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To cite this article: M. Curtis Allen (2022) Compression and Noise, Journal of Aesthetics and Phenomenology, 9:2, 101-117, DOI: [10.1080/20539320.2022.2143652](https://doi.org/10.1080/20539320.2022.2143652)

To link to this article: <https://doi.org/10.1080/20539320.2022.2143652>



Published online: 21 Jun 2023.



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Compression and Noise

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ABSTRACT

Compression is an essential technique used across diverse information systems, one in which supposedly redundant or superfluous information is minimized or eliminated in order to make the storage, transmission, or reception of other information more legible or efficient. Compression is involved in everything from computer data storage (encoding) and efficient computational processes (floating point arithmetic) to the formatting of media (telephony, radio, streaming) or the engineering and circulation of sound and image (dynamic compression of volume, JPEG resolution). Beyond any particular technical implementation, though, *compression* names the peculiar perceptual regime of late modernity—it is our percepteme, our episteme. As Galloway and LaRivière (2017) have noted—*everything is compressed*, from the logic of digital computers to our attention spans. Yet, if compression designates the essence of experience today, it is precisely in response to a complementary concept of *noise*. Noise is the lived affect of our material conditions which cannot be made significant to us: not only the literal acoustic noise of late modernity (the waste-product of technologies which hang over perceptual spaces like smog hangs over cities) but, perhaps more critically, compression emerges to cope with a new, properly “cognitive complexity” embodied in the unprecedented entanglement and mediation of social relations through the technical/computational unfolding of the value-form of capital. Such complexity—lying beyond the grasp of any human individual—is logistically offloaded onto the nootechnical externalizations associated with, for instance, AI algorithms. On the other hand, it is individuated in experience as *noise*. Because such noise is perceptually intractable, compression becomes the necessary shape of our *aesthesis*, one that rigorously flattens the available modalities of experience/value—yet giving birth to new forms of abstraction, perception, and thought. While several thinkers—notably, Jason LaRivière and Cécile Malaspina—have brilliantly elaborated each concept on its own, I argue that they can only be properly situated through each other. In order to do this, I combine computational and information theory, philosophy, media and cultural theory, as well as political economy with concrete domains where compression and noise articulate the phenomenological stakes for aesthetics today.

KEYWORDS

Compression; noise; information theory; digital media; capitalism; perceptual coding

Itinerary

This essay elaborates the nature and consequences of *compression* and *noise*, understood as interdependent phenomena determining current aesthetic regimes and modes of perception in the “cognitive complexity” of the computationally mediated experience of late modernity. This is done in four phases. First, it contextualizes the background of compression and noise relative to the political economy of the money-form of the commodity according to Marx, a form corresponding to the origin and persistence of the social complexification of modernity at large, of which today information-technological (and specifically computational) complexity is a critical part. Second, it looks to the technical and theoretical outline of each of these concepts and their interconnection—first of compression, then of noise—in the context of their central importance for information theory. Third, taking the technical delimitations of these concepts on board, it then investigates compression as an epistemo-metaphysical problematic in recent philosophy and media theory, criticizing Galloway and LaRivière’s nominalistic account of compression as metaphysics in favor of Cavia’s constructivist approach to encoding and computation. Finally, gathering everything together, it points to the modal impoverishment of experience via processes of “perceptual coding” brought about through compression via noise, realized by the convergence of mediation onto digital computational formatting. The essay pays special attention to three important domains of the modal subtraction of perception: sight, sound, and time. Finally, the essay concludes by developing the stakes for the current shape of our aesthesis in late modernity and its aesthetic, historical, and political affordances for the construction of a new common form of life.

Background

In *Capital* Volume 1, Marx diagnoses the money-form of the value of commodities as implying the mutual alienation of the social relations through which commodities get produced and exchanged. Because money is an intervening factor in exchange, the participants in the process of exchange in capitalist markets are generally unaware of, and indifferent to, any part of the circuits of exchange in which their own money, goods, or services do not enter. As Marx says in an example illustrating the circulation of commodities,

[t]he weaver has undoubtedly exchanged his linen for a Bible, his own commodity for someone else’s. But this phenomenon is only true for him [sic]. The Bible pusher, who prefers a warming drink to cold sheets, had no intention of exchanging linen for his Bible; the weaver did not know that wheat had been exchanged for his linen. [. . .] We see here, on the one hand, how the exchange of commodities breaks through all the individual and local limitations of the direct exchange of products, and develops the metabolic process of human labour. On the other hand, there develops a whole network of social connections of natural origin, entirely beyond the control of the human agents.¹

Unlike direct exchange, in which money does not enter and through which the terminal good of consumption is acquired more or less immediately and reciprocally by both parties, the money-form establishes a mediation of social relations: money is the medium of exchange and acts as a universal equivalent of the value of commodities. In its role as

intermediary, money also thereby becomes a reservoir of social power. Just like “the spice melange”—the highly addictive drug, prescient tool of strategy and navigation, and emblem of universal political control in Frank Herbert’s *Dune*—money too allows for the folding of time and space: it compresses the duration of the labor-time of the commodity and the distance of trade, having at its disposal the total productive power of society implied in the value of the commodities for which it will eventually be substituted.² But, the seller of a commodity is under no obligation to immediately use their money to buy another commodity and this delay puts the relations of production expressed in that quantity of money at a remove from their origins, and thus at a remove from the spontaneous experience of the subjects entertaining these relations in future activity.

This mediation of social relations, through which the whole world is entangled in ways that are not subject to conscious presentation, in turn gives rise to a new regime of complexity in human life, one with unprecedented epistemic and aesthetic ramifications, the effects of which are constantly being renewed and transformed, and which are therefore in continual need of qualification. As Srnicek notes, following Jameson, this is a regime not of our perennial sensorial complexity mastered in cognition by the appropriate use of our faculties, but rather a “properly cognitive complexity” of increasingly indirect and non-linear dynamics, of opaque relations of production that are spread diffusely in variable processes across the surface of the earth.³ These outstrip the capacities of any individual to “naturally” comprehend them. Information and computation processes—and, increasingly, artificially intelligent systems—stand as the nootechnical externalizations of the complexity brought about by the mediation of social relations through capital. This complexity, occluded by the money-form, is also compressed by it in the form of a novel kind of abstraction—one taking place, not in the mind of the nominalist or the Platonic heavens, but through the real material relations of society. It is, to borrow a term popularized by Sohn-Rethel, a “real abstraction.”⁴ This essay aims to elucidate the aesthetics of that abstraction by looking at its paradigmatic experiential avatars today: compression and noise.

