

# Accidental HDI: Designers interacting with data

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## 1 INTRODUCTION

Designers are attracted to emerging technologies, new interfaces and ways to interact with their audience. Academic designers even more. For many of us, data as a design material or means to constructive design research [5] has taken a different arrival: for years, products have incorporated some form of data in their internal logic, have produced data coming from embedded sensors, or consumed and represented data with connected products and services. Or rather all these aspects in combination. Creating products that seamlessly integrate into contemporary systems means designing products and services that talk in data, from one to another, and back.

As such, designers have dealt with data, interacted with data, for different reasons: (1) designing interfaces to data and data collection, from dreaded cookie banners and hidden opt-out toggles to consent forms, to spreadsheets and data visualizations, to information decorations and Everyday data displays, (2) designing data-hungry products and services that monetize via data, from streaming sites to almost everything commercial on the web, to Internet of Things (IoT) products and connected automation services, (3) designing on the basis of collected data (traditionally qualitative, increasingly quantitative data) that inform design not only operationally, but more so in vision and strategy. These trends are aligned with globalized design teams, tasked to create meaningful, value-adding products and services for a global audience. The promises of data science and big data have seemingly caught up with design: scaling up the sense-making to the needs of businesses by collecting and wrangling more diverse, voluminous and data [2, 6]. Despite the advantages and technological appeal: regression to the mean, anyone?

## 2 REVISITING HDI IN DESIGN

Let us take the perspective of Human-Data Interaction (HDI) [8, 9] and visit the tenets of legibility, agency, and negotiability. *Legibility* refers to the sense-making of data in design. This means far more than receiving a data set with correct meta-data, processing a few columns and then proceeding to cluster user groups, assign personas, or build recommender systems. Legibility means going to the roots of the data collection process, to the context and people that design data is often “about” [3], it means that designers not only understand data in its structure and content, but also in its being a model of the real-world, a lossy one that is. The second tenet, *agency*, builds on sense-making and yet is more than just “acting on data” in design. In terms of HDI, agency means that designers have the agency to collect data that are necessary for the purpose of designing. It is often necessary to dig into the context, into circumstance, practices and routines [1] to understand. The third tenet, *negotiability*, plays into this: while arguing for more agency in design, unilateral approaches and information asymmetry mean repeating earlier mistakes. Instead, we need to embrace negotiating data collection and access, making our stance clear, clarifying needs and implications.

In summary, design practice and research have grown towards data, in that design researchers regularly use data to support their inquiries into the Everyday and domain-specific use-cases. And that design practitioners willingly leverage the abundance of data in commercial systems in their processes. At the same time, we see that HDI in design is rather implicit and overshadowed by necessity, utility, and organizational decision making. And that’s where accidents happen, that’s where we need to talk about professional ethics as well as a most conscious wielding of a powerful tool.

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### 3 MORE (HAPPY) ACCIDENTS!

Accidents are how we learn, happy accidents are often the result of engaging with the world through making and deploying designs. We need to actively inquire which instances of HDI we can spot in design and what needs to be done consequentially, what experience design practitioners have with data and how they deal with it professionally, and finally what we can learn from educating designers in data skills, especially when deeply rooted prototyping and making with data.

We can channel our curiosity and go in several directions. First, we need to look at *design education*, at how we train designers for contemporary work that is remote, data-driven and fast-paced. Design education needs to foreground data in design practice, that is, how to acquire, criticize and scrutinize design-specific data, how to design based on data (requirements and ideation), through data (data-enabled process) and with data (generating artifacts from data or integrating data in artifact). In many cases, this means creating and enforcing design processes around data, this should go beyond retro-fitting design processes with data as another means. We need processes that mold on data, that have explicit layers and data perspectives. Second is the perspective on the *design team*. While the previous point demands data literacy for designers, we do not argue for compromising on other design skills. Instead, we argue for new roles in design teams, multi-disciplinary designers that are specifically trained. A first role facilitates the collection and the making accessible of designerly data, casually called data design plumbers [7]. A second role targets new ethical perspectives, the implications of collecting and using data in design. Both roles are ideally trained as designers, are sensitive to the aims of design. Third and finally, we need new *tools in design* and *new design labs* [4] to create data-enabled artifacts that serve our need for inquiry into contexts, for deploying and evaluating new data-driven design interventions, for participation of end-users and also stakeholders in data design practice, and for the necessary reflection that is part of any creative process. Because that is the key to turn accidents into happy accidents.

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