



# Dividuated Images

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In contrast to the integral photographs of cinema, the images of a post-cinematic media regime are *dividual*, their forms *discorrelated* from molar subjectivity, their forces *molecular*, and their agencies of the order of *metabolism* rather than perception or cognition.<sup>1</sup> It is in these terms that I have sought to understand the differences between cinematic and post-cinematic media (Denson 2016), and I have thereby made appeal to a somewhat Deleuzian framework—essentially situating the post-cinematic image as a medium, vector, or agent of the control society, complicit in the dividualation and modulation of subjects and their experiential and agential capacities under post-Fordist or neoliberal capitalism, as suggestively described by Deleuze in his famous “Postscript on the Societies of Control” (1992). But what are the means and mechanisms by which discorrelated, “dividuated” images are supposed to affect us?<sup>2</sup>

## Substrate/Form

To answer this question, I depart from Niklas Luhmann’s abstract concept of “mediality” as a model for conceiving a dynamic *interplay* between technical substrate and experiential form and for re-focusing the temporal implications of dividual images’ diffuse but materially robust impact on experience (Luhmann 1997).

Mediality, for Luhmann, names not a particular apparatus but rather the *relation* between some substrate and the forms that can be constituted out of it. Accordingly, this way of thinking about mediality avoids a reductive identification of medium with apparatusic substrate; but because, according to Luhmann, substrate and form consist of the same basic elements—the same “stuff,” so to speak—this notion of mediality will not support an oppositional view whereby the technological or ontological realm is separat-

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<sup>1</sup> A much expanded version of this text will appear in Denson 2020 (forthcoming). There, I develop the concept of discorrelation across film and media-technical parameters (e.g. against the notion of “suture”) as well as philosophical coordinates (e.g. in contrast to the phenomenological “correlation” that Husserl [2012] theorizes and Meillassoux [2008] calls into question). For more general reflections on the concept of post-cinema, see Denson/Leyda 2016 and Shaviro 2010.

<sup>2</sup> In addition to Deleuze 1992, see also Ott 2018 and Raunig 2016 for further explorations of dividuality.



ed by an unbreachable gulf from a securely encapsulated phenomenological realm of experience. The difference between substrate and form is instead not a difference of kind but of organization: a substrate consists of a “loose coupling” of elements, a relatively chaotic or unordered mass of particles, while forms emerge out of the substrate as the “tight” or strict couplings or combinations of the same elements. For example, more or less randomly distributed air molecules can be reordered into the forms of wave patterns by a loudspeaker; the tones that present themselves as subjectively perceivable are themselves a substrate out of which music can be formed. There is a recursive linking among media, such that the forms of one substrate come to constitute a higher-order substrate for other forms. Letters are a substrate for the forms of words, words a substrate for sentences, sentences a substrate for larger textual forms, and so on. Thus, the substrate/form distinction is strictly relative: a medial substrate exists only in relation to the forms that it enables, and vice versa. A medium, on this view, is not objectively individuated as a thing-in-itself; rather, it is related to an observer or system as “the operative deployment of the *difference* of medial substrate and form” (Luhmann 1997: 195; my translation).

The role of difference in this definition of mediality is crucial to the task of thinking dividuation—both of images and of experience—across the substrate/form divide.<sup>3</sup> While the difference of loose and tight couplings decisively undercuts a strictly oppositional paradigm, whereby experience is ensconced behind a membrane impermeable to the image’s technological substrate, Luhmann’s view of media does not thereby revert to a correlative identification of substrate and form, such that every meaningful change in one would have an apparent effect on the other. Instead, difference remains as an essential and irreducible tension, thus providing a basis for thinking dividuality across the substrate/form divide. As I have put it elsewhere:

Luhmann’s differential media concept thus bears a special relation to Gregory Bateson’s famous definition of information as a “difference that makes a difference.” Mediality is not just any difference but, we might say, the difference that makes the differences that make a difference—an information-generating and, more fundamentally, a system-structuring difference that orients by means of defining the objects and structures that can count for a system, as well as specifying the elements of their composure. (Denson 2014: 314)

Accordingly, the subjectivizing power of a *dispositif*, which produces its subject in relation not only to image-objects but also to the infrastructural substrate that supports them, is built into this conception as essential to it. For ultimately at stake in this definition of media is an environmental agency and its relation to systems as such. Luhmann