While it is not our concern here to detail the relation between capital and its technological and epistemic superstructures, it is only within this regime of cognitive complexity, which real abstraction brings about, that the concepts of compression and noise come to dominate the perceptual and phenomenological registers of life in the late modernity of the twenty-first century. Before detailing the stakes of these concepts for specific domains of aesthetic activity, it will be useful to place compression and noise within their theoretical contexts in order to better understand, on the one hand, how they are co-constitutive phenomena dependent on one another, and, on the other, what their ubiquity means for the modal impoverishment of experience, what Bernard Stiegler calls the “proletarianization of sensibility.”⁵

Compression

Compression is an essential technique used across diverse information systems, one in which supposedly redundant or superfluous information is minimized or eliminated in order to make the storage, transmission, or reception of other information more legible or efficient. Compression is involved in everything from computer data storage

(encoding) and efficient computational processes (floating point arithmetic) to the formatting of media (telephony, radio, MP3, digital streaming) or the engineering and circulation of sound and image (dynamic compression of volume, JPEG resolution). Compression is also a concept gaining increasingly wide extension in various fields beyond its origins in communication and information theory. The language of compression is finding its way into biology, to the extent that AI research, computer science, and cognitive science overlap—for example, in the way that light, taken in by the retina of the eye, is transduced and compressed into the electro-chemical signals processed by the neuronal activity of the brain.⁶ It has also found its way into epistemology through the mathematician and computer scientist Gregory Chaitin, and into media historiography and cultural theory through the likes of Jonathan Sterne as well as Alexander Galloway and Jason LaRivière (the latter three we will be return to in detail below).⁷ It seems that compression names a historically characteristic process undergone by all levels of experience in contemporary life. We are told the dimensions of our lives under the conceptual and mediatic ubiquity of information and computation technologies are being compressed; our experience itself—whether in hearing, vision, or thought—is now recollectively understood as always already having been a species of compression. Its framing as an episteme also justifies itself by virtue of its own concept. The transdisciplinary effectiveness of compression becomes epistemically justified (according to Chaitin) on the basis of its theoretical parsimony—that is, on the basis that this frame itself compresses the information needed to articulate a “system of the world” better than those that have preceded it. Theory success is itself a Ockhamian function of compression.⁸

The question then becomes how we should characterize compression. In general formal terms, compression can be understood as any encoding of data—that is, any mapping from one set to another—in which the two sets involved are not isomorphic and in which the codomain (the output) of the mapping is strictly smaller than the domain (input)—compressed information is smaller, it is comprised of fewer bits than uncompressed information. In technical terms, compression is a surjection of a base set to a target set. Lossless compression is then a transcoding (a “translation” from one encoding to another) in which the operation of compression can be reversed in order to recover the original data.⁹ One obvious example of a lossless compression is a ZIP file—often used to compress multiple files into a single package which is smaller in size than the original collection of files. This makes the transition and storage of such data more efficient. In an informal sense, one can think of lossless compression of this type as containing the instructions needed to construct the original data, rather than as containing that data itself. By performing those instructions, one decompresses the ZIP data into the original configuration of data. Another analogous form is the DNA code of an individual’s genome used to replicate the cells of the organism. Assuming everything “goes according to plan” in the case of cell replication, the new cell should be molecularly identical to the old (putting considerations about evolutionarily advantageous base mutation rates to one side).

Lossy compression, on the other hand, is one in which the original data cannot be retrieved by reversing the operation. As its name suggests, then, lossy compression loses data: it deletes it, conflates it, forgets it, etc. File types such as MP3s and JPEGs are common forms of lossy formatted media that we widely circulate on a regular basis. But even

before the advent of personal computing, lossy compression was widely used in a variety of media, for example in telephony, where compression is used to better isolate the frequency range of the human voice, and to eliminate unwanted variation in the dynamic range of volume—both of which make it easier to understand speech through a noisy channel, like a telephone line with low-fidelity microphones and speakers.¹⁰ As Sterne notes, “Compression history cuts a wide path through technological history” including, pivotally, the techniques of “perceptual coding”—types of compression developed around models of human perceptual experience in digital media, beginning in the 1970s and 1980s.¹¹

Lossless compression operates solely by the removal of redundancy in the information being transferred, while lossy compression inevitably introduces a margin of uncertainty in non-redundant information itself, within which the information deleted, forgotten, or conflated is understood to be superfluous or irrelevant in the contexts of its use. Both, nevertheless, leave themselves in an ineliminable relation with noise, though in different ways.

Noise

In a broad and important sense, the concept of noise designates the lived affect of our material conditions which cannot be made significant to us. This is in keeping with the literal meaning of acoustic noise, but it is equally true of the use of noise in the information-theoretic sense, which responds directly to the problem of cognitive complexity, and which conditions our inquiry about aesthetics. As Cécile Malaspina contends, “[n]oise no longer characterizes only entropic processes related to mechanical work, but increasingly conditions information networks, and even, if differently, the co-emergence of cognitive labour, characterized by information overload and even the ‘mental state of noise.’”¹² With respect to the technical understanding of information given by Shannon, noise represents the randomness or uncertainty in a signal through which information is transmitted—the greater the noise in the channel, the smaller the probability of accurate transmission. In other words, the predictability of the “message” decreases. However, although noise is accidental, it is also essentially unavoidable—so much so that it is baked into the theory of communication from the start. “In the process of being transmitted, it is unfortunately characteristic that certain things are added to the signal which were not intended by the information source. All of these changes in the transmitted signal are called noise.”¹³ As such, “[n]oise has become a concept intrinsic to the statistical analysis of the variability of data in almost every domain of empirical enquiry.”¹⁴ In virtue of its centrally problematic position, noise is circumscribed by *redundancy* on the one hand and by that of *information* on the other, and it is through these that noise coexists alongside compression.

