

ORIGINAL ARTICLE

Passé Media: Communication and Transportation on Commuter and Computer Buses

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This essay proposes the concept of “passé media” as a contribution to scholarship that combines communication and geography, as well as to work that foregrounds background processes of networked, digitized social production. Passé media, communication and transportation technologies that both connect endpoints and are acclaimed only until the next technology arrives, reveal at least three attributes: (1) a novel way to conceptualize mobility, (2) the transformation of use-value to exchange-value, and (3) the continued ecological imprints of digital technologies. To illustrate, we turn to the bus, deployed both for transportation (commuter buses) and communication (computer buses). We argue that the moment of the bus highlights the ways in which spaces of connection are simultaneously privileged and ignored, highlighted and effaced.

Keywords: Passé Media, Data Transportation, Commuter Bus, Computer Bus, Communication Geography.

doi:10.1111/comt.12056

It's a bus-age wonder, Magic Bus — Pete Townsend

Waiting for a bus is a quotidian experience in two senses. First, the wait for a *commuter bus*: standing on a curb near a sign, watching the time, listening for familiar sounds of the rumble of diesel and the relief of the air compressor to lower the bus on its suspension. This is waiting for *transportation*. Second, the wait for the *computer bus*, the internal pathway in all computers where data are passed back and forth between the processor and memory. This wait involves watching graphical interfaces that display percentages processed or loading bars. This is waiting for *communication*.

Often, these two activities occur simultaneously; commuters play with their smartphones while waiting for the bus to arrive, and they wait for the app to load.

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Perhaps the commuter seeks to overcome the wait for transportation with a (seemingly) instant connection with a colleague via a computer bus: I'm on my way, but the bus is late. In other words, the computer bus is used to pass time while waiting for a means to pass through space on the commuter bus; or, the computer bus is used to conquer space by time. Thus, it appears the two buses are radically different objects: the first for transportation, the second for communication; the first for space, the second for time.

However, we argue against the conceptual separation between communication and transportation networks. We do this by reconnecting the computer bus with its metaphorical parent, the commuter bus. Doing this helps to illuminate the relationships between data and space, transportation and communication, and computers, commuters, and commodity circulation. We see two simultaneous, and ultimately misleading, epistemologies that arise when theorists distinguish communication and transport. First, physical transport is thought to be outdated or passé without the integration of communication technologies. Transportation technologies that do not link to digital networks fade into the infrastructural background and are ignored as scholars turn their attention to the newest "new" media. Second, and more importantly, in communication, *transportation of data* becomes effaced. In other words, the materiality of informational transportation is easily ignored if we think of communication as not-transportation, as overcoming transportation. By rearticulating communication and transport, we see that transportation and communication media are both material, constitute spatial/temporal production, and are utilized for the desires of the other's annihilation: Physical transport makes data transport *seem* immaterial, just as communication *seems* to make transport time instant. Buses highlight what gets erased when conceptual metaphors efface the material associations of physicality in transport/communication toward "an illusory union that seems to transcend the material world" (Schaefer & Durham, 2007, p. 41).

To elaborate, we propose the concept "passé media" to link transportation and communication as practices of connection (to pass), which are made to appear boring (passé). Our work extends other research that foregrounds seemingly banal infrastructure. While various strands of research have taken up the importance of these in-between spaces, they do not emphasize why or how these media are forgotten background processes. We suggest that a focus on the bus foregrounds both the moments in which spaces of transit are celebrated and, after the celebration ends, how they are discursively defined to be something effaced or overcome by newer technologies. To consider this produced passé quality of the means for connecting endpoints, we turn to the bus, a simultaneously current, necessary, and perpetually effaced mode of connection, to highlight the contours of passé media. Tracing the metaphor of the bus emphasizes the material consequences of what we call "data transportation."

The article is organized into four parts. First, we explain how the concept "passé media" contributes to previous reflections on banal infrastructure. Next, we detail the ways in which buses, both the commuter and the computer varieties, have been celebrated as freedom from constraints—constraints often produced discursively as

something to overcome. Staying with the bus highlights the material consequences of transportation and *data* transportation, produced alongside the endpoints they seemingly merely connect. Third, we highlight the material consequences of discourses and practices that privilege mobility as flow over other ways of being, data transportation's larger histories of labor and production, and the eternal return of the material in communication and transportation. We explore both the logic of passing over older forms of data transportation as the new effaces the old, as well as the logic of data transportation as it relates to the transformation (passing through) of circuits of value, each embodying the logics of capital.¹ Finally, in the conclusion, we reiterate the conceptual value of *passé media* as a heuristic that can rearticulate communication and transportation, a necessary move in a time when, once again, the "immaterial" is presented as an antidote to global ecological chaos. In all, this heuristic furthers the proposed crossover field of "communication geography" (Adams & Jansson, 2012) and critically examines how scholars perceive the spatial production of communication and transportation as they relate to materiality, political economy, and extraction.

