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Nudging the Internet
Behavioural Expertise in the Platform Economy

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Declaration

I declare that this thesis has been composed solely by myself and that it has not been submitted, in whole or in part, in any previous application for a degree. Except where states otherwise by reference or acknowledgment, the work presented is entirely my own. The work presented in Chapter 6 was previously published in Journal of Cultural Economy as ‘Nudge goes to Silicon Valley: Designing for the Disengaged and the Irrational’.

To my family,
Nuket, Erbil, Kaan and Thibaut

Abstract

This thesis follows ‘nudge theory’ (Thaler and Sunstein 2009) into the platform economy and examines how behavioural expertise is organised and made to work, to feel and move users. The prevailing critical and commercial accounts of online nudging tend to overrationalise the workings of techniques, hype up their effectiveness and abstract away from the practical work realities within which they are performed. Drawing on ‘pragmatic’ studies of markets, technologies, and organisations, this research presents an empirical study of online nudging, based on 30 original interviews with behavioural experts working in various roles in the platform economy, including product managers, user researchers, data scientists, designers, and marketers. The research reveals how ‘nudge’ as a frame – as an explanation of platformised interactions – and as a network – comprising people and practices – spread; and how data-intensive commercial nudging works in practice, within proximate organisational or market settings.

I find that while behavioural economic science has become a shared background to contemporary interaction design, actors selectively activate scientific rhetorical sources. Conversely, most observable instances of nudging in the platform economy, are *decoupled* from behavioural theory, and instead manifest as local product optimisations driven by iterative, data-driven testing assemblages aimed at enhancing product metrics through real time user feedback. Numbers, not nudges, serve as the central organising device in contemporary product development, shaping the character and value of work, and reinforcing incremental, ‘piecemeal’ and ‘A/B testable’ (as interviewees refer to them) changes often preselected for their anticipated performance against metrics. The ubiquity of nudging is better understood as an *effect* of technical, organisational and market arrangements within which products and interactions are designed in the platform economy, rather than as a technique that moved into the field because of its inherent efficacy in feeling and moving users. By contextualising nudging within practical arrangements, this study contributes to the platform economy literature, and offers insights into platformised interactions, their designs, as well as misfires.

Lay Summary

Platforms like Google, Facebook, Airbnb, or Uber have become an integral part of our lives in the past decade. At the same time, we have become accustomed to hearing about how their designs strongly influence our behaviours, to the point of making us do things we did not intend to do. One set of specialised techniques that platforms are commonly said to deploy derives from ‘nudge theory’ in behavioural and psychological sciences. Nudge theory was originally proposed in policymaking as a way of designing policies by drawing on behavioural science findings to steer people towards choices that are in their best interest. Platforms and marketers, by contrast, are claimed to have adopted the nudging techniques to advance their own private interests, through making consumers spend more time on the apps, buy products, book services, or click on ads.

This thesis investigates how digital commercial nudging works in practice, drawing on 30 interviews with professionals working in various domains such as marketing, product development, or data analytics – individuals whose job is to influence consumer behaviour online. I find that, most of the time, the small interventions seeking to alter online users’ behaviours are not necessarily linked to scientific findings on behaviour or decision-making. Instead, marketers and product developers continuously try and test all sorts of interventions to get users to perform the actions they want them to do, discovering what works from changes in key metrics that track users’ actions. These metrics and the measurement systems in place, therefore, influence the design practice and its outputs more strongly than any scientific theory of behaviour. With these findings, the thesis demonstrates that studying actual work and business practices within their proximate settings allows us to develop a more accurate understanding of how platforms seek to influence our actions.

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Chapter 1: Introduction

Nudging the Internet

On 21 June 2023, the US Federal Trade Commission (FTC) filed its third lawsuit against Amazon, in anticipation of a final one that would conclude the commission's inquiry into the company's alleged anti-competitive and anti-consumer practices.¹ The focus of the lawsuit was Amazon's Prime service, and its strategy was to dissect the processes of subscribing to and cancelling the service. These are referred to in tech companies as 'user flows' and are defined as 'the process steps from the user arriving on a website to completing their task or tasks.'² By contrast, the FTC alleged, 'the primary purpose of the Prime cancellation process was not to enable subscribers to cancel, but rather to thwart them' (FTC 2023, p. 3).³ 'Fittingly, Amazon named that process "Iliad," which refers to Homer's epic about the long, arduous Trojan War.' Not only has 'Amazon designed the Iliad cancellation process ("Iliad Flow") to be labyrinthine,' the FTC argued, 'its leadership ... slowed or rejected user experience changes that would have made Iliad simpler for consumers because those changes adversely affected Amazon's bottom line.' As expected, the user flow for subscribing to Prime, which the lawsuit referred to as 'nonconsensual enrolment', was notably more seamless. Meanwhile, 'The Iliad Flow's complexity resulted from Amazon's use of dark patterns – manipulative design elements that trick users into making decisions they would not otherwise have made.' Most of the lawsuit featured a detailed description of the relevant user flows, articulating the numerous deceptive design elements ('roach motel', 'sticky footer' etc.) that the user encounters at each turn.

