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## Old rope: Laing's knots and Bateson's double binds in systemic design

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# Exploring R.D. Laing's Knots in Systemic Design

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**Abstract** *Knots*, a 1970 book by the Scottish psychiatrist R.D. Laing, is based around a collection of patterns of human thinking, metacognition, and theory of mind, drawn from real experience with patients but turned into abstracted examples. The approach has the potential to be adapted into a range of formats which enable systemic design phenomena such as recursion, reflexivity, theory of mind, and second-order effects in systems to be explored, as a way of thinking about systems for design students and adding to their conceptual vocabulary, but potentially also as a method for doing research with people. This paper illustrates example 'new knots' around topics including sharing data, social media, clickbait, and 'smart' homes.

**Keywords:** systems, knots, double bind, methods

## 1. Introduction

Bringing systemic thinking into design education—and practice—takes many forms. Work described at previous RSD conferences (e.g. Sevaldson, 2017), and in the wider community around systemic design, cybernetics, and related fields such as transition design, has emphasized the value and importance of particular systems concepts and approaches, from the leverage points and stocks, flows, and buffers of Donella Meadows (2008), to the conversation models of Dubberly and Pangaro (e.g. 2015a), the materials mapping of Aguirre Ulloa and Paulsen (2017), and the visual approaches of Boehnert (2018). There is, taking a systemic perspective, probably no ‘right’ set of concepts to teach or learn, only a repertoire or vocabulary (Lockton & Candy, 2018)—a requisite variety—of methods, tools, or lenses for examining and exploring systems at different levels of resolution and with different purposes and goals in mind; “All models are wrong, but some are useful” (Box & Draper, 1987).

A resurgence in attention to the history of methods and developments in systems research and cybernetics (e.g. Pickering, 2010), the evolution of the design methods movement, and their intersections with interaction design (Stenson, 2017; Dubberly & Pangaro, 2015b) and practical application within current technological contexts (Fantini van Ditmar, 2016) has inspired re-examination of some tools and concepts from a related area: the systems and psychiatry milieu of the 1960s and 70s.

In particular, in this paper, I explore a few examples of ways in which R.D. Laing’s concept of *knots* (1970) has proved applicable in provoking design students to consider systemic effects in relation to aspects of interaction with digital technology in everyday life, and enabling new kinds of analyses. We also touch on Gregory Bateson’s related notion of the *double bind* (1972).

Although originally developed and presented in very different circumstances, the two concepts have certain synergies that make them valuable ‘tools for thinking’ about systems, and can be applied practically to people’s role in contemporary technological examples including issues of data protection, social media, ‘smart’ homes, behavioural targeting, and design for behaviour change, as well as other topics within design practice such as contextual research with participants, and participatory design.

## 2. Some contemporary examples of knots and double binds

Laing’s *Knots* is a curious 1970 publication, a slim book formatted in the form of a volume of poetry, which contains a collection of patterns of human thinking, metacognition, and theory of mind that Laing had noticed in his work as a psychiatrist, and turned into abstracted (but still often poignant) examples. Many of them involve one person reasoning about how another person thinks, or trying to unravel the complexity of, or causalities within, a situation, and there is a good deal of ‘second-order’ thinking present which is immediately (superficially at least) reminiscent of the kinds of cybernetic discussions of relations and conversations in the work of researchers such as Pask, Glanville, Pangaro, and Dubberly.

These knots are essentially about people trying to understand what someone else understands about them, or in our terms, how someone understands their relationship with a system. But that understanding changes how they relate to the system, and the system in turn then changes the relationship, and a tangle or knot emerges. For instance, the book starts with:

*"They are playing a game. They are playing at not playing a game. If I show them I see they are, I shall break the rules and they will punish me. I must play their game, of not seeing I see the game." (Laing, 1970:1)*

Some later patterns verge into forms of concrete poetry which are essentially systems diagrams (e.g. Figure 1), and it is this way into using the concept of 'knots' which has proven useful in exploratory design classes, with students introduced to knots through extracts from the book, and challenged to find (and construct) examples of analogous situations in people's everyday interactions with technology.

