

# Automation as a very familiar place

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## ABSTRACT

We propose that the constraints set by the infrastructures supporting our journey through spaces we create are a strong determinant of how we experience those spaces and their places. We argue that rigidity of infrastructural constraints causes familiarity, and that familiarity breeds the automatic experience.

## Author Keywords

Automation, qualitative experience, infrastructure.

## ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

## INTRODUCTION

*The train came out of the long tunnel into the snow country. The earth lay white under the night sky. The train pulled up at a signal stop.*

*A girl who had been sitting on the other side of the car came over and opened the window in front of Shimamura. The snowy cold poured in. Leaning far out the window, the girl called to the station master as though he were a great distance away.*

—Yasunari Kawabata, *Snow Country*

The infrastructure making our journeys through spaces possible have also always shaped our experience of those spaces. We wish to propose that the constraints of infrastructure are an important though certainly not the only factor in producing our experience of the journeys they support.

We are interested in the qualitative attributes of infrastructure and consider their consequences for the automatic experience. The choice of the wording "qualitative attribute" rather than the software engineering term "quality attribute" is intentional—we want to allude to

the richness of meanings that are determined through qualitative studies rather than the more restricted notion of quality used in software engineering, which intend to capture what, when talking about software, is meant by a 'quality product'. At the same time, we take note of the experience in software architecture that the structure or structures of a system are strong determinants for that system's quality attributes [1], including usability [2]. We hypothesize therefore that the architecture of our technological infrastructures is similarly important to the ways in which we experience the places and spaces they support.

The quotation chosen to initiate this paper illustrates how difference in landscape as evident to a train passenger can be used to evoke a feeling of place to readers. In the hands of a nobel-prize winning author, the familiar features of train cars and a winter landscape are used to reconstruct for readers a sense of place. Arguably, much of the power in these concepts as used here lies in their familiarity. They are familiar because they are stable across a variety of contexts—a journey by train in Scandinavia now compared with one in Japan some hundred years ago, while not exactly the same, has some stable and defining features: the passive traveler situated in the train car, observing the landscape passing by the window.

What is more, the stability across many contexts of how train travel is experienced enables a shared understanding between people. Much of this stability is due to the technically necessary features of rail infrastructure. It by nature defines one or more fixed and non-negotiable routes through landscape, and the passenger is necessarily confined to "their" place in the train car for much of the journey. Certainly the passenger can get up and go to another car, but the practical circumstances given in the train car is a strong force for most passengers to surrender and remain passive in the place defined by others, the train car.

What happens to our experience of journeys such as train travel if it is infested/blessed with the wave of technologies ubicomp represents—enabling people to increasingly personalize their surroundings? Personalize, we must note, is justified precisely because it allows people's preferences to direct more aspects of their own experience, enabling them to make places their own. When people make places their own, by e.g. choosing the soundtrack to their journey, they are simultaneously avoiding the alternative. That

alternative, the place that could have been or the displaced place, is what we currently have a diminishing opportunity to study. It is rich and important precisely because people cannot choose and personalize ad infinity, because it brings out the frequently collaborative behaviour of appropriation that, in de Certeau's [3] terms, are the *tactics of the weak*. Personalizing ones experience rather than producing it collaboratively would seem particularly likely during transportation, as the people one happens to be co-located with are often strangers.

Opportunities for personalization, of course, are never unbounded. Infrastructure always constrains behaviour, and anyone who has tried to reuse software will know that is no less true for digital technology. What is the relationship between the constraints set for us by technological infrastructures supporting mobility and the ways in which we experience journeys? Will the digital infrastructures of tomorrow enable future authors to draw on experiences it frames with the same richness that Kawabata does for train travel? Or will an unprecedented opportunity for personalization mask the influence of infrastructure's constraints, making them too subtle, localized and personal to allow analysis?

Tailoring of technology to the preferences of the individual is to a degree orthogonal to the question of control—who is doing the personalization. On the one hand authors such as Aarts et al. [4] envision environments saturated with AI technology that are able to artfully adapt to the desires of the individual. On the other hand, initiatives such as PalCom [5] emphasize the necessity of people remaining in control. We take the position, along with Barad[7], that distinctions are always local, including the of distinction between humans and digital agents as pointed out by Suchman[6]. In some contexts this distinction matter, in others it does not. To designers it often matter a great deal, because designers must try to match technology with use. For users they may not be important—how many of us are aware of when the trains we travel in are steered by a human an when by a computer?

The position that the distinction between human and digital agents is localized—important in some contexts and not in others—enable us to ask the question: in what contexts is it meaningful to talk about automation as a distinct mode of control ? Perhaps it is not meaningful in general. Automation does not always mean external to a human body. Psychologists know that a large part of our everyday behaviour is automatic in the sense that we are not consciously aware of it [8]. The ways in which often repeated patterns of behaviour become automatic is familiar to most people. Distinguishing between what we do unconsciously and what is done for us that we are not conscious about may not be significant in every context. Thus the employee who bicycles to work following the same route as he or she has for twenty years may have an experience that is every bit as automatic as that of the person who for twenty years have been going to work on

the same computer-steered train. Yet if we instead look at the means available to them for handling contingencies, the distinction between automation-in-the-body and automation-in-the-computer becomes significant. If a need arises en route to change the destination, the person in the train is left with fewer options—those designed for him or her—than the person who drives a bicycle. This example shows that the force causing automation can be of different magnitudes—automation-in-the-body is easily changed or overruled by the individual, whereas automation in which control is situated in infrastructure is much more rigid. This, interestingly, is true for digital infrastructures as well—any software architect will agree that changing the architecture of a system has far-reaching consequences, and is often very costly.

## CONCLUSION

We have suggested that the rigidity of constraints set by infrastructures, digital or otherwise, is a key factor in producing the automatic experience. Digital technologies that increase the opportunity for personalization may change the ways in which infrastructure influence our experiences. In particular, we raised the question of whether it makes the meaning of our experiences more personal and therefore less shared. Further we suggested that the notion of automation can usefully be analyzed in terms of where control is situated and in terms of the rigidity of its implementation.

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