

# Transformations

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### Towards a Meteorology of the Media

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We inhabit the very first culture that up to a point is able to predict thunder and lightning, though not yet earthquakes. Without weather reports – that is, without computer simulations – no leisure activities, without leisure activities, no experience society. So whenever it is summer, give thanks to our computers.

– Friedrich Kittler, “Lightning and Series, Event and Thunder”

Peter Sloterdijk has reminded us that to be human is to be a “Being-in-the-air; or more exactly a Being-in-the-breathable.” For Sloterdijk, “this was so deeply true and self-evident that arriving at a detailed thematization of air and atmospheric relations was practically impossible” until the “negative air-conditioning” that occurred via the gas attacks of World War 1 (Sloterdijk 48). Sloterdijk argued further that modernity has been one long project of “explication” of the latent, and that the past hundred years of techniques and technologies aimed at the air have made the dependence of humans on breathable space explicit and therefore endangered. The accuracy and precision of Sloterdijk’s history may be debatable, but the insight that the atmosphere itself is under attack and needs to be preserved is undeniable. However, the new science of the air, once dubbed “aerology” by Johann Herder, is not limited to either preserving and purifying or destroying and polluting. The study of the air is invested in making the atmosphere itself productive and useful, part of a larger project of Enlightenment that seeks mastery of Nature.

One sub-project is to make the air luminous and thick with messages. Or, more precisely, since Guglielmo Marconi invented the wireless in 1895 (the same year as the cinématographe: coincidence or concurrence?), the explication of the air for the purpose of sending messages has taken the form of exploiting and controlling the electromagnetic spectrum (Barnouw 6-12). This “radio-activity” has supported what William Uricchio has called “the dream of simultaneity” in television, radar, the telephone, satellite communications, wireless internet, microwave transmissions, the list goes on (Uricchio 121). While Uricchio is invested in demonstrating that television, rather than film, realized the cultural imagination of simultaneity, Steven Connor noted that such explication of radio-activity has been taken as the achievement of a larger set of cultural fantasies: “wireless signaling ... unleashed a dream of absolute communication and universal contact. Contemporary communications – or the material imagination which makes sense of them – still have as their ideal horizon a universe of absolute transparency and traversibility” (Connor 159). As Armand Mattelart has forcefully shown, these globalist fantasies are long-standing, stemming from “two forms of universalism: the Enlightenment and liberalism” (Mattelart 1). The Nineteenth Century followers of Saint-Simon bound the explication of the air and universalism together in their slogan, “everything through steam and

electricity," a marriage of immaterial and ephemeral forms of energy that took advantage of the new knowledge gained through aerology (Mattelart 15). The explication of the atmosphere as a medium through which encoded signals can travel has enabled the new media: the telegraph, the radio, the telephone, television, teletype, telex, internet, and satellite communications (Parks). The proliferation of new media and the correlational ascendancy of simultaneity and transparency have brought about what Paul Virilio has bemoaned as a "loss of space" in favor of time, resulting in "the image-form of the 'planetary globe' or 'teletopia'; in other words, globalisation" (Virilio 49-98).

Traveling so quickly from the explication of the air to globalisation is fully in keeping with Sloterdijk's philosophical project (see, for instance, *In the World Interior of Capital*), but I seek to leverage these forays into aerology as a way to critique the cultural imaginary of immateriality at the heart of the "dream of absolute communication and universal contact" inherent in the promotion of new media (Connor 159). I propose a meteorology of the media to assist media scholars in redirecting media studies towards considering questions of (im)mediacy, (im)materiality, and (in)visibility in the context of technical innovation and the production of new mediated forms of living. For instance, idealist visions of communication (and communication networks) as instantaneous, invisible, and immaterial employ ethereal metaphors in their promotion (e.g. cloud computing, Ethernet, etc.). These metaphors also point to the technical components of the devices and systems in question even while their promotional value as fantasy precisely emphasizes certain aspects of existing social structures over others. A meteorology of the media constitutes the production of knowledge which engages aerology and the practices of making the atmosphere habitable, navigable, and legible.