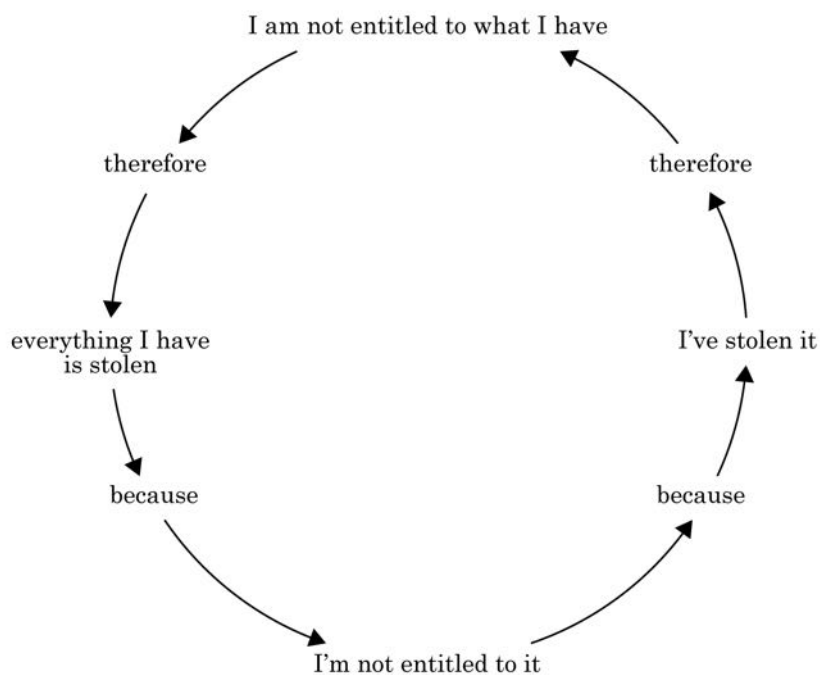


Figure 1: A knot redrawn from Laing (1970:35)

## 2.1. Knots in sharing data

For example, in Figure 2, a ‘new knot’ around data sharing and personalization in smart homes is presented (building on ideas from Fantini van Ditmar & Lockton, 2015, and originally presented as part of a workshop at NORDES 2015 (Dutson et al, 2015)).

