The Phenomenological Case for Stricter Regulation of Cell Phones and Driving

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Abstract: The case is made here for stricter regulations on the use of cell phones (both handheld and hands-free) while driving. I review, contextualize, and expand on a phenomenological account of distracted driving that I have developed across a series of papers. This account remains consistent with the empirical literature on the driver distraction of cell phones, but it also offers an alternative theory on why the distraction of cell phone conversation poses such a considerable danger. My argument is that cell phone distraction results from learned perceptual habits, and that breaking these deeply engrained habits is no simple matter.

Key words: postphenomenology, cellular phones, multistability, distracted driving, smartphones

Introduction

Communications technologies are changing so rapidly that it can be difficult to foresee the consequences of new designs. One major change has been the increasing mobility of communications devices, with continual advances in cellular phone calling and texting, and smartphone Internet connections. A safety issue has emerged as people hold cell phone conversations while behind the wheel of a car. As reviewed below, scientific research has found cell phone usage to be accompanied by a dangerous drop in driving performance. I suggest that there is now a need for detailed theoretical accounts of exactly how cell phones cause dangerous levels of driver distraction. And we need reflection on the implications of these theories for traffic policy.

In my own work on this topic, I have developed a phenomenological account of cell phone–induced driving impairment. This has first required the formula-

tion of an original phenomenological account of cell phone usage (Rosenberger 2010). Next, this account was developed into an explanation of why using a cell phone while behind the wheel results in impaired driving, one consistent with the empirical research, but which is different from the prevailing theory held by the empirical researchers (Rosenberger 2012). In addition, this account has been applied to more specific issues within this domain of concern, such as texting while driving (Rosenberger 2013a), and dashboard technologies (Rosenberger 2013b). This project has branched as well into activist efforts to argue publicly against the practices of using the phone while driving, and in favor of greater regulation. In what follows, I review and further refine this account.

I work from the philosophical perspective called postphenomenology. This perspective builds on insights into human experience from the philosophical tradition of phenomenology, and incorporates commitments from American pragmatism. The groundwork of this perspective is Don Ihde's body of work, which refines phenomenological ideas for use in the practical description of human relations to technology, all while remaining dedicated to pragmatist commitments to nonfoundationalism and anti-essentialism. It is my contention that the postphenomenological framework of concepts requires expansion in order to capture the salient aspects of the experience of using the phone while driving. Here I review the central concepts of the postphenomenological perspective, and develop an expanded account for describing the ways that technologies can come to shape a user's overall field of awareness, and for identifying the particular strength of the habits associated with individual human-technology relationships.

Through the course of developing over time this postphenomenological account of cell phone–induced driving impairment, and sharpening it through discussion with colleagues, a friendly debate has emerged between Galit Wellner and myself over the nature of technologically mediated perception. Where she explores the experience of divided attention, I have instead focused on habitually entrenched relations to technology, and these diverging emphases have led us to differing conceptions of cell phone–related distraction. I continue this debate below, responding to the challenge to my account posed by the kinds of claims made by Wellner and others.

I begin in the first section by reviewing the pertinent postphenomenological concepts. Here, I develop my account of the experience of using a cell phone while driving, and I contrast the postphenomenological perspective with Martin Heidegger's account of tool use. In the second section, I review the empirical research on cell phone–induced driving impairment, and relate my account to these

findings. The third section considers the multiple uses to which phones can be put, and responds to the suggestion that cell phone–related distraction is not a concern because users can always learn to experience the phone and car differently. The final section argues that greater regulation of cell phones and driving is urgently needed.

How Telephones Shape a User's Field of Awareness

In the description of the experience of telephone use in general, and of the experience of the use of the phone while driving in particular, there are two issues that must be addressed. The first is the specific way that phone usage shapes a user's overall awareness—what is attended to, what is ignored, what stands out as significant, what instead constitutes the backdrop for those significant things, etc. The second is the strength of the habits associated with this particular structuring of awareness induced by the phone. That is, another issue that must be addressed is just how strongly we are compelled to experience phone calls in this manner. In exploring this topic, I have found that new phenomenological concepts are required for articulating these aspects of the experience of the telephone.

I went into the study of the issue of cell phones and driving under the assumption that there would be a body of literature in phenomenology on the topic of the phone. I expected to then use these phenomenological accounts to reinterpret the empirical literature on phones and driving as a form of applied philosophy. To my surprise, I found that there were at best a few articles on the topic of phenomenology and phone usage; and there was nothing like an established discussion, let alone a generally agreed upon account. Even more, I came to find that established phenomenological accounts of the user experience of technology, including those in my own preferred perspective of postphenomenology, were ill-equipped to address the most salient features of the experience of the phone.

This initial setback presented an opportunity: it pointed out places in the framework of postphenomenology that require expansion and refinement.

Ihde has used the telephone as an example in his work on occasion. For instance, he writes:

> The telephone in use falls into an auditory embodiment relation. If the technology is good, I hear *you* through the telephone and the apparatus "withdraws" into the enabling background:

> (I-telephone)-you
> But as a monosensory instrument, your phenomenal presence is that of a
> voice. The ordinary multidimensioned presence of a face-to-face encounter
> does not occur, and I must at best imagine those dimensions through your
> vocal gestures. Also, as with the telescope, the spatial significations are
> changed. There is here an auditory version of the visual near-distance. It
> makes little difference whether you are geographically near or far, none at
> all whether you are north or south, and not with respect to your bodily rela-
> tion to the instrument. (Ihde 1990, 78)

These observations get at the heart of the kind of experience that now needs to be
described with greater precision, and below I review and expand on the technical
terms Ihde uses here. To account for the experience of phone usage with greater de-
tail, I suggest that we need to go beyond the standard notions of Ihde's postphenom-
enological account of human-technology relations. To gather inspiration for this
expansion, let's look to the work of classical phenomenologist Aaron Gurwitsch.

Gurwitsch formulates an account of what he calls the "field of conscious-
ness," providing a general phenomenological description of all of that which is
experienced by someone in a given moment (Gurwitsch 1964). He develops what
he calls a "field theory" of the ways that experiences are "organized." For Gur-
witsch, one's field of consciousness includes the chosen focus of experience, those
things which make up the immediate context of that chosen focus, and those things
lingering in the background as insignificant.[1] While I do not ascribe to Gurwitsch's
particular tripartite structural account, I do think that what is needed to describe
many experiences of technology usage is a structural account of a user's overall
experiential field.