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<sup>3</sup> Though I will not pursue it here, one could ask about the relations between Luhmann’s substrate/form distinction and Hjelmslev’s distinctions between “content” and “expression,” “substance” and “form,” as the latter inform Deleuze and Guattari’s concept of the “assemblage” (see Deleuze/Guattari 1987).



suggests at one point that his model of substrate/form provides an “alternative formulation” of the environment/system distinction (1991: 121), thus implying that the interplay simply cannot be stabilized with reference to a subject, whose integrity is centrally at stake in the formation called “system.” A non-positivistic causality is implied: a transductive relation where the system or observer referenced in the definition of mediality as “the operative deployment” of the substrate/form difference does not transcendentalize but is itself constituted in relation to the interplay of these levels. In other words, it is precisely the subject (and its objects), for example the subjectivity of a spectator, that is up for grabs at the intersection of substrate and form. Individuation follows from and does not precede the circulation of dividual materials. We are dealing here with the broadly environmental or metabolic processes that I have associated with dis-correlated images.

Against a subjectivistic experientialism, experience is thus not “on the side” of form, as opposed to a technological substrate on “the other side”; rather, experience is precisely that which is at issue in the difference between substrate and form. It is the ear (or the tympanic membrane) which is at stake in the articulation and disarticulation of sound waves; and it is the “ear” (or the aesthetic sensibilities) of the listening subject that is at stake in the articulation and disarticulation of music. What Luhmann refers to as the observer need not be a fully formed subject; in Peircean semiotics, it is called the “interpretant.” The Luhmannian view, which emphasizes that substrate/form relations are always in flux, thus decenters focused perceptual experience; exchanges between substrate and form express themselves less as perceptual objects than as intensities of temporal synchronization. The ear’s tympanic membrane resonates in sync with the sound waves in the air; the listener’s educated “ear” is entrained by the sonic forms of music. This re-focusing of experiential intensity thus dislocates static conceptions of subjectivity (essentially spatialized conceptions that oppose subjects, dualistically, to their objects), thereby leveraging the ongoing modulation of subjectivity or experience, much like the modulation at stake in Deleuze’s control society. Through the repeated flux of formation and deformation, an ear or an eye becomes susceptible to training, a body becomes susceptible to habituation, and a mind becomes susceptible to education. Mediality is thereby reconfigured from a passive channel between fixed subjects and objects to become instead the site of affective attunements.

Emerging out of this perspective, as we see, is an essential reference to temporality. Mediality—as the site of interplay, flux, modulation, and attunement—is conceived as thoroughly processual: it is realized as the *process* of the coupling and decoupling of forms, which emerge from and return back into a substratal pool of disarticulation. These processes constitute patterns and rhythms that define nothing less than the temporality or metabolism of a system. As irreducibly temporal formations, media in a sense “give” time to the structured organisms, psyches, and social units at stake in the for-



mation of systems. Conceived along these lines, the metabolic agency of post-cinema's dividual images is expressed in terms of a modulation of (pre-personal) temporality itself. And while this view is apparently at odds with ordinary concepts of what an image is—for example, the notion that it is a spatial-figural visual object rather than a primarily temporal vector—a reconceptualization of images as temporal is in fact necessary in order to account for their circulation in today's media.

The history of electronic images, in television, video cameras, and now computational systems, is a history of de-spatialization, as the photographic image was not only decomposed into smaller spatial units (dots and pixels), but recalculated and reconfigured as a flux of frequencies—such as the frequency of phosphor illuminations by electron beams tracing alternating scanlines on the screens of cathode-ray tube televisions. Protocols such as NTSC and PAL redefined the image in terms of a subperceptual flux: the European PAL system temporalizes the image at the rate of 25 interlaced frames of video per second, the NTSC system at the rate of 29.97 frames. But far from simply accelerating the frame rate of cinematic images, these electronic frames are fundamentally incomparable to the 24 frames per second of sound-era cinema. Interlaced video images are radically dividual in the sense that they are never fully present as integral units on the screen; instead, they are drawn by way of two “fields,” each consisting of several hundred scanlines, which are illuminated alternately: first all the even-numbered lines are consecutively illuminated, then all the odd-numbered ones. In the PAL system, which has 625 scanlines (only 576 of which are visible), this means that images do not appear as 25 full (or “cinematic”) frames per second but are instead dividuated at a frequency of 50 Hertz—or 50 “fields” of 312.5 lines each per second, where each line is traversed at a speed of 64 microseconds. The afterglow of the phosphor coating activated at this rate makes the image appear more or less complete, but due to the phosphor's short luminescence decay time, as well as the fact that the first field of the next frame will be drawn while the second field of the last frame is still visible, the image on the CRT screen is never stable or integrally individuated. The interlaced image, as a subperceptual “time-image,” is a fundamentally dividuated image.

