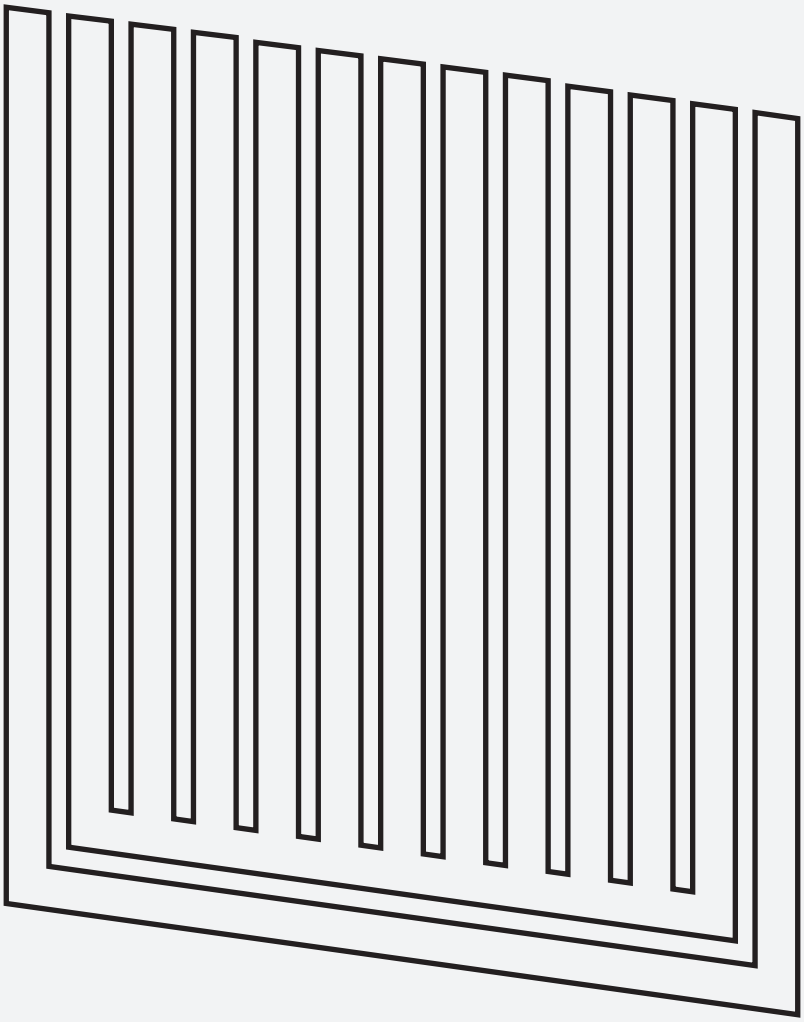
Steven Cottingham

Heat, death



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IF CAPITAL COMPRISES the governance of labour through time, and if time is reducible to the measurement of entropy, then capitalism can be understood as a circumscription of heat. Heat is directed literally through the control of furnaces, engines, and energy-production; figuratively through the governance of passions, desires, affective flows; negatively through the careful release of pollutant and entropic artifacts produced in resource extraction; and territorially through the creation of sovereign subjects, liberal individuals, and discrete phase states. In this sense, there is little difference between the labourer's hammer and the bell's clapper—both serve to produce regularities or negentropic units that ward off entropy in favour of putting energy to work.

The irony of this arrangement is that, by cordoning off flows of time into workable hours, time becomes as fiat as money. The various feedback loops generated by mass-production—such as soil erosion, tidal friction, global warming—all act recursively upon our common resources. These activities on and within the earth's crust begin to affect planetary rotation, creating discrepancies not only in the character of a season or length of a solar day, but affecting the planet's radial tilt and throwing off all varieties of temporal measurement. Even financial markets, which utilize a 360-day calendar to avoid problems of variable-length months, leap years, fractional seconds, etc., lose their buffer zone as the capitalist optimization of time destabilizes time itself.

To view these material conditions through the lens of heat offers a few benefits. First, both irony and ideology recede when we have recourse to the primal laws of matter: all energy is finite, or, there is no production without destruction. These primal laws return us to a field of possibilities where matter is virtual, not foreclosed by what is merely *feasible*. The second benefit is the instantiation of a monist principle: there is no affecting without being simultaneously affected. Every relationship is recursive. Concurrent affect-and-affectability—coming from the third law of motion—may not *appear* to extend from physics to social relations, but is not disproven by appearances

alone. Nonetheless, a theory of heat must account for mutual affect even in relationships as asymmetrical as that of colonizer and colonized. Even though we are aware that somewhere friction is at play, destroying more than is produced, the trope of an "idealized human motor that never wears out" prevails.[1] So how do we attend to this gap of secret destruction?