As Shannon and Weaver have shown, the information content of a message is a function, not of its *actual* (semantic) meaning, or even its definite (syntactic) configuration, but of its *possible* configurations. Information is a function of what they call the “freedom of choice” in selecting (or interpreting) a message. Such “choices” encode the number of binary “decisions” that are possible in the message.¹⁵ The more of these “decisions” there are (the more “binary units” or “bits”), the more information—in the technical sense of the term—is contained in the message. What this implies is that

a message which is completely redundant, one where certainty is absolute, contains no information because there is no “freedom of choice”—i.e. no randomness or uncertainty—in its possible selection. This means, on the other hand, that uncertainty is necessary in order for a message to be informative: it must be able to surprise us, tell us something new. As a consequence, for Shannon, information is a function of information-entropy, a measure of the randomness or uncertainty of the coding of the message. If information relies on a probabilistic relationship with uncertainty, then, as Malaspina has exhaustively shown, there is no principled distinction between information and noise itself from the strict standpoint of its quantification through information-entropy—though there are of course, real practical differences between uncertainty which becomes informative and that which persists as mere noise. “What we call complexity is a correlate of low redundancy, in other words, of a low level of pre-knowledge about a system. [...] Greater complexity of information denotes greater uncertainty.”¹⁶

Finally, then, it seems compression is meant to contend directly with noise, as an index of the complexity and uncertainty we are confronted with readily. However, in making itself more informatic (by virtue of eliminating redundancy or supposedly superfluous information) compression also becomes vulnerable to noise. While redundancy eliminates uncertainty precisely by limiting potential information, it is also widely used to codify the intended or existing information by a process of repetition that ensures its encoding across contexts—it provides sign-posts, markers, or duplicates which indicate where the information is, or how it should be interpreted. Error-correcting codes, for example, often rely on redundant information as sources of checking in order to correct a message where some randomness has entered the signal. Lossless compression minimizes such redundancies, and thus opens itself onto noise in a particular way. Further, lossy compression can introduce randomness into the non-redundant features of its data. A common example is the way in which artifacting occurs in low resolution compressions of images like JPEGs; additionally, lossy compression can remove or “round off” information that might otherwise inform in ways not established by the criteria set by the engineer. All of this points to a profoundly ambivalent philosophical problematic that pervades the concepts of compression and noise as well as the relationship we have to them. This problematic needs to be laid bare, since how one understands current regimes of perception will hinge on one’s philosophical comportment toward this problematic.

On abstract vs. generic compression

In “Compression in Philosophy” Alexander Galloway and Jason LaRivière make a distinction between two philosophical orientations toward compression: “abstract compression” and “generic compression.” These orientations allow the authors to read the history of philosophy and the relation between thought and what it thinks, not from the early modern standpoint of *representation*, but instead from the informatic and mediatic standpoint of *compression*. Abstract compression, on which they spend the majority of their analysis, is determined by a relation between a putatively “superlative” nature and its selective reduction in the appearance of phenomena.¹⁷ This reductive compression is understood as a nominal act of abstraction at the level of language or the mind. On the other hand, generic compression proceeds by means of what they call a “material” and later a “physical indifference” rendered through the “positive tactic” of

opacity.¹⁸ According to them, the avatar of the latter orientation is Melville's Bartleby, who disrupts the workaday rationality of the law office where he is employed as a scrivener by refusing the binary encoding of decision with his iconic phrase: "I would prefer not to."¹⁹

On the surface then, abstract compression seems to be aligned to a negative, nominalist or idealist disposition toward a noumenal conception of nature, while generic compression seems to be aligned instead with a lived and thus—for the authors—a real or material indifference. "We label this the tradition of generic compression in which deletion of data happens at the level of real material life, not at the level of mind, language, spirit, essence, or totality."²⁰ While it is easy enough to understand their characterization of the transcendental metaphysical disposition of abstract compression—even if it is itself reductive of the actual positions it describes—it is less obvious what the metaphysical upshot of the tactical position of generic compression brings to bear on the concept of compression itself. For example, they claim that

Bartleby's opaque indifference to work and his refusal to order the real make him an ideal model for withdrawal from the representational contract. Through a kind of productive unworking [the line of *désoeuvrement* which they follow from Bataille and Blanchot through to Agamben and Esposito], Bartleby gestures toward new forms of life and revitalized potentials for living in a community. / Bartleby's peculiar affect of opacity thus links him in our minds to various projects interested in forcing a compression of the subject toward the generic.²¹

While the potential political usefulness of a tactical withdrawal—especially regarding labor—as well as an affect of psychological opacity relative to certain mechanisms of power or structures of authority is not in doubt, it is not clear how such tactics can open anything more than the possibility of political leverage for a strategy which itself cannot in its essence be opaque or indifferent. Such a refusal doesn't gesture concretely "toward new forms of life or revitalized potentials for living"²² but at best toward the abstract possibility for such forms to develop. These tactics themselves do not seem to constrain the qualification of new forms of life in any meaningfully material sense. Such tactical opportunities should not be overlooked, but they cannot vouchsafe for the real end of their own activity—an end which stops at nothing short of the transformation and reorganization of the total productive powers of society. Nonetheless, the very modes of existence, the cognitive complexity giving rise to the compression of perception itself, in its mediatic leveling, may in fact be the basis of a renewed *aesthetic* conception of the generic subject or—to use the term of the young Marx—the genus-being (*Gattungswesen*) of society in the twenty-first century.²³ However, we are at present a long way from the proper organization of the generic, which I have argued for elsewhere under the rubric of the common: its establishment is a question determinable only by a great many historical and geo-political contingencies of which there is, as yet, no clear way through.²⁴

Leaving aside the sweeping problems of political organization and aiming instead at the level of the theory itself, the two orientations presented by Galloway and LaRivière are posed at least in certain respects as mutually exclusive and in consequence as exhaustive of alternative philosophical paradigms of compression. Yet, it is not clear whether they are appropriately drawn up or whether their features are allocated correctly. Between and

through these alternatives, there seems to be at least a third way and likely many more besides. One serious problem for their categorization stems from the substantive theoretical differences collected under the umbrella of “abstraction” around the relations they impute of abstraction toward nature or the real. This has consequences which attenuate their discursive extension of the concept of compression into metaphysics.

