

## Week 1: What is Interaction Design (IXD)?

*This description is a precis of the key points in the journal article Kelly, N., Hobson, S., & Greentree, J. (Under review). **Interaction Design (IXD): An invitation for a definition.***

### Introduction

You're probably familiar with the idea that there are many design disciplines. Some of the most well-known of those are disciplines like [architecture](#) (which has been around for thousands of years) and [industrial design](#) (which has been around for over a century).

Australia's peak body for Design, the [Design Institute Australia](#) (DIA) lists the following categories in which design is formally practiced:

- Communication (digital media, graphic design, etc.)
- Object (industrial, furniture, jewellery, etc.)
- Systems (design management, service design)
- Spatial (interior design, interior decoration, set design)

Interaction Design, which has been around since the 1980s, is a legitimate – if newer – design discipline that operates within the broad category of 'Communication' within that above list.

However, unlike other design disciplines, IXD is troubled by something of a definitional uncertainty. A lot of this has to do with two quite difficult-to-answer questions: what *is* an interaction, and can an interaction be 'designed'?

But before we tackle those tricky questions, let's look at how the practice of Interaction Design came to be.

## Looking back – IxD’s History

People often *define* IxD based on its history. This is a very normal place to look for evidence of what something is, but we believe this also obscures the bigger picture of how Interaction Design operates. IxD is much more than its history, but here is that history nonetheless:

- The invention of computers in the 20<sup>th</sup> Century led to frequent needs to design for complex interactions between an (artificial) system and a human user.
- As [software](#) became a bigger part of the world (as a way to let people make use of computer hardware) there was a realisation that a special skillset is involved in making software that was useful. Some people became experts in ensuring making software that was easy to use, pleasurable, intuitive, didn’t need a manual, etc. They were good at making it easy for people to achieve their goals with software.
- Often it was industrial designers gaining these specialised skills. Some of them wanted a word for this profession and interaction design was what they chose. It has been called an “interdisciplinary collision” of science, engineering, and design. It was a new profession that became widespread at the turn of the century.

There remains a lot of overlap between industrial and interaction design. The difference is emphasis.

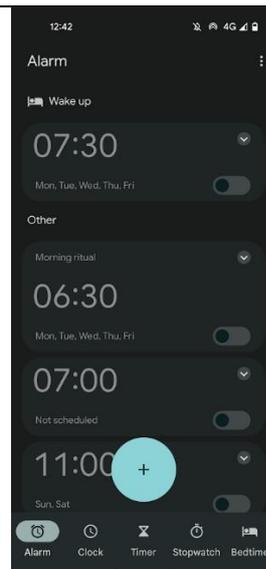
- For example, think of an alarm clock. At a certain point in time the design of an alarm clock was widely understood as a work of industrial design. (The example below is a famous piece of industrial design.)
- As alarm clocks became digital and began to have more features and more buttons there was more of a focus on the **design of the interaction** than on the form factor or manufacturing.
- The alarm clock app in your mobile phone is a work of interaction design

Today, interaction design is a discipline with a set of specialised tools, methods, and ways of thinking that come with being a discipline. We will talk a lot more about all of these in the course of this unit.

The aim here is to get a sense of what is special and different about IxD; to get a sense of what defines it.



*Braun alarm clock, Dieter Rams*



*Google Android alarm clock (Pixel 4)*

## What is an interaction?

Now feels like the right time to get back to those tricky questions. When thinking about what defines an Interaction, you probably have some intuitive sense of what that ‘thing’ is. If you were to try and explain your sense of an interaction to someone else, how might you do that?

The question, in this context, of what an interaction is, is really a question of scale; of what it encompasses in the context of design theory. This is important because it gives us a set of rules as to what we can apply the critical perspectives of Interaction Design to.

Here’s where we landed:

*An interaction involves a being (human or animal), a thing (a designed object or service), and a design intention (the circumstance for why the interaction exists).*

This definition isn’t super useful by itself, however, and that’s because it’s entangled in the *second* tricky question.

## Can interactions be designed?

The trouble with interactions is that they cannot be designed. Yes, you read that right. People have autonomy—they’ll do what they want to do.

A high school mathematics teacher can plan out their lesson in fine detail with engaging activities, but if the student doesn’t want to participate (and sits there staring out their phone while listening to headphones) then no learning will happen, despite the best design in the world.

It’s the same with an interaction: a designer can only design *for* an interaction. They can set up the conditions such that it’s likely that an interaction will follow an intended pathway. *Later in this subject we will look at the mechanisms by which designers can request, demand, allow, invite, encourage, discourage, or refuse parts of an interaction.*

- **Interactions are dialogues.** Even though interactions take place between a being and a thing they are a two-way street. Think about the way that your phone vibrates, or when a web form shows you a message in green to let you know that something you’ve done has been successful. That’s your phone speaking to you. And when you tap a physical button, tap a virtual button, or say “Hey Siri”, that’s you speaking to your phone.
- **Dialogues are designed for in the context of a design intention.** Consider that you’re designing a new alarm clock app. A way to describe what you’re doing might be *designing for a dialogue that results in the user being able to set an alarm*. Of course, it’s not that simple. One of the hardest parts of IxD is knowing which dialogues to design for (and which not to). What about cancelling your alarm? Or saving an alarm to be used later? Or changing the time of your alarm? Or changing the sound of the alarm? Or integrating the alarm with other apps to allow your favourite Spotify song to be the sound of your alarm? And how should these dialogues be entered into? What is the relationship between them? *Things get complex very quickly!*
- **Interaction design is more useful for designing with complex things.** A useful heuristic (rule of thumb) for when interaction design is useful is that *the more complex something is, the more useful IxD will be*. Something is complex if it has lots of states and if there are lots of ways that a user might change those states. So, a computer is complex (many input choices, many states) but a desk lamp is not (one button, two states). An analogue telephone is more complex than a desk lamp, and the remote control for a television is more complex again. The more complex something is, the more useful (or even necessary!) IxD will be.