Passé media: In praise of boring things

Why even consider buses? They are so *boring*. However, boring things need critical attention, too. Specifically, how do they get *produced as boring*? In this sense, then, we wish to join Star's "Society of People Interested in Boring Things." As Star (1999) argues, attention must be paid to infrastructure, technical specifications, classification schemes, "the forgotten, the background, the frozen in place" (p. 376) because these boring systems fundamentally structure day-to-day life without calling attention to themselves. Both computer and commuter buses fit this bill. Below we detail others who have focused on how these background processes constitute the social before specifying what is gained by our proposed concept, "*passé media*": namely, how and to what ends this production of the banal takes place.

Picking up on Star's argument, Fuller and Goffey (2012a, 2012b) argue for the study of "gray media." For them, "Grayness marks the breakdown of clearly defined contrasts: a Monday morning feeling, a certain blankness that is not indifference or affectlessness but something approaching what Roland Barthes theorized as the 'neutral,' a fading and withdrawal rather than an abolition of contrasts" (Fuller & Goffey, 2012a, p. 11). Gray media meld into the background as boring, overlooked, unremarkable, infrastructural—and yet are constitutive of entire systems. "Grayness is a quality that is easily overlooked, and that is what gives it its great attraction, an unremarkableness that can be of inestimable value in background operations" (Fuller & Goffey, 2012b, p. 11). And yet, gray media contain within them fascinating ambiguities and complexities.

Thrift (2004) also considers the importance of taken-for-granted processes that meld into second nature, what he calls "qualculative" processes. These logistical processes underscore Peters' (2012) "logistical media," a concept that highlights

the infrastructural role of media, and the largely hidden mechanisms Graham and Marvin (2001) uncover in the networked city. Graham and Marvin focus on the construction and use of “networks that interlace and infuse cities,” from which “modern urbanism emerges as an extraordinarily complex and dynamic sociotechnical *process* ... mediated by telecommunications, transport, energy and water networks” (Graham & Marvin, 2001, p. 8, emphasis in original). These explorations of the networked infrastructures that interlace and connect various nodal points and invisibly *constitute* the very production of the social underscore the “mobility turn” in various disciplines. For example, Urry (2007) promotes mobility as a concept to understand the boring systems that structure sociality, turning to the physical production of spaces for both enabling and constraining the flow of peoples, goods, and ideas (also see Adey, 2010; Cresswell & Merriman, 2011; Sheller & Urry, 2006). Augé (1995) coins the term “non-place” for the spaces of transit that are constitutive of supermodernity, and it is to these spaces that much work in mobility studies turns to (Bissell, 2010; Butcher, 2011; Human, 2008).

Transportation modes are taken in mobility studies as social structuring processes. Communication scholars promote this mobility turn to highlight the spatial production of media systems (see Wiley & Packer, 2010). For Sterne (2006), both communication and transportation function as logics of social and material organization, reproducing each other in a continuous effort to overcome barriers. This constant overlap between the constitutive elements of the seemingly background processes of communication and geography (Sterne, 2006) grounds the impetus for Morley’s (2009) materialist media studies or Adams and Jansson’s (2012) call for a “communication geography.” Both communication and geography examine spatial orderings via mediatized systems that push for temporal instantaneity to link and move the world. The synthesis of communication technologies in Graham and Marvin’s (2001) networked city highlights the spatial production of mediatization (Jansson, 2013). From surveillance networks at each entry point to overcrowded Internet pipes, such networks produce dual access and mobility between those who can afford to avoid hassles and those who cannot.

And so, perhaps scholars have actually been paying a great deal of attention to these spaces of transportation and communication. But how, and from what vantage point? Part of what is interesting about these background processes are not merely that they are forgotten-yet-important, but that the recovered focus found in the above scholarship itself reveals something important: Remembering and forgetting of these temporal and spatial systems are two sides of the same cultural logic.

To explore this cultural logic, we propose the study of *passé* media. We define these media as *passé* in two ways. First, *passé* media refers to media that were once glamorous and grand but whose time has passed. To be *passé* is to be past one’s prime, unfashionable, no longer young or beautiful. In other words, to be *passé* is to be *passed over* for something perceived of as better. Every infrastructure, every database, every catalog was once, in its youth, a darling holding out the promise of unending pleasures and profits. Computer and commuter buses enjoyed such halcyon days.

Rather than cruelly toss them aside in the search for the next young technothing, we want to know them and their histories. Doing so contributes to research on such background processes by suggesting that the production of space through these mediating practices—its mediatization (Couldry & Hepp, 2013)—exists in and through an “out with the old, in with the new” logic that perpetually creates new areas for the circulation of capital.

Secondly, *passé* means *passing through*. “Passé” contains the connotation of space and movement. This is both the *passé* of ballet (moving the foot to the side of the knee, and then passing through to the front or back, depending on the starting position) and, more importantly here, the boring process of “just passing through” on the way to one’s destination. This meaning of *passé* will be critical to our argument that the study of buses illustrates the material consequences of data transportation: of communication as transportation. *Passé* media, then, are gray and logistical, spatial and temporal, moving and boring. *Passé* media are past their prime, yet they are the necessary media—and therefore always materially present—of connections and overcoming *impasses*, of passing through and transforming.