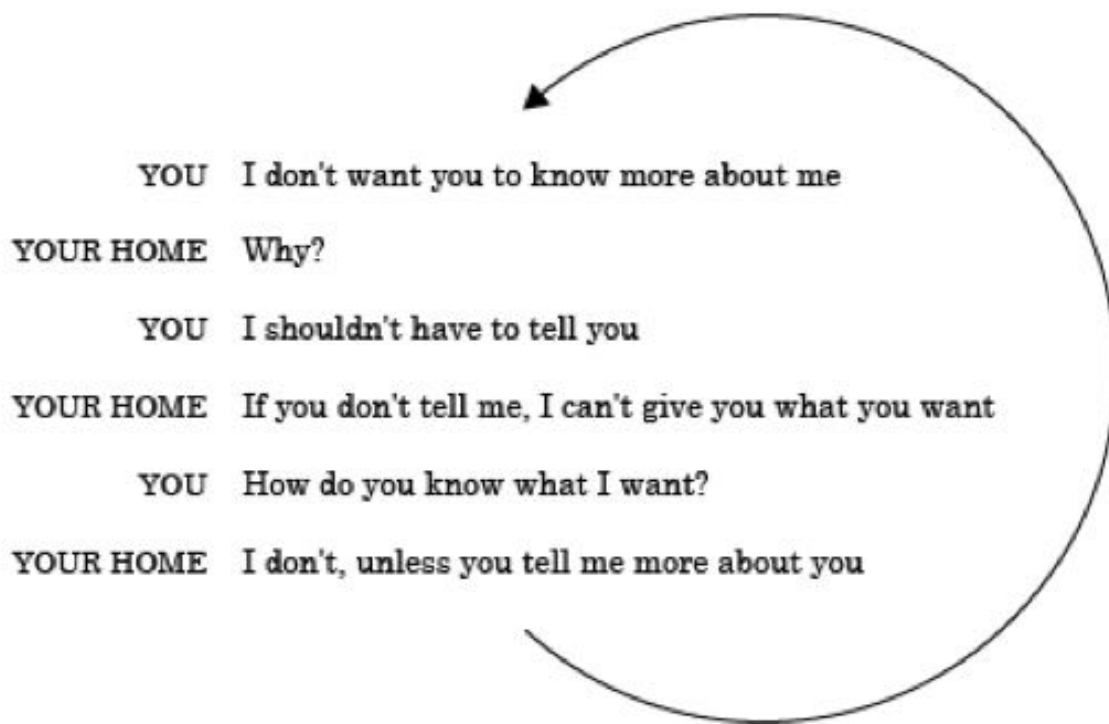


Figure 2: A ‘new knot’ in a smart home context

A similar model might also be applicable to behavioural profiling in advertising and algorithmic feed curation in social media. People (at least according to advertisers) express a desire for ‘relevant’ content, but also don’t wish to give up any data to enable the content to be tailored.

One student’s project around this issue involved asking others “What do you think Facebook thinks about how you think?”, based on extracting data from the advertising ‘audiences’ that Facebook had placed them into (Figure 3), finding that this tension, or flip-flopping, between being annoyed by perceived inaccuracies in the categories, but also feeling annoyed by categories which were *too* accurate (hence indicating too-successful profiling), was a common feeling.

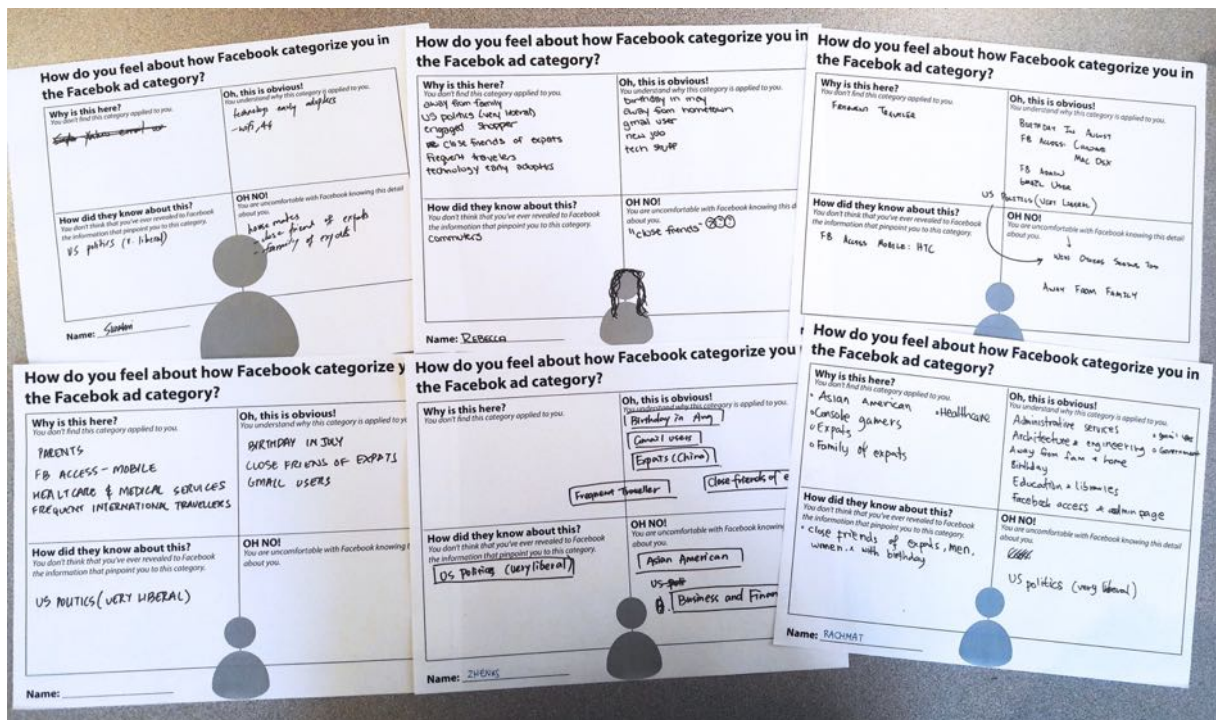


Figure 3: Extracts from research done by Annisa Prasetyanto into students' feelings on learning how they had been categorized for advertising purposes by Facebook.

