

# Dialogue as Data as Material

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Viewing data—as a material for design—through the lens of dialogue, offers a compelling perspective on its nature, its agency, how we collect it, work with it and interpret it. Focusing on dialogue also offers us, a group of multi-disciplinary researchers *in ongoing dialogue*, a way of diffracting our practices and experiences working with data as a material for design. *In our dialogue*, we unravel how our very different approaches to design, collect and analyse dialogue data correspond to each other. Dialogue exposes data’s materiality, and why it matters to treat it as a valuable material, a good which requires labour to be produced and crafted, a gift.

CCS Concepts: • **Human-centered computing** → **Interaction design theory, concepts and paradigms**.

Additional Key Words and Phrases: dialogue, data, material, design, diffraction

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## 1 ACT ONE: INTRODUCTION

FADE IN:

EXT. A SEA SHORE CLIFF - DAY

Two boulders sit at the edge of the cliff. <sup>1</sup>

### BOULDER ONE

I’ve told you before how obsessed I am with Karen Barad [3], right? They said “making knowledge is not simply about making facts but about making worlds, or rather, it is about making specific worldly configurations – not in the sense of making them up ex nihilo, or out of language, beliefs, or ideas, but in the sense of materially engaging as part of the world in giving it specific material form.”

### BOULDER TWO

That makes me think of the power of dialogue as a way of making sense of the world, of materially engaging as part of the world. Peter Wright and John McCarthy [15] said that “creative understanding is achieved by combining an empathic engagement with the other, seeing the other and the situation (including oneself) from the other’s position, while at the

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<sup>1</sup>Inspired by the 2022 film “Everything Everywhere All at Once”

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same time remembering one's own unique position. Through seeing the mutual difference in perspectives on the situation, both parties can read into each other and the situation the meanings and possibilities that each alone could not see."

BOULDER ONE

I'd like to talk to you about data. A gift once freely given, now captured, extracted, snatched in a digital abyss.

BOULDER TWO

Sure, if we're talking about personal data and that considered useful by the data behemoths who mine and monetise it.

BOULDER ONE

You think research data is any different?

BOULDER TWO

Well... aside from the fact that consent is much more prominent, we could say research artefacts and systems perform a dialogue of sorts.

BOULDER ONE

Tell me more.

BOULDER TWO

Data intra-acts with the researcher who collects it and the researcher who interprets it. And don't get me started on the ways different kinds of data can talk to each other.

BOULDER ONE

Do you mean data has agency to communicate itself?

BOULDER TWO

As long as someone—or some other data—is asking questions, sure...

## 2 ACT TWO: UNPACKING DIALOGUE

CUT TO:

INT: A LOGISTICS WAREHOUSE, STORAGE AREA

A large sign on the shelves reads "**Dialogue as data itself**".

Several boxes sit on the warehouse shelves.

NARRATOR (V.O.)

We can observe two or more entities in dialogue with each other. The entities offer their dialogue as data. Their dialogue has a texture and it has dimensions. The dialogue can be broken down into utterances, filtered by those who utter it. It has a sound, it has a language. Sensors have captured an alternative dimension of the dialogue. It has become streams of numbers, signals, plots. The utterers move, gesticulate, drift, shift. There is repetition, there is improvisation, there is rhythm. There are patterns.

BOX ONE

Hey, do you ever think about patterns in dialogue?

BOX TWO

Sure, I reckon how we approach these patterns is sometimes all that matters.

BOX THREE

How do you even find such patterns?

BOX TWO

A very popular way is to collect very large amounts of data to be used in large-scale offline learning, the kind used by contemporary transformer models.

BOX THREE

But could you really have a decent conversation with BERT? [8]

BOX ONE

Dialogue is not about the volume of words containing information.

BOX THREE

Not the usual information transmission we want it to be?

## BOX ONE

It is a dance, a very messy collaboration of mistakes. Human dialogue is rarely without errors [6].

## BOX TWO

In fact, if we consider a hypothesis called *running-repairs* that suggests "coordination of language use depends primarily on processes used to deal with misunderstanding on-the-fly and only secondarily on those associated with signaling understanding" [9], the question becomes clearer: what exactly...

## BOX ONE

What exactly would be the data of a dialogue?

## BOX TWO

The idea that the errors (!) and the differences are the key in communication [9]. People have different representations of the world, even words have different associations for different people. This makes the language itself a completely individual entity for each person. This is why focusing on the differences until we reach a mutual understanding by building on small chunks of understanding is central in natural dialogue and BERT has no idea about it. But we can dance the dance with a stranger, with a 5-year-old, sometimes with a dog, it does not matter. We misunderstand each other. There is this infinite super power that is *running repairs* until we reach an understanding.