Extending Fuller and Goffey’s concept, we would argue that *passé* media contain vestiges of times within them when they were not gray but many-colored: that is, exciting, shiny, and new. The rust on the commuter bus hides a rainbow paint job. The wires of the computer bus have many colors, too, but they are hidden inside a polished aluminum case. Today’s boring buses (both on the street and in the computer) were once cutting-edge technological systems that were easily articulated into larger discourses of techno-hype and liberation. These technologies of freedom of movement, however, are perpetually produced to be *passé* due both to their function of collapsing space and time and the social construction of soon-to-be-old forms of movement as boring. New technologies are sold as stopgaps until the next, better solution arrives. Constructed as such, these processes become the historical *a priori* for the *next* instantiation of the utopian consumerist promise of annihilating space-time (e.g., Carey, 1989). By way of example, recent urban commuter buses have been draped with advertisements for Amazon’s Audible, a mobile service for listening to audiobooks: “Try Audible with a Free Audiobook at audible.com,” state these billboards-in-motion. Mobile ads call on the consumer to pass through transit time by passing through communication media. These ads, and the practice of mobile listening, suggest that to pass through the commuter bus *without* communication buses is so *passé*, an obsolescence produced by the selling of this next techno-hype: Don’t forget to get the very latest *New York Times* bestseller on your Audible account as you pass the time. Mobile ads, after all, remind the consumer that you are merely passing through, and so should want to do so as efficiently as possible with the latest commodities. The contradiction lies in both the greater interest in such spaces and the greater desire for their effacement.

Thus, *passé* media are both fundamental to conceptions of time (passed over) and space (passing through), while at the same they are overlooked in the incessant process of continual technological hype endemic in late capitalism. Experienced

as simply the moment of passing through, they are sold as passé in their current instantiation, passed over for the next space of capital accumulation. Thus, passé media orients us to the fundamental equivalence of both transportation and communication: in other words, data transportation. Our concept of passé media adds to the growing "new materialist" turn in communication studies (Packer & Wiley, 2012), which refuses the ontological distinction between communication and materiality; in our view, passé media are communicative spaces of organization (Vasquez & Cooren, 2013). Such medium theories address information and transportation as elements of communication, accounting for social and economic histories through the constitutive networks of communication and transportation (Innis, 1951; Thrift, 1990). Analyses of such media as the "environments in which social life unfolds" (Sharma, 2008, p. 458) are most fruitful when they focus on communication as culture (Carey, 1989), or ways in which media's spatial productions are always temporal, cultural, political, and contradictory. Czitrom (1982) examines the cultural histories of such media in their social and political contexts when they are "new," but we can also learn a great deal from the evolving histories and discourses around structuring media that are now deemed obsolete yet remain constitutive of relational subjectivities within a power-topography and chronography (Sharma, 2008). We turn to the bus, in commuter and computer forms, to illustrate ways in which communication and transportation are interlinked, especially around capital interests of accumulation, spatial orderings, and "instant" connectivity. Passé media, we argue, are at the heart of these processes.

In a sense, then, we intend to make the passé fashionable again, to make "old media" new while pointing to the inevitable (at least, as techno-hype would have it) oldness of new media. We do so by next turning to buses to explain their cycles of fashion and obsolescence as part of the same cultural logic.

Buses, when they were fashionable

The commuter bus

Everything has its 15 minutes of fame, and the commuter bus is no exception. The discourse of an abstract, universalized, democratic mobility (Cresswell, 2006) underscores the utopian history of the bus as well as other modes of transport. Cross's 20th century U.S. history as a history of consumption emphasizes the "myth of mobility" (Cross, 2000, p. 23) as particularly enticing, in which the promise of free movement legitimates the expansion of transportational infrastructure across the landscape. The commuter bus is part of this infrastructure, allowing subjects to move in an "urban environment as prosthesis" (Cresswell, 2006, p. 173).

Contemporary commuter omnibuses have their roots in 17th-century Paris. Their invention is credited to the philosopher Blaise Pascal, who came up with the idea of offering a carriage for up to eight unrelated people for a standard fare. As the use of omnibuses expanded, city planners created protomodern features such as fixed routes and schedules, transfer points, and zoned fares, and of course, overcrowded

buses that passed waiting passengers by (Papayanis, 1996). The omnibus arose during a time when circulation was a major concern of urban planning. The 18th-century French urban planner Nicolas Delamare saw the street as the focus of building a well-ordered city:

Well-planned, clean, and unencumbered streets were essential to commerce, facilitated exchanges among people both foreign and native, promoted a healthful environment, permitted the flow of public vehicles and private letters, and assured the ability of armies to move where they were needed (Papayanis, 1996, p. 25).

Consider this 1920s New York City bus company's decidedly sanguine description of the possibilities:

the bus ... passes around obstacles and obstructions. It is like the nimble deer, as it were, going here and there, from one current of traffic to another, eliminating danger and annihilating time. If one street be blocked — well, the bus will make a detour and go by way of another street. If an automobile be stalled in front of it — well, what of it? — the bus will go either to the right or to the left of it (Quoted in Schrag, 2000, p. 68).