The main issue with Galloway and LaRivière’s diagnosis is that they presume abstract compression to be responding to the demands of an essentially incompressible nature, which is converted into a transcendently intelligible form through the process of compression, one which implies a harmfully reductive paradigm of encoding. “[W]e conclude that encoding is synonymous with the above-labeled abstract compression. Encoding is thus synonymous with the metaphysical tradition itself, in which existence appears as a specific encoding of matter.”²⁵ However, the dyad nature/compression misses its mark precisely because compression only ever refers to an already encoded milieu of information. As Weaver says in his introduction to Shannon’s original landmark paper, “[t]he information source selects a desired message out of a set of possible messages (this is a particularly important remark, which requires considerable explanation later).”²⁶ It is particularly important because, in order for a “message” to be transmitted, it *must* first be encoded. And in order for a message to be compressed it must be transmitted since, as we’ve shown, a compression (as a mapping operation) is itself a kind of transmission. When we send a message in English, for example, we are implicitly selecting from the available symbols of the alphabet, punctuation, etc. as well as from the rules of syntax for those symbols and so on. This set of symbols and rules delimits a set of possible messages. What a process of compression reduces in such a context is either the redundancy or supposedly superfluous data concomitantly constructed or induced by that encoding. Nonetheless, noise is an invariable concomitant to encoding; it is a perspectival or relative mode of presentation of contingency peculiar to information, one against which information itself is measured in terms of its entropy. In other words, as was shown earlier, information content is a factor of its uncertainty, its surprisal or its inability to be predicted.²⁷ Compression does not reduce a superlative or superabundant nature, but the supposedly non-informatic noise subsequent to the act of encoding. And there is no finite or intelligible operation, no practical activity, and no tactical orientation of refusal or indifference without the presumption of any such encoding. Yet it is precisely this encoding Galloway and LaRivière see universally refused in generic compression. It “refuses to order the real.”²⁸ In such a case, it is difficult to understand how such a generic refusal, unqualified as it may be relative to any encoding, can count as a type of compression, since a generic indifference to encoding in information-theoretic terms is equivalent to entropic equilibrium—that is, it is equivalent to the inability to detect differences in states with a random distribution of elements. In this sense, the fully lossy compression of a generic refusal of decision is utterly indistinguishable from noise.

The more important point, then, is not one of drawing a Manichean ontological distinction between nature and abstraction, within which any reduction is bad, only to uphold a generic compression which attempts to circumvent or “think around”²⁹ the synthesis of abstract intelligibility altogether. Rather, the point is a much more difficult and much more patient one: it is one of qualifying abstract compression in its concrete contexts, of deciding between good and bad compression in terms of the practical,

aesthetic, and experiential dimensions afforded by those contexts of compression. This is not relative to formal schemes of fidelity to a noumenal metaphysics, but instead relative to the dimensions which are dissuaded, obscured, deleted, or conflated within various practices of compression. More acutely, for us, it is a question of the distribution and impoverishment of perception.

Galloway and LaRivière are of course correct to insist that all compression involves an essential forgetting; “compression” they say, “forget[s] the details.”³⁰ But the real question is not about the fact *that* compression forgets, but about *what* in each case is forgotten. It is this latter question which allows us to avoid a facile and alarmist rejection of compression which is nothing but the obverse of a mysticism about nature, without resorting to the complicity of labeling any critical attitude toward cognitive and sensorial impoverishment in the use of technology as politically reactive. The opacity advocated for by Galloway and LaRivière—as illustrated through Warhol’s detached, mask-like artistic persona³¹—may be a valid individual coping strategy expressed as a cultural position responding to advanced capitalism, but it will never amount to an effective political program which could collectively construct forms of life we deem adequate—something they seem to expect of opacity. Instead, it shuts itself to its causes in lieu of its effects and does so as a putative act of survival in the harsh perceptual jungle of cognitive complexity and the modes of control and surveillance peculiar to it.

From generic to constructive compression

Opposed to Galloway and LaRivière’s reading of abstract compression—which supposes a hypostatic, natural, a priori, and metaphysical infinity, within which finite epistemic acts are coded as reductive—but also against the finitist “prophylactic ontology”³² of generic compression, I advocate here for an unlimited project of *constructive compression*—what I have called elsewhere “unlimited” or “abstractive synthesis”³³—a version of perceptual and cognitive encoding which takes abstraction as essentially mediated, incomplete or inconsistent, but nonetheless *real* in the full-blown sense of the word. Constructive compression is related not to the “representational” or “metaphysical contract”³⁴ but to the concrete deployment of defeasible thought within the sphere of real aesthetic, practical, and social life—the only sphere in which thought can be understood in the material terms Galloway and LaRivière seek for the generic.

Constructive compression is much closer to AA Cavia’s understanding of encoding and compression expounded in their two principles: the Principle of the Irreducibility of Contingency (PIC) and the Principle of Encoding (POE). Through these, Cavia champions a constructivist or intuitionist logic of real indeterminism which entertains an ineliminable relation with contingency (or noise) against the axiomatic deployment of philosophical encoding or “philosophical decision” which Galloway and LaRivière associate with the “metaphysical tradition.” Cavia’s proposal escapes bad metaphysical infinities by accounting for the in-principle unlimited but contingently finite (and thus defeasible and revisable) nature of thought, even at the level of rules of inference. For Cavia, real indeterminism is a consequence of the fact that a supposedly perfect physical encoding of information about future states implies an infinite information storage capacity in the present—a supposition which is rejected as an empirically untenable metaphysical speculation.³⁵ The upshot of this rejection is that the future cannot be

completely and consistently encoded, not even at the level of physical law itself. If nature is no longer superlative in this sense, then time is essentially indeterminate, and the future is at best only statistically predictable—that is, the future is ontologically in a process of “becoming real.”³⁶ Encoding fails to capture the whole of being, not because of the noumenal plenum of an incompressible nature, but precisely because of a universal and entropic forgetting which pervades immanence itself. Being forgets itself at infinite scale-lengths:

From the computational perspective, these infinities represent non-terminating procedures that enact an encoding of infinite time. It is this specter that subsumes them under a vector of entropy which, in Gisin’s rendering, tends toward contingency. This does not serve to undermine decision procedures as such, but rather, as Fazi remarks, ‘to enhance the possibility of an open-ended—or indeed of a contingent—understanding of them.’³⁷

Seen from this light, what Galloway and LaRivière take to be a problem about the metaphysical relation between nature and mind entailed by a nominalistic conception of abstraction and its supposedly hubristic belief in its own sufficiency, is actually a problem about the integration of the discrete and the continuous within nature, under the auspices of the physical limitations of computability and its consequences for the nature of physical law and time. Cavia’s proposal makes inroads towards this integration by undertaking a constructive computational understanding of time and the physical themselves.³⁸

The aim then cannot be the generic rejection of encoding *tout court*, but instead must entail the charting of the dialectical topography of compression and noise in contemporary life in its concrete effects.

