

Driver Distraction at the Intersection of Philosophy, Public Policy, and Cognitive Science

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In the space where cognitive science and public policy overlap, there is a bubbling disagreement over how to address the threat to traffic safety introduced by the drop in driving performance associated with cell phone use. On the one hand, research in cognitive science presents the perhaps counterintuitive data which show *both* handheld and hands-free cell phone usage (e.g., headsets, dashboard-mounted speakers) to be associated with significant driving impairment. That is, a driver's performance has been shown to decline substantially while she or he talks on a cell phone, and this drop occurs independent of whether that phone is of the handheld or hands-free variety. On the other hand, the trend in public policy is toward the regulation of only handheld phones.

At its foundation, this disagreement between public policy and scientific research is over how cell phone use is understood to *cause* driver distraction. Philosophical tools can contribute to this discussion at precisely this juncture in two ways. First, philosophy can be used draw out the theories of exactly how cell phone use causes driving impairment implicit in the scientific and policy work. Next, with the assumptions underlying the current discussion revealed, philosophy can be used to develop an alternative theory of the cause of the impairment. Below, I offer such a theory built on ideas from the tradition of phenomenology. My account disagrees with the theory of impairment implicit in the ways cognitive scientists have cast their findings, and it also disagrees with the theory implicit in the public policy trend. Yet at the same time, this account remains in accord with the experimental data, and also remains consistent with the scientists' conclusion that the outlaw of only handheld phone use is inadequate for addressing the dangers of this kind of driver distraction.

In what follows in the first section, I summarize this disagreement between science and policy. In the second section, I consider the accounts of the source of driver distraction implicit in the scientific research and policy, and outline the contrasting phenomenological account I am developing. In section three, I discuss the specific positive effects that interdisciplinary interaction has had on this discussion.

1. The Debate over Cell Phone Driver Distraction

In response to the burgeoning research which shows cell phone use to result in a dangerous level of driving impairment, multiple countries and several states in the US have enacted bans.¹ These bans, while varying in detail from country to country and state to state, all apply to only handheld cell phones. The use of hands-free phones, in which the user can keep both hands on the wheel during conversation by speaking into a headset or speaker system, remains an expanding practice. Such hands-free systems are even being built into the dashboards of certain new car models.²

Many scientists, however, have come out against this trend. They claim that the evidence reveals that not only are handheld phones associated with a dangerous drop in driving performance, but so are phones of the hands-free variety. Thus, in this reasoning, legislation pertaining exclusively to handheld phones at best addresses only part of the problem. At worst, it also actively contributes to unsafe road conditions by implying that hands-free phone usage while driving is safe when it is not.

This research occurs in the field of cognitive science, conducted mostly by practitioners of the human factors stripe. A variety of creative research strategies have been developed for investigating the tricky topic of driving while using the phone (tricky because safe conditions for drivers of course must be maintained, and a multitude of variables must be taken into account). Perhaps the most prevalent form of investigation is the use of computerized driving simulations, from simple joysticks and monitors to multiple-screened immersive devices fit with an actual car dashboard and driver's seat (e.g., Alm and Nilsson, 1995; Consiglio et al., 2003; Hunton and Rose, 2005; Törnros and Bolling, 2005; Streyer et al., 2006; Streyer and Drews, 2007; Just et al., 2008). Such simulation research makes it possible to control for many variables, but also introduces its own issues regarding the artificiality of the simulated environment. Another prevalent investigative strategy involves the epidemiological study of accident data, such as police and hospital reports (e.g., Redelmeier & Tibshirani, 1997; McEvoy et al., 2005). Studies are even conducted in which participants are observed using the phone while driving on carefully monitored real-world roadways, such as test tracks or selected stretches of highway (e.g., Lamble et al., 1999; Patten et al., 2004).

This research is expansive enough to be the subject of meta-analyses. For example, one report analyzes the findings of 125 different experimental studies, and concludes that the preponderance of evidence shows both handheld and hands-free cell phone use to be associated with a dangerous level of driver distraction (McCartt et al., 2006).