First, we ought to clarify that the mutuality of affect is a virtual capacity, meaning affect-affectability is always *possible* but not always *present*. Capacities of affect change through *phase transitions*, catalyzed by heat. For instance, a fixed quantity of water in its frozen state assumes a variety of capacities. The crystallization process results in the occupation of a greater volume than its liquid form: just as the formation of glaciers lowers sea levels, ice can burst pipes that previously enabled flows of liquid or gas. As liquid, the same quantity of water provides nourishment and performs cleansing functions or, in other circumstances, suffocates, leaks, and dissolves. As gas it cannot assume the same functions as other phase states: it is highly affectable as drifting clouds, it dissipates irrecuperably, but when compressed steam can be used to power turbines. Similarly, we can consider forms of social organization as phase states, freed from the moralizing notions of "progress" that typically accompany such taxonomies.[2] Hunter-gatherer collectives may be grasped in a manner analogous to gas particles that, by nature of their relatively distant proximities from one another, are endowed with the capacity to travel nimbly and are less affectable by transmissions of disease. Social organization around a more sedentary development of monoculture agriculture may be understood as a "condensation", potentially crystallizing into solidified industrial societies that exhibit increased resilience to threats in the form of famine or local resource depletion as well as internal forms of dissent and deviancy. Because capacities of affect and affectability are simultaneous, and therefore only actualize new capacities through interactions with other arrangements of matter, we can note that an expanse of frozen water immobilizes crystalline societies (as in the many ships sunk by icebergs) but opens new transportative possibilities for vaporous

communities (as in the use of dog sleds across tundras).

Similarly, the application of heat to earth, food, or metal results in an immanent restructuring, fundamentally changing the affective capacities of the material. Baking and metallurgical processes add another axis of variability to the concept of phase transitions—the reorganization of matter depends not only on crossing a phase threshold, but also the manner in which the threshold is crossed. For instance, heated at a certain speed to a certain point, indigestible grains and yeast give rise to bread. To heat past the point of consumption over the course of several hours yields pure carbon in a cellulose structure. In this form, pyrolized bread no longer has the capacity to deliver caloric energy to biological bodies, but becomes a source of combustible fuel; though its potential productivity as a source of heat is always eclipsed by the heat-input required to produce it in the first place. As is increasingly the case with other carbon-based fuels, the "energy return on investment" is so low as to only be desirable when subsidized. In the absence of an affect/affectability state-change, the bread becomes an entropic dead zone.

All of this is to say that the invocation of heat is not *absolute*—more or less heat does not directly correspond to more or less affective capacity—it is *relative* and dependent on the material conjunctions in question. Understanding affect through phase states allows us to grasp how possibilities are not limited by extensities like population, force, or resources, but are produced through immanent organizations of heat.

So, even if we acknowledge the asymmetry of the colonizer/colonized relationship, or the apparent injustice of action without *equal* reaction, we still have to escape the inertial codes that favour the affective capacities of the colonizer, or perhaps the valourization of affective action altogether. In order to preserve the desirable properties of crystalline society (hierarchical arrangements, predictable regularities, inflexible architectures that direct flows of time/labour/capital in teleological manners), capitalist infrastructures must constantly siphon off unproductive byproducts generated by friction. This siphoning is managed through heat sinks. A common (albeit repressed) component of many electronics and complex machines, heat sinks typically take the form of finned metals, devoid of moving parts, utilizing instead a passive architecture that compress high surface areas within low volumes in order to compensate for productive expenditures of energy elsewhere. The high conductivity of crystalline solids, which make them so desirable for transmitting information, also makes them susceptible to overheat. These architectures therefore operate in tandem with flows of air or coolant to wick heat away from essential components. The unproductive heat dissipates into the surrounding environment. In accordance with laws of thermodynamics, negentropy in the local machine (order, regularity, energy available to be put to work) always incurs entropy in the general economy.

Without recourse to metaphor, we can identify this same siphoning process present at every level of colonial capitalism. Friction (heat) is generated not only through the burning of fuel, but is also structurally produced as flows of capital move against the metabolic flows of "natural" ecology, the limits of our terrestrial carrying capacity and the time scale at which resources renew; against flows of competing capitalists, forcing an increase of dead labour at the cost of dwindling surplus value; against the internal contradictions of the purportedly rational market, which cannot function without unwaged work and colonized assets; against "the attribution of affectability";[3] against class struggle; all of which is subject to the entropic flow of time. By charting frictions, we can mark places in which capital still remains highly affectable.

Because all acts of colonization serve to 1) accumulate resources (raw materials) and 2) increase the carrying capacity of those resources, the mass-production of heat through friction must be dealt with in two ways in order to preserve the desirable ratio of affect-affectivity. The first is positively, by leveraging into motion the economic potential of "nature's hoard", and the second is negatively, through the dissipation of entropic artifacts. The latter entails a variety of repressions, including the dumping of pollutants, and the impoverishment of so-called surplus populations. Heat sinks expel excess past the point of nominal sovereignty and into realms where responsibility is no longer clear. For instance, waste products leave the factory's proprietorial bounds by way of ungoverned rivers or air currents; nations are unobliged to sign (symbolic) climate accords when corporate activity is deterritorialized, international; and Indigenous populations are granted enough autonomy to be deemed responsible for the effects of structural marginalization without being granted access to that which would allow escape from these effects. We must not mistake heat's transition from a local machine into

the general economy as partaking in an open system immune to entropy—the affected system is only legislatively open by virtue of exceeding liberal atomization. Materially, all is finite; all exists within a common realm; all affects as it is affected.