Luhmann's concept of substrate/form relations accounts perfectly for such images, which are formed according to precise temporal operations—or “time-critical processes,” as Wolfgang Ernst calls them—that tightly couple the elements (red, green, and blue phosphor dots or pixel strips) that compose the visible form of the image. Indeed, as we have seen, the image, which is no longer ever fully and singly “present,” fundamentally *is* the temporal flux or frequency that measures substrate/form exchanges. It is important to note, however, that such frequencies are measured only by the technical system, not by the viewer, for whom the impact is subperceptual and immune to subjective measure; as Jordan Schonig says in the context of compression glitches, this “movement is not *measured* by the spectator but immediately felt as an intensity” (2017: 221). Neverthe-



less, the viewer does of course *see images*, but this fact must be seen as a byproduct of the temporalization of the image (even if such perception was the original and ultimate goal that led engineers to temporalize the image in this way—i.e. according to PAL, NTSC, and other protocols—in the first place). Thus, the viewer’s body must essentially resonate with the frequencies of the electronic image, be affectively attuned to it in order for perception to take place; and indeed, many design decisions (concerning refresh rate, phosphor persistence, screen resolution, and the like) were made with the temporalities of bodily sensitivities in mind.

### Temporalization and Control

But this reconceptualization of the image in terms of temporality is hardly inconsequential, as it opens the concept of “image” up to forms that would not be tuned thus to human perception. Indeed, by drawing on Luhmann’s abstract theory of mediality, we are compelled to reconceive the image quite apart from its visible or perceptible manifestations. This consequence will no doubt strike many readers as unacceptable, a veritable *reductio ad absurdum*. On the contrary, however, I claim this consequence precisely as a strength of the theory, in that it allows us to account for the embodied impact of imaging processes that do not have visible manifestations. What I have in mind here is not a philosophical flight of fancy but instead concerns real-world applications that are very real, very concrete, and increasingly widespread. Media artist Trevor Paglen has termed these “invisible images”—images that circulate between machines, unseen by human eyes, in computer vision systems and artificial intelligence applications, in devices and platforms ranging from smartphones to satellites, Automatic License Plate Readers (ALPR) to social media networks (Paglen 2016). As Paglen puts it:

over the last decade or so, something dramatic has happened. Visual culture has changed form. It has become detached from human eyes and has largely become invisible. Human visual culture has become a special case of vision, an exception to the rule. The overwhelming majority of images are now made by machines for other machines, with humans rarely in the loop. The advent of machine-to-machine seeing has been barely noticed at large, and poorly understood by those of us who’ve begun to notice the tectonic shift invisibly taking place before our very eyes. (2016: n.p.)

Whether captured by a camera or generated synthetically, such “detached” or radically dis-correlated—literally post-perceptual—images are not produced for human consumption, but many of them are crucially involved in processes that are of no small concern to us: surveillance, logistics, industrial production, and the automation of various other fields that have a direct bearing on our sociopolitical and spatiotemporal situations. In Paglen’s words:



The landscape of invisible images and machine vision is becoming evermore active. Its continued expansion is starting to have profound effects on human life, eclipsing even the rise of mass culture in the mid 20th century. Images have begun to intervene in everyday life, their functions changing from representation and mediation, to activations, operations, and enforcement. Invisible images are actively watching us, poking and prodding, guiding our movements, inflicting pain and inducing pleasure. But all of this is hard to see. (2016: n.p.)