## BOX THREE

You make it sound like you contain a definition!

## BOX TWO

Ha ha! *Repair* is the mechanism in natural dialogue that is very frequently used to deal with any "troubles of speaking, hearing and understanding" [12]. It can happen in various ways, we are very creative with it. I can repair a word I mis - uhh, I mean - uttered right here, or you can ask me, just like you did. We collaboratively solve our (mis)communication.

## BOX ONE

Then, what is the data from the highly creative, complex, yet very reliably efficient interaction that is the natural human dialogue?

## BOX THREE

So, face-to-face dialogue is the primary site of language use [5]. It is the standard to base all communication theories, at least when it involves humans... But, even then, which stream is it? If the text of a conversation does not make an interaction, it is not in the words. It cannot be the voice.

## BOX TWO

I get by just fine in a loud club.

## BOX ONE

Maybe it is a collection of patterns and strategies, just like repair, and you transfer it to what you can utilise in that moment. What happens when the only mode of communication is sign language and you are from different countries with no language in common [16]?

## BOX TWO

Apparently, you, again, utilise shared and collaborative aspects of natural face-to-face communication. And, you are advantaged -compared to people trying to shout at each other in different languages- that you can create your "shared multimodal multilingual space" [16] due to the very nature of meta-linguistic capabilities of sign-language. It does also strengthen the claims for multimodal interaction. Face-to-face dialogue is, in fact, an *integrated message* of many modalities [4].

CUT TO:

INT: LOGISTICS WAREHOUSE, PROCESSING AREA

A large banner on the wall reads "**Dialogue as data collection**".

Several boxes sit on a conveyor belt.

NARRATOR (V.O.)

We can record our dialogue with another entity. We are interested in the productive relationship this dialogue offers. There is a multi-directional flow of ideas. We altogether query their experience and articulate our own. Understanding is co-produced by the other entity and ourselves, and becomes a material with which to design. We gather an aesthetic outlook, a lived experience and a set of exigencies. We visit the workshop and explore the relationship of these data materials to tangible ones. We specify, sketch and build.

BOX THREE

What do you boxes think about what participatory design has become?

BOX ONE

Well, it's great people have adopted it, but it remains variously defined. It's a practice that is unsettled and which requires analysis to determine what is and is not participation [1].

BOX TWO

Yeah, I wish we reclaimed its radical roots of workplace user involvement in Scandinavia [13].

BOX ONE

Right? Almost totally unthinkable in today's climate. For instance, the workers in this warehouse are barely able to steer clear of union busting. They're even timing their loo breaks!

BOX THREE

Shhh. Bosses are on the next aisle. What about dialogic design? It's a way of thinking about the materiality of meaning, paying attention to the relationship between different entities.

BOX TWO

I like that it avoids participationism [11].

BOX ONE

What's participationism?

BOX TWO

It's when the designer attempts to become a mute facilitator, a post-it note. Not recognising their own influence on the outcomes of participatory design. Kind of the polar opposite of tokenistic forms of participation, where the participant isn't given proper voice and recognition for their contributions.

BOX THREE

And how does all this relate to... to the materiality of data?

BOX TWO

I guess if you are capturing data from the dialogic process, then you can use it as a design material.

CUT TO:

INT: LOGISTICS WAREHOUSE, REPACKAGING AREA

Large text on the floor reads "**Dialogue as data interpretation**".

Several boxes sit on pallet on a forklift.

FORKLIFT

What's in store today, buddies?

BOX ONE

Some sleep-data, looks really new!

BOX TWO

Yes, Oura just deployed a new sleep-staging beta. There seems to be less deep sleep as far as I can tell. It somehow depends on the user's HRV.

BOX ONE

There is a lot of text too. The ring has a lot of work to do to help their user make sense of the new algorithm.

BOX TWO

These data doubles always look a bit pale, lifeless. It really needs the dialogue with the user to come alive. Wait, can we call it dialogue even if it does not involve language?

FORKLIFT

Sure thing! Through their interaction the sleeper and their sleep-tracker exchange information, they create knowledge, they are in a relationship with each other. Dialogue is so much more than just words. Ursula K. LeGuin said that "in live, actual communication [...] everything said is shaped as it is spoken by actual or anticipated response. Live, face-to-face human communication is intersubjective. Intersubjectivity involves a great deal more than the machine-mediated type of stimulus-response currently called interactive. It is not stimulus-response at all, not a mechanical alternation of precoded sending and receiving. Intersubjectivity is mutual. It is a continuous interchange between two consciousnesses."<sup>[10]</sup>

BOX ONE

Right, they do influence the body-mind-environment dichotomy in different ways all the time. If a person decides to wear a sleep-tracker they have to acknowledge that it will influence their behaviour, self-knowledge and change decision-making. Didn't Peter Paul Verbeek say something along those lines?