At the isomorphic level—where the forms that populate this argument can be understood not merely as allegories but as virtual diagrams delineating ontological procedures—we can identify examples of architecture antagonistic to the heat sink. As a fugitive from the sovereignty of both plant and animal kingdoms, the sea sponge directs flows inward rather than out. Its igneous morphology allows various waste materials and entropic artifacts to collide, giving rise to disparate emergent communities. These are assemblages without teleology, antipode to capitalism's crystalline organizations where productivity determines value. When its organic substrate is replaced with an inorganic material, as in petrification or lost-investment casting, the sponge acquires the properties of a Faraday cage and blocks all negentropic (communicative) signals. This irregular and cellulose strata interrupts electromagnetic waves, creating invisible eddies of lost data. Likewise, scavenged aluminum from conduits, wires, and vehicular components is shifted from a communicative medium to an entropic material. This architecture behaves as another harbinger of death, a turbulent virtuality where production and destruction are inseparable.

Given the sum of these arrangements, we can finally note that the governance of heat in the last instance performs the function of obscuring material relations to inscribe ideological codings. The affective capacities that arise between some phase states but not others means that various occurrences only become apprehendable as they enter into arrangement with our capacity to perceive them. Consider how solids heated to a certain point will start to produce a visible glow. This glow already exists outside the visible spectrum as infrared light, but becomes *incandescent*—it enters into affective alignment with the human eye—at a certain temperature. While art cannot engage with the *material conditions* of colonization except allusively, through metaphor and veillities, the *ideological codes* are aesthetic or architectural operations that (as we have identified) exist at every level to guarantee the inertial follow-through for each deployment of force. It is here that we can stake a claim for art. If capitalist codes behave negentropically, compelled to order all available energy for the single telos of "self-valourizing value",[4] then art can introduce entropy into communicative channels. By this I do not only mean that art's political efficacy comprises a kind of sacrificial expenditure opposed to the logic of a heat sink—a waste of resources that falls short of even the most speculative of investments—nor do I think this capacity is limited to the production of irrational forms in otherwise rationally-governed society, but that art instantiates a potentially frictitious flow that can bring affecting phase states into alignment.

Notes

1. Karyn Ball, "Losing Steam After Marx and Freud: On entropy as the horizon of the community to come", *Angelaki* 20, no. 3 (2015): 64.

2. Manuel DeLanda, *A Thousand Years of Nonlinear History* (New York: Zone Books, 1997), 15–18.

3. Denise Ferreira da Silva, *Toward a Global Idea of Race* (Minneapolis: University of Minnesota Press, 2007), 44.

4. Karl Marx, *Capital: A Critique of Political Economy, Vol. 1* (London: Penguin Books, 1976), 423. "The means of production are at once changed into means for the absorption of the labour of others. It is no longer the worker who employs the means of production, but the means of production which employ the worker. Instead of being consumed by him as material elements of his productive activity, they consume him as the ferment necessary to their own life-process, and the life-process of capital consists solely in its own motion as self-valourizing value."

Bio

Steven Cottingham is an artist working on unceded territories (Vancouver). He has recently exhibited at Wellcome Collection (London), the Herbert Read Gallery (Cambridge), the Museum of Capitalism (Oakland), Agora (Berlin), Centro Desarrollo de las Artes Visuales (Havana), The Luminary (St. Louis), and the Art Gallery of Alberta (Edmonton). Cottingham has participated in residencies at the Skowhegan School of Painting and Sculpture (Skowhegan), Zentrum für Kunst und Urbanistik (Berlin), Fogo Island Arts (Fogo Island), and Griffin Art Projects (North Vancouver). He received an MFA from the University of British Columbia (Vancouver) in 2017. With Leigh Tennant, he is founding co-editor of *QOQQOON*, a journal for art and political philosophy.

List of works

1. *The stonebreakers*, 2018, cast iron bell-clapper, aluminum heat sinks

2. *Ablative fluid reduction*, 2018, automotive coolant boiled to a reduction, concrete masonry unit, aluminum foil

3. *Tectonic attainder*, 2018, pyrolyzed bread

4. *No failure but the properties of matter*, 2018, aluminum burn-out cast of sea sponge

5. *Time is the fire in which we burn*, 2018, aluminum heat sinks

6. *Redundantv*, 2018, schlieren videograph of cpu hard drive exhaust, extruded aluminum, screens, various electronics

7. *Every commodity is inscribed by the mode of its production, all matter is contiguous with itself*, 2018, vase sponge, ear sponge, sea cap sponge

8. *Arson for the cadastral plane*, 2018, burnt antifreeze, extruded aluminum, heat-resistant shelf

9. *Value form phase transition*, 2018, i) molten aluminum is poured into water, solidifying on contact, ii) the water is frozen, iii) the resulting sculpture is displayed in the gallery at room temperature, melting and depositing pieces of aluminum according to its process