Perceptual coding and modal poverty

Let us return to our initial framing. Information and computational systems, downstream of industrial production, are developed to deal logistically with the effects of the increasing mediation and complexity of social relations. Nonetheless, these technical externalizations, built to cope with myriad contexts of the complexification of society, individuate the experience of that cognitive complexity as noise, since they become the recalcitrant coefficients of a perception unable to concretize this complexity in intuition or to comprehend its totality in cognition. The inability of the first indexes our current sensorial distance from the contexts for which our natural perceptual faculties were adapted; the second, our current social distance from the traditional contexts within which interpersonal cognition originated. While many things are trivially incomprehensible (i.e. epistemically un-totalizable) in their complexity, the fact that the basis of the organization of our social relations is among those things cannot be made trivial: it implies that we register the ways in which it has real consequences for us without thereby gaining practical traction on them. It is the tension between society’s structurally determining character for us and its obliqueness to experience that characterizes what Malaspina, following Sands and Ratey, calls “the mental state of noise.”³⁹ Compression then—as a peculiar problem for perception—corresponds to this dissonance by deploying itself across the technologically mediated contexts of experience in the form of a perceptual coding which “masks” or subtracts from the modal variety of perceptual

domains, while opening up the space of new modes to emerge, albeit those already circumscribed by the convergence or flattening of mediatic and, therefore, perceptual space.⁴⁰ Compression becomes the shape of our *aesthesis* precisely by withstanding, diminishing, hiding, or utilizing noise.

The term “perceptual coding” originates from work done in the fields of psychoacoustics, audio engineering, and computer science in the 1980s, whereby models of human auditory perception were used in the formatting of digital media, such as the MP3.⁴¹ Interestingly, perceptual coding was immanently concerned with noise from the outset. As Sterne insists,

[h]istorically, noise had been understood as something to be eliminated, the object of abatement. But a group of approaches developed over the twentieth century that sought to domesticate noise in one way or another, either to render it useful—in environments like manufacturing, avant-garde music and sound art, dentistry, or office work—or irrelevant, as was the case in communication engineering. The domestication of noise is perhaps the biggest shift [...] because it recontextualizes [...] the theory of critical bands and computers’ emergence as potential sound media.⁴²

Sterne is concerned with sound, yet the domestication of noise is equally true of visual media, such as the JPEG or video codecs used in contemporary digital media. Further, the circumscription of perception in techniques of perceptual coding—which we use here as a term not limited to any particular sense-modality—has itself generated novel modes of perception as well as new artforms, including the meme and other artworks invested in the incorporation of the low-res, noisy artifacts of digital media.⁴³ Prominent visual artists investigating aesthetic modes emergent from noise and compression in digital media include Hito Steyerl and Cory Arcangel, among many others, and interest extends to the genres of glitch art and glitch pop, noise music, so-called “deep-fried” memes, as well as the technique of “datamoshing” in video.

However, the emergence of such modes come only as a consequence of the convergence of mediation in general onto that of digital computing.⁴⁴ In this convergence, the means of perception in almost every relevant domain become reliant on the technical criteria needed for the implementation of digital media for their existence—perception becomes compressed by the conditions of possibility of more-or-less rigorously delimited and practically closed platforms. Modes of perception in general are always reliant on the limitations of the media through which they are expressed, yet the perceptual ecology changes when mediation itself is convergent in the way described above. There is a hard limit of differentiation in terms of what counts as digital computational encoding and what does not, and consequently of what is afforded digital mediation and what is not. Anything outside it is threatened with extinction or, at least, irrelevance. This brings to bear the situation of modal subtraction. In concluding, I want to briefly overview this situation in three perceptual domains: sight, sound, and time.

With respect to sight, computation is of course mediated through the frame of the screen. The screen produces a powerful optical mode of vision at the expense of others. Film, television, and videogames are perhaps the most dominant visual aesthetic platforms today, all of which can easily be developed through the technical reproductive capacities of digital computers. The hegemony of optical perception was nonetheless in many ways already in place with the emergence of reproducible media (such as

photography and film) and the exhibition-value they gave pride of place to, as detailed in the 1930s by Benjamin, but digital computation represents something like the culmination of this tendency.⁴⁵ However, there are equally important, historically-inflected modes of visual perception that have no digital analog, and that are not equally amenable to reproduction and digitalization (at least not yet). Besides the auratic perception and cult-value to which Benjamin counterposes film from the outset, there are also haptic and hodological modes of perception that attend to the dimensionality of real space. The first relates a cross-modal connection between sight and touch—one which occurs as a phenomenon peculiar to vision that was the focus of the studies of Riegl.⁴⁶ In the case of the haptic, the materiality of objects becomes a focal point of the experience of vision itself, wherein one “touches” with the eye, grounding the substance-character of objects in three-dimensional space. This gives phenomenological texture to the visual field, which, so far, optic-digital frameworks are unable to develop. The second, hodological perception, pertains to vision as it relates to embodied movement through space; the way in which we perceive space by construing paths through it that appear to us pre-consciously, as aspects of perception.⁴⁷ With hodological perception, several psychological factors—understood as forces in a topological field space—are integrated, thereby determining the path set out by an agent. This too—although related in advance to perceptual, psychological, and social systems other than vision—is an essentially visual process, one which does not occur in the stationary and flat environment of screen viewing.⁴⁸

