

Designing with Friction

Inverting Notions of Seamless Technology

Jacob Sheahan
Institute for Design Informatics,
University of Edinburgh
jsheahan@ed.ac.uk

David Chatting
Open Lab, Newcastle University
david.chatting@newcastle.ac.uk

Robert Collins
School of Design, Umeå University
robert.collins@umu.se

Jessica Bley
Volvo Cars
jessica.bley@volvacars.com

Alexander Eriksson
Volvo Cars
alexander.eriksson.2@volvocars.com

Marco C. Rozendaal
Industrial Design Engineering, Delft
University of Technology
m.c.rozendaal@tudelft.nl

Nick Taylor
Open Lab, Newcastle University
nick.taylor@newcastle.ac.uk

ABSTRACT

There is growing unease and a sense within the design community of the value placed on efficient, simplified, and seamless interactions, with a growing awareness and documentation of their unintended consequences across society. By prioritizing ‘frictionless’ finance, healthcare, education products, and services, there has been a concerted effort to reduce or eliminate our daily frictions in the pursuit of efficiency and ease of use. The role of friction, however, is more nuanced than this, with a growing appreciation for designing with frictions: leveraging features usually considered problematic or exploring the benefits, barriers, and complexity beyond hindering users. In seeking a more balanced understanding of friction in systems design, this workshop will offer ways of bringing friction to the fore of design and examining its role across the domains of care, privacy, security, repairability, and autonomous vehicles. Participants will contribute to an exhibition of frictions before taking part in sessions that will unpack digital systems, identify frictions, and examine the ethical ambiguities posed by the addition or removal of friction in particular contexts. In employing the concept of friction as a critical and constructive design lens, we seek to develop further a Human–Computer Interaction (HCI) agenda for future discourse that inverts and provokes preconceptions and assumptions of a seamless digital landscape.

KEYWORDS

Design Friction, Care Ethics, Surveillance Capitalism, Autonomous Drive.

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1 BACKGROUND

Friction, generally associated in HCI with elements of a user experience that impede or prevent the completion of tasks, has increasingly been explored as both a hindrance and help in the design of technologies. Described as ‘emerging vocabulary’, designing with friction can be seen as a “viable tactic to promote reflection among users in Human-Computer Interaction in relationship with the production of digital traces” [1, p.142]. There are examples of frictional practices at various scales, with Grosse-Hering et al. [8] employing the principles in the *slow design* of a juicer as a product that can reveal often missed or forgotten processes of maintenance and repair to users, expanding the value of the device beyond perceived functionality and attributes, and enable more ‘reflective consumption’ and social accountability from users. This contrasts the urban size and scale Forlano and Mathew [7] in workshops that sought to reveal the hidden politics of urban technologies such as networked communication and street furniture, employing friction to elicit controversies and tensions, and offer agonistic spaces for participants. Such work is critical of a culture of convenient and intuitive systems; efforts to minimize friction and boost efficiency continue to dominate many of the interfaces of today’s technology and enable effortless spending of time and money as well as practices like ‘doom scrolling’ [16]. Addressing these aspects of technology design is an ongoing challenge for the HCI community, as nearly two decades ago Chalmers, MacColl, Galani, and Bell sought to challenge the values that underlay notions of ambience and invisibility with a “seamful” approach that engaged with system flaws (or seams) as opportunities rather than purely problematic [3].

Within HCI, recent frictionless studies have focused on interpersonal conversations in virtual environments [10] and NFC-enabled systems [12], whereas efforts to add friction have been explored through payment interfaces [9] and automated driving safety [2]. These examples begin to illustrate some of the key concerns in

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Table 1: Planned workshop activities

| Time | Activity |
|---------------|--|
| 13:00 – 14:00 | Exhibition (1hr): Doors open, time to see the Exhibition and enjoy tea or coffee. |
| 14:00 – 14:10 | Welcome (15min): Introduction to the Workshop |
| 14:10 – 15:10 | Session 1 (1hr): Practices of Design Friction |
| 15:10 – 15:30 | <i>Coffee Break (20min Swedish fika)</i> |
| 15:30 – 16:30 | Session 2 (1hr): Contexts of Design Friction |
| 16:30 – 17:00 | (30 min): Final Thoughts |
| 17:00 | End |

drawing on frictionless or frictional design practices - reducing frictions can improve user focus and promote flow but also encourage mindless interaction [13]. While seeking such “sticky engagements” at the micro level [6], theorists have further suggested that engaging “the awkward, unequal, unstable and creative qualities of interconnection” of frictions at a macro level can provoke new ideas and “arrangements of culture and power” [15, p.5].

Referring to user experience design, design friction speaks to points of obstacle, frustration, and delay when using a device, which is often a target of designers. However, several design researchers suggest that specific forms of friction can have positive effects and are often used to advocate for greater user agency. Cox et al. [6] suggest that such “micro boundaries” can drive behavior change and support value-led decision-making. These form a strategy of introducing small obstacles before an interaction or choice that helps us pause and reflect on our actions. Whilst these practices have the potential to enable more mindful and conscious decision-making, they also illustrate the fine, ethical line between useful and restrictive forms of interaction [5].

Given the real risks that designing with indifferences to complexity can create situations in which people and resources are unwittingly exploited, a critical lens and community of practice are greatly needed [4]. As the collection and commodification of personal data through surveillance capitalism expands, the ethics and morality of enabling frictionless care, security, and autonomous driving need to be examined. As HCI researchers engaged with such contexts, we intend this workshop as an opportunity to subvert the drive for technological automation in the service of big data collection. Building on a breadth of design friction applications, we will provide participants with an engaging and constructive day of learning, sharing, and reflecting on the potential benefits and limitations of employing friction in their research and design practices. In calling for participation, we seek participants who have actively, or on reflection, navigated the role of design friction in their work as a tool or ethical dilemma.