## 2.2. Knots in design for behaviour change

In design for behaviour change (e.g. Tromp & Hekkert, 2018; Lockton et al 2009), the relationships between attitudes and behaviours are often a matter for investigation, as different models presume different starting points. Figure 4 starts with this, in a 'knot' form, and then also mentions a perceived collective action problem—a common framing particularly in relation to influencing more sustainable behavior, where it may seem 'not worth' doing unless everyone else does it too.

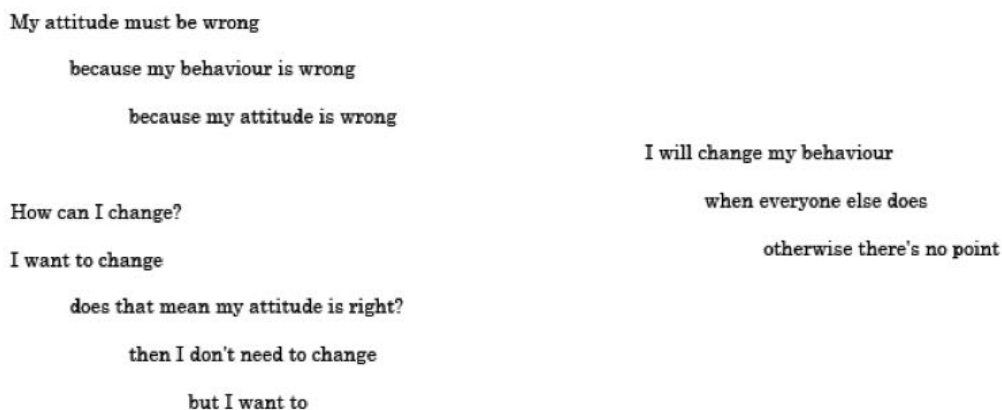


Figure 4: An attitude/behaviour 'new knot'



### 2.3. Double binds in student wellbeing

When we introduce the idea of knots to students, the principle often works in conjunction with Bateson's concept of the double bind, in this context referring to dilemmas or situations where someone feels—or *experiences*—being pulled or pushed (metaphorically) in two contradictory directions at once (causing stress, unhappiness, or decision paralysis).

More precisely, the double bind describes situations where the 'rules' of how to act within a system seem to be mutually self-contradictory and any action taken in one direction causes more problems in the other (paralleling aspects of wicked problems, particularly Conklin's (2006) interpretation). To use an example that students raised, they know they 'should' eat more healthily (taking time to prepare), but they also know they 'should' spend as much time as possible working. Often the contradiction occurs because each framing of 'the problem' is operating at different level of the system, and so uncovering double binds as experienced by people living 'within the system' can be a route into understanding how to intervene, or at the very least to map a system from the perspectives of the participants.