A lot was riding on the bus; as a large vehicle moving through city streets, the bus was seen as essential to circulation on the streets, a cutting-edge modernist machine capable of annihilating time.

Moreover, the bus was viewed as a tool of urban democracy, part of the promise—a promise that guides policy decisions—that harnessing technology will produce democracy (Carey, 1989, p. 132). The name "omnibus" itself is Latin for "all in one" ("Histoire générale des transports," 2012), an apt name for a machine with the putative ability to level class hierarchies. Carlton Jackson's history of the Greyhound Bus catalogs the idea "that all classes are assimilated on buses" in movies and the popular imagination (Jackson, 1984, pp. 48–49). As the Bus Chick Manifesto puts it, "I believe in sitting next to my neighbors, in saying, 'How you doing today?' and 'Nice weather, isn't it?'" (Saulter, 2010). "All in one" is a democratizing slogan, eradicating distinctions between persons as they sit in ordered rows. In its best light in glossy advertisements and the utopian dreams of urban democrats, the bus was once indeed a sexy young technology promising many fantasies.

The computer bus

In the ubiquitous Von Neumann Architecture, the computer bus is the channel by which data is moved between the processor and memory (Von Neumann, 1993). Buses are collections of wires and protocols that allow devices to connect. They are fixed in place and have specified rules for data to enter and leave. In order for a device (say, an input device like a keyboard) to send data through a bus, the device must make a request to a *bus arbiter*, and, once permission is granted, the data can ride the bus to its destination, usually between memory and the processor.

Like the commuter bus, the computer bus has enjoyed moments of fame. A key early example is DEC's Unibus (in the famous DEC PDP-11), first described by Gordon Bell and his research team in the late 1960s (Bell et al., 1970). Like any other Von Neumann-style machine, the PDP-11 contained primary memory and a central processor. Humans and hardware interfaced with the machine via a console and peripheral connections. Privileged at the center of the PDP-11 design was the Unibus, which allowed "any component [to] communicate with any other component" (Bell et al., 1970, p. 660). Moreover, the Unibus allowed users to connect custom-built hardware components to the architecture, as well as for manufacturers to create peripherals. DEC's PDP series of computers is now famous in the history of computation as the prototypical hacker's computers. We tend to think of hacking in terms of software, but in fact hacking was also a *hardware* practice. The Unibus allowed for hardware hacks to work directly with the archive and the processor of the machine.

More recently, the now ubiquitous universal serial bus (USB) standard has extended this idea, allowing a huge range of devices to attach to computers through an industry-wide (rather than proprietary, as in the DEC Unibus) standard. Although by the mid-1990s, buses on computers were already boring, the USB standard re-ignited interest in buses:

Why the sudden interest in something as seemingly trivial as a serial port? The answer is that the Universal Serial Bus is much more than a serial port — *it's a serial bus*. This means that a single port on the back of your computer can be the window ... into a myriad of devices.... When you think of the Universal Serial Bus, it's best to think of it as a "network" of devices ... (McDowell & Seyer, 1998, p. 5, emphasis added).

USB extends the Unibus logic of heterogeneous networks of hardware. This was once exciting, just as the ability to carry around a massive amount of data on a USB drive was very exciting. Indeed, to emphasize the sexiness of this technology, the advent of computer buses is probably more important in the history of computation than the more famous separation of software and hardware by IBM in the late 1960s, because buses allowed for hardware to become a *hardware platform* and thus allowed for the growth of the OEM (Original Equipment Manufacturer) industry.

Thus, the name "bus" for the connection between the computer's archive and processor is an apt metaphor. Just as anyone can ride the commuter bus, any datum can ride the computer bus, so long as it obeys protocological rules for connection. Both types of bus provide for circulation, flow, and heterogeneity. Both connect endpoints, passing over and through. With the bus in place accepting passengers, devices, and data, a heterogeneous network of communication, software, data flows, devices, capital, information, and humans emerges and conquers myriad impasses, eliminating physical space with time. As Terranova argues, protocols offer consistency in rapidly changing networks: Upgrades in hardware and software are possible within the consistent setting of the network as defined by protocols. Divergence and differentiation are made compatible and common (Terranova, 2004, p. 42). But this

does not set aside the logic of control: It is an open system as long as one obeys the protocol. Protocol, as Galloway (2001) notes, "standardizes in order to liberate" (p. 95). It controls a wide range of behaviors in order to create an open system. Whatever device offers this openness is lauded, and both the commuter bus and computer bus were, in their time, no exceptions.

Passing over and passing through the buses

But of course, both of these objects are boring now. In place of buses, we have communication networks, clouds, cars, and light rails, communication *on* transportation and communication *as* transportation, all allowing us to transcend or temporally pass over passé media. Not merely do these buses become passé; they are from the beginning *made to be passé*: a stopgap on the way to the next technological breakthrough in connecting lines or transportation media. The bus may still liberate, but its openness is passed over for the next technology that can conquer space and time. The new will inevitably be deemed old. Despite their being passed over, we argue that each of these passé media are worth investigation because they provide an *always-required* "passing through" function, whereby human and nonhuman phenomena are transformed in contemporary capitalism. This transformational function also calls forth the material production apparent in all data transportation, regardless of their lauded annihilation of such materiality. The following three sections explore these ideas in turn.