The Latin origin of the term "meteor" denotes something aerial, an atmospheric object. As the study of atmospheric phenomena, including winds, precipitation, lightning, meteorites, as well as rainbows, auroras, and other luminary events, meteorology can provide fertile ground for the study of media. Because air – that which forms the atmosphere – is all around us, always touching our bodies, and a substance crucial for life itself, treating it as the basis for all media opens new avenues for media scholarship. Media technologies rationalize and technologize the air, an often taken-for-granted portion of our environment. For example, photography is reliant on an abundance of light, and it has been in part the abundance of predictable sunshine that has made Southern California a dominant production center of photographic images. Cinema is based on the ability to control and direct light; as Haidee Wasson has put it, those who have designed projectors and theaters "have long struggled with how best to capture light within the projector and then to get it to the screen." Even the oldest of the "new media" depends on the explication and control of atmospheric phenomena for its existence and effects. Likewise, electromagnetic waves traveling through the atmosphere form the basis of wireless telegraphy, radio, radar, television, cellular phones, and the wireless internet. The air itself has become crowded – polluted even – with flocks of signals traversing from transmitter to transmitter to receiver. Thus, weather can disrupt the functioning of these media: solar storms have affected satellite transmissions, cellular phone networks, television broadcasts, and even telegraph networks. In short, technological media depend on repurposing the medium of the air and putting it into service of human communication and culture, which in turn continues to make media susceptible to atmospheric changes in ways that are often overlooked. The continual repurposing of the atmosphere for the purposes of communication has made contemporary media signals a form of weather – changes in atmospheric properties that affect those who come into contact with them. If Kittler is correct in claiming that computers produce summer through simulation (forecasting models), it is because computing itself is a form of weather (and our new computational society a form of climate change).

Crucially, reconceptualizing the "new media" (that is, the media dependent on atmospheric rather than the materiality of vegetable pulps or animal skins) as meteorological discloses the tension between materiality and immateriality inherent in the new media. The luminosity of photography and cinema depends on controlling invisible and intangible photons, the force

carrier of light, which itself depends on the fusion of immaterial waves and material particles. Apprehending this light requires the proper employment of a series of technologies and techniques. Kittler has argued that film is “optical” and television not, since the images in the former can be seen by the human eye at any point while television signals cannot be apprehended by the human eye. But he is quite wrong, as anyone who has tried to watch a cinema by gazing at the beam of the projector can attest (Kittler, *Optical Media* 226). The screen renders the immaterial beam of light material; it is the screen that turns the intangible into the material event of image. The aeriality of radio, television, and cellular phones depend on encoding and decoding energy within the electromagnetic spectrum; the generation of this invisible and intangible energy managed and regulated by the International Telegraph Union: “an original institution” comprised of an international body of experts and “open to the entire community of sovereign nations,” which in part is why television has been more closely associated with globalisation than film (Mattelart 7; Andrew). Both forms depend on the creation and encoding of energies that are then resolved at the site of a screen. From the standpoint of anyone who is not an engineer, then, media images – content – do seem immaterial outside of the tangibility and physicality of the aptly named “hardware.” Thus to think of media as suspended in air, as particles, waves, energy states, whose effects we feel and experience even if they are invisible, intangible, and non-objectified is to acknowledge their already present meteorological nature. As spectators, we see the material results of the aerology enabling the new media but cannot point to the waves and particles explicated by this aerology. The material of the media is the screen, the endpoint of experience, the terminal. But it is the immaterial (electromagnetic waves) that makes new media possible.

The immaterial, somewhat counter-intuitively, serves as a foundation for the new media and the cultural imaginary of simultaneity. Using a cellular phone to call, text, read email, or access the internet means participating in a world of magically invisible messages and codes – signals – which crowd our atmosphere and bring the distant closer. The same could be said of radio and television – that the connections created via these technologies seem ethereal, spiritual, even haunted (Sconce). For some, the ubiquity of these wireless devices, which means participating in “telepresence,” has been taken-for-granted, and “perpetual contact” is the new watchword for urban elites and the new barrier for entry in the new economy (Katz and Aakhus; Bhavani et al). In short, the atmospherics of the new media – the immateriality of their processes – combined with the mobility and portability of the devices themselves provoke a romantic fantasy of constant communication and provide the basis for an expression of power via the realized fantasy of “absent presence” (Gergen).