Even if they are invisible, such images are undeniably real and materially consequential—they can be matters, literally, of life and death. Consider, for example, the invisible images that a self-driving car generates (with a set of smart cameras, radar, and LIDAR systems) and then processes (starting in-camera, applying geometrical transformations, video compression, and edge detection preprocessing before streaming the signals to other processing units), all without the intervention of a human perceiver. Indeed, it is the human passenger whose continued existence, much less perception, is precisely at stake in these microtemporal operations. Or consider the very similar processes taking place in autonomous military drones, where the automated capture and analysis of invisible images is directed not towards the preservation but the annihilation of life. Crucial to these operations is the dis-correlated image, the dis-integrity and dividuality of which is a function of its ever-accelerating temporalization, and vice versa. In such forms, post-cinematic images become vectors of control at the broadest scale.

Again, I am drawn to Luhmann's concept of mediality because it enables us to account for such processes in which dis-correlation and dividuality, far from marking the impossibility of having an impact on human experience, are instead coupled with clear and sweeping consequences, hence aligning dividuated images with the modulating processes of Deleuze's control society. But it is not just the paradoxically spectacular-yet-invisible images of drone warfare and expensive cars that play a role here. In between the CRT's still relatively perceptible images and the strictly invisible images of neural nets, we are hailed everywhere today by digital screens and their dividual images. These too, I suggest, are part of the mundane machinery of control. Recognizing them as such requires that we understand the interplay of pre-perceptual intensity, temporal synchronization, and embodied habituation at work in the images that circulate on the majority of our screens today: whether flatscreen TVs, LCD computer monitors, or handheld devices like tablets and smartphones. Seen in this light, we can more fully appreciate the pre-personal impact that the dividualities of computationally processed images, as a matter of their sheer environmental presence and quite apart from their drawing attention to themselves as individuated perceptual objects, can have on us. Again, situating dividuation precisely at the difference of substrate and form, rather than sacrificing this difference to either an oppositional or a correlative model that would cordon technological operations off from experience or raise them up to the level of perception, will allow us to see dividuated images as agents of everyday control: vectors of



temporal modulation operating at the level of environmental metabolism rather than perception or cognition.

As in the case of the interlaced video image on the CRT, the interplay of substrate and form in a digital display device implies new forms of temporality, only further dis-correlated from human subjectivity—which is selectively, optionally, and if at all, then only *temporarily* given access to the new images. According to Paglen:

What's truly revolutionary about the advent of digital images is the fact that they are fundamentally machine-readable: they can only be seen by humans in special circumstances and for short periods of time. A photograph shot on a phone creates a machine-readable file that does not reflect light in such a way as to be perceptible to a human eye. A secondary application, like a software-based photo viewer paired with a liquid crystal display and backlight may create something that a human can look at, but the image only appears to human eyes temporarily before reverting back to its immaterial machine form when the phone is put away or the display is turned off. (2016: n.p.)

The temporary appearance of the image is a consequence of the specific temporality of an image which, in principle, could remain invisible to the human; this temporality is determined by the interplay of substrate and form (the process by which the image “appears” briefly before “reverting back” to the invisible substrate). The time that is proper to such images is the superfast time of computational microtemporality, wholly dis-correlated from the temporal window of human perception. To become visible, the image must be brought inside that window through mechanisms (LCDs and LEDs, etc.) that correspond to our embodied receptivity. The point, however, is that the image is—at the outset, and in principle—invisible due to the temporal mismatch between computational and human temporal processing; visibility is optional and ancillary with respect to the more fundamental state of invisibility.

Paglen emphasizes, however, that even when such images remain invisible, they are capable of shaping or modulating experience, effectively setting the parameters for it as the environment within which we live. For example, Facebook and Instagram present themselves as places to share photos with friends and family, suggestively offering “albums” in which to store related images (photos from your last vacation, for example). But, as Paglen shows, “the analogy is deeply misleading”: “When you put an image on Facebook or other social media, you’re feeding an array of immensely powerful artificial intelligence systems information about how to identify people and how to recognize places and objects, habits and preferences, race, class, and gender identifications, economic statuses, and much more” (2016: n.p.). In other words, the invisible substrate is where the action’s really at, while human perception is secondary at best.

Regardless of whether a human subject actually sees any of the 2 billion photographs uploaded daily to Facebook-controlled platforms, the photographs on social



media are scrutinized by neural networks with a degree of attention that would make even the most steadfast art historian blush. Facebook's "DeepFace" algorithm, developed in 2014 and deployed in 2015, produces three-dimensional abstractions of individuals' faces and uses a neural network that achieves over 97 percent accuracy at identifying individuals—a percentage comparable to what a human can achieve, ignoring for a second that no human can recall the faces of billions of people. (Paglen 2016: n.p.)