2 WORKSHOP SCHEDULE

Per Table 1, this half-day, in-person workshop will include an exhibit, activity sessions, and a roundtable and sandpit.

2.1 Exhibition

Encompassing the workshop, we will coordinate an exhibition of design friction in practice by asking for participants’ contributions to

be positioned alongside those of the authors. Materials for the exhibition will be collated before the day, during the recruitment stage, and we seek participant submissions either from their research projects or personal experiences of the frictional and frictionless. The exhibition provides a space for encounters with this material and a forum for discussion.

2.2 Session 1

This session explores the ways in which design friction practices surface the underlying networks that are obscured and simplified by the interface, engaging contemporary practices of critical mapping of digital technologies. After first introducing critical cartography approaches, which help surface extractive and human work beyond the initial impressions of seamless systems [11], the group will map doorbells to compare a traditional system to Google’s Nest. As we unpack how such a simple method of domestic communication has become intertwined with today’s planetary computing stack, we will see how mapping can be essential to understanding the full complexities of products like the Nest doorbell. Drawing on this experience, we will split into subgroups and spend the final part mapping examples from participants’ contributions, reimagining ways to use designed friction to reveal the work beneath. By realizing the hidden networks behind our interfaces, we hope to stoke the exploration and ideation of more frictional and seamful interaction, revealing the human work, meta-interfaces, and extraction beneath.

2.3 Session 2

The second session will explore several domains where friction is most useful while considering the ethics of frictional design. A question we often consider is where design friction might be most beneficial; which places does it make the most sense? Participants will break into sub-groups to explore one of three contexts based on existing projects to evaluate and reflect on how practices have been used and if they are proportionate to the need. Facilitators will highlight ethical ambiguities, support participants in realizing a more balanced use of design friction and hold a rigorous discussion of the merits and problems that arise. We will explore some or all of the following ‘friction-rich’ contexts in the session, based on level of attendance:

- Context 1: Exploring the complicated role of friction in care contexts, we will examine a remote monitoring scenario using a care ethics perspective (drawing on Joan Tronto’s ethic of care [14]) to unpack the implications of frictionless

and balance the use of friction within such complicated and situational environments.

- Context 2: Autonomous vehicles offer new forms of travel and mobility; however, situations still arise where transitions between the driver and the system are necessary. Considering proactive and reactive situations, we will explore how friction can support informed decision-making as part of a complete automated driving experience.
- Context 3: In the domestic environment, smart home technologies have been framed as a source of convenience and comfort akin to the arrival of electric kitchen appliances; we will unpack the now discontinued Amazon Dash Button, a WiFi ordering device that aspired “to make shopping disappear”, to inspire frictional alternatives.

Building on the conversation throughout the day, time will be allocated for final thoughts, as a guided discussion and reflection on the role of friction in design research and practice and consider potential future directions. We will explore emerging and common language and terminology, as well as the challenges presented and addressed throughout the day. In guiding participants to reflect on the learning in their own work, there will be opportunities to bring ideas to the fore as we develop a strong and sustainable agenda for designing with friction.

3 WORKSHOP PROMOTION AND RECRUITMENT

We seek participants who engage or see the role of friction in their research and practice and seek to explore it collaboratively and in more detail. We will accept up to 20 participants for the workshop, accepting submissions that offer captivating approaches, concepts, or themes. The workshop will be promoted through our extensive academic and industry networks, which will include a call made available on the University of Edinburgh’s Design Informatics website. We will engage our international HCI networks and institutional affiliations in distributing the call for participants and undertaking a coordinated campaign across social media, personal communication, and email lists. In addition, our affiliated organizations and institutions will support us in sharing the workshop details.

4 WORKSHOP OUTCOMES

This workshop will (i) exhibit a variety of design frictions from across the HCI field, (ii) help to identify what frictions could be and how they might be productive (iii) offer methods of mapping digital technology systems and points of the friction within, (iv) unpack the moral and ethical dilemmas working with design frictions bring, (v) and drive the development of a collaborative working group that will lead special issue on the subject as series of future events. As part of this, the workshop webpage will provide an archive for submissions, ideas, and patterns with outputs to be made available and accessible via the University of Edinburgh’s Design Informatics website.

5 ORGANIZERS’ BACKGROUNDS

We have come together around a common interest in designing with friction to develop this workshop, bringing with us a variety of

academic and industry backgrounds, design practices, and research contexts. **Jacob Sheahan** is a Research Fellow at the University of Edinburgh developing interdisciplinary methods of realizing ageing and technology futures with local communities. **David Chatting** is an Innovation Fellow in the Centre for Digital Citizens at Newcastle University who seeks to confront technical systems through a process of *designerly hacking* in order to disclose alternative design spaces. **Robert Collins** is an Irish artist, designer, and Doctoral Researcher in Designing for Contestable Systems at the Umeå Institute of Design, Sweden. **Jessica Bley** is a UX Designer at Volvo Cars, previously part of Autonomous Drive, working with the HMI and driver interaction from a safety perspective. **Alexander Eriksson** is a Technical Expert in Human Performance & Experience at Volvo Cars, with a PhD in Human Factors in Automated Driving. **Nick Taylor** is a Senior Lecturer in Human-Computer Interaction at Newcastle University, working at the intersection of design, technology, and society to understand the impact of emerging technologies and practices. **Marco C. Rozendaal** is an associate professor of interaction design at TU Delft’s Faculty of Industrial Design Engineering in the Netherlands, who directs the Expressive Intelligence Lab and examines interaction styles and paradigms.

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