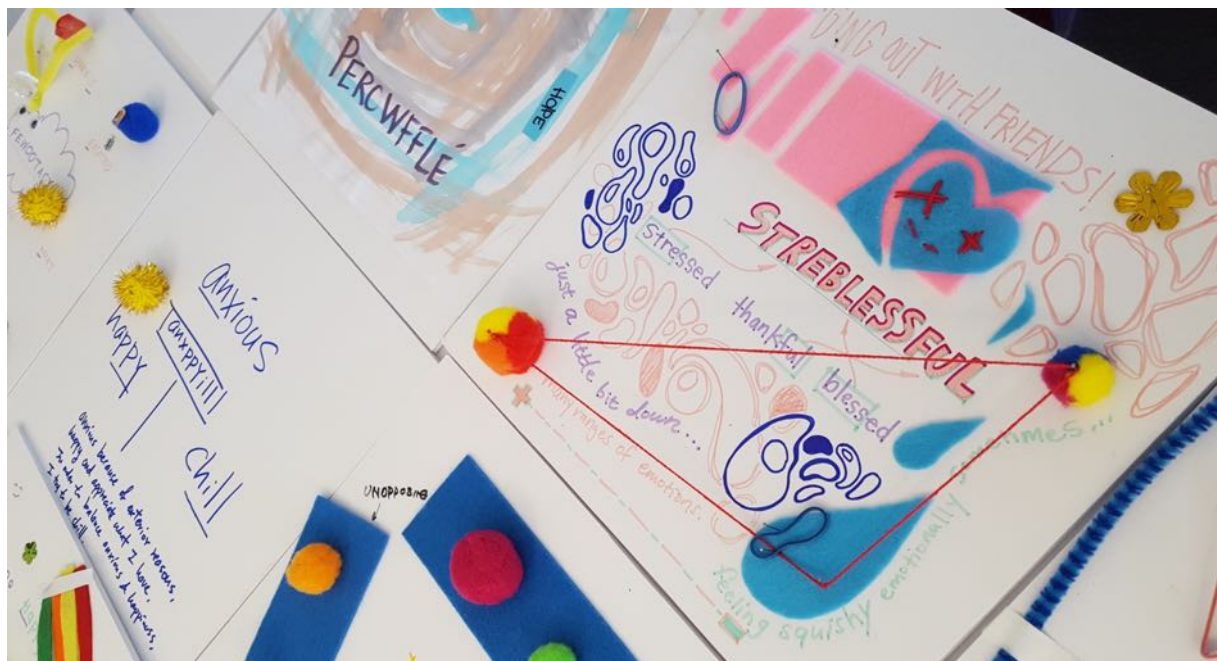


Figure 5: Streblessful: an extract from *Lexicon of Feelings* by Aisha Dev, Kailin Dong, Katie Glass, Zhiye Jin, Soonho Kwon, and Jessica Nip (Luria et al, 2019)

One recent project (Luria et al, 2019) includes students examining 'contradictory injunctions' in relation to mental health and pressures on student life (work hard but also get enough sleep; be successful but don't work too hard; be sociable but also concentrate on studying; etc) through creating new compound words which capture the contradictory states in a single expression, e.g. 'Streblessful' (Figure 5) to signify feeling stressed, but also thankful and blessed.

## 2.4. Knots and overthinking in messaging and social media

Social media and other contemporary forms of communication offer a variety of ‘overthinking’ situations which can be modelled using a ‘knot’-like approach. Figure 6 shows a (simulated) conversation in which the attention someone believes a friend is paying to their updates is not matched by reality (perhaps through genuinely not paying attention, or perhaps through an algorithmic decision to hide/de-emphasise the updates, unbeknownst to either party). Figure 7 shows a meme example around Snapchat responses, embodying consideration of theory of mind.



Figure 6: A (perhaps unrealistically stilted) text message conversation embodying a variant of Laing’s “I’m upset you’re upset” knot (Laing, 1970:21).





Figure 7: An 'expanding brain' meme (collected on Reddit's me\_irl subreddit) dealing with a knot-like escalating sequence of approaches to dealing with a Snapchat snap. By the fourth panel, the "thinking about how the other person will think you think" level has become complex and employs a particular affordance of the messaging system (the 'typing' notification) in a strategic way. Original author unknown.

In a potentially more formal communication format, such as replying to email, responding to a telephone message, or even replying to a letter, a somewhat similar knot can play out (Figure 8) around a delay in replying, and how that is believed to be perceived by the other person. A slow

reply can signal a lack of care about the correspondent, but a fast, perfunctory reply can signal that the sender has not thought deeply (enough) about them. In general, many of these kinds of knot encompass a recognition that, as Laing had earlier noted, “Your experience of me is invisible to me and my experience of you is invisible to you... [but] I cannot avoid trying to understand your experience, because although I do not experience your experience... I experience you as experiencing.” (Laing, 1967:4). As we enter into systems, we are aware that other people within the system will also be experiencing it, just as we are; we are aware that their experience may not be the same as ours, and we are aware that they may interpret our behaviour in different ways, and make inferences about us and our intentions (and personality) from observing our behaviour (Ross & Nisbett, 1991), whether or not those inferences are correct.