“Limitless communication,” Mattelart has argued, has led to new rifts between the “data-poor” and the “data-rich” so that immateriality is a disguise for the new international division of labor, and the new hierarchies between and within regions are disguised by the promise of simultaneity and instantaneity (Mattelart 97-120). The fantasy of immateriality is ideological in the Marxist sense of obscuring actual social relations – it actively hides the labor and material necessary for the realization of these fantasies. Countering this ideology by demonstrating that there are materials at work within the new so-called “information economy” (which has replaced the “brick-and-mortar” store with the magic of “point-and-click shopping”) and networked logistics are valuable interventions. But this kind of excavation cannot compete with the work of capitalism which seeks to bury labor and material in order to render it invisible. Likewise, so much of advertising, what Raymond Williams has called “the official art of modern capitalist society,” appeals through stories, narratives, and fantasies of intangibility, immaterial, immediacy, and invisibility (Williams, “Advertising” 184). The whole body of promotional material comprising advertising, publicity and public relations promulgates a very particular relationship between, on the one hand, happiness, contentment, and a fulfilling life and, on the other, immediacy, immateriality, and technology that can be described as approaching transcendental.

But these fantasies are fantasies of infrastructure, not of the devices themselves. For the

television watcher, the Internet surfer, the moviegoer, and the cell phone texter, it is hardly a good thing if those devices are immaterial. They have to be tangible (the buttons of remote control, the screen in the movie theater or the touchscreen of a cellular phone use physical resistance to function), they have to mediate (otherwise what would be the point of using them?), they have to be visible (even Google Glass has an appearance). How these devices work (operations), what makes them work (functions), where they get content (productions) has been rendered immaterial in the “official art.” In other words, the fantasy presented to us is one in which operations, functions, and production are actively erased in favor of fantasies of perpetual contact and a limitless flow of images and sounds accessed on-demand. Of course, media depend precisely upon that which is left out of advertising, and taken together as an aggregation of submerged technologies, this remainder constitutes infrastructure. But it is the materiality of the device coupled with the disappearance of infrastructure that makes new media seem transcendent. Thus, visions of perpetual contact, absent presence, and simultaneity work to actively hide the materiality of labor and infrastructure through a recurrent focus on the device itself: its fit, its handiness, its mobility (Cooley). This emphasis, present in both advertising and academic discourse, forestalls analyses of the relationships between devices and between people; or, put another way, what constitutes the nature of transmission (DeBray).

If advertising is so crucial to maintaining these techno-fantasies that it “commands the services of perhaps the largest organized body of writers and artists,” then surely we have yet to leave behind Theodor Adorno and Max Horkheimer’s observations on the culture industry and the “rationality of domination” (Williams, “Advertising” 185; Adorno and Horkheimer). Therefore, following Antonio Gramsci, I suggest that the “concrete fantasy” of ideology (in this case the specific capitalist fantasy of the immateriality of infrastructure), must be met with theory capable of providing the basis for an alternative “concrete fantasy” (Gramsci 239). Reminding iPhone users of the materiality of Foxconn factories or Amazon.com customers of the materialities of the warehouse does not provide an alternative vocabulary through which users/customers can understand their own direct experience of downloading an mp3 file on their phone or streaming the latest fashionable television program to their laptop computer (Johnson; McClelland). These reminders are descriptions of materiality – the tangible, the economic, the objectified – that may provide ammunition against the ideological pretense of the immateriality of infrastructure, but do not, by themselves, provide an adversarial concept-framework for strategy in the struggle for hegemony. These excavations produce the concrete without fantasy (see, as examples, Pfiesser, Starosielski). Instead, thinking of media as meteorological would be to re-place these devices within infrastructure, or more metaphorically, to suspend television, cellular phones, and computer terminals in the atmosphere which endows them with capabilities. By categorizing new media technologies as forms of aeriality, I seek to acknowledge what attracts and motivates the use of these technologies in the first place – the fantasy of magical effortless contact between those not physically co-present.

It is worth recognising how Gramsci’s term, concrete fantasy, is itself an example of the approach I favor. At once an acknowledgement of the primacy of materiality, it does not dismiss the immaterial out of hand. In Gramsci’s writings, the concrete has variously meant the actual, the real, or the non-theoretical. The term concrete also illustrates Gramsci’s own analytic approach and priorities, since concrete, as a composite material of particles and binding agents, is also an apt metaphor for social relations. Gramsci recognized the power of the symbols, messages, meanings, imaginations, and fantasies to mobilize and motivate. To claim that everything is material (that is, arguing for the materiality of ideas and thoughts) or to claim that only materiality *matters* (that is, that only the tangible matters, in some variations, or the economic, in others) and thus only the material is worthy of analysis is but the obverse of the idealist who pretends that conceptions call objects, social relations, and technologies into being. Some balance must be struck between the structuring influence of physical material (say the celluloid of the film contrasted to the cellulose of the book) and the agencies, intents, and

actions of humans who put these materials to use.

