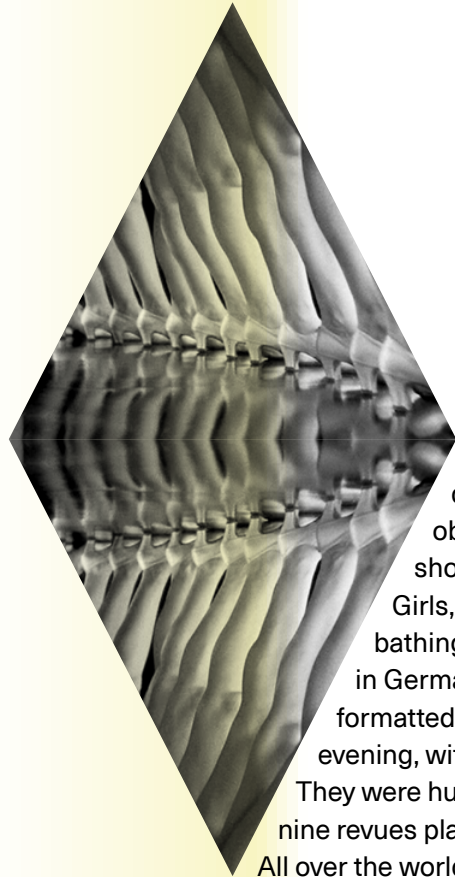
Everything rehearsed on animals is later practised on humans. This is nowhere clearer than in the dairy industry in its pioneering of genetics, fertility treatments, algorithmic decision-making and data analysis. The technosciences of hormone and genetic 'therapy' were pioneered in the investigation 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 into 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 ancient 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 guide-lines set by capital: the poor here, the rich here, ideological agents here.

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



ornamental



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 randomised 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. 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.¹⁶

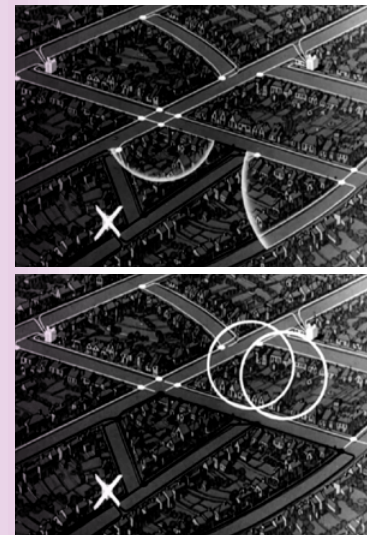
They were huge affairs, for example, in the 1926—27 season, nine revues played nightly in Berlin to eleven thousand spectators.

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.¹⁷ 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.



¹⁶ Peter Jelavich, *Berlin Cabaret* (Harvard University Press, 1993)

¹⁷ Siegfried Kracauer, 'Das neue Bauen', in *Schriften* 5:2 (Frankfurt/Main: Suhrkamp, 1990)

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, 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. 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 prescribed 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.¹⁸

electric abstract

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.

¹⁸ Siegfried Kracauer, On Employment Agencies, The Construction of a Space.

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 electri-fication was ending.

By 1972, 97% of farms had been connected to the National Grid. 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.

gridded

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'. 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.