My contention is that in order to more deeply describe the experience of
human-technology relations, postphenomenology needs to develop an account of
the ways in which technologies transform the structural organization of a user's
overall experience. (To distinguish this project from Gurwitsch's, let's use the term
"field of awareness" to refer to the terrain of one's experience as it is reorganized
through the use of a technology.) That is, postphenomenology must develop a field
theory of technological relations. I begin the development of this theory here.

The part of the postphenomenological framework which I expand is Ihde's
account of the various kinds of relations to technology—"embodiment," "her-
meneutic," and "alterity relations,"—and also his notion of the "transparency" of
those relations. These concepts are themselves at once both an appropriation and
a critique of Martin Heidegger's influential phenomenological account of tool use.

A review of these postphenomenological concepts and their relation to Heidegger is helpful for exploring what it means to say that postphenomenology is pragmatic and nonfoundational.

In the postphenomenological perspective, technologies are conceived in terms of the ways in which they mediate human experience of the world, transforming both the user and the world through the mediation process.[2] That is, rather than understanding a technology to be yet another object in the world to be perceived or acted upon, technologies are instead understood to be a means of experience, a transformational conduit of perception and action. Ihde distinguishes between three relationships that users develop with technologies.[3] While perhaps not exhaustive, these relations help to describe the ways in which users engage with technologies through their bodily senses.

The first of these Ihde calls "embodiment relations." In this form of relation, a user's experience of the world is transformed as the device itself is incorporated into her or his bodily awareness. A pair of glasses, to take the standard example, transforms a wearer's ability to see as the wearer looks *through* (and not at) those glasses themselves. The second form Ihde calls "hermeneutic relations." In a hermeneutic relation to technology, a user receives transformed access to the world by perceiving a device directly and interpreting its instrumental readout, for example, by looking at, listening to, or feeling a device. A simple example of a technology to which we share a hermeneutic relation is a clock. All at once through a perceptual gestalt, we gain transformed access to the precise time of day by looking at and interpreting the clockface. A more complex example is a doctor's relation to a hospital imaging technology, such as an fMRI readout. The doctor gains access to information about the interior of a patient's body by providing a professional interpretation of the colorful, brain-shaped image. A third form of human-technology relationship is an "alterity relation." This refers to a device with which a user relates in a way somewhat similar to how she or he relates to other human beings. For example, some technologies have a question-and-answer style interface, such as a "dialogue box" that opens on a computer screen, poses a question to the user, and awaits a response in the form of on-screen button clicks.

Ihde develops the notion of "transparency" to refer to the degree to which a technology fades into the background of awareness as it is used. Take again the example of the eyeglasses. Ihde writes, "My glasses become part of the way I ordinarily experience my surroundings; they 'withdraw' and are barely noticed, if at all. I have then actively embodied the technics of vision" (Ihde 1990, 73). Despite enacting substantial changes to the wearer's entire field of vision, and

despite sitting on the bridge of the wearer's nose, a typical wearer will remain barely aware of her or his pair of eyeglasses as they are worn. The eyeglasses can be said to be embodied with a high degree of transparency. Through the wearer's intention toward using the glasses, and through the bodily and perceptual habits the wearer has developed as she or he has become accustomed to the glasses over time, she or he is able to focus more on what is seen through the glasses than on the glasses themselves.

Ihde's conception of embodiment and transparency is in certain ways a straightforward appropriation of the insights of Heidegger's tool analysis from *Being and Time* (1996). In this work, Heidegger develops his influential account of the hammer, in which a hammerer uses the tool in an everyday manner. According to Heidegger, the hammerer focuses more on the work being done with the hammer than on the device itself; the hammer "withdraws." He writes, "The less we just stare at the thing called hammer, the more actively we use it, the more original our relation to it becomes and the more undisguisedly it is encountered as what it is, a useful thing" (Heidegger 1996, 65). Heidegger also describes a moment of breakdown in which the tool fails to function as usual and, rather than withdraw during usage, the tool stands forward as a conspicuous impediment to the work being done. If, for example, the hammerer's tool suddenly breaks, that broken hammer itself, which had just a moment ago remained withdrawn, now becomes a conspicuous object. Heidegger uses the term "present-to-hand" to refer to that conspicuous broken hammer, and "ready-to-hand" to refer to that functioning hammer that withdraws into the background.

On the one hand, Ihde can be understood as baldly appropriating Heidegger's tool analysis, recasting the account of readiness-to-hand into his own terminology of transparently embodied technology for the purpose of developing an account of human-technology relations. (Additionally, as a post-Merleau-Pontyan phenomenologist, Ihde's emphasis is on the relation of the tool to the user's bodily perception, and not only the user's "work.") But on the other hand, the distance that Ihde moves away from Heidegger on exactly these concepts is indicative of a central part of what means for Ihde's work to be "postphenomenological."

It is important to recognize that the aim of Heidegger's account of tool use is *not* to provide a description of human relations to technologies. It is not ultimately about human-technology relations at all. Heidegger's project is a radical attempt to differentiate between fundamental categories of being. It is an account which insists that the sum of metaphysical thinking in the history of Western philosophy has overlooked an entire category of existence, namely readiness-to-hand. The project

of postphenomenology is different. With its intermixture of pragmatist and phe-
nomenological insights, postphenomenological work strives to address concrete,
practical issues (with the present debate over cell phones and traffic policy as a
paradigmatic example). And with its commitment to pragmatic nonfoundational-
ism, postphenomenology eschews fundamental metaphysical proclamations such
as those of Heidegger. So where Heidegger's notion of readiness-to-hand is devel-
oped as part of a sweeping metaphysical critique, Ihde's notions of embodiment
and transparency are intended for practical use in the description of user relations
to technology. Indeed, part of Ihde's project of identifying the three forms of tech-
nological relations is to challenge the common conception, stemming from Hei-
degger, that technologies are experienced only as either conspicuous or withdrawn.[4]

   The present project of developing an account of the ways technologies trans-
form a user's field of awareness is consistent with the postphenomenological per-
spective, and thus should be taken as nonfoundational and context dependent. The
node of the postphenomenological framework of concepts on which I would like
to expand is the notion of transparency. Above, I have intentionally cast this notion
as a kind of variable, that is, as a characteristic of human-technology relations
that applies to different relations in different ways and to different degrees. (Ihde
only sometimes casts the notion of transparency in this manner; sometimes he can
instead be interpreted to define this notion as a constitutive feature of embodiment
relations.) By conceiving of transparency as a variable, we are prompted to won-
der if there are other variables that also characterize human-technology relations.