Perhaps some illustrative examples will help drive this point home. In the United States, early iterations of television relied on the physical and tangible infrastructure of cables to transmit signals from studio to home, and synchronize sound with image. These were either telephone lines or electrical cables. But in the early 1930s, in California, experiments were performed by Philo Fransworth to try and perfect wireless transmission of television (Barnouw 25- 50). In 1932, one engineer, Harry Lubcke, convinced an airline, Western Air Express, to participate in a test of television's aeriality. In the experiment, a local radio station, KHJ, in cooperation with a television station operating under an experimental license, W6XAO, transmitted a film and equipment in an airplane flying overhead nearly ten miles away picked up the signal. While this experiment is notable for the first instance of television in an airplane, it is more importantly an early instance of the de-materialization of television signals. The notion was so novel that the science columnist for *The Los Angeles Times*, Ransome Sutton, devoted an entire "What's New in Science" column to explaining the "revolutionary" technology of wireless television and the new techniques of "tuning in" for television viewers. The fact that this demonstration of the meteorological properties of television included (even foregrounded) a circling airplane displays the aeriality of television itself as new media (Sutton). In other words, the test was not simply a test of whether a receiver could capture signals from the air, rather it showed how the tendency of the new media is to take advantage of the new aerology and emphasize its vertical and altitudinal capabilities. Using an airplane as a publicity stunt for television linked the airplane with the ongoing cultural phenomenon of "air-mindedness" elucidated by Joseph Corn, so that television was promoted not as a kind of domestic cinema, but as another form of aviation, flying, and aeriality (Corn). In other words, the materiality of the airplane, television set, and transmission tower participated in the immaterial phenomenon of air-mindedness and helped create a new intellectual space for thinking about connections between distant places and times, so that the immaterial and material become intertwined and act upon each other.

Or consider the appendage to the now ubiquitous personal electronic device, headphones, which tether the human body to the dense piece of technology in hand (or purse or pocket). Michael Bull borrowed from Jean Baudrillard's observations on the automobile's condensation of media and mobility in *America and The Ecstasy of Communication* to draw attention to the various ways that headphones and portable music technologies are employed to create "private bubbles" for their users: mobile spheres of private space (Bull). The creation of a private sonic space gave individuals a form of control over what sorts of social interactions they participated in, and served as a "stimulus shield" against the "hyperstimulation" of the modern urban milieu (Schivelbusch 167). Thus headphones are enlisted in a project of inhabitation, by which I mean the habit (or practice) of listening to music with headphones is also a way of creating a space for living in the world. Headphones are desirable not just because they help keep other sounds (and other people) out, they also help create intimate ties between the user and whatever sounds emanate from the headphones – like the cinema and television, they help bring the distant closer. This is crucial for contemporary media devices, which are often carried on the person (and customized by the user). Headphones enable devices to be mobile while being used without disturbing others. In other words, rather than a form of publicity, sharing, or performance like a portable stereo boombox, the headphoned music device is a passive assertion of identity, space, and privacy. This passivity enables new portable media to be integrated in the ongoing social transformations brought about by increased urbanization, separation of work and home, and ascendancy of transported mobility that Williams has called "mobile privatization" (Williams 2003). In essence, headphones allow for individual self-enclosure while not disturbing a social order dependent on crowding, face-to-face interaction, and social transactions between strangers. Headphones thus permit user fantasies of control and individuality, while the social order of late capitalism requires submission to a whole host of phenomena not directly created by (and outside of the individual agency of) each user.