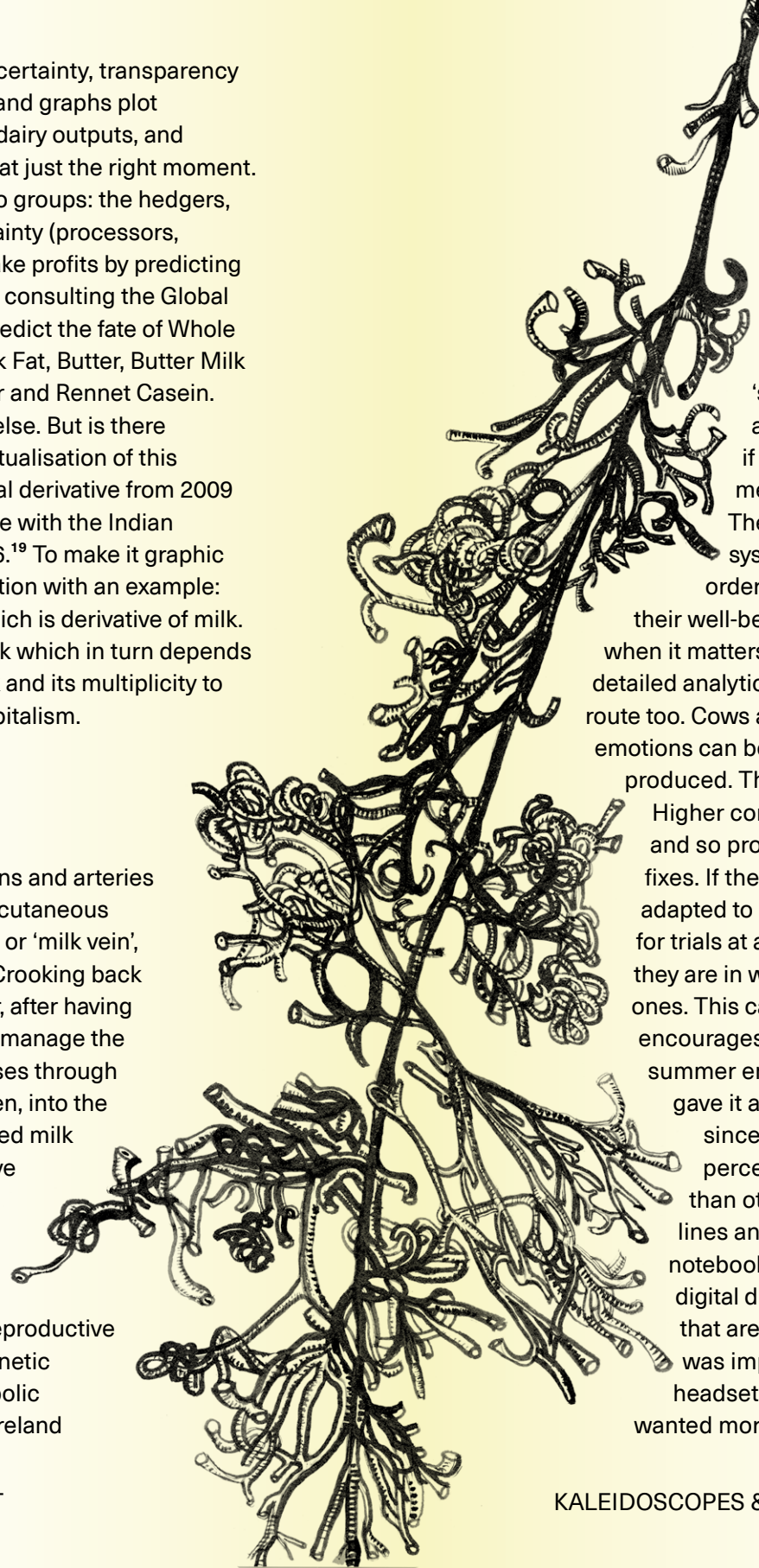
All this they do by acting to 'create price certainty, transparency and a forward view of market sentiment'. Grids and graphs plot movements up and down in the global sales of dairy outputs, and traders hedge their bets or dash in and pull out at just the right moment. The Dairy Futures traders are separated 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 1956.¹⁹ 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. From milk and its multiplicity to a whole system of supply and demand, or to capitalism.

diagrammatic

The cow's body contains a network of veins and arteries circulating blood. One path is by way of the subcutaneous abdominal vein commonly called the mammary or 'milk vein', along the lower side of the abdomen of a cow. Crooking back and forth, this vein returns blood from the udder, after having supplied the alveoli with nutrients, into order to manage the transformation of blood into milk. This vein passes through one or more openings in the wall of the abdomen, into the body cavity of the cow. These openings are called milk wells. The milk veins are varied. Some cows have more twisted or tortuous ones than others. The diameter is changeable. Judges of dairy cattle used to believe that the size and tortuousness of these veins were indicative of the productive ability of dairy cattle. Now the productive and reproductive ability of cattle is calculated by data tracking genetic markers and traits, and the chemical and metabolic conversion of calories into profit. Every cow in Ireland