Passed over: mobility and impasses

Why did these buses become boring? The answer lies in the desire that they stand in for: the conquest of space by time. Flows and movements are privileged in contemporary cultural discourse. Mobilities, as flow, are often articulated as Good Things: an imperative to increase the free flow of information, commodities, consumption, and exchange, as well as military power wherever human and/or property rights are being abused (e.g., Hardt & Negri, 2000, pp. 36–37). Freedom to move is championed as a human right. Social justice issues are framed as removing the barriers to *unencumbered* mobility, and academics often fall in line (e.g., von Burg, 2012). The figure of the cosmopolitan Global Citizen, capable of flowing into different global contexts, provides a model for undergraduate education and modern governance. Global Cities link up with and mediate such flows.

This utopic "nomadic metaphysics" (Cresswell, 2006) underscores a history of transportation and communication as organized movement (Sterne, 2006), specifically the dream of unimpeded traffic flow by eliminating impasses to circulation in space. In a historical account of the outdoor advertisement, Gudis (2004) traces how the concept of traffic became a cornerstone for theorizing economic efficiency. With biological metaphors, Great Depression-era research explores the frictionless "power of traffic" as propelling a flowing economy: the circulating flows that vitalized the social body (Gudis, 2004, p. 117). More recently, Goldman, Papson, and Kersey (2003) illustrated how UPS's "What Can Brown Do for You?" campaign conquers time and

space through the promise of frictionless shipping. The company's current "Logistics" campaign adds to these themes of a network of flows and mirrors Peters' (2012) "logistical media." UPS promises to make the liminal time and space between the input and output of a company's production as invisible as possible.

What we see in this literature, in history, and in popular culture is that the flow is never fast enough. Space is stubbornly rugged and obdurate. Permanences (Harvey, 1996) impede the elusive promise of unencumbered flows. Traffic lanes fill, building projects alter flows, nodes fall off the network, hills cause diesel engines to stall, atmospheric conditions inhibit wireless signals. When they are new, communication/transportation technologies promise to pass over the limitations and problems of previous technologies. The commuter bus once offered this utopian rhetorical promise. But now, as a passé medium, it is passed over by the rhetoric of the future (Carey, 1989, p 174): the desires promised by automobiles, other public transport networks, or virtual mobility.

To elaborate: First, the personal automobile triumphs over the commuter bus. Rather than waiting at a bus stop (and thus being caught up in socially aggregated time), the motorist enjoys "automobility," becoming an automobile subject (Furness, 2010), a car-driver hybrid overcoming the temporal and spatial constraints of the bus, bypassing bus schedules and, according to any SUV advertisement, even roads (e.g., Gunster, 2004)! No matter that car traffic proliferates and annoys; that the automobile's conveniences rely upon accessible parking (Jakle & Sculle, 2004); that reliance on automotive travel spells numerous fatalities²: The car's promise largely lies in its individuated temporal-spatial mobility, and in that way contrasts with the scheduled public offerings of the bus.

Second, the mobility offered by commuter buses is passed over by other modes of public transport more amenable to gentrified residents. Light rail transit connects longer distances and greater speeds. Recent rail projects in Los Angeles, for instance, privilege long-distance travel between preferred economic hubs, a privileging historically raced and classed (Cresswell, 2006, 2010; Lovett, 2012) as well as gendered (Hutchinson, 2000). As rail projects displace funding for commuter buses, they also weaken the mobility of those dependent on such modes of travel, disproportional to poorer commuters (Massey, 1994; Shome, 2003). Buses are eclipsed when they do not fit the narrative of economic, forward-looking infrastructural development. Those dependent on such passé media are left behind. Rail lines often "pass through" largely minority communities. Rail projects pass over passé media such as buses and add strain to those most dependent on them (Hutchinson, 2000). On these economic, racialized, classed, and gendered logics, the bus is produced as passé from its inception. Here, the nonfashionable does not go away but, instead, its differentially mobile functions are erased by various social logics. Downtown centers connect to airports, suburban sprawl, and even distant cities with high-speed rail. While such projects often promise to displace some automotive driving, or airplane travel in the case of high-speed rail, they can often more directly displace funding for commuter buses (Cresswell, 2006; Hutchinson, 2000). The commuter bus medium, and those that rely

on it, are passed over for sexier modes of mobility: not simply cars, but public transport of greater distances and speeds.

Third, the use of computer-mediated communication has helped surpass the commuter bus's central economic function by way of the use of the *computer bus*. Telecommuting has been the future of work for decades (and will probably remain so). Government and consumer services are digitized, allowing end users to skip the line and get their services and goods almost immediately. Networked work, citizenship, and consumption offer to circumvent traffic jams with (seemingly) instantaneous collaboration and communication.