With respect to sound, the problems are analogous. Recorded sound generates a perceptual field akin to that of the screen and deploys compression in similarly modally subtractive ways. What we might call *audionic* perception—that is, perception related to the coding of audio in analogy with the optical coding of vision—reduces or inhibits dynamical, frequential, as well as environmental perception in sound. The dynamic compression of volume and associated gain boost are used actively in audio and musical engineering—so much so that dynamic compression has come to define the “modern” digital mix, even as opposed to music recorded to tape as recently as the 1980s. This is because with analog means of compression, distortion is introduced into the tape signal, whereas in today’s digital audio workstation (DAW), producers and engineers have access, in principle, to unlimited replication without distortion and gain channels with unprecedented headroom. These digital compression techniques are now ubiquitous, contending with the noise and output quality of settings like the car stereo or the smartphone. These settings also have similar consequences for audible frequencies in the higher and lower registers of perception which are less likely to matter for the entrainment of music or legibility of the voice. Lastly, in the context of reproducible sound, with few exceptions, the dimensionality or spatiality of sound—sound’s importance for the establishment a perceptual environment—is diminished by the manner in which speakers (and headphones) localize sound, a situation substantially different from the setting in which human hearing originally developed. This has the effect of compressing, not only our sense of sound, but also of space, much as optical media and the screen flatten the dimensionality of our sight and its space.

Finally with respect to the perception of time, the contraction of attentional economy, as well as the re-formatting of historical record through the convergence of computing in relation to language, image, and sound, have radically reoriented our perceptual field of

action—what Benjamin called our *Spielraum*—, so much so, that it may call for the reevaluation of the notion of agency altogether. It is often said that linear time distinguishes modernity from the cyclical time of the ancients. However, even within the classical project of modernity, linear time was still wed to a universal notion of teleology—a secularized transformation of the eschatological time of Abrahamic religion and of Christianity in particular. Notions of progress and the supposed purposefulness of history are relative to this way of orienting temporal linearity. Linear time is supposed to align also with the subjective apprehension of time (linear because related to the ends or purposes of the subject), while objective apprehension is the province of the circle (cyclical time was a product of natural regularities such as seasonal change and celestial movement). However, neither of these seems to describe the spontaneous perception of time relative to our own material conditions. Instead of the circle or the line, we seem instead to inhabit a compressed contractional time of what Deleuze calls the “living present”: a durational time dilated or contracted on the basis of our captivation.⁴⁹ Our current time corresponds increasingly to the capture of experience and action, the correlate of which is an economy of attention and occupation.⁵⁰ With regard to the presentism of current regimes of time perception, both the circle and line are transformed and redeployed, compressed in the service of a seemingly ineluctable present. Through this compression they are bound, no longer to the collective structures of ancient cyclical or modern progressive time, but to the personal structure of routine. The circle does not extend beyond the day or the week—or at least not beyond the fashion cycle. These repeat as incessantly as the “any-instants-whatever” of the homogenous quantified time underlying Newtonian mechanics and the wage earner’s workday.⁵¹ There are no longer auspicious days, points of privilege, ruptures in ordinary time. There is no longer any calendar at all except the one that marks the sheer passage of time, the number of days, and the personal obligations one must fulfill within it. The line is now comprised of agglutinated segments of task-time that are contiguous without ever being integrated into what we might want to call “a life.” In this respect, today’s “living present” no longer organically composes a modally rich inhabitation of time (no longer extends meaningfully in the direction of the past or the future). In this sense, there is no longer any dwelling in time. Time has become empty, abstract, and so we must fill it with the capture of our experience. In this respect, the present alone is possible.⁵² In this capture, not only have cyclical and linear perception become transformed, but finally, a temporal mode contrary to fact—a time that might stand the chance of breaking through the homogeneous time of capital and its narrow field of possibility—that is, a *counterfactual* and *counterpossible time* in which history and the future reside are no longer presented to perception as salient features of experience in the present. In this respect, the more thorough the capture of attention is, the more contracted cultural memory and imagination become. The inhabitation of an unoccupied time, within which a counterfactual reflection on the state of the present might take place, is an increasingly rarified opportunity. The inhabitation of history, of a time greater than oneself, greater than of one’s own time seems to be on a death-march as inexorable as the increase in precision with which we can scientifically measure timescales, from the Plank-time to the cosmological time of the universe. This contradiction between the knowing-that of time and its knowing-how should not be lost on us.

Stiegler defines “the proletarianization of sensibility” as a loss of knowledge, of *savoir-faire* (knowing-how-to-do) and *savoir-vivre* (knowing-how-to-live), “through apparatuses for the canalization and reproduction of perception.”⁵³ The masking, subtraction, or inhibition of these several modes of perception enacted by the implementation perceptual coding is a process of compression corresponding to the noise of cognitive complexity. It is one without a corresponding emergence of other qualitatively distinct modes which might be suitable to our moment; one that signals an unprecedented modal poverty of phenomenological and aesthetic life. The evident consequences are drastic for what we can do and how we can live. Such poverty has its potential reflection in the possibility of a new commons of experience wrought by the convergence of perceptual modalities. Compression and noise therefore also name the generic conditions of experience of late modernity around which a new form of life may yet be constructed. *But we cannot live on possibility*. A life not “unworthy of what happens to us”⁵⁴ must live by the reality of compression and noise, if only so as to produce its counter-actualization.