¹⁹ Bishnupriya Mishra, Sathya Swaroop Debasish, *Financial Derivatives* (Excel Books, 2009)



has a unique number. No animal is anonymous. No animal can stray. The number of each cow is entered into a database. Each mouthful of milk might be traced to source. All events are digitally and genetically monitored: insemination, gestation, birth ease, pharmaceutical intervention, udder suitability for robotic milking, lactation. How much milk a cow produces is combined with other datasets, for example with meteorological data, to produce parameters for 'smart grazing'. There is a desire to know more and more, to know how much each cow eats, drinks, if she is lame or her udders inflamed and in need of medical attention, if she is acting in any way strangely.

The company Cainthus has developed a digital vision system that gathers information on each animal, in order to passively monitor your cows 24/7 and analyse their well-being, productivity and performance, alerting you when it matters most through daily notification to a phone with detailed analytics. The digital capture of the cow takes another route too. Cows are conceived of as emotional beings, and their emotions can be measured through the quantities of cortisol produced. The calmer the cow, the higher the milk yields.

Higher cortisol, sign of more stress, leads to less milk, and so productivity plummets. There are technological fixes. If there is stress, the new Virtual Reality headsets, adapted to a cow's face, may help. Developed by researchers for trials at a farm outside Moscow, the cows are to believe they are in warm summer fields, and not than cold wintery ones. This calms them down, reduces their anxiety, and, encourages them to produce more milk. As for the particular summer environment they were immersed in, the designers gave it a warm and predominantly red colour scheme, since studies on cattle vision have shown that cows perceive the red part of the visible spectrum better than others. Animation sets all free to follow ludicrous lines and confected imagery, to make up delirious notebooks in the field of the world, in the new fields of digital dictatorship, frolicking while bound in the pastures that are around us, unreal but inhabited. A Turkish farmer was impressed with the results and introduced two headsets into his farm. Feed prices were rising and he wanted more output. He played classical music in the stall too.

After ten days of life under sunshine in a virtual green pasture, the test cows' milk production increased by 22% — it was of better quality the farmer said. He has ordered ten more devices. The cow has become digital, just as its products derived from milk get enmeshed in digital systems. In times of crisis, animal feed becomes more expensive. Automation and supply systems allow precisely calculated amounts of grain to arrive at the cow's mouth. Wastage is spared.

And humans too become digital, right down to the capturing of their emotional states, on a constant basis, in order to hone workplace management and consumer behaviours. Contemporary culture is organised around digital media, including social media, and these social media are generators of affect, reaction, dramatic expression, spaces in which care and abuse are meted out overtly. When this digital environment becomes a virtual, immersive environment that is indistinguishable at a sensory level from the non-digital world, the sense of the mediated environment as a provoker of affect, as a possession rather than a feeling, becomes an emotion, or an all-encompassing atmosphere in which external and internal worlds meet and bind. Emotion becomes a kind of motion, batting back and forwards between subject and system, an input become output, circled back as further stimulus, in a cycle of data.



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. It was designed 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. Digitalisation captures the present — real time analytics during each milking event — but it also promises a capture of the future, a science of prediction. The companies' sales pitch goes: Now, our digital analytics product detects potential issues early, but over time, the company believes it can start predicting issues before they occur.



mod milk

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 contact between cow and human other than when milk enters the mouth. Industry uses the term 'share of throat' to quantify the amounts and market share of each type of liquid consumed by purchasers. Its ingestion is conceived on the model of a pie chart or diagram that has been projected into the interstices of the body. 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.



Some packaging firms have added an additional Platonic geometry, with white tetrahedral milk packs and 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 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 standardised, 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.

BEAUTY Begins in a MILK BAR



the old moloko

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. In a local context, 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, free of cost to the needy, and in this way any surplus milk supplies were used up, whilst a lifelong habit of milk drinking was 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 dust-free place with operatives who were as clean as surgeons, their cows groomed and cleansed.