   Here I would like to offer two more such variables, what I refer to as "field
composition," and "sedimentation." Along with the notion of transparency, the
variables of field composition and sedimentation are crucial for articulating the
experience of telephone usage generally, and the experience of using the phone
while driving in particular. While I do not claim these three variables to be ex-
haustive (and I do not believe them to be), together they help show what it can
mean to develop a postphenomenological field theory. I define the notions of field
composition and sedimentation below.

   Field Composition: In his own classic phenomenological field theory, Gur-
witsch gives an account of the structures which "organize" our experiential field.
With the notion of "field composition," I refer to ways that some relations to tech-
nology involve substantial reorganizations of the total field of our awareness. The
use of a technology may, for example, greatly reconstruct and otherwise transform
a user's field of vision. The experience of watching a movie in a theater is an ex-
ample of a human-technology relation deeply characterized by field composition.

Sitting in the theater, one may at first remain aware of the typical surroundings, the fold-down seat, the murmuring crowd, the popcorn smell. But after the lights dim and the movie begins, and after one gets accustomed to the movie-watching experience and becomes engrossed in the story, one's overall field of awareness becomes composed in a specific manner. It is not only that the theatre itself grows transparent, those cushy seats, the rectangular shape of the screen, the bumpy expanse of the heads of those seated in front of the viewer. It is that the content of the movie itself takes up or occupies the majority of the overall space of which the viewer is aware. The visual and audio sensations of the movie, and the content of that movie itself, stand forward with significance and positively compose the viewer's overall field of awareness.[5]

Sedimentation: The notion of sedimentation is of course common to work in the tradition of phenomenology. It refers to the past experiences which remain a contextualizing presence within present experience, providing a sort of pre-established frame of expectation that allows new perceptions to occur as already significant. The analogy is to the accumulated detritus that hardens into sedimentary rock. In an analogous way, past experiences collect and harden into a context through which new perceptions are experienced as immediately meaningful. As Merleau-Ponty uses the term, "there is a 'world of thoughts,' or a sediment left by our mental processes, which enables us to rely on our concepts and acquired judgments as we might on things there in front of us, presented globally, without there being any need for us to resynthesize them" (Merleau-Ponty 1962, 130). I use the term here in a technical sense to describe a specific variable of human-technology relations. With regard to a postphenomenological field theory, sedimentation refers to the strength of the habits associated with the experiential structures of a given human-technology relation. It is the magnitude of the habitual force associated with a user's relationship with a particular technology. When a particular human-technology relation has a high degree of sedimentation, that user is strongly inclined to experience the use of that technology in a specific, long-established manner.

For example, eyeglasses wearers often develop deeply sedimented relations to their particular pair of glasses. That is, it is not only the case for the accustomed wearer that the glasses themselves take on a high degree of transparency. It is also the case that this transparent relation occurs with a considerable amount of automaticity and stubbornness. That is, for the accustomed user, it is not only that the glasses themselves withdraw from awareness as they are worn, it is also that the glasses jump into that state of withdraw almost immediately when placed on the

face, and it requires an act of concentration for the user to again perceive the glasses themselves. If concentration on the glasses is disrupted, the user returns to looking through the glasses out at the world, and the device will immediately submerge into the background of the user's overall awareness. All of this is to say that for the accustomed wearer, the transparent relation to the glasses is deeply sedimented.

In what follows in the remainder of this section, I apply the notions of transparency, field composition, and sedimentation to the description of the experiences of using the telephone and driving. I suggest that the salient aspects of the experience of the phone, and the experience of driving, can be fully accounted for only if we centrally address the deep field composition and sedimentation of these relations. And more, it is my contention that the driver distraction of cell phones is the result of the very particular and deeply sedimented composition of a driver's overall field of awareness as she or he uses the phone while driving. Put differently, any phenomenological account of cell phone–induced driver distraction must address two issues: (1) the composition of the user's field of awareness, and (2) the depth of the user's habits. Let's consider these experiences below, first through a description of phone usage, then driving, and finally the experience of driving while on the phone.

The Experience of Using the Phone

The challenge of describing the experience of using the phone is in accounting for the way a phone conversation comes to captivate a user's attention. Consider the experience of someone talking with a friend on the phone while standing alone in a familiar room. Let's imagine that the person is standing in the middle of that room and talking on a cellular phone, holding the phone beside her or his face with one hand, and looking ahead at a wall adorned with, say, familiar pictures or paintings, and shelves of books and knickknacks. For this user, the most significant part of her or his experience—the thing that will "take up" the center and the majority of her or his attention—will be that phone conversation itself. The user's mind will be "on" the content of the discussion, "on" the words said and heard, "on" the presence of the person with whom she or he converses. And more, the experience of holding that phone in hand, and of looking at that wall ahead, will simultaneously *not* be central points of attention. To address the challenge of describing these aspects of the experience of the phone, we can turn to the postphenomenological conceptions of embodiment, mediation, and habit.

The experience of the phone is primarily an example of an embodiment relation to technology. As a user talks on the phone, she or he interacts with another

person *through* the device. The user comes to embody the phone. But not all of the aspects of phone usage involve an embodiment relation exclusively. As a user looks at and interprets the readout of the cell phone screen displaying, say, text messages or the number of an incoming call, the relation can best be categorized as hermeneutic. And an alterity relation with the device is taken up in the case of conversationally interactive "personal assistant" smartphone applications that recognize human speech and respond with audio replies. But as a user talks on the phone, the relation is primarily one of embodiment, and that is what I would like to focus on here.

For a user accustomed to talking on the phone, the embodiment relation to this device is deeply characterized by transparency, field composition, and sedimentation. As a user holds a conversation on the phone, the device itself takes on a high degree of transparency, like the pair of glasses that withdraws into the background as it is worn. Despite being clutched in one hand, despite being held beside the face, and despite the fact that it enacts such a substantial transformation to a user's ability to converse with others over a distance, a user grows less and less aware of the phone itself as the device is used. To further highlight this point about the transparency of the phone, it can be helpful to think about the Heideggerian breakdown phenomenon (if we think of breakdown in a practical postphenomenological context of human-technology relations, and *not* in terms of Heidegger's radical ontological project). An example of the breakdown of the phone is the "dropped call," in which the link to the other person through the phone suddenly and unexpectedly fails. In an instant, the phone's status as "transparent" is lost, and the malfunctioning phone itself pops forward within the user's field of awareness, taking a commanding presence as the obstacle to the very conversation that it had just moments ago made possible.