When any two people talk to each other, that's a dialogue. Think about making a new friend. Maybe it goes something like this: you talk to them once and you exchange pleasantries; then you share a coffee and get to know what they're interested in; then you progress to a deep and meaningful chat about the meaning of life; then you keep meeting up in similar ways and take pleasure in each other's company.

A dialogue between a person and a thing is a bit like this too. It changes over time. The first time you use something (a piece of software, an alarm clock, a ticket system, whatever it may be) is a very different experience to the fifteenth time that you use it.

Interactions have many dimensions that we will get into later. The complexity of the thing is one. The social context is another. The knowledge, cognition, and physical abilities of the user are all relevant in designing for interactions. Interactions are complex, are two-way, can be designed *for* (but not designed), are situational, and evolve over time.

### IXD is a way of viewing the world

IXD is more than what its designers do; it's also a way of viewing the world as a set of interactions.

Consider that:

- Architecture is a way of viewing the world as a **built environment**. It pays attention to those things that are designed environments. It has things to say about how environments have been designed (a way of critiquing built environments). It has a language for talking about them (read [any architecture magazine](#) and you'll see what I mean!) and methods (e.g., ornamentation, post-occupancy evaluations, etc.)
- Industrial design is a way of viewing the world as **designed objects**. It pays attention to those things that are designed objects. It has things to say about them (a way of critiquing designed objects). It has a language (of form factor, of aesthetic, of usability, etc.) and certain methods for prototyping, ideating, etc.

In a similar way, IxD is a way of viewing the world as a set of **designed interactions between people and things**.

- It pays attention to those interactions that have been designed for. That means that it doesn't have much to say about your interaction with a beautifully scented rose (although such interactions might inspire interaction designers). It has things to say about interactions that were explicitly designed by an interaction designer (like the alarm on your phone) and also things to say about interactions that were designed without any involvement of an interaction designer yet were still designed.
- It has a way of critiquing interactions. Some of these overlap with those of industrial design in terms of *usability, accessibility, pleasure, intuitiveness*; others like *feedback* and *responsiveness* are more specific to IxD.
- It has a language which involves all of those qualities just mentioned, and many more. Words like user experience, personas, breadcrumbs, wireframes, prototypes, mockups, storyboards, moodboards, user journey, etc. You will learn this language in this unit of study.
- It has tools that it uses (like Figma, Adobe XD, Sketch) but isn't bound by them. It also has methods that are commonly used (for doing user research, for prototyping, for ideating, etc.) but isn't bound by them.

**Interaction design is special.** IxD is different to any other design discipline—it is not the object that is the final product of the design process, but rather an intention for a certain kind of dialogue between a person and thing.

*Side note: for our purposes we will use the terms user experience design (UX) and IxD interchangeably. There are differences: namely that industry in Australia at this moment tends to use the term UX and academia tends to use the term IxD. There are many conflicting definitions in the literature.*

### Putting it all together: a definition

There are many people who have tried to give definitions of IxD in the past. Here are a few of them ordered by date:

	<b>Definition</b>	<b>Reference</b>
1	<i>Shaping digital things for people's use</i>	(Löwgren & Stolterman, 2004)
2	<i>The design of subjective and qualitative aspects of everything that is both digital and interactive</i>	(Moggridge, 2006)
3	<i>The creation of a dialogue between a person and a product, system, or service. This dialogue is both physical and emotional in nature and is manifested in the interplay between form, function, and technology as experienced over time</i>	(Kolko, 2010)
4	<i>The practice of designing interactive digital products, environments, systems, and services</i>	(Cooper et al., 2014)
5	<i>Designing interactive products to support the way people communicate and interact in their everyday and working lives</i>	(Preece et al., 2019)
6	<i>The design of the interaction between users and products. Most often when people talk about interaction design, the products tend to be software products like apps or websites. The goal of interaction design is to create products that enable the user to achieve their objective(s) in the best way possible</i>	(Siang, 2020)
7	<i>The consideration of and designing for dialogues. Dialogues are understood as involving beings (who perceive the world in an embodied, situated way influenced by socio-historical context), and things (e.g., products, systems, or services). Dialogues evolve over time, in diverse environments.</i>	(Kelly, Hobson, & Greentree, In press)

Have a read through these and try to notice a few different things:

- Some of these definitions [1,2,4,6] restrict their definition of IxD to only being about **designing for digital**. This is a problem! The tools, methods, and language of IxD are all useful for talking about *any* interactions, whether they are digital, clockwork, quantum, paper-based, or some future kind of interaction. We suggest that IxD is defined as **designing for and consideration of dialogues** which includes all of these types of interaction [following Kolko, 3].
- Some of them specify a focus on **products** [5,6]. Here we suggest that it's much broader than this. The products, systems, services, or environments that Cooper and Kolko both mentions are a good guide. We prefer the term **things** to refer to all of these and more, to avoid being misleading with specificity.

Definition [7] is the one that we've developed in our research that brings together these viewpoints.

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*Do you feel like you've got a good sense of how to define IxD now? In industry it's often about the design of apps and websites, but in theory it's so much richer than this. It's a way of thinking that will be useful long after the technologies of today are outdated, when the tools of today are outdated, and when the language and methods have evolved.*