As part of the emergent milk grid, milk bars were introduced to the UK in the 1930s. 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. '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. Here technologies of blending with electric whisks invented new drinks: phosphate drinks, egg drinks, malted drinks, sodas, water ices, milk shakes, 'fancy' drinks. The milk bar was a place designed for a newly cash-rich demographic; independent young people with disposable income.

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'. 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 'milksop' has naturally revived as a term of abuse. 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 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.

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'.²⁰ These boys are living inside 'a myth-world compounded of a few simple elements which they take to be those of American life'. 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. 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. 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 gangs of youth, enacting their ritualised performances of violence — so close in spirit and appearance to the youth cultures angsted over at home. The book's invented language and its hyperviolent events gushed from him for three weeks. The opening paragraph describes a milk bar:

²⁰ Richard Hoggart, *The Uses of Literacy* (Harmondsworth: Penguin), pp.247–8

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 twentyto- one, and that was what we were peeting this evening I'm starting off the story with.

Violence is a synaesthetic pleasure. And it is an end in itself, separated from cause and effect, pain, empathy. Sex in *A Clockwork Orange* 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: 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.

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 ultraviolence. 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 nonviolence 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.



blue pinta

In the wider British world in which *A 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 *A 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 British soft porn industry where an oft-repeated scenario involved a housewife in her short synthetic negligee and a milkman.

blue

Penicillin mould worms its way through cheese, in green, grey, blue or black veins. Blue is common. Blue mould is ever ready to emerge out of the air. It settles like a powder on whatever organic entity it finds, if the conditions are damp enough and with enough surrounding oxygen. The veins in blue cheese are the result of a spiking by needles held in hands or by devices poking in copper rods, or, later, stainless steel ones. These holes let oxygen circulate and the mould grow and move. The mould makes the cheese more acidic. It breaks down proteins, turning the cheese softer and creamier. Mould breaks down fats, releasing ketones, free fatty acids that taste piquant. The dairy proteins in cheese act as mild opiates. Fragments of cheese protein, called casomorphins, fasten to the same brain receptors to which heroin and other narcotics attach. Each bite of cheese yields a tiny hit of dopamine. It brings us pleasure. We become addicts.

abject subject

In the USA, farmers' lives are hard. Agribusiness places farmers on a supply-price treadmill. Gate prices for food fall. Prices for energy and food rise. It is impossible to grow a way out of crisis. More production depresses prices further. Even the largest farmers are cash-poor. Monoculture clears farmers from the land. Counties turn into company towns. It is said that companies punish growers who attempt to organise among themselves. Objectors are supplied with the worst poulters or the dregs from company feed silos. Suicide and self-harm results. There is also self-medication with prescription opioids, as farms are prone to accidents and injuries. Chronic pain stems from the repetitive motions of kneeling and carrying. Recent surveys of rural residents indicate that large numbers of adults working in agriculture have been directly impacted by opioid abuse, either by knowing someone, an acquaintance or family member, who is addicted, by having taken an illegal opioid, or by living with their own ongoing addiction.²¹

²¹ Opioids in Rural Farming Communities', June 2021

synthetics

Now the cow is sequenced and the cow with specific traits (more milk, high protein, daughter fertility, udder health, longevity and so on) can be ordered from a catalogue. Deleterious recessive variants can be removed and favourable alleles selected. Errors, assembly gaps and misassemblies occurred the original sequencing of the DNA in blood from L1 Dominette 01449. Later long-read sequencing technologies make possible a re-assembly of the reference genome, using Dominette's lung tissue to resolve problems, reducing gaps and inversions.

The desired goal for future genomics is transitioning from the individual Hereford reference genome, to a 'pan-genome' reference, representing every DNA segment existing in commonly used cattle breeds. In this way, the cattle reference is aligned with the direction of human genome research.²²