But a phone call enacts greater transformations to a user's field of awareness than simply imbuing the phone itself with a degree of transparency; a phone call actively composes the overall field of which the user is aware. For that person standing alone in the room and talking on the phone, it is not the case that the wall in front of her or him simply goes unnoticed. It is that the conversation itself stands forward within her or his awareness, expanding so far in its significance as to overtake the field almost in its entirety. In this way, phone usage can be understood to be deeply characterized by the variable of field composition. The user's experience takes place in a realm composed primarily by the audio sensation of the conversation, the engagement with conversational content, and the striking presence of the other person mediated by the phone. That is, phone usage typically

involves a particular field composition in which the near entirety of awareness is occupied by the experience of the conversation.

The breakdown phenomenon again underscores these structural features. When cell phone breakdown such as a dropped call occurs, the effect is not only the phone itself losing its transparency. The user may also suddenly become explicitly aware of her or his status as a phone user. That conversational space which had a moment earlier occupied the whole of the user's field of awareness may now suddenly be experienced as a distinct lack, an unfulfilled expectation, an emptiness. And more, where the user's field of awareness had been composed by the conversation, transformed by the human-technology relation, the user may in this new moment be thrust back into that familiar room. The user may be struck by the experience of herself or himself as someone looking at that wall ahead, with its picture frames and shelves, and standing there at the room's center, alone.

There are several reasons why a phone user's field of awareness takes on this particular structural configuration. For one, talking on the phone is the user's intent; it is her or his task at hand; it is the project to which the user devotes conscious attention. Thus, the object of this task—i.e., the content of the conversation—is what stands forward with the most significance. The means of that conversation, the mediating technology of the cell phone, simultaneously drops back into insignificance as its usage grows familiar and taken-for-granted. Second, the phone is not simply any device facilitating just any task. It is a communications device which facilitates interaction with another human being. Other people, themselves active perceivers and participants in our shared world, take on a special meaning within one's awareness. The presence of another person is something that jumps forward with significance. That room in which that user talks on the phone would be experienced much differently if another person were standing beside her or him. And a version of this remains true of the experience of the "telepresence" of another person, the technologically-mediated attendance of that person across some channel of communication, such as the phone, even if this attendance does not occur in its normal full "dimensionality," as Ihde says. This combination of the user's intent toward the conversation and the special significance of the presence of others helps to tell the story of how the technological mediation of the phone comes to involve the particular structural features described above. But even this is not the whole tale. There is a third reason.

For the accustomed user, the structures of awareness associated with the phone also come about through a long-established force of habit. That is, the user's field of awareness becomes composed as an audio-content-focused zone,

and the phone itself grows transparent, all in part through the action of bodily perceptual habits established through a user's personal history with the device. As the user engages in phone conversation, and the transformations described above occur to the user's field of awareness, this all happens with an automaticity, immediacy, and stubbornness that reflect the user's long-standing relationship with the device *in exactly these terms*. Over time, the user has learned to experience the phone this way. All of this is to say that the user's relationship with the phone is deeply sedimented.

Once again, the breakdown phenomenon is useful for drawing out the specifics of this human-technology relation. In the event of the dropped call, jarring in its suddenness and unexpectedness, the user may for a moment be struck by the experience of the lack of conversational content and interpersonal presence which is left behind in the place of the former conversation. As described above, this appears to be at least in part the experience of an unfulfilled intent; the phone is no longer performing the task for which is being used. But in addition, the field of awareness composed by the conversational content may retain that shape for a moment after the call has been dropped (and that content has been drained) through the habitual force associated with phone usage. That is, it is not only the user's conscious expectations that are suddenly unfulfilled, but also her or his bodily perceptual habitually-engrained anticipations that suddenly go unmet. And more, when a call is re-established and conversation begins once again, it is due to the presence of strongly sedimented habits that the user's field of awareness can again spring into its phone-associated structure so immediately and so automatically. That is, the perceptual experience of phone conversation occurs through particular experiential structures in part because we have trained our perception to do so.

The Experience of Driving a Car

The challenge of describing the experience of driving a car is accounting for the way that good driving involves both habitually directed perception and consciously directed perception. Take, for example, the experience of someone driving a familiar car along a somewhat busy roadway and approaching an intersection at which she or he plans to turn. This driver must perform a number of tasks at the same time. She or he must monitor the movements of other cars on the road and must keep a watchful eye on the approaching intersection. At the same time, she or he must engage with the interface of the vehicle, e.g., operate the steering wheel and pedals. To some of these tasks the driver devotes concerted attention, while others are instead delegated to bodily habits developed through an individual his-

tory of training and everyday usage. A driver must at once concentrate "on the road" and at the same time must maintain control of the vehicle. Only a novice first thinks about the desire to stop the car, then asks herself or himself which of the pedals performs this function, then opts to use her or his feet to press the appropriate one. For the accustomed driver, the intention to stop the car co-occurs with the application of pressure to the brake pedal. For the accustomed driver, the most significant part of her or his experience—the thing that jumps to attention and rings with immediate importance—will be changes in those aspects of the car and the road relevant to the overall task of driving. The driver's mind will be "on" the sudden flash of the brake lights of the car ahead, "on" the fuel gauge as it approaches "E," "on" the truck changing lanes in the rearview mirror, "on" the sounds of an approaching ambulance siren. Other aspects of driving, such as the operation of the steering wheel and pedals—while still being engaged—do not stand out as significant. To address the challenge of describing these features of driving, we can again turn to the postphenomenological conceptions of embodiment, mediation, and habit.

Like the phone in the previous subsection, the experience of driving is primarily an example of an embodiment relation to technology. As the driver operates the vehicle, she or he comes to embody the car; *through* the mediation of the device, the driver experiences transformed abilities to travel. But not all aspects of driving involve an embodiment relationship exclusively. For example, a driver establishes a hermeneutic relation to the car as she or he looks at and interprets the various readouts across the dashboard, the speedometer, gas gauge, heat gauge, etc. If a driver is deeply familiar with using these readouts, then the interpretive process occurs with a degree of transparency; the driver need only glance at them to apprehend information about the vehicle in a visual gestalt. This is the case as well for signs and signals on the road, such as traffic lights, the turn signals of other cars, or the lowering arm at a railroad crossing. The driver need not first read the sign displaying the word "STOP," then consider its red and octagonal design, and then interpret its meaning. The directive to stop the car appears in a gestalt, standing out as meaningful among the other objects on the side of the road. An alterity relation to the car is taken up, for example, in the case of a dashboard-mounted GPS device as it recites out loud directions to a preset location through a human-like voice. But as a driver operates the vehicle, the relation is at least centrally one of embodiment, and that is what I would like to focus on here.