2. Three Accounts of the Cause of Cell Phone Driver Distraction

In what follows in this section, I first briefly spell out the explanation of driver distraction implicit in both the public policy and the scientific research. Next, I review and expand on the conceptual toolkit of phenomenology and develop my alternative account to be contrasted with the other two.

2a. The Policy and Cognitive Science Explanations of Driver Distraction

Implicit in the trend in public policy toward the regulation of only handheld phones is a theory of what causes the associated drop in driving performance: *in this view, driver distraction is caused by the fact that handheld phones leave only one hand free for grasping the steering wheel.* This implicit position is made explicit through the contrast with cognitive science research reviewed above in two ways. First, the behavioral data (showing hands-free phones to also eventuate the same driving impairment) can be interpreted to call into question any account based on only the issue of the freedom of the driver's hands. Second, since the cognitive scientists present a rival

account of driver distraction, the public policy position is forced to review and defend assumptions inconsistent with this alternative.

In the theory of driver distraction advanced within the experimental literature, the claim is that act of holding a conversation on the phone is itself what precipitates this dangerous level of impairment. In my observation, a widespread understanding of just how it is that the act of phone conversation could cause driver distraction can be abstracted from the particular ways that the conclusions offered in these studies are formulated: *in this view, driver distraction is caused by telephone conversation because the human brain is limited in its capacity to perform multiple tasks at the same time.* The precise way this theory is articulated varies from article to article, but common formulations include the use of terms such as “dual task scenarios” or “multitasking.” The brain is conceived as a something with a limited amount of resources which it can allocate to desired tasks at a given time. The currency of these resources also changes from article to article, but common examples include “attention,” “information processing power,” and “cognitive workload.” This overall theory is encapsulated by Michael A. Raegan and his colleagues’ remark in the introduction to their collection on the general topic driver distraction, “If the human brain were not limited in attending to multiple tasks at the same time, driver distraction would not be an issue” (2009, 3).

2b. The Phenomenological Alternative

To construct a further alternative to both of these theories, I turn to work in the phenomenology of technology (e.g., Verbeek, 2005; Ihde, 2009; Rosenberger, 2010).³ This perspective puts a spotlight on the relationships that humans develop with the devices that populate their everyday lives. Without getting into the esoteric details of the phenomenology here, some general themes at issue in these accounts include the investigation of the structures of a user’s experience, and the degree of habituation that can accompany such experiences. For example, an issue relevant to phone use that could be highlighted by this perspective is the way that, as a user becomes accustomed to talking on a phone in an everyday manner, that telephone itself becomes less and less prominent within her or his awareness. That is, a user focuses more on what the device is being used to do—have a conversation—than on the interface, i.e., on holding the phone.

In my work on this topic so far, it has become apparent that the conceptual framework of phenomenology requires expansion in order to address the most salient aspects of telephone usage. One issue I explore is the way that a phone conversation can overtake a user’s overall field of awareness; as a user engages in phone conversation, the content of the conversation and the presence of that human interlocutor can take on a significance within the user’s overall awareness. A tendency in phone usage, I suggest, is to attend more to the conversation and less to the surrounding environment. I use the term *field composition* to refer to the general phenomenon of an aspect of one’s relation to a technology coming to occupy one’s awareness overall as that technology is used. The field composition of the experience of the phone, I suggest, is one that is brought about through the force of the habits formed through the user’s individual history with this device.

In light of this conception of phone use, an alternative account of cell phone-related driving impairment is possible: *in this view, driver distraction is caused by*

telephone conversation because the driver's habitual inclination to focus on that conversation distracts her or him from the task of focusing on the road. The idea is that a driver who uses the phone is presented with a strong phone-associated habitual pull to have her or his overall field of awareness occupied by the conversation and not by the driving. The strength of this pull depends upon an individual's history of experience with the telephone. And while it is certainly possible for a driver to adequately resist this habitual pull, the effects are something like a bad habit; this pull occurs independently of a user's conscious intentions, and can sometimes take effect without being conspicuous.