Genetics is the solution to every problem, farmers are told. In 2021, the cow breeding industry coined the term 'slick genetics'. Breeding from cows whose hair coat is glassy, because of a mutation in the prolactin receptor gene, which donates the ability to more effectively regulate internal body temperature through sweating, improves milk yields in tropical climates and under the increasing heat stress associated with climate change. Once cow genes are synthesised, there are further opportunities. There are dreams of animal-free leather. Skin cells may be augmented to produce and assemble collagen and other proteins resembling that of any chosen animal, in order to yield leather that is biologically identical to traditional forms. Artificial raw meat is printed in 3D from multiplied stem cells. Producing milk or leather is understood more as a harvesting of data. In contemporary dairy industrial farming, the cow's body may be discarded in any case. It becomes the location of a series of processes to be 'optimised' — utilising a language that pervades the industry, where 'yield' must be increased by manipulating the cows' feed, medication, living conditions and genetics. There is of course also a long history of destroying animals not deemed to be economically viable as part of national animal improvement plans. The United States Department of Agriculture now carries out its 'animal improvement program' through genetic selection, rather than the culling programs of the early twentieth century.

The 'Better Sires: Better Stock' campaign of the 1920s devised a series of incentives to inspire farmers to mate their cows with 'purebred' bulls rather than 'scrub' or 'degenerate' ones. Certificates were given out to those who complied. Pamphlets were distributed by USDA field agents with titles such as 'Runts and the Remedy' and they explained how the value of the stock would rise with each generation. Profits could be bred.

²² D.M. Bickhart, J.C. McClure et al, 'Symposium review: Advances in sequencing technology herald a new frontier in cattle genomics and genome-enabled selection', *Journal of Dairy Science*, Volume 103, Issue 6, June 2020 5278—5290



In 1924 the campaign undertook peculiar practices. The USDA published its 'Outline for Conducting a Scrub-Sire Trial' at county fairs, cattle auctions and regional farmers' association gatherings.²³ The guidelines detailed how to hold the trial of a non-purebred bull, which results in its condemnation as unfit to reproduce and so destined only for execution. A pamphlet produced lays out the necessary cast of characters: a judge, jury, attorneys and witnesses for both parties and a sheriff, wearing a metal star and carrying a gun. The trial proceeded, after the words 'Hear ye! Hear ye! The honorable court of bovine justice of ___ County is now in session.' The charges were laid out: the scrub bull is a thief for consuming 'valuable provender' and providing no value in return. He is an 'unworthy father', whose very existence is 'detrimental to the progress and prosperity of the public at large'. He is shot at the end, after two hours of theatre, and a beef barbecue celebrates his expunging. And so the bull succumbs to the then-budding science of eugenics. Such trials were occluded by the era of the concentration camps and the explicit and deadly institution of eugenics as state policy in Germany.

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 has become 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. 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.²⁴ 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. 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's 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'. 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.

Genetic animal 'improvements' are often tied into alliances of scientific, government and corporate policy. In similar fashion, humans identified as 'under-capitalised' 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 granddaughters 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.

²³ D. S. Burch, 'Outline for conducting a scrub-sire trial', USA. Bureau of Animal Industry, 1924

²⁴ John Hibma, 'The History Behind Artificial Insemination', 21 July 2017, farmingmagazine.com/livestock/artificial-insemination-history/

This was however counterbalanced by the increase in milk supplies that his genetic data brought about over 35 years.

In contemporary agriculture, the mining of vast datasets of bioinformatics is 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.'²⁵ This abstraction into biotech, computer analysis and knowledge economy tends towards a focus on ideas and the ideal and occludes material, bodily repercussions. 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.



caput

It happens there. It happens here. Capitalisation enters into reproduction, as IVF and food supply are intermingled with private equity and exchange value. Outside the body exists a pantry, a grocer's, a store which is a receptacle of eggs and milk that can be frozen outside the body for a future to come, or to offset unpredictabilities, such as the where and when of child birth and rearing.

Improved cryo-preservation techniques and the development of data analytics affect the science of prediction, calibrating chances, averages, opportune moments — its leaves the region of fate. Future is offset through freezing — time stops — future is subject to predictive technologies — time is managed and so becomes time of Kairos not Chaos. Capital investors and platform fertility companies engage with predictive embryo selection and estimations of future fertility, fertility

²⁵ Richard Twine, 'Addressing the Animal-Industrial Complex', in *The Politics of Species: Reshaping Our Relationships with Other Animals*, eds. Raymond Corbey, Annette Lanjouw (Cambridge University Press, 2013), p. 79

insurance, digital health companies in the shift towards proactive fertility management, and employers institutionalise this, in the name of rationalising workforce planning, all of which are institutionalised through the employer.