Safe driving necessitates that certain aspects of a driver's experience of the vehicle's interface take on a degree of transparency. Like the way the hammer

withdraws into the background of the hammerer's awareness, and like the way the cell phone itself becomes highly transparent in the hand of the phone user, specific aspects of the interface of the vehicle grow transparent for the accustomed driver. For the novice driver, the grip on the steering wheel, the pressure of the pedals, and the feeling of being belted into the driver's seat all may remain conspicuous features within the totality of things of which she or he is continuously aware. But as training continues, as experience behind the wheel is gained, as she or he "learns to drive," these points of interface take on a greater and greater degree of transparency. The steering wheel itself and the pedals themselves no longer hold a place of significance in the driver's overall field of awareness, giving way to tasks that require explicit concentration, such as keeping track of the movements of other cars, watching for signs and signals, and following directions.

The experience of driving is also characterized by a complex and specific field composition. It is not only the case that aspects of the car's interface grow transparent, but also that certain features stand forward with significance and make up the majority of the sensory realm of the driver's awareness. A driver's field of awareness at any given moment is composed by the space on the road directly ahead of the vehicle through the windshield, the space behind and beside the vehicle revealed in the mirrors, the relevant sounds of the car and the road, and the gestalts of information provided by dashboard readouts, among other relevant driving features.

Once again, the breakdown phenomenon can be useful for drawing out these features of the experience of driving, especially apropos in this case since damaged cars are often referred to as "broken down." My first car was a powder blue 1987 Plymouth Sundance, a small sedan already old and "used" at the time I acquired it, and one which got me back and forth to class in my undergraduate days. Though loved greatly, the car had a number of problems, such as extremely slow acceleration, and a windshield so leaky that during rainstorms water came pouring out of the dashboard tape deck. For these and other problems, the car took on the nickname "the Mir Wagon," referring to the Mir space station that was still in orbit at the time and was regularly making the news with reports of mechanical mishaps. One of the Mir Wagon's biggest problems was its propensity to "throw belts," meaning that belts within the engine would break more than usual (a problem eventually found to be due to a subtly bent gear). The belt the Mir Wagon would throw was one that ran to the engine's alternator, the device which converts the mechanical motion of the engine into electrical power to refill the car's battery. I would only know that the Mir Wagon had thrown a belt when, while driving, the

car's battery would die, something which would cause the car to stop running. (I recognize that this example shows its age; my current car has neither an alternator, nor belts of any kind, and certainly no tape deck.)

Here's what happens when an '87 Plymouth Sundance begins to stall due to a dying battery. The first thing to go is the power to that tape deck, causing the music to slow and become low-pitched. This is a confusing experience. The next thing to go is the power steering and power brakes. This is an alarming experience. And it is a case-in-point example of how technological breakdown brings about changes to the structure of a user's experience. Those formerly transparent features of the car's interface suddenly become focal points of attention. If, like me, you are otherwise unaccustomed to driving a car without power steering or power brakes, then it is quite jarring to experience those familiar interface features now responding quite differently. And then finally the full stalling of the engine occurs, and you must find a place to pull over using the car's remaining momentum, all while the experience of turning the wheel and pressing the brakes is now alarmingly different, requiring much more exertion.

The driver's relation to the car is also one which is deeply sedimented. Indeed, safe driving requires a driver to possess deeply sedimented habitual relationships with the vehicle. The fact that this sedimentation is entrenched very deeply is evidenced by the immediacy with which the structures of experience described above are taken on as the driver sits down behind the wheel, and by the way these structures are retained to some degree even in difficult road conditions. Further evidence of the depth of these habits appears in the inclinations of one sitting in the passenger seat; often such a passenger finds her or himself unintentionally pressing the floor as if to apply an imaginary brake pedal.

The Experience of Driving while Using the Phone

My contention is that the above postphenomenological account of the experiences of driving a car and of using the phone offers an explanation of how phone usage causes a dangerous level of driving impairment. I suggest that, due to the strong forces of habit associated with the phone, the driver who uses the phone will at times have her or his overall field of awareness composed by the content of that conversation. That is, despite what may be a driver's commitment to remain primarily aware of the task of driving, due to the pull of the habits of phone usage, that driver will at times drift into a primary awareness of the phone conversation. Or put plainly, the driver's mind at times will be on the conversation, and not on the road. And I argue that, despite the protestations of some drivers to the contrary, this presents a dangerous situation.

To clarify, I do not take it to be the case that the habits associated with the phone must be somehow stronger than those of driving. It is simply that since those habits are strongly present, a driver is faced with the task of actively resisting the strong inclination to have her or his field of awareness composed mainly by experience of the phone conversation. If the driver's resolve to continually focus on the road should wane, she or he could fall prey to the strong pull to become primarily and centrally aware of the phone-mediated conversation. Any number of factors could sap driver resolve in this way: an increase in the interest or urgency of the conversational content, an increase of the boredom of the driving task, simple overconfidence, etc. Compound this with the fact that not all drivers even consider phone usage to pose any distraction in the first place—thus they do not put any conscious effort into remaining focused on the road.

How Deeply Sedimented is this Relationship to the Phone and the Car?

The extent to which a driver's relationship with the phone and car is habitually sedimented in terms of the structures of experience reviewed above can be inferred from the empirical literature on the subject of using the phone while driving.

Researchers in the field of cognitive science have found a preponderance of evidence showing that the use of a cell phone while behind the wheel is associated with a dangerous drop in driving performance. How dangerous? Epidemiological studies, in which accident data are cross-analyzed with phone records, have found cell phone usage to be associated with a four-fold increase in crash risk (Redelmeier and Tibshirani 1997; McEvoy et al. 2005). Texting while driving has been shown to be even more dangerous (e.g., Drews et al. 2009; Owens, McLaughlin, and Sudweeks 2011). Experiments conducted in a driving simulator have even found cell phone usage to be associated with levels of impairment similar to that of driving while intoxicated (Strayer, Drews, and Crouch 2006). And studies are beginning to show that this dangerous level of distraction is distinct to the phone, with passenger conversation not resulting in the same impairment (e.g., Drews, Pasupathi, and Strayer 2008; Charlton 2009).