The increased use of portable media has been taken by many within academia (and the mainstream press) to conclude that we are now living in a more atomized society characterized by loneliness, a deficit of sociality, and a loss of conviviality. As Baudrillard put it in *America*, “interface or interaction ... has replaced contact and action,” and calls the new mode of living he witnessed in his visit to the United States a “code of separation” (33-4). While not the first to make these observations, Baudrillard’s ideas are emblematic of the kind of thinking to be found in thinkers as diverse as Robert Putnam and Sherry Turkle as well as anthropologically-inclined scholars of new media such as Michael Bull and Rich Ling (albeit in different and more challenging forms). It seems to me that the use of headphones constitutes mutually agreed upon isolation, a kind of cooperative separation. Headphone use is actually more effective in a subway car, on the street, or in the office *if other people are also using headphones*. In other words, the use of headphones reinforces the boundaries of the “mobile bubble” created by new media. This applies for the paragon of modern mobile media bubbles, the automobile, as well, for there is nothing more disruptive to the sonic order of urban life than the car whose stereo can be heard by those *not* travelling within the car. Thus, these bubbles are not separate, disconnected spaces looking for a vacuum or attempting to create a place evacuated of humanity (in that case, headphones would not be necessary), rather their boundaries are strengthened by connecting to the walls of other media bubbles. The reason these connections often go unrecognized is because they are invisible, intangible, and seem immaterial. In short, portable media devices create miniature atmospheres. It is true that many of these, like cellular phones, now also rely on electromagnetic waves and aerology for their functionality, but even older devices that did not, such as the Sony Walkman, still produce media space (in other words, immateriality).

I want to return to the work of Peter Sloterdijk as it offers some potential ways to think about new media as meteorological. In the third volume of his *Sph̄ren* project, Sloterdijk uses the term “foam city” to describe the interconnected bubbles that characterize the modern urban milieu. For Sloterdijk, these bubbles are not just spaces created by media devices, but also describe apartment buildings, and automobiles. Sloterdijk’s ideas are in part inspired by Thom Mayne, whose term “connected isolation” denoted the new forms of urban space “in which boundaries, enclosures, and territories are no longer the result of permanent physical obstacles” (Mayne 7). It is here that we can see the importance of the immaterial. If modern life is characterized by increased freedoms of mobility (and capabilities of movement) via vast rapid transportation and communication networks (that are increasingly transnational and global), then it would appear that the fantasy of liberation and freedom is achieved. But at the same time, the disappearance of physical boundaries make us vulnerable. Sloterdijk sees the project of building bubbles within the foam as also producing an “immune system ... against the influences of the outer world” (Morse). The bubble, then, is not a shield so much as a semi-permeable membrane, which allows certain connections (and incursions) but not others. The “foam” is thus the accretion of bubbles, which may be of “variable shapes and sizes,” still connected but separate (Elden 8). Currently, new media are the prime creators of foam: portable devices allow the multiplication of bubbles and the mutual support of their walls in public space, so that sidewalks, streets, and squares become covered in invisible and intangible streams of suds, while stationary devices, such as domestic television sets, shore up the “immunological” function already performed by walls and windows. Again, by concentrating our analytic focus on the materiality of the technological object and the materiality of the corporeal user, we miss the in-between, the way that these miniature atmospheres created by new media devices interact with each other while providing users with a space for living.

A meteorology of the media acknowledges the production of atmospheres by media devices. It also maintains that new media are themselves dependent on the new aerology of the last century, without the scientific experimentation on the electromagnetic spectrum and the analysis of air itself, these technologies would not exist. In part, this is why weather has become the chief adversary of our media system: solar flares, lightning strikes, and wind shears all

disturb the functioning of these devices and their infrastructures. As important as the sociological and the technical aspects of thinking of media in meteorological terms is the political. On the one hand, positioning media as “of the air” would seem to compound the idealist fantasies of those who would promote new networked media technology as liberating and redemptive of capitalism. But what I propose is that scholars take advantage of the concrete fantasy of immateriality. Meteorology is the study of phenomena in the air, which has to account for flows, currents, turbulence, the fluid dynamics of the atmosphere, the interconnectedness of these patterns and their disruptions. But meteorology also depends on being able to account for and point to physical, tangible, and visible things: rain, snow, clouds, sunshine. A meteorology of the media, similarly, would not lose sight of the materiality of the media, but would analyze it in a context of “immaterial” flows and currents. These flows and currents, invisible to many, constitute the infrastructure upon which media depend. If encoded electromagnetic flows of energy are, in fact, the invisible and intangible signal for television, radio and telephony that manifest on devices, we might say that the material device is the event of media and the immateriality which surrounds it constitute the forces and actions which make the event happen. The new media, therefore, need space – the atmosphere – to “compress” time and likewise need time – the speed of light – to “compress” space (Harvey). Media studies needs to account for the relationship *between* the material and immaterial in order to critically engage media as apparatus of creating inhabitable environments. Media are not just technologies of images and sound or systems of communication, they are techniques for creating the conditions of contemporary life.

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