naming

Pine-Tree GS Cruzer

CherryPenCol HighCloud

Denovo 17835 Lennon-P

Wilra SSI Faneca Ebersol

Bomaz AltaCabot

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

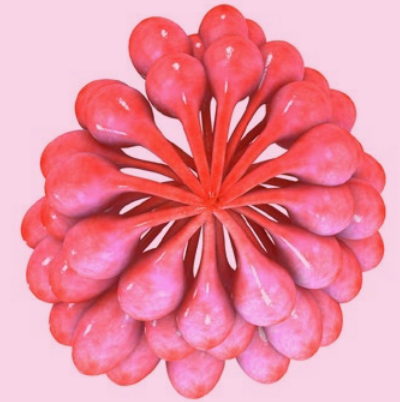
Cashcoin Observer X Harmony

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

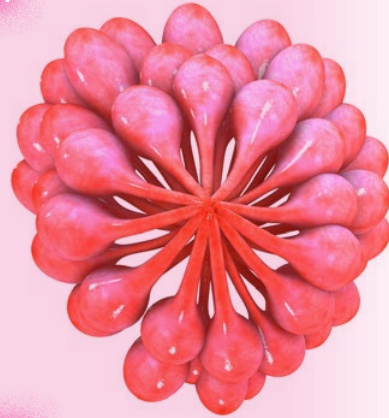
Zeus Planet Shottle

Defender Mogul X Man

Shotgun Shuttle Man Manat

Goldchip Goldwyn Shottle Champion

Police X Plane Die-Hard



big cow

The cattle whose curved backs were traced by firelight on walls of rock were huge beasts, called aurochs, almost as tall as an elephant, with fearsome horns. Until the early seventeenth century, these roamed European plains, wild, until loss of habitat and domestication made them extinct, the first animal perhaps driven into extinction by human practices. Extinguished too in this were grazed fields within which other species thrived. Genetic science makes efforts to reverse-engineer such animals into existence again, so they might occupy land, graze and create conditions for other beings to survive. The scattered auroch genes in Spanish, Portuguese, Italian and Balkan cattle are bred together to attempt to reach back into the past — moving forwards through seven generations brings the past cow, now called Tauros, into the present. The closeness to an original auroch can be tested through matching against a complete auroch genome held at University College Dublin. De-domestication is in train: new old cow learns to fight with wolves. Is a natural order restored, or just another order brought into being through the intervention of selective breeding? Habitats are reshaped — made open and usable for others — by habits of grazing and browsing — the latter the act of feeding on leaves, soft shoots and shrubs.

leftover cow

In Northumberland in the north east of England a small group of cattle, snowy white, big-horned Chillingham wild cattle, exist that have been closed off from interbreeding with other species for eight hundred years. A castle overshadows them, but they live without the intervention of humans, largely, since their enclosure within the grounds, originally for purposes of blood sports. In the coldest of winter, hay may be left and the dying might have their demise hastened. Left for so long to their own devices, there is something preserved in them, a time capsule of behaviours: herd structure, mating rituals and so on. Is this the cow in freedom? The male is a violent beast. And it will suffer the consequences of fights without any human help. The inbreeding of the herd means that, in this preservation of something unaltered, natural in itself, not only is there a prevalence of birth defects and susceptibility to disease, there is also homogeneity. Each one replicates the same snowy-whiteness, and white horns with black tips.

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.²⁶ 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. It is, though, a highly technical, technologised fluid, and one of the most technologised fluids on the planet. Milk's capacity is to be extendable, to issue in various ways.

²⁶ Charlotte Faircloth, *Militant Lactivism?: Attachment Parenting and Intensive Motherhood in the UK and France* (Berghahn Books, 2013)

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 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 non-life 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.

traps

Today, microbial agents figure as major players, indeed even usurpers of human agency, colonisers of human subjectivity. We are the ferment, or we are fermenting. We are this on Karl 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.' 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. Hormones, smart drugs, whatever form wherever, invades bodies as molecular prostheses. 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 websites 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? 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 on 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 techno-utopian euphoria and exaltation in the face of extinctions. 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 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. Midwife shortages increase.²⁷ Fertility Network UK 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'.²⁸ A cost of living crisis has made private recourse to treatment unavailable to many more.²⁹ This is a global problem. The WHO reported in 2021 a shortage of nearly a million midwives worldwide.³⁰

soppy

Ours is a climate with disdain for dependency, the flesh and vulnerability. It collaborates 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 ungendered, 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.