What's more, drivers tend to recognize that *other* drivers are negatively influenced by phone usage, but at the same time also tend to think that they are themselves immune to these effects (e.g., Horrey, Lesch, and Garabet 2008; Tison, Chaudhary, and Cosgrove 2011). (Stacey Irwin's contribution to this issue is striking in this regard. I take her phenomenological description of using the phone while behind the wheel *not* to support the claim that she and others can do this safely. Instead, it seems to me only to add support to the empirical claim that drivers think they can.[6])

Where the scientific findings get interesting is on the issue of hands-free cell phones. More than a decade of research has found that handheld and hands-free phone usage is associated with the same precipitous drop in driving performance. (For meta-analyses of the multitude of experiments that have shown both handheld and hands-free cell phone usage to result in dangerous driving impairment, see Mc-Cartt, Hellinga, and Bratiman 2006; Caird et al. 2008; Ishigami and Klein 2009). The reason why many are surprised to learn that hands-free phones are equally distracting as handheld models is that it is often assumed that the distraction of the phone is the result of taking a hand off the wheel to hold the phone. But the fact that hands-free phone usage is equally distracting as handheld phones makes it impossible that an explanation of cell phone–induced driving impairment reduces to concerns about whether both of a driver's hands remain on the steering wheel. The question remains: how does cell phone usage cause driving impairment?

This body of empirical research can be characterized as one with an abundance of data and a dearth of theoretical accounts of that data. That is, there is a profusion of data showing that cell phone usage (both handheld and hands-free) is associated with a dangerous drop in driving performance, but there is neither a large quantity of theorizing performed in this work, nor a generally agreed upon explanation of cell phone–based driver distraction.[7] Nevertheless, I suggest that a general explanation of the distraction of cell phones can be abstracted from the language through which many of these researchers report their findings.

When these researchers present their findings, these data are often cast in terms of a general background set of assumptions about the inherently limited supply of resources in the human mind. When experimental data are presented in these papers, a tendency is to couch these data in terms of the human mind's limited stock of "attention," or "information processing capabilities," or "cognitive resources."[8] From this language can be abstracted the following explanation of cell phone–induced driving impairment: conversation on a cell phone is distracting because it is a cognitively demanding act which saps away resources necessary for the performance of the act of driving.

I take my own work on the topic of cell phones and driving to offer two contributions to this literature: (1) The postphenomenological account of cell phone–induced driving impairment reported above is submitted as an alternative coherent account of the empirical data. (2) By offering an alternative theoretical account of this empirical data, the "inherently limited cognitive resources" model is highlighted *as* a theory. The language of inherently limited stocks of cognitive resources should be seen for what it is: a theoretical account of that data, and one which is

subject to comparison with alternatives. I am open to the possibility that both the postphenomenological account and the cognitive resources account may be some-how together part of a larger explanation that includes insights from each. But additional data or reasoning would be required to for preferring one of these accounts over the other, or for preferring a combined account over either account alone.

In the end, all of this speaks to the level of sedimentation that is associated with the relationships users develop with the phone and the car. Considering just how deeply distracting the empirical research shows cell phone usage to be, and considering how generalizable these findings are, it appears that the pull of habits associated with phone usage is strong. The act of holding a conversation over the phone appears to present not just any inclination, but a strong inclination, for one's field of awareness to become composed by the experiential structures associated with the phone. Many of the empirical researchers seem so convinced that the phone presents drivers with a dangerous distraction that they claim that the human brain is actually not capable of consistently performing adequately these two tasks at the same time. While I am not committed to their explanation of the driver distraction of cell phones, I agree that these data show drivers to be deeply disposed toward dangerous driving behavior when on the phone.

The Multistability of the Telephone

Another central concept of the postphenomenological framework is the notion of "multistability." Multistability refers to a technology's capacity to hold different meanings for different users, and to be used for multiple purposes (e.g., Ihde 1990, 144; for recent explorations of multistability here in *Techné*, see Rosenberger 2011a, 2011b). In its conception of all technology as always open to alternative meanings and uses, the notion of multistability reflects postphenomenology's commitment to nonfoundationalism and anti-essentialism. The term is useful because it emphasizes two things at once: (1) the "multi" part of the term reflects the idea that technologies are always capable of fitting into multiple use-contexts; (2) the "stability" part of the term reflects the simultaneous conception of technology as something always limited in its potential meanings and uses by the concrete materiality of the user and the device—that is, a technology is limited to a restricted number of concrete "stabilities."[9] On this view, a technology can be used for many different things, can mean many things to many users, and can be made to fit into many contexts, but at the same time it cannot do simply anything, cannot mean simply anything, and cannot be made to fit into just any context.

The notion of multistability is *not*, in my view, essential for understanding the driver distraction of the telephone. However, in order to sort out the debate over these issues taking place here in this special issue of *Techné*, it is helpful to see how the notion of multistability is consistent with the above postphenomenological account of cell phone–induced driving impairment. Some postphenomenologists may argue that since technology is multistable, drivers can always develop new non-distracting relations to the phone and the car. In this section, I show the limitations of that view. I show how, instead, it is consistent to be committed to both the multistability of technology and also to an understanding that cell phone usage is dangerously distracting to drivers in a way that is fixed, stubborn, and not easy to dismiss.

There are several ways to conceive of the multistability of a device as complicated as the telephone. One could cast the phone's various built-in uses as the device's different stabilites: calling, texting, timekeeping, picture taking, the running of smartphone applications, etc. One could instead contrast, on the one hand, the stabilities built into the device, and, on the other, new stabilities that users could invent, such as scenarios from movies in which the authorities track users' locations by their phones, or using a phone to trigger a bomb. An additional way to think of the multistability of the phone is to consider slightly different ways that users may experience the phone's standard uses, and in particular the different ways that a user could experience a cell phone conversation. It is this last kind of multistability that is important here.

There are those such as Wellner who suggest that since the technologies of the phone and the car—as multistable—can always be approached in new ways, we should not support stricter regulations on cell phones and driving (see Wellner 2014). They argue that it should be possible to develop an alternative stable relation to the telephone in which a driver can focus together on both the phone conversation and the driving. It is not difficult to sympathize with this intuition. We could ask: Shouldn't it be possible to develop a relationship to the car and the cell phone such that the two can be used together without the phone distracting from the task of driving? Shouldn't a user be able to develop a stable relation to the technologies of the phone and the car such that she or he maintains a field of awareness that includes both an experience of the phone conversation and also a responsible engagement with the road? Can't we learn a new way to use the phone and the car so that the phone does not automatically incline distracting experiences?