Notes

1. Marx, *Capital* Vol. 1, 207. Readers of Marx will notice, of course, that our illustration relies only on an outline of the simple money-form of commodities, not on the analysis of money as capital proper (the form in which the social complexification of modernity actually took place), but nothing in our example is affected by this substitution, which is made for the purposes of illustrative clarity.
2. Herbert, *Dune*, 361. For more on the concept of time-space compression in modernity, see Warf, *Time-Space Compression*, esp. 78–212; and Harvey, “Between Space and Time,” 418–34.
3. Srnicek, “Navigating Neoliberalism,” para. 26. Srnicek frames the term “cognitive complexity” via a problem of aesthetics regarding Jameson’s concept of “cognitive mapping,” namely how one understands the relation between individual experience and one’s position and formation within a global social totality. See Jameson, “Cognitive Mapping”, 346–60; and *Postmodernism*, 45–54, esp. 54.
4. Sohn-Rethel, *Intellectual and Manual Labor*, 18–47.
5. Stiegler, “The Proletarianization of Sensibility.”
6. Haken, “Information Compression in Biological Systems”; Plumbley and Abdallah, “Information Theory and Sensory Perception.”
7. Chaitin, “Epistemology as Information Theory”; Sterne, *MP3*; Galloway and LaRivière, “Compression in Philosophy”.
8. Chaitin, “Epistemology as Information Theory,” footnote 2.
9. There is a technical nuance here which is liable to provoke confusion without elaboration. The process of reversal, in the case of lossless compression, is not an inverse mapping of the surjection from base to target sets (an injection), and this is why even the output of a lossless compression is not isomorphic with its input. In the analogy with a ZIP file, moving from the base data to the instructions, so far as I understand it, is not the inverse of moving from the instructions to the base data, since inverting the surjection would mean that the two sets were strictly isomorphic (bijective), and this means they would be equal in size, and, therefore, each set would entail the same number of bits. As a toy example, one can map the numbers 1, 2, 3, 4, 5 to I, II, III, IV, V or to A, B, C, D, E and each of these is isomorphic with the others, but they are not compressions, since each requires the same amount of information—i.e. each requires five symbols (disregarding specific considerations about the encoding efficiency of each notation).
10. Sterne, *MP3*, 61–91.
11. *Ibid.*, 6, 92–127.
12. Malaspina, *An Epistemology of Noise*, 93.


13. Weaver in Shannon and Weaver, *A Mathematical Theory of Communication*, 7–8.
14. Malaspina, *An Epistemology of Noise*, 1.
15. Shannon and Weaver, *A Mathematical Theory of Communication*, 8–16. See also, Malaspina, *An Epistemology of Noise*, 51–70.
16. Malaspina, *An Epistemology of Noise*, 55.
17. Galloway and LaRivière, “Compression in Philosophy,” 127.
18. *Ibid.*, 127–8, 135.
19. Melville, as cited in *ibid.*, 135.
20. *Ibid.*
21. *Ibid.*, 137
22. *Ibid.*
23. Marx, *Economic and Philosophic Manuscripts*, 76–77 and throughout. Ray Brassier has also attempted to develop the theme of genus-being in relation to the concept of the human in a recent seminar. Brassier, “Capital: Form of Flow?”
24. Allen, *The Metaphysics of Modernism*, 208–230; “Disenchantment and Forms of Life.”
25. Galloway and LaRivière, “Compression in Philosophy,” 141.
26. Weaver, in Shannon and Weaver, *A Mathematical Theory of Communication*, 7.
27. Malaspina, *An Epistemology of Noise*, 4.
28. Galloway and LaRivière, “Compression and Philosophy,” 137.
29. *Ibid.*, 138.
30. *Ibid.*, 130.
31. *Ibid.*, 138.
32. *Ibid.*, 143.
33. Allen, *The Metaphysics of Modernism*, 164–69.
34. See above 28.
35. Perfect (Laplacian) physical encoding implies, for example, that causation is instantaneous and therefore that the notion of simultaneity is physically unproblematic—however, Einsteinian mechanics invalidates both of these assumptions. So, even if the universe were infinite in size (which would be required for infinite storage capacity in the present) it would have no instantaneous causal order, and thus no perfect global encoding of future states. In other words, there would always be some part of itself that “didn’t know” what was going on with some other.
36. Cavia, “Compression Artefacts,” 140: “This essentially Brouwerian interpretation of time—conjectured by Gisin as the creation and destruction of information—allows computation to refigure the continuum in its own mold as a process of becoming real”.
37. *Ibid.*, 142
38. For a fuller understanding of Cavia’s picture of the relation between computation and physics see, Cavia, *Logiciel*; and, “Shannon’s Demon.”
39. Malaspina, 169.
40. See Sterne, *MP3*, 96–106.
41. *Ibid.*, 92–127.
42. *Ibid.*, 94.
43. For more on the general cultural use of noise (compression artifacts) in compressed images, see Hito Steyerl, “In Defense of the Poor Image”; and for an understanding of JPEG compression see, Cory Arcangel, “On Compression.”
44. Friedrich Kittler has tracked this convergence in considerable detail—from the alphabet, to analog recording, to digital processing—especially with respect to what he calls “time axis manipulation.” Kittler, “Real Time Analysis.”
45. Benjamin, “The Work of Art.”
46. Riegel, *Late Roman Art Industry*, 22.
47. See Deleuze, *Cinema 2*, 127–8. The concept is developed at length by Kurt Levin, *Principles of Topological Psychology* and other works.

48. Augmented reality technologies, like VR, may be able to overcome some of the limitations of the screen in this second regard, but so far, they have been met with limited adoption and success.
49. Deleuze, *Difference and Repetition*, 76. For Deleuze, the ontological dimension of the “living present” rests on habit, contemplation, or contraction. However, today, in the subjective lived-time of the person, Benjamin’s understanding of the transition from contemplation to distraction seems apt—in this case, contraction as contemplation is substituted with capture or captivation. Benjamin, “The Work of Art,” 39.
50. Celis Bueno, *Attention Economy*, 42–44.
51. For the concept of “any-instants-whatever” see Deleuze, *Cinema 1*, 1–11.
52. Perone, *The Possible Present*, 13–30, 87–102. Perone’s contention is that the present becomes *possible*, i.e. modally rich, only on the basis of its inhabitation, what he calls its “lingering”. It seems such lingering or dwelling, if it ever existed in the way that Perone or Heidegger had hoped, is now barred by our material conditions.
53. Stiegler, “The Proletarianization of Sensibility,” 5.
54. Deleuze, *The Logic of Sense*, 149.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Bibliography