Meanwhile, the consequences of this substratal action can be very concrete:

As governments seek out new sources of revenue in an era of downsizing, and as capital searches out new domains of everyday life to bring into its sphere, the ability to use automated imaging and sensing to extract wealth from smaller and smaller slices of everyday life is irresistible. It's easy to imagine, for example, an AI algorithm on Facebook noticing an underage woman drinking beer in a photograph from a party. That information is sent to the woman's auto insurance provider, who subscribes to a Facebook program designed to provide this kind of data to credit agencies, health insurers, advertisers, tax officials, and the police. Her auto insurance premium is adjusted accordingly. A second algorithm combs through her past looking for similar misbehavior that the parent company might profit from. In the classical world of human-human visual culture, the photograph responsible for so much trouble would have been consigned to a shoebox to collect dust and be forgotten. In the machine-machine visual landscape the photograph never goes away. It becomes an active participant in the modulations of her life, with long-term consequences. (Paglen 2016: n.p.)

I have quoted at length from Paglen's descriptions of this landscape of invisible images because they get at something essential about the contemporary interplay between substrate and form—i.e. the processes of flux that "give" time today to humans (and, given the planetary reach of our technologies, possibly to life on Earth more generally). The temporalization and dividuation of contemporary images, as we see, gives rise to metabolic forces that are reshaping the very pathways of exchange (input/output, perception/action, consumption/production, digestion/excretion, etc.) within the general ecology of contemporary biotechnical existence.

And while all of this may seem quite distant from the act of watching movies, for example, it is increasingly hard to draw a line: when we stream videos from Netflix, Amazon Prime, Hulu, or YouTube, for example, we are providing valuable information to these companies that, while it may not be used against us in the way that Paglen imagines above, will certainly be monetized and re-cycled back into the larger ecology. This might be in the form of paid advertisements, recommendations for other videos that will keep us in the circuits of attention and invisible data-exchange, or even for the purposes of content-generation: Netflix has famously used viewing information to make decisions about original content production and funding, while YouTube infamously enabled a perverse ecology of algorithmically generated content directed at young, often preverb-



al, children locked into the “Up Next” autoplay circuit on their parents’ iPads—with videos featuring their favorite cartoon characters being tortured, vomiting, or showing up in creepy situations wholly inappropriate for the target audience (Bridle 2017). Meanwhile, even apparently non-networked video consumption is hard to keep out of these circuits: our smart TVs, BluRay players, and videogame consoles relay information back to their parent companies about the type of content we make visible on our screens, whether they come from cable TV, from an optical disk, or are stored on an external hard drive. Here, again, we see that the visible forms of digital images are just the tip of the iceberg, and that their invisible substrates implicate them in diffuse and far-reaching ecologies of experience and control.

Above all, what emerges in this view is that, across scales, the dividuation of the image is bound up with the dividuation of experience. Most centrally at stake in these operations, in the interplay and flux of substrate and form, is temporalization or the modulation of time itself. The image today is not a primarily visible object but an always specific *binding of time*, whether in relation to human perception or computational microtemporality. Dividualization is itself a fundamentally temporal control process, concerned with an ever more fine-grained division of time and the operationalization of the smallest available temporal units. Paglen refers to “the ability to use automated imaging and sensing to extract wealth from smaller and smaller slices of everyday life” (2016: n.p.), or again: “Smaller and smaller moments of human life are being transformed into capital” (2016: n.p.). My point about dividuated images is that they are crucial mediators of this process, as they serve to bind human attention and time more generally to the microtemporal circuits of the planetary control systems that would seem to have us locked into a global death spiral, on a collision course with extinction. Surprisingly, then, confronting this horizon of a future without future may require us to step back from specifically futuristic fantasies of terraforming Mars and the like, and instead to focus on the more mundane present of watching movies. For it is here, on these screens, that the future is being plotted in increasingly anticipatory processes that materially displace the perceptual present and seek in advance to format the subject of experience, to modulate subjectivity by means of the molecular, metabolic forces that are activated when we “press play.”

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