The answer to all of these questions taken together is: yes and no. "Yes," it seems to be possible, at least in theory, to develop a novel relationship with these technologies such that a user is not distracted by the phone while driving. As a

postphenomenologist, I remain committed, at least abstractly, to the notion that our relationships with the phone and the car are multistable, and are thus open to being taken up differently. (But it should be noted that the cognitive scientists' account of inherent cognitive limitations does not appear to even allow for this possibility.) At the same time, "no," it is not possible *in any straightforward or easy way* to develop new relations to these technologies, and it would be dangerous to rely on people to do so. As I explain below, this is due to the deeply sedimented relations we have established with these devices.

Albert Borgmann uses the term "pluralist" as a pejorative against those thinkers that seek to undermine observations about patterns of technology design and usage by simply pointing out any alternatives to that pattern that can be contrived. He writes,

> The pluralist sees it all, the entire complex web of numerous countervailing forces. Against this picture any proposal of a great and consequential scheme must appear as a falsification of reality. Ironically, the pluralist view does very well with opposing theories, but it fails reality. Technology, in fact, does not take shape in a prohibitively complex way, where for any endeavor there are balancing counterendeavors so that no striking overall pattern becomes visible. (Borgmann 1984, 11)

I suggest that the resistance to addressing the dangers of cell phones and driving mounted by Wellner and her sympathizers risks just this kind of pluralism. There is indeed a "great and consequential scheme" at work in our relations to the cell phone and the car. It is one articulated in detail by researchers in the field of cognitive science, one that is beginning to be addressed by traffic policies worldwide, and one for which I have developed the postphenomenological account above. When Wellner and others suggest that such a scheme can be dismissed on the grounds that alternative relations to these technologies can be imagined (say, by drivers learning to divide their attention), this fails to address the strength of these patterns, embedded in our practices, and sedimented in our learned habits.

It is important to recognize that our typical relationship to the telephone, with the experiential structures described above, should be understood as the telephone's "dominant stability."[10] That is, the dominant way users experience the phone is as a device which itself takes on a degree of transparency as it is used, and which composes a user's overall awareness into a field primarily and centrally occupied by the content of the conversation and the presence of the interlocutor. By "dominant stability," two things are indicated: (1) that this is the typical usage of

the phone, the one for which the device was designed, and the one which the user typically intends to take up; and (2) that the habits associated with this stability are deeply sedimented through a user's individual history of usage.

We can contrast the dominant stability with those alternative stabilities brainstormed by critics like Wellner, such as the option in which a user divides attention between the tasks of using the phone and driving. In my view, what is revealed by such a brainstorm of stabilities is just how difficult it would be to actually take up these alternatives in practice. The issue of sedimentation is key. I suggest that what is ultimately highlighted by the contrast between the dominant stability and imagined alternatives is the fact that we have been using the phone for a lifetime *in terms of the dominant stability*, and thus it is accompanied by deeply engrained habits of usage. None of the other freshly imagined alternatives retain this quality. Thus, attempting to, say, divide one's attention between holding a conversation on the phone and driving a car not only requires a choice, but it also requires a sustained effort to resist the pull to experience the phone through the dominant (and highly distracting) stability.

Think once more of the example of the pair of eyeglasses. Imagine a lifelong wearer of glasses decides that she or he would like to develop a new relationship to this device in which the glasses are still looked through as normal, but also in which this wearer has trained her or his perception to keep the frames of the glasses (along with their surrounding region of blurriness) within her or his field of vision at all times. This wearer divides her or his attention in a way that retains those frames as a point of focus, all while also continuing to pay attention to the world through those lenses. This does seem possible, at least in theory. But what is striking is not only the difficulty the wearer will have in learning to divide her or his attention in this way, but also the difficulty the wearer will have in continually resisting the inclination to return to seeing through the glasses as normal. This wearer faces the difficult task of unlearning the deeply sedimented habitual inclination to experience the glasses themselves with a degree of transparency. If this wearer were to simultaneously take up a dangerous task (say, driving a car) while experiencing the glasses in this divided way, I believe we would be justified in doubting whether she or he could perform the task safely.

It is on this issue of learning that I believe my own account to be strongest of all. Since the cognitive science viewpoint conceives of cell phone–induced driving impairment in terms of inherently limited cognitive resources, it seems to have *no* room for learning a new stable relationship to the car and phone in which a driver divides attention between each. Meanwhile, those such as Wellner, who take the potential for developing an alternative relationship to the phone to be a reason

for dismissing concerns about cell phone–induced driving impairment, appear to overlook the effort required to unlearn a lifetime of sedimented phone-related habits. In contrast, the account I have developed above at once allows for the abstract possibility for users to learn new ways to take up their technologies, and at the same time shows why a safe new relationship to the car and phone would be prohibitively difficult to achieve.

Why We Need Stricter Regulations of Cell Phones and Driving

The time has come not to dither about what sorts of relationships to the phone are possible in theory, but to aggressively address the dangers of cell phone–induced driving impairment that actually do occur in practice. Currently only a very small minority of countries across the globe have enacted laws against using hands-free phones while driving. The United States is a case in point, with forty-four states having now outlawed texting while driving, twelve additionally outlawing conversation on a handheld phone while behind the wheel, and zero placing any prohibitions on all drivers from using hands-free phones.[11] I join with those cognitive science researchers who, based on their empirical findings, recommend the stricter regulation of cell phones and driving. This should include a legal ban of the use of hands-free phones while behind the wheel, and in most cases stricter fines and more consistent enforcement for existing laws. This should also include more dogged awareness-raising campaigns. While many drivers have proven resistant to such campaigns, a driver's last-minute choice to put down the phone, or to doubt her or his own ability to divide attention between tasks, may be the deciding factor between life and death, either for themselves, or for the other drivers, passengers, and pedestrians whom they place in danger.

The philosophy of technology in general, and the phenomenology of technology in particular, have the potential to make unique and crucial contributions to efforts to address the dangers of distracted driving. There is a need in these efforts for answers to the question: Why? Why are cell phones so severely and dangerously distracting to drivers? The "theory" side of the empirical literature and the public policy discussion is in need of development and critical examination. Contributions from philosophy have the practical potential to inspire new empirical designs, to appraise current policies, and to develop new strategies for conveying the dangers of cell phones and driving to an often resistant public.