²⁷ RCM calls for urgent Government action on midwifery shortages', RCM, 24 June 2022

²⁸ Sarah Marsh, 'IVF cut back in 13 areas of England to save money, new data shows', guardian.com, Sunday 6 August 2017

²⁹ 'How the cost-of-living crisis is pricing couples out of IVF and fertility treatment', Nov 2022

³⁰ 'New report sounds the alarm on global shortage of 900 000 midwives'



cowless milk

It is now possible to abstract milk from a cow, in the sense that biotech synthesis makes it possible for those who are able to make bio-identical milk from genes banked and replicated. '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 cow's milk, but cow's milk itself can be synthesised in the laboratory. One 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. In 2009, the first cow to have her genome sequenced — indeed the first agricultural mammalian species of all — was eight years old and lived in Montana. It was a highly inbred Hereford cow, with the name L1 Dominette 01449.³¹ Extracted and digitised in the laboratory, or as one leading 'enterprise biology' firms put it, turned into 'the Story of Cow', the C, G, A, and T chemicals are assembled to make the gene for beta-lactoglobulin, a whey protein. This is then deployed in a process known as precision fermentation, whereby sugar is converted, through homologous recombination, into whey and casein by the use of microflora.

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. The 'milk' has 98% of the proteins in cow's milk, but it does not have immunoglobulins or helicobacter pylori, antibody and bacterial elements in milk that in other contexts have been used to mitigate or suppress human diseases. To the 'milk' is added fats, such as sunflower oil, carbohydrates, minerals and vitamins and a plant-based sugar. Its boosters note that 'Your body cannot tell the difference because it's the same in every meaningful way'.³² Your body is fooled by your mind, as if the two were not entwined.

³¹ Chandra Sekhar Mukhopadhyay Amit Kumar Rajib Deb, 'Cattle genomics: genome projects, current status, and future applications', Eds. Vasco Ariston De Carvalho Azevedo, Debmalya Barh, Yashpal Singh Malik, S M Paul Khurana Govind P Rao, *Genomics and Biotechnological Advances in Veterinary, Poultry, and Fisheries* (Elsevier Science, 2019)

³² <https://fortune.com/2016/08/31/animal-free-cows-milk-perfect-day/>



milkless milk

The cow is being scorned in another way. Dairy production is charged with contributing massively to climate change and water pollution — for its emissions of methane that warm the air and the ammonia that seeps from its manure. Cows also take up the land and require large supplies of water to grow their feed. Plant milks appear in vegetal mimesis with their badges of virtue but new problems emerge with this ersatz substitution. Soy, containing all the amino acids needed by humans, fixes nitrogen in the soil — but so much land is needed to grow it in quality. A litre of soy milk requires about a square mile of land. Monocultures, pesticides, intensive irrigation, soil and bee depletion haunt oat, rice, coconut and almond cultivation but hazelnuts and peas and hemp and other things will be squeezed into something like milk and placed in similar packaging and marketed in old and new ways and the cowless, plantless milks will continue to ferment in the laboratories. Nobell Foods have already made soybeans that produce casein — the essence of bovine milk enters into the magic bean.

milk mimesis

Milk vessels of Ancient Egypt's Middle Kingdom are feminoformed with breasts and nipples and sometimes arms and hands or feminine faces on the neck. These may be associated with the cult of Hathor. Some nipples were pierced, so that they might dispense milk and so evoked the anatomy of the lactating breast. Cow creamers are mimetic in another way. 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 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.





ISBN 978-1-7393431-0-1

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This book accompanies 'Deeper in the Pyramid: Share of Throat'



shown as part of the Milk exhibition at Wellcome Collection, 30 March — 10 September, 2023

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