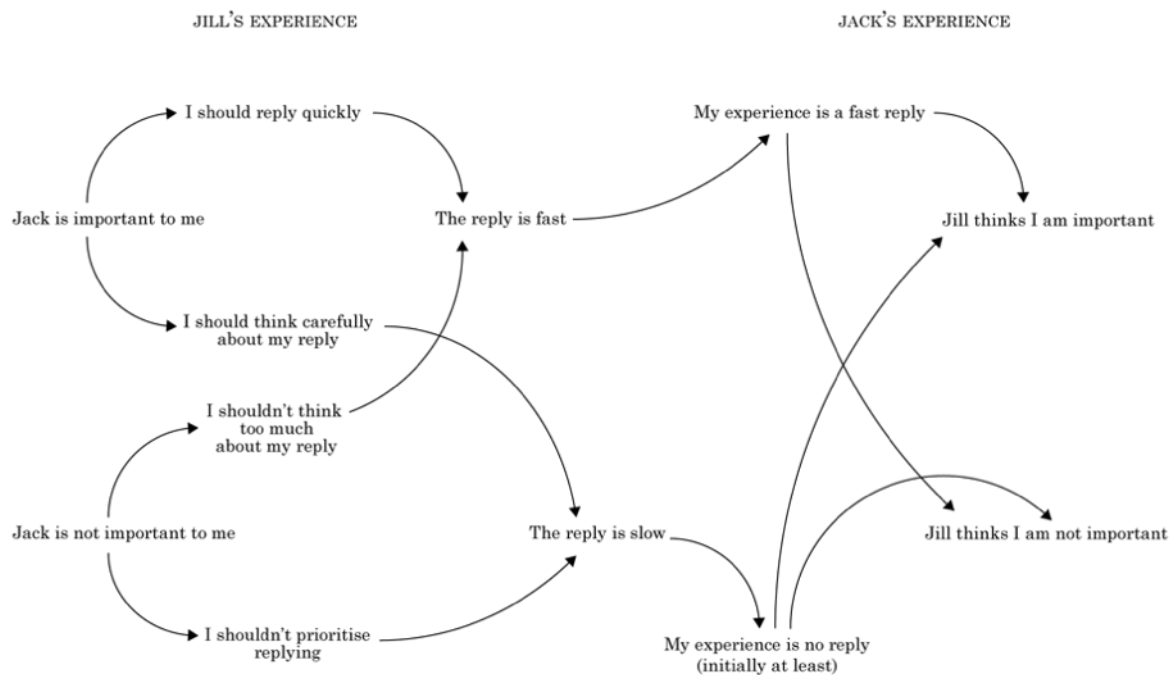


Figure 8: A knot in reply etiquette (e.g. replying to emails) contrasting the possible experience of each party (Jack and Jill).

Some of these are essentially variants of classic dilemmas around unrequited (or not) love, or attention in general (e.g. Figure 9) which are relatively easy to put into a 'knot' format.

Jill likes Jack  
Jill *hopes* Jack likes Jill  
Jill hopes Jack thinks Jill likes Jack  
Jill *worries* Jack thinks Jill doesn't like Jack  
Jill worries Jack thinks Jill likes Jack too much

Jack doesn't like Jill  
Jack hopes Jill doesn't like Jack

Jack hopes that Jill likes Jack  
even though he doesn't like her

Jack doesn't like Jack

Figure 9: An old story, of thinks, hopes, and worries.

## 2.5. The real reasons that knots and clickbait relate. #2 will shock you!

The phenomenon of clickbait—often sensational ‘news’ stories created primarily to attract readers to click, thus enabling increased advertising revenue—has been modelled from a system dynamics perspective by Nicky Case, creator of the wonderful Loopy “tool for thinking in systems” (Case, n.d.), primarily in terms of how trust in journalism is eroded. But it’s worth highlighting the basic knot-like systemic relationship: the more people click on ‘shocking’ things, the less ‘shocking’ they become, and so an escalation or runaway race to the bottom might be a consequence. Figure 10 is an attempt to illustrate part of this process.

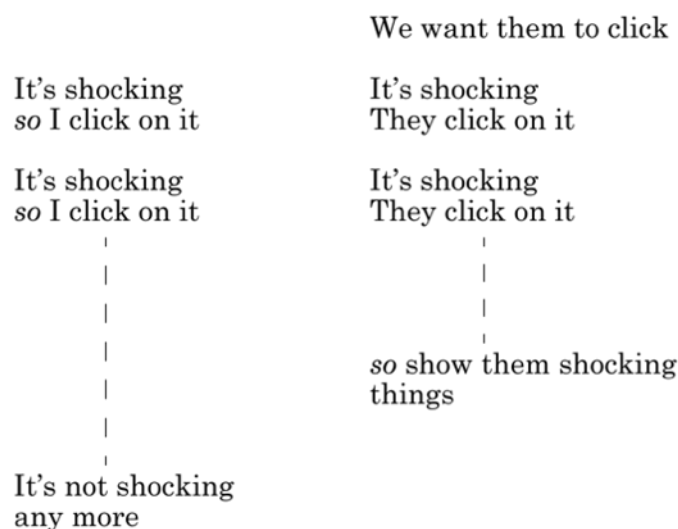


Figure 10: Eventually the system ‘optimises’ for clickbait: what starts off as an accidental side-effect with certain stories quickly becomes the default way to write stories, but loses its effect.