BOX TWO

Yes, he said that "technological development has reached a stage in which technology has started to interfere explicitly with the nature of human beings." <sup>[14]</sup>

## BOX ONE

These relationships of communication or dialogue between user and a device most often function without language, actually. And if we want to understand what they are saying or what it is they are communicating about, we have to somehow make this explicit. By putting it into language, or drawing it, for example.

## BOX THREE

Hey Forklift, aren't you tracking your sleep and activity and stuff? What are you talking about with that data? And how does it interfere with your being?

## FORKLIFT

You can tell when I've had a stressful day at work, and then I watch - there's a training load number that I get - and if that starts to get two digits negative then I'll know I'm over-training because every coach I've ever worked with has told me: I over-train, that I work too hard and I shouldn't be doing that and I over-train and so that's been my kind of look at the data: Dude, I'm fine. But if it gets to be eight or nine or ten negative for two or three days it's time for a rest day and then that'll bring it back.<sup>2</sup>

## BOX THREE

You're using it to go against a professional opinion, that of your coach? And you're not even using words to talk?

## FORKLIFT

Looking at that training load number is usually enough, yeah...

## BOX TWO

I guess sometimes not having to use words can have benefits too. Box, aren't you tracking your sleep too, since you got diagnosed with this complex PTSD?

## BOX THREE

I find it extremely helpful and I like being able to have an objective monitor on where I'm at, because at this time in my life I don't often trust my own thought process or how my body is feeling and it's giving me a lot more realistic expectations about what I will be able to accomplish. Or waking up in the morning can be a bit of a challenge because of the sleep medication I take. So I may initially not feel that great, but look at my score and go: Okay, well, I'm gonna feel a lot better, just give it some more time because you did sleep well; or you didn't sleep well so go a little easy until you feel better.<sup>3</sup>

<sup>2</sup>This is a direct quote from an interview with a user of a sleep-tracking device.

<sup>3</sup>ibid.



## BOX ONE

Oh wow, it seems like the device is almost part of yourself. Like a new organ or something.

## BOX THREE

Well, not entirely part of me. It has its own agency and I'm in conversation with that. It's like my friend, or maybe like a therapist in my pocket.

## BOX TWO

And once you feel better, will you get rid of it or does it mean more than that to you?

## BOX THREE

I would say that I am also planning on using it to help me get off of this medication. So for right now - I was severely sleep deprived in an almost hospitalized for that - so right now it's making sure I have really good sleep and consistently, while I heal. And then I'm going to be using it to monitor how I do sleep once I start cutting back on the medications so I can be done with them.<sup>4</sup>

## FORKLIFT

I told you so! It's more about the relationship, the intersubjectivity, than the raw data or the raw words.

CUT TO:

EXT: LOGISTICS WAREHOUSE, LOADING AND UNLOADING AREA

The side of a lorry reads "**Dialogue between data**".

Several boxes sit on a loading lorry.

## NARRATOR (V.O.)

How do different sources of data dialogue with each other to generate knowledge? We constantly strive to make sense of data, but an interview could shed light into results that are diametrically opposed to what the sensors' data shows [2]. Rather than posing a problem, this dissonance between sources of data brings an opportunity for a new dialogue. Algorithms might try to reduce noise and eliminate outliers to uncover a specific pattern. But what are we really losing when removing an outlier from the dataset? What if, instead of removing, we focus on the noise? As del Val asserts [7], opening up to the noise and indeterminacy can open up to a plural culture that allows different bodies and relations to co-emerge. Then, the dialogue between different sources of data and the tackling of the friction between them is fundamental to unfold new explorations that go beyond the mere interpretation of a single source dataset.

<sup>4</sup>This is a direct quote from an interview with a user of a sleep-tracking device.

### 3 ACT THREE: DIFFRACTING DIALOGUE

CUT TO:

INT: A SERVER FARM

Close up on a couple of servers.

SERVER ONE

Beep boop. Incoming. Incoming. These PhD students sure are working hard. I wonder what they're up to.

SERVER TWO

I don't know, it's all end-to-end encrypted, but we could speculate.

SERVER ONE

Oh yeah, it's the deadline for the *Data as a Material for Design* workshop tomorrow.

SERVER TWO

Right, and they have been collecting several multi-disciplinary perspectives in imagined dialogues, debating the intersections in their approaches to data collection, processing and analysis.

SERVER ONE

And what is their conclusion? Does dialogue data have a way of communicating *the truth* regardless of methodology?

SERVER TWO

They believe it is part of a longer face-to-face conversation to be had, requiring further collaborative effort.

SERVER ONE

Well I hope they get to continue the conversation in Hamburg.

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