And yet, the computer bus—which is at the core of such computer-mediated labor—has itself been critiqued for its inability to provide frictionless data transportation. The limited bandwidth between the processor and memory is often called the "Von Neumann Bottleneck" after John Backus's 1977 ACM Turing lecture (Backus, 1978). Backus bemoans the "tube" between the processor and memory because it becomes clogged with "not useful data but merely names of data, as well as operations and data used only to compute such names" (p. 615). Thus, as with the commuter bus, there are traffic jams *within* computers (and of course on networks more broadly).

This is not to mention how the transfer of services and consumption online passes over those who do not have the computer literacy or network connections to enjoy them. As in the classed and raced logic of light rail passing by minority and poor neighborhoods, the rush to frictionless online commerce and service elides those who relied on traditional stores, banks, and government offices. For example, even as many people log on to a site like Healthcare.gov (and curse its slowness due to traffic), those on the other side of the digital divide make do with paperwork and harried volunteers.

But even as the online marketplace promises to speed up daily life, it is already not fast enough. While parallel and quantum computing may promise to lessen the impact of the Von Neumann Bottleneck, a more ubiquitous technology is already in use to surpass the internal bus of the computer. Cloud storage promises to make the computer bus *passé* by enabling users to avoid loss of productive time waiting for downloads. If, for instance, a user uploads a document to a cloud service like Dropbox while working on a tablet on a commuter bus, and if that user's office computer is already on and linked to Dropbox, the file will be downloaded and waiting at work. Rather than passively waiting for a download, the modern knowledge worker can set up myriad devices to actively download and distribute files.

In this sense, these buses become *passé*, or passed over, simply because they are no longer the latest answer to the perpetual question of how to conquer space by time. Once they annihilated time; now time has passed them by. We now have new things to shape our worlds and (seemingly) immediately connect to our desires. Because technology and fashion have merged, to proffer these old technologies as a solution to this old problem of conquering space with time is just not fashionable—even in situations (as in minority neighborhoods) where they might do some good.

Passing through: transformation of value

However, the role of buses in particular and passé media in general is quite essential to contemporary capitalism, even if they are boring. Although there is a desire to conquer space by time, space will not be so easily set aside. We are in agreement with the "new materialism" in communication studies that seeks to deny the ontological separation of communication and materiality (Packer & Wiley, 2012), or specifically, communications and transportation (Morley, 2011). This is where we turn to our second meaning of passé, to pass through. Our argument here is politically *economic*: What do buses do for labor and the production of value?

Although commuter buses have been used for a wide range of purposes, including tourism, the transportation of workers is the predominant use. As a Brookings Foundation report argues, "With governments at all levels considering deep budget cuts, it is increasingly important to understand not just the location and frequency of transit service, but ultimately how well transit aligns with where people work and live" (Berube & Puentes, 2011). Indeed, the development of the omnibus coincides with the development of industrial capitalism. Getting people to and fro quickly and efficiently has been required in industrial capitalism from the outset. Whether it be 17th-century Paris or contemporary Washington, DC, buses run their routes so labor can efficiently get to work.

Likewise, getting data to and fro is a requirement for informational capitalism. Global just-in-time networks require (seemingly) instantaneous analysis of on-the-ground conditions in myriad markets (Cetina, 2010). Everywhere the feedback loops are tightening: Customer data and sentiment is captured at the point of purchase; new programming techniques make distant Web sites respond like local software; and inventories are monitored as supply chains ebb and flow.

But again, these lines of analysis pass over the bus, privileging the ends over the transportation means, highlighting speed over the moment—however fleeting—when the data packet or the worker is transported. What happens as commuters and electrons take the bus back and forth? What is the nature of the connection between leisure and work, storage and processing?

Drawing on Marx's *Grundrisse*, Dyer-Witheford (1999) argues capitalism seeks to "speed the passage from commodity-form to money-form and back again" (p. 202). But there is *necessarily* a speed limit imposed on this process:

A commodity must remain in the owner's hands long enough to be sold. Capital might wish to maintain the continuity of circulation by passing through its different phases "as it does in the mind, where one concept turns into the next at the speed of thought." But this dream cannot be realized. For the commodity to retain its essential attribute—that of being bought and sold—its passage must be interrupted: "it must spend some time as a cocoon before it can take off as a butterfly" (Dyer-Witheford, 1999, p. 202).

Alfred Sohn-Rethel makes a similar argument. Value in use is temporally distinct from value in exchange: "There, in the market-place and in shop windows,

things stand still. They are under the spell of one activity only; to change owners" (Sohn-Rethel, 1983, p. 25). For example, a laptop on the shelf is a use-value suspended in time, exciting possibilities in the mind, but it cannot be realized as a use-value until it is realized as an exchange value. In other words, you cannot take the laptop off the shelf and own it. You must pay for it. It must *pass through* the exchange process. It cannot be yours and the retailer's property at the same time and space. Private property is a law of space-time, of the distinction between use and exchange.

