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A Response to Göde Both's

Accomplishing Autonomous Driving: An unfinished Description

Moving in and between worlds is never easy, as doing so always entails the risk of letting down one side of the debate or the other. As a skilled equilibrist, Göde Both walks between the skyscrapers of the Computer Sciences and the Social Sciences, seeking "to combine sensitivities from both worlds to understand what is going on when computational enhanced cars are moved from the laboratory to real-life traffic." Such is the challenge for most scholars working in the field of Science and Technology Studies (STS). Both's "unfinished description" thus provides an entertaining and inspirational tale to be told.

In a sense, Göde Both's *confession* – so to speak – that his description is "unfinished" is a realization common to ethnographers working in STS. When studying objects that are characterized by an entanglement between multiple epistemological fields, who are we to decide where the boundaries lie? Who are we to say where a description ends, or should end? It nevertheless strikes me as a sign of honest doubt in Both's contribution to this volume. Instead of withdrawing at the sight of this difficulty, however, Both formulates five answers to his research questions: *"What is autonomous driving (or fully automated driving)? What is an autonomous car (or a self-driving car or a driverless car)?"* Whereas the tales told by Both appear fragmented at first, it is exactly the fragmented nature of the object, which oscillates between "a good old-fashioned automobile and an experimental driverless car," that he wishes to convey – and he succeeds in the endeavor.

In his first response, Both argues, "Whatever this is that I am writing about, it is not just in one place. It is distributed." To show that it is indeed distributed, he takes us along on a walk through the project's physical locations. Starting from "the office," he zooms out from the location where he "is sitting" to include a mental blueprint of "the computer science department" of the university. He also invites us to go with him to see the "Doomsday Devices" in the physics department of the same university. I found this notion very insightful. The term refers to "apparatuses" in the physics lab where the "autonomous car" is located. The members of the project in which Both does his field work "do not know what they are for, but [feel] they look as if they belonged to mad scientists." Both's respondents, however, do not belong to the latter group. Their autonomous car, and thus Both's object, routinely becomes normalized. The autonomous car, which is standing in the same laboratory with *the other* "Doomsday Devices," is referred to as *das Auto*: "the car." The model of the car is one of the more popular ones in Germany, we are told, and thus the self-driving car is *not* a "Doomsday Device," but a car. The tendency toward

normalization does not stop at the car's appearance. It extends to the inside as well. As Both argues in his observation of a test drive, the car contains "red emergency switches," which "can disconnect the additional ICT systems (this includes the laptop) from the rest of the car. I have never seen them used, but they seem to have a symbolic value," which he delineates as "the desire for automation and the need for human control."

As I observe Both walking the cable between the skyscrapers of the computer sciences and the social sciences, I am overtaken by an uneasy feeling. In his fourth response, Both notes, "Autonomous driving is volatile technology. Control oscillates between the driver and the laptop." In this, he once again discusses the oscillation between the desire for automation and the need for human control: "The research vehicle may be driven just like a regular car. In fact, despite of all the modifications, it is still a regular car. (…) The modifications (…) can be turned off and on. In fact, the safety driver often switches into autonomous mode in mid-drive or resumes control in mid-drive." I wonder, however, whether "it is still a regular car." Even though it is possible to drive the car without it being synced to the computer, it is *also possible* for it to be driven by the assemblage of human engineers, sensors, GPS, track, and computer. When Both arrives at his conclusion, however, I find myself fooled once more, for it seems that the provocation toward unease was precisely his intention. As he argues:

> To talk about an "autonomous car" is misleading if you think of it as a stable and permanent identity. When the "autonomous car" exists, it exists only for limited time in situated practice. It oscillates between manual and autonomous driving. It is also misleading to think of it as autonomous in the sense of self-sufficiency. The car has to be pushed out of the garage, driven to the test-track and constantly cared for. The car is a precarious assemblage that has to be re-animated each time the project members take it to the streets.

It is therefore not "a regular car," although it is part of the "precarious assemblage" that he portrays in this piece.

To conclude this commentary, I would like to pose several questions. Is it not the trademark of an equilibrist to incite in the crowd watching from below a blend of awe and unease – a sense of making them wonder whether they can do the same, while simultaneously leaving the audience feeling worried for the person balancing on the cable above? Is this not part of the fascination that one has for the balancing individual? Studying objects that are characterized by a state of constant "trans" is characteristic to work in STS, and part of the difficulty involves breaking down the normalization of these objects from all aspects of the spheres that they transgress, allowing readers to grasp the complex nature of the object under study. In this "unfinished description," I believe that Göde Both has found a way to do so.