¹ <https://www.ftc.gov/news-events/news/press-releases/2023/06/ftc-takes-action-against-amazon-enrolling-consumers-amazon-prime-without-consent-sabotaging-their> accessed February 2024.

² <https://www.interaction-design.org/literature/article/flow-design-processes-focusing-on-the-user-s-needs> accessed February 2024.

³ All quotes in this paragraph are from the same page.

A similar line of argument was pursued by the UK Competition and Markets Authority's (CMA) 'Online Platforms and Digital Advertising Market Study' that focused on Google and Facebook and concluded three years ago. To explain the market domination of the two companies, the report '[has] identified a number of characteristics of these markets that inhibit entry and expansion by rivals and undermine effective competition' (CMA 2020, p. 11). Among the technical characteristics, such as 'network effects and economies of scale; unequal access to user data; lack of transparency; the importance of ecosystems; and vertical integration, and resultant conflicts of interest' was also 'consumer decision making' (idem). The CMA observed that the vulnerabilities inherent in consumer decision making were exacerbated in the information and choice-rich environments of the digital economy. A case in point was 'the power of defaults': 'defaults play a very important role in influencing consumers' use of search engines, and second, default settings and the way in which choices are presented to consumers have a strong influence on the ability of platforms – particularly social media platforms – to collect data about their users, and the ability of users in turn to control the use of their data' (p. 13). As a result, 'In 2019, Google paid around £1.2 billion in return for default positions in the UK alone,' while 'the platform choice architecture' favoured intrusive data collection settings that activate consumers' 'inclination to stick with default settings that are presented to them (status quo bias); and tendency to focus more on the near-term implications of their decisions and discount the long-term implications (myopia)' (p. 194).

In making these claims and using these terms, the report was drawing on the popular field of *behavioural economics* and *nudge theory*. Nudges, as per Thaler and Sunstein's (2008) minimal definition, are small and subtle changes to the choice environment 'that [alter] people's behavior in a predictable way without forbidding any options or significantly

changing their economic incentives’ (p. 6). An important word here is ‘predictably’: the effects of interventions can be predicted because they target systematic cognitive or behavioural biases and ‘work with the influence biases inevitably have’ (Selinger and Whyte 2011, p. 928). Additionally, ‘they are built on robust empirical experiments, most of them based on RCTs’ (Hortal 2023, p. 334). (Randomised controlled trials or RCTs are studies evaluating interventions, in which subjects are randomly assigned to conditions, either receiving or not receiving the intervention. They are considered the highest form of causal evidence.) Although ‘there is no such thing as a “neutral” design’, *Nudge: Improving Decisions and Health, Wealth and Happiness* puts forth what would become a highly influential argument, ‘choice architectures’ can be deliberately designed to bring about predetermined behavioural outcomes (Thaler and Sunstein 2008, p. 3). Informed by this idea, the CMA observed, platform design ‘inhibits consumers’ ability to exercise informed choice and nudges consumers into making choices that are in the best interest of the platforms’ (2020, p. 14). In concluding, the report recommended platforms to practice ‘fairness by design’ and use behavioural biases to instead help users make well informed data privacy choices.⁴

Regulatory actors are not alone in invoking nudge theory when describing, explaining, or seeking to govern how users act in digital environments.⁵ The idea that platforms shape our behaviours in ‘small and subtle’ yet ‘potent and predictable’ ways has become a dominant critical frame across popular and academic discourse. Uber is found to nudge its drivers to ‘take up more fares’ with features like push notifications that target

⁴ See ‘Appendix Y: Choice architecture and Fairness by Design’ at: https://assets.publishing.service.gov.uk/media/5fe36ab9d3bf7f0898e0776c/Appendix_Y_-_choice_architecture_and_fairness_by_design_1.7.20.pdf accessed February 2024.

⁵ Goldenfein and McGuigan (2023) offer a comprehensive overview of how behavioural economics informs current attempts to regulate digital markets, and particularly, the issues of consumer protection and data privacy.

‘people’s preoccupation with goals’, or the automatic queuing of the next ride that activates ‘default bias’ (Rosenblat and Stark 2016; Scheiber 2017; Susser, Roessler and Nissenbaum 2019). YouTube is criticised for deploying a similar tactic to increase time spent watching videos with the autoplay feature. The creator of ‘infinite scroll’ apologises for contributing to ‘rising rates of social media and smartphone addiction’ by removing frictions that pagination created (Knowles 2019), while ‘the inventor of the “like” button wants you to stop worrying about likes’ (Morgans 2017). Instagram’s ‘Project Daisy’ experiments with removing like counts to ‘depressurise the app’ and decrease prompts for ‘social comparison’ (Chozick 2020). Beyond individual examples, human-computer interaction scholars call for broader self-reflection within the community, to assess whether they ‘are to blame for letting the genie out of the bottle’ by ‘developing interface techniques that are now commonly used to nudge users, for example, to click on ads, stay on a site, keep playing a game and come back for more’ (Rogers et al 2021, p.1). Originally proposed as an innovation in public policy, nudge theory now constitutes the common grammar of how we relate to ‘the distinguishing’ organisational and technological form of our time, that is, the platform (Pais and Stark 2020; Schüßler et al 2021).