This is easy to see with a commodity such as a laptop, but it is equally applicable to labor power. The day begins. The bus arrives. The work site beckons and the laborer rides to work. The laborer agrees to a wage, and then labor-power's value is realized in use during the production process. After work, the laborer returns home on the bus. He or she remains in his or her home until the next day when the omnibus arrives. The laborer's use-value remains suspended when he or she is at leisure. Labor-power remains in the mind of the would-be capitalist seeking to command it: hence the overwhelming influence of jobs reports and labor market studies in modern political economic thought. While the potential use of labor power is excited in the mind of the capitalist, for the laborer, the home is a place to store labor power for the next work day, to maintain it with food and rest, and to reproduce it with sex. The commute, then, becomes an instance of transition from the time and place of leisure to the time and place (and pace) of work and back.

This logic also applies to data. Storage of data in databases on hard drives is the suspension of the use-value of data; it is information transduced out of time between storage and processing (Gehl, 2014). Thus, data must travel through a bus. When the query arrives, assuming it is structured well, the data appear in a GUI or on a printout. Once the query is over, the data return to storage via the bus. There, the computer engages in its own sort of maintenance and reproduction of archival power: checking discs for errors and backing up data to an external harddrive (Kirschenbaum, 2012).

But again, there must be a distinction between exchange and use; otherwise, data becomes valueless in informational capitalism (Dyer-Witheford, 1999). This especially applies to the commodification of user data. While it appears that behavioral ads are loaded instantly as we surf the Internet, in reality auctions happen in the split-second before a visitor arrives at a website (Desilva & Phillips, LLC, 2008; Montgomery & Chester, 2009). The user's profile and potential as a value-realization machine is suspended as the page loads until it can be exchanged for money. The same process occurs on contemporary *commuter* buses. The extension of RFID cards structures the transition from use value to exchange value. The bus commuter taps onto the bus with the RFID card, and in that portal the commuter's identity is sanctioned and monitored (Cameron, 2006). That is, computational portals implant onto commuter portals, where payment of the commuter's mobile practices is verified, documenting one's entrance into such commodity transactions.

Packets or people, the process is the same: There *must* be a moment of transition. The bus is a transitory point, where data leaves storage for processing, where use-value begins its transformation into exchange-value, where leisure transforms

into labor. *The two cannot collapse.* We cannot get the data instantly, but must go through some credentialing via the bus arbiter or a standardized query language, or better yet through a login like Facebook. We cannot collapse home and work entirely; that would be slavery, not capitalism. It is a laborer's job to take care of herself, on his own time and in her own space, and it is up to the background processes of the computer to maintain the integrity of the storage medium. Buses and transportation of electrons and humans mark the *passing through* in which such transformation must occur. Moreover, both of these moments are sites of intense monitoring and control (as in the instant auctions of attention or the RFID chips in commuting)—even as such software-supported infrastructures are largely pushed into the background.

In sum, the logic of the bus is the logic of capitalism: of transference into exchange value. It is this transference as commodity exchange which is so often effaced. Parks (2004) offers the phrase “epistemologies of movement” to explain how computational interfaces are seen as unencumbered freedom of movement for the disembodied user who does not see the traces of data or the waste stream of computers that mark such transference from one loading page to another. In passé media, this transformation of value is elided as the endpoints are seen as smoothly integrated. As Audible tells us on the commuter bus, be productive and listen; you are simply *passing through*. Scholarly attention to such spaces as constitutive should also pay attention to how and why these spaces are produced as passé: namely, to hide the operations of informational capitalism underneath the interface. Buses might be passé, but everything must ride a bus at some point. This passing through function always remains, just as the production of seemingly instantaneous data transport reproduces ecological imprints, as we will explore next.

Producing spaces: the material return of passé media

The dual function of passé media elaborated here—to pass through connecting points, and to be produced as boring, from its inception, in the name of greater speed and efficiency—reflect the desire to efface time and space. However, as Schaefer and Durham (2007) point out, this transcendence is illusory. So, what spatial practices are produced in this perpetual desire of effacement? Here we highlight one material trace left behind, yet ever present, in the drive toward immateriality: continual ecological impacts. Environmental impacts, along with other effects such as differentiated corporeal mobilities and the politics of spatial justice, reveal how passé media do not erase material consequences but both produce materialities (by *passing through*) and silence that materiality (by *passing over* the consequences of passing through).

Computer buses are a prime example of passé media's effacement of ecological impacts. The very possibility that someone, somewhere will need to transverse Internet spaces by either logging on to a website or smartphone app requires that the server farms (stacks and stacks of computers) supporting them be always on, always ready, always drawing massive power loads. Websites must be up and running 24 × 7, whether there is any traffic or not, and thus server farms draw energy and exhaust heat no matter the demand.

Similarly, commuter buses run, burning fuel and emitting exhaust, whether there are any passengers on board or not; indeed, buses only make ecological sense if sufficiently used. In either case, use is always assumed. Fashions dictate ecological effects. The *passé* support the whims and compulsions of the tourist and the worker, be they online or on the streets.