## 2.6. Knots, machine learning, and other intelligences

### KNOTS AND THE SMART FRIDGE, OR THE OLD SAUSAGE\*

I am vegetarian  
I don't like sausage  
My friend is not  
She came to stay  
She brought sausage  
She left some

My fridge has sausage in it  
I don't eat it

My fridge has sausage in it  
I don't eat it

My fridge has sausage in it  
I don't like sausage

Your fridge has sausage in it

Your fridge has sausage in it

Your fridge *always* has sausage in it  
You must really like sausage

Let me order you some more

Based on a case in Delfina Fantini van Ditmar's PhD, *IdIoT: Second-order cybernetics in the 'smart' home*, 2016

Figure 11: Based on a case in Delfina Fantini van Ditmar's PhD, *IdIoT: Second-order cybernetics in the 'smart' home* (2016), in this example the 'learning' system of a smart fridge makes an incorrect inference about the reason for there always being sausage in the fridge.

Many of Laing's knots are essentially about people trying to understand what someone else understands about them. We might extend that to covering how someone understands their relationship with a system—but of course, that understanding changes how they relate to the system. In this vein, one application of knots as a 'format' could be in doing user research around people's understandings of artificial intelligence, particularly systems using machine learning. We are used to thinking about how other people think about how we think (and mentally simulating that, perhaps adjusting our behaviour as a result), but what does it look like when we start having these kinds of thoughts about other actors—not just humans? And when 'they' start having these kinds of 'thoughts' about us? What 'models of how people' are being encoded into algorithms (quite apart from the structural biases)? What new knots could emerge from our interactions with systems which are learning about us just as we learn about them (Figure 11)?

### 3. Conclusion: What do knots offer?

This working paper has provided a brief, shallow, and quite cursory tour of just a few examples of how formats inspired by, or based on, aspects of R.D. Laing's *Knots* can provide a systems-ish perspective on different, mainly technology-mediated, phenomena in contemporary design research. While it is hard to define an exact specification for a knot format—Laing himself notes that the patterns he has “delineated... have not yet been classified by a Linnaeus of human bondage” (Laing, 1970:v)—I hope the reader will be able to see some commonalities of structure and ways of thinking among the examples.

Knots offer a way of enabling recursion, reflexivity, theory of mind, and second-order effects in systems to be explored through a variety of narrative formats. Introducing this as a way of thinking or exploring systems to design students serves to add to their conceptual vocabulary, but perhaps a more expansive way forward is to use elements of the format as a method for doing research with people. How could we use knots (and double binds) as a concept to help people explore their relationships with systems? What could it look like to turn knots into a form of probe or interview tool? Could we help people identify knots in their own lives (and help them untangle them?) Is it even possible to untangle these? Do they describe problems that have a wickedness to them which means attempting to untangle creates a whole new problem? (Is it inherently ‘wicked’?)

Through a series of projects with colleagues over the last few years, I have become increasingly fascinated by how we, as designers, can apply methods from design practice as a form of enquiry into the imaginaries, mental imagery, intangible and invisible aspects of people's understanding and personal, subjective experience of concepts and ideas which are otherwise hidden or only describable through spoken or written language. What started in 2011 as an attempt to get people to draw their mental models of heating systems using Post-It notes led through various modes including asking people to create instructions for others (Phillips et al, 2013) and to draw or paint their mental imagery around energy (Bowden et al, 2015) or build model landscapes to represent career paths or life journeys (Ricketts & Lockton, 2019). But an investigative format based around knots, perhaps actually physicalized (Fass, 2016) as a system of string or thread which can be tangled and looped and connected, seems to offer a particularly exciting and rich set of possibilities, enabling people to model relationships in a more nuanced format than a static diagram, and facilitating prompts for discussion about the specifics of the knotted situations that emerge, as part of a participatory design process. This is the direction I intend to take this work in future projects.

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