There are many reasons to stay vigilant with regard to the dangers of distracted driving. One is that these issues involve the complex phenomenon of human communication through technology. A driver's relation to a cell phone is

not simply a case of a user's relationship with just any device. It is not comparable to, say, the distraction of eating a hamburger while behind the wheel (or even listening to the radio or a book on tape). Instead, the use of a cell phone while driving involves interaction with another person through the technological mediation of the phone. It involves an encounter with the telepresence of another human being. It involves the interaction with someone not sharing the same surrounding space, a space which contains the dangers of the roadway. Thus, cell phone–induced driver distraction is unlike the distraction of simply performing any other additional non-driving act; it is a special case requiring special attention. And more, the act of using the cell phone while behind the wheel is also one which involves interaction with other drivers and pedestrians on the roadway. In this sense, laws pertaining to cell phones and driving are unlike helmet or seatbelt laws, which are intended only to protect the driver from the dangers of her or his own actions; cell phone–induced driving impairment imperils others on the road as well.

Another reason for remaining vigilant in the study of these issues is that the topography of technologies relevant to distracted driving is in constant flux. It is difficult to develop specific strategies to compensate for the dangers of each particular technology when the relevant devices keep changing. Where just a few years ago the crucial technologies were Bluetooth headsets and speakerphones, now the relevant threats include smartphones with hands-free interface for many of the device's applications, including texting and calling. Further, the automobile industry is working to put more and more communications and Internet technologies into the dashboard—"infotainment" systems, as they are called (Rosenberger 2013b). Soon enough, we will also have to contend with the distraction of wearable technologies with head-up displays. We must remain vigilant in the face of multinational industries that have strong financial interests to weaken our resolve. And against this ever-changing context of distracting in-cab technologies, we must remain agile in our thinking. But we also need theories general enough to be able to account for the various distractions of these communications technologies as they continually develop. I hope that the postphenomenological account developed here is a useful step in this effort.

In the end, the solution to these problems should not involve teaching drivers to learn new ways to use the phone while driving. The solution is to find the political will to enact stricter regulations. With the present lack of that will across the globe, the heavy responsibility falls on drivers to police themselves. Despite the failure of the law to sufficiently act on these issues, and despite the automotive industry's efforts to make these technologies more easily available, drivers should themselves resolve to refrain from using the phone while driving.

Notes

1. For this tripartite structural account of the organization of consciousness, Gurwitsch uses the terms "theme," the "thematic field," and the "margins" (Gurwitsch 1964, 55).

2. The notion of mediation is central to much work in the philosophy of technology (e.g., Ihde 1990; Latour 1994; Green 2002; Bødker and Anderson 2005; Kockelkoren 2007; Verbeek 2011).

3. Ihde develops these notions through multiple works across his corpus, but the versions I use here are those developed in his 1990 work *Technology and the Lifeworld* ("embodiment relations," 73; "hermeneutic relations," 80; "alterity relations," 97; see also "background relations," 108). For Verbeek's critique and expansion of this list, see Verbeek 2011.

4. For example, when introducing the notion of "hermeneutic relations" in *Technology and the Lifeworld*, Ihde explicitly casts this idea as one which presents a challenge to Heidegger. He writes, "Heidegger's hammer in use displays an embodiment relation. Bodily action through it occurs within the environment. But broken, missing, or malfunctioning, it ceases to be the means of praxis and becomes an obtruding *object* defeating the work project. Unfortunately, that negative derivation of objectness by Heidegger carries with it a block against understanding a second existential human-technology relation, the type of relation I shall call *hermeneutic*" (Ihde 1990, 80).

5. I mean "positive" in the sense of expanding and stepping forward, rather than in a moral or otherwise evaluative sense.

6. For example, Irwin writes, "I have noticed how my attention is divided while I am driving. Whether I am doing what is called *multitasking* or *sequentially and quickly switching from ordered tasks*, I can successfully drive a car the way it was made to be driven, by watching the road and the multiple dials on the dashboard, while potentially attending to the passengers, and talking on my cell phone" (Irwin 2014, 14). If by "successfully" she means "safely," then I remain doubtful.

A fascinating finding in the empirical literature (noted above) is that drivers are not always aware of their own level of impairment. In my view, this is due to the habitual nature of the distraction of cell phones. I suggest that drivers can be unaware of their impairment exactly because the structures of phone usage described above occur with such a high degree of sedimentation. Like the way those who habitually bite their nails will be on occasion surprised to look down and find they are once again biting their nails, drivers may slide inadvertently and unconsciously into the distracting habits of the phone, habits in which their awareness is occupied more by the conversation than by the road.

7. While there is no generally agreed upon account in this body of work, and there is not much theorizing done overall, some researchers have offered specific theo-

ries. For example, it has been suggested that the distraction of cell phones is due to an information processing "bottleneck" in which the available resources cannot be adequately distributed to the two tasks (e.g., Levy, Pashler, and Boer 2006). It has also been suggested that the distraction of cell phones is an example of "inattention blindness," in which distracted drivers do not even see the events ahead of them (e.g., Strayer, Drews, and Johnston 2003). The distraction of cell phones has also been accounted for in terms of the "multiple resource model," which claims that different systems (such as the auditory and visual systems) compete for the same limited resources (e.g., Rosenbloom 2006). For the purposes of this paper, these various specific theories can be understood to fit under the general account explored above in which cell phone distraction is explained in terms of a driver's limited cognitive resources.

8. For a list of quotations of work from this body of empirical literature that conform to the general account that the drop in driving performance associated with cell phone usage is the result of a user's inherently limited stock of cognitive resources, see Rosenberger 2012, 89n11.

9. In the postphenomenological vocabulary, the term "stabilities" is sometimes substituted for the term "variations." While technically these terms are interchangeable, I prefer the term "stability" because it emphasizes the part of the notion of multistability that the "multi" part of the notion does not, namely that the variety of meanings and uses possible for a technology are limited to only those that are "stable," i.e., capable of supporting a coherent human-technology relationship. The term "variations," while technically identical in definition to the term "stabilities," seems to connote the same part of the notion of multistability as the "multi" part of the term, namely that multiple (or various) meanings and uses are possible for any technology.

10. Ihde has used the phrase "dominant stability" in exactly this manner, but has not developed it into a technical term. He writes that a hammer "may be used in a number of ways. It could, and perhaps is dominantly used, for its designed purpose—to hammer. But it could be used as a paperweight, an objet d'art, a murder weapon, a pendulum weight, a door handle, etc. This ambiguity of uses, however, is not indefinitely extendable" (Ihde 1993, 37).

11. See www.cellular-news.com/car_bans/, www.distraction.gov/state-laws.

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