Of course, both commuter and computer buses are presented as answers to ecological damage. The argument goes: Greater mass transportation would lead to less individual use of cars. Greater use of e-commuting and e-transactions will reduce emissions and paper waste. Both are claims of efficiency and faith in technology: the persistent rhetorical promise Carey (1989) examines of electronic revolutions purportedly effacing material industrial spatial practices. E-commuting is believed to displace physical travel; the bus running on natural gas is said to displace some of the need for oil consumption. And yet, critical research has shown that this great contradiction of capitalism will not be overcome via these systems. Virtual pathways connect people on vast scales and often encourage more extensive physical travel, complementing more than substituting face-to-face interactions (Haynes, 2010; Urry, 2007). Always-powered buses are part of a larger ecological catastrophe; they are not going to solve its systemic problems.

Therefore, virtual space is not simply a replacement for the ecological imprints of commuting and connecting, but is a continued acceleration of the economic and militarized logic that call for new resource extraction. Virtual space requires the production of new spaces of extraction, fueling new—and indeed, *passé*—media forms. The physical to digital shift, then, is not simply a displacement in quantities of extraction as much as qualitative shifts in capital demands for new extractions. Indeed, ecological catastrophes are economic opportunities, with the melting ice in Greenland enticing opportunities for mineral extraction (Rosenthal, 2012). Mere technological solutions will not solve ecological issues like climate change without social changes (Jorgenson, 2012). Faith in proportional displacement—where alternative energy will displace fossil fuels, where digital processing and archiving replaces their paper equivalent—overlooks the logic of *passé* media: to continuously produce boring spaces for particular logics of growth and production, to make us forget waste and instead exalt in speed.

Conclusion

In this essay, we have taken the perspective of the lowly bus, considering how commuter and computer buses are *passé* media that pass over and pass through the liminal spaces between endpoints, and in turn produce spaces in accordance to this *passé* logic of organizing movement in space. Let us return to Sterne's (2006) alignment of communication and transportation. Popular conceptions of a split between these two processes only reflect a particular level of scale. From the perspective of the human, communication outpaces transport: The telegraph splits communication from the speed of its physical transport. However, on the macro level, both communication and

transport function together to accelerate efforts at collapsing space and time. From the perspective of the bus—from the perspective of the nonhuman scales of our passé media—transport and communication conjoin into data transportation.

Human ignorance constructs worlds as well as knowing does. Ignoring the bus—by getting on and off passé media without looking around the liminal space between, in, and around them, and the logic that perpetually produces these spaces anew by defining the current instantiation as passé—produces differentiated spaces and mobilities. The all-too-eager forgetting of the bus metaphor points to the desire to render circulation instantaneous, forgetting the ontological constraints of materiality, privileging the ends over the means. The Von Neumann architecture of long-term storage and short-term processing (more memory! faster processing!) (Gehl, 2014), the day-to-day hustle of work and play (more jobs! more time off!), the moments when the e-mail arrives and the video loads (your network, right now!), the audio-book available at the touch of a smart phone (spice up your boring commute!): all are desired, but they are desired while ignoring the conditions by which they are linked and fueled. Other mobility metaphors (the network, the cloud) satisfy this perpetual desire for greater instantaneity, for faster connections between ends, and for putatively frictionless living. Once those are passé, who knows what metaphors will replace them? Who knows what else we will ignore? Ultimately, what we have is not merely a perceived physical separation between transportation and communication at the individual level—a perception we have shown to be destructive—but also at the discursive level, metaphorically positioning communication above its physicality (its transportation) all together. Clouds float above our corporeal heads.

Yet at *both* the macro and micro levels, that physicality remains: as cables and satellites traverse the globe, as commuters and packages move to and fro, and as electrons flow through minds and wires. Not only is there the materiality of communication systems in their tremendous energy demand. At the scale of communications itself, the digitized world functions with a social system that demands persistent capital accumulation, resource extraction, and expanding infrastructure. Humans and electrons alike are shunted around, made to flow where needed, by whatever means necessary. It is a material presence not eclipsed by the liminal modes of transport compressing space and time, but ordered through the very production of passé media. Passé media orient us to the continued production of control, capital, labor, and ecological degradation under late capitalism. The boring, the overlooked, and the passé are central to life in these times. We would do well to not simply call attention to these background processes. Academics concerned with such background infrastructure and mobility networks are cautioned to not forget passé media: turning to what, in our foregrounding of background processes, remains dismissed or forgotten.

Notes

- 1 In this essay, we primarily focus the analysis of passé media around logics of capital and the rhetorical promises of unimpeded flow. However, transportation and computer technologies are shaped not only by logics of capital but also, for instance, by logics of

governance and control. In this vein, Parks (2012) details the “dataland” imagery of contemporary warfare; Packer (2008) offers a plausible dystopian future in relation to intelligent transport systems, in which mobility, not space, is the site of control; and Hay and Andrejevic (2006) note the new forms of risk calculation and surveillance made possible by the U.S. government reorganization after 9/11. To offer suggested avenues for further research, this essay gestures towards ways in which passé media are shaped by various logics of protocological control, such as surveillance and RFID tracking on omnibuses (Cameron, 2006) and differentiated mobilities along race and gender lines (Hutchinson, 2000).

- 2 See Packer (2008) on the integration of safety discourse in which freedom and regulation operate symbiotically.

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