- Allen, M. C. “Editor’s Introduction: Disenchantment and Forms of Life.” *Chiasma: A Site for Thought*, 8–16. Accessed July 10, 2022. <https://chiasma-journal.com/issue-6/>.
- Allen, M. C. forthcoming. *The Metaphysics of Modernism and the Aesthetics of Reason in Wittgenstein, Deleuze, and Beyond*. PhD Dissertation, London, ON: The University of Western Ontario.
- Arcangel, C. 20078. “On Compression.” Accessed July 10, 2022. <https://coryarcangel.com/downloads/Cory-Arcangel-OnC.pdf>.
- Benjamin, W. “The Work of Art in the Age of Its Technological Reproducibility (Second Version).” In *The Work of Art in the Age of Its Technological Reproducibility, and Other Writings on Media*, edited by W. Jennings, B. Doherty, and T. Y. Levin, 19–55. Cambridge, MA: Belknap Press, 2008/1936.
- Brassier, R. *Capital: Form or Flow?* Seminar, New Centre for Research and Practice. Accessed July 10, 2022. <https://thenewcentre.org/archive/capital-form-flow/>.
- Cavia, A. A. “Shannon’s Demon.”  Accessed July 10, 2022. <https://tripleampersand.org/shannons-demon/>.
- Cavia, A. A. *Logiciel: Six Seminars on Computational Reason*. New York: &&& Publishing, 2022.
- Cavia, A. A. “Compression Artefacts: On the Aesthetics of Compressibility.” In *My Computer Was a Computer. Catalyst: M. Beatrice Fazi*, edited by D. Cecchetto, 127–146. Seattle: Noxious Sector Press, 2022.
- Celis Bueno, C. *The Attention Economy: Labour, Time and Power in Cognitive Capitalism*. New York: Rowman and Littlefield, 2017.
- Chaitin, G. *Epistemology as Information Theory: From Leibniz to Ω* . New York: Cornell Tech, 2005. doi:10.48550/arXiv.math/0506552.
- Deleuze, G. *Cinema 2: The Time Image*, Translated by H. Tomlinson and R. Galeta. Minneapolis: University of Minnesota, 1989/1985.
- Deleuze, G. *The Logic of Sense*, Translated by C. Stivale and M. Lester. New York: Columbia University Press, 1990/1969.
- Deleuze, G. *Cinema 1: The Movement Image*, Translated by H. Thomlinson and B. Habberjam. Minneapolis: University of Minneapolis Press, 1997/1983.

- Deleuze, G. *Difference and Repetition*, Translated by P. Patton. London: Continuum, 20011968.
- Floridi, L. *Information: A Very Short Introduction*. Oxford: Oxford University Press, 2010.
- Foucault, M. *The Order of Things: An Archaeology of the Human Sciences*, Translated by A. Sheridan. New York: Routledge Classics, 20021966.
- Galloway, A., and J. LaRivière. "Compression in Philosophy." *Boundary 2* 44, no. 1 (2017): 125–147. doi:10.1215/01903659-3725905.
- Haken, H. "Information Compression in Biological Systems." *Biological Cybernetics* 56 (1987): 11–17. doi:10.1007/BF00333063.
- Harvey, D. "Between Space and Time: Reflections on the Geographical Imagination." *Annals of the Association of American Geographers* 80 (1990): 418–438. doi:10.1111/j.1467-8306.1990.tb00305.x.
- Herbert, F. *Dune*. New York: Berkley Publishing, 1975.
- Jameson, F. *Postmodernism, Or, the Cultural Logic of Late Capitalism*. Durham, NC: Duke University Press, 1989.
- Jameson, F. "Cognitive Mapping." In *Marxism and the Interpretation of Culture*, edited by C. Nelson and L. Grossberg, 346–360. Chicago: University of Illinois Press, 1990.
- Kittler, F. "Real Time Analysis, Time Axis Manipulation." *Cultural Politics* 13, no. 1 (2015): 2–18. doi:10.1215/17432197-3755144.
- Laruelle, F. *Philosophies of Difference: A Critical Introduction to Non-Philosophy*, Translated by R. Gangle. London: Bloomsbury, 20101988.
- Laruelle, F. *Philosophy and Non-Philosophy*, Translated by T. Adkins. Minneapolis: Univocal, 20131989.
- Lewin, K. *Principles of Topological Psychology*, Translated by F. Heider and G. Heider. New York: McGraw-Hill, 1936.
- Lyotard, J. F. *The Postmodern Condition: A Report on Knowledge*. Translated by G. Bennington and B. Massumi. Minneapolis: University of Minnesota Press, 19841979.
- Malaspina, C. *An Epistemology of Noise*. London: Bloomsbury, 2018.
- Marx, K. *Economic and Philosophical Manuscripts of 1844 and the Communist Manifesto*, Translated by M. Milligan. Amherst: Prometheus Books, 19881844.
- Marx, K. *Capital: A Critique of Political Economy, Volume 1*, Translated by B. Fowkes. London: Penguin, 19901867.
- Perone, U. *The Possible Present*, Translated by B. S. S. Benso. Albany: SUNY Press, 20112005.
- Plumbley, M. D., and S. A. Abdallah. "Information Theory and Sensory Perception." *WIT Transactions on State of the Art in Science and Engineering* 27 (2006): 205–233.
- Riegl, A. *Late Roman Art Industry*, Translated by R. Winkes. Rome: Giorgio Bretschneider Editors, 19851901.
- Shannon, C., and W. Weaver. *The Mathematical Theory of Communication*. Chicago: University of Illinois Press, 1964.
- Srnicek, N. "Navigating Neoliberalism: Political Aesthetics in an Age of Crisis." *After Us: Art—Science—Politics* 1, no. 1 (2015). Accessed April 13, 2017. <https://medium.com/after-us/navigating-neoliberalism-f9fae2405488>.
- Sterne, J. *MP3: The Meaning of a Format*. Durham, NC: Duke University Press, 2012.
- Steyerl, H. "In Defense of the Poor Image." *e-flux Journal* 10 (2009). Accessed July 10, 2022. <https://www.e-flux.com/journal/10/61362/in-defense-of-the-poor-image/>.
- Stiegler, B. "The Proletarianization of Sensibility." *boundary 2* 44, no. 1 (2017): 5–18. doi:10.1215/01903659-3725833.
- Warf, B. *Time-Space Compression: Historical Geographies*. New York: Routledge, 2008.
- Zhaoping, L. "Data Compression and Data Selection in Human Vision." *Brain Informatics. De Gruyter*, no. 7 (2009).