This alternative, I suggest, is consistent with both the empirical data which show handheld and hands-free phones to be associated with driving impairment, and with the claim that both types of phone usage require regulation. This alternative may constitute a productive contribution to this discussion for two reasons. First, it helpfully highlights the fact that much of the discussion in the experimental literature shares a set of assumptions about the brain-limitation-based causes of driver distraction. By presenting this alternative account, the provocative suggestion is posed that, at this level of analysis, it *could* be the case that talk of brain function is at best unhelpful, and at worst misleading. One current direction in my own research regards the implications for subtopics within this literature, such as the difference in distraction level associated with phone and passenger conversation, and the self report data showing drivers' lack of awareness of their own impairment. Second, the language offered by this phenomenological perspective may be useful for policy efforts to raise awareness of the threat to traffic safety posed by this form of driver distraction.

3. The Role of Interdisciplinarity in the Study of Driver Distraction

The interdisciplinary matters involved in this line of research have been tricky to navigate, and they do not reduce to a single issue. In a practical sense, the task of fairly and accurately summarizing work occurring in fields other than my own—in this case, the policy discussion and the human factors experimentation literature—has been challenging. It has required tasks such as learning the dissemination conventions of other fields, translating esoteric work within my own field to a form suitable for a general audience, and also making professional contacts to help sort out the claims and terminology used in an everyday manner by other groups. But there are specific advantages, at least in this case, which have come from the scrutiny placed upon the assumptions of each discipline from the vantage point of another discipline.

First, the public policy discussion has had its own assumptions revealed and challenged by the evidence offered by the work of the cognitive science experimentalists, and also by their alternative theoretical account. Second, the philosophical framework of concepts already developed by phenomenologists of technology is challenged in the attempt to account for phone usage. The limitations of this framework are revealed in the attempt to utilize it for addressing a concrete issue, and opportunities for expansion are presented. Third, the cognitive science/human factors discussion is challenged by the presentation of the phenomenological alternative. By presenting an alternative account also consistent with the data, a spotlight is placed on the assumptions at work in the existing conversation. None of the disciplines involved leave the encounter unchallenged, hopefully for the better.

At least two factors make driver distraction an interesting topic in this regard. One, driver distraction does not clearly fit into the domain of one body of thought. Since the topic regards traffic safety, it falls under the purview of policy. Since it regards individual human behaviors, it also falls under the purview of psychology. And since it regards technology usage, it falls under the purviews of philosophy of technology, human-computer interaction, engineering, and other fields. Two, driver distraction is an issue which has effects on the lives of many people. This presents the need not only for scientific research to burrow and burrow deeper toward the truth for its own sake, but also the need to translate data into policy suggestions and public outreach.

I am reminded of Thomas Kuhn's characterization of the benefits of work performed within the context of what he calls "normal science," "By focusing attention upon a small range of relatively esoteric problems, the paradigm forces scientists to investigate some part of nature in a detail and depth that would otherwise be unimaginable" (1962, 24). Without addressing the details or implications of his thought here, an insight is the recognition that science is able to produce the results that it does by creating communities that engage in a deeply esoteric focus. That's all well and good. But when those results are directly relevant to the public, the esotericism that makes them possible must be explicitly confronted (without assuming it can be innocently removed). A productive, albeit difficult, way to engage in such confrontations is from the perspective of another discipline. Driver distraction is a prime example; the topic calls for the deployment of perspectives from disciplines as different as public policy, cognitive science, and philosophy, and in the process interrogates the assumptions each brings to the encounter.

Notes

1. Eight states in the US so far have enacted bans on handheld phones while driving. For more information see: distraction.gov/state-laws
2. The related hot button issue of the regulation of texting-while-driving is of course also relevant, but I will not address it here in this short paper.
3. The particular contemporary school of thought within phenomenology on which I expand is called "postphenomenology." For introductions, see Ihde, 2009; and also the 31(1) issue of the journal *Human Studies*.

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