Drawing on thirty interviews with product managers, marketers, designers, user researchers, data scientists, and behavioural scientists whose job is to nudge users and consumers online, this thesis examines how data-intensive commercial nudging works. It studies nudge as a frame and seeks to understand how we have come to relate to our interactions with platforms in its terms. It also studies nudging as a specific business practice that platform companies, digital marketers, and application developers engage in and seeks to understand how this work of designing interactions and prompting actions is organised. The organisational structures, institutional arrangements, knowledge and expertise, data and other

artefacts, are brought to the fore in explaining how product and design decisions are made, implemented, and evaluated. Particular attention is paid to how actors know when an intervention works, and what makes up how they know what they know (Cetina 2007). Ultimately, the thesis seeks to understand how nudging has become so ubiquitous on the internet; although it contextualises nudging ‘in the proximate setting of the situation rather than in the shifting sands of ultimate ends’ (Tavory and Timmermans 2022, p. 171) of surveillance capitalism.

The Behavioural Expertise Network

In addition to outlining a powerful cultural frame, the publication of *Nudge* brought about a new, dynamic, rapidly grown expert network. Members of this network offer explanations of and interventions into behaviours in areas of life as varied as health, transportation, development, work, education, finance, sports, consumption, and technology usage (Halpern 2015; de Souza Leão and Eyal 2019; John 2018; Nadler and McGuigan 2018; Strassheim, Jung and Korinek 2015). Within just fifteen years, thousands of professionals have clothed themselves in behavioural science, or rebranded their expertise in what was once market or consumer research, product design or strategy, as being on ‘human behaviour’. There are currently at least three private sector associations, and over eight hundred organisations that reportedly have behavioural science teams on staff. A notable portion of this behavioural expert network is active in the platform economy, designing and optimising its ‘products’, ‘apps’ and ‘ads’ distributed on platforms. The human actors of the network are in various roles ranging from product manager, user researcher, designer, applied scientist; while its language of ‘habits’, ‘behaviours’ and their ‘designs’ extend even beyond.

My interviewees belonged to this ‘behavioural expertise network’, as we shall call it, following sociologist of expertise Gil Eyal’s (2013) proposal to study expertise as ‘a network

connecting together actors, devices, concepts, and institutional and spatial arrangements.’⁶

The network of behavioural expertise is frequently invoked in critical accounts of platform nudging: Oxford-trained tech ethicist, and former Google advertising strategist, James Williams, claims that the designers of websites, apps, and platforms have been ‘exploit[ing] the catalog of decision-making biases that psychologists and behavioral economists have been diligently compiling over the last few decades’ (Williams 2018, p. 33). Uber is an oft-cited example for having an in-house ‘behavioural economics lab’, however briefly lived. While allusions to ‘behavioural scientists who make apps addictive’ (Leslie 2016) abound, the actual role that the network’s actors play, the influence its concepts exert, or its workings within product decisions broadly, are rarely evidenced nor specified. Besides, when tracing ‘the spread in time and space of anything’ if we follow Bruno Latour’s lead, we must maintain that ‘faithful transmission ... is a rarity ... and if it occurs it requires explanation’ (1984, p. 267). My hypothesis is, if and to the extent that behavioural scientific findings, concepts, or methodologies are drawn upon, it is because they respond well to local and contingent problems (Law 1993). This thesis seeks to specify what these problems are and reveal the contingent arrangements in which they are worked out.

How Nudging Works: Overview of the Argument

There is in some quarters a heated debate and in others a silent consensus on whether nudging works. On the one hand, nudge science is going through a credibility crisis with investigations and meta studies casting doubt on the replicability and effect sizes of nudges

⁶ Eyal himself uses the notion of ‘expertise network’ to explain how behavioural economics experiments are held together and made to function in the specific context of international development (see de Souza Leão and Eyal 2019). Meanwhile, Strassheim, Jung and Korinel (2015), refer to ‘behavioural insights and interventions’ in the field of public policy as ‘behavioural expertise’. However, here I conceive of a broader behavioural expertise network, one that spans across public and private contexts and concerns.

(see the conclusion of this thesis, and also e.g., Mertens et al 2022, Maier et al 2022).⁷ On the other hand, critical and regulatory interventions into platforms continue to operate under the assumption that nudging techniques are implemented for their effectiveness; or that nudge is among the primary modes of governance platforms exercise over users' behaviours, actions and interactions. Indeed, the academic literature understands platform nudging in either the 'effectiveness' or 'governance' mode. In the first, nudging figures as a set of techniques discovered in the academic or policy fields, and later moved into the industry; they are the 'application' of 'behavioural economics' (see Dieter et al 2019; Rogers et al 2021; and, of course, Williams 2018). These routine references largely draw on promotional materials (namely Nir Eyal's [2014] *Hooked*) and scant empirical evidence. The claim itself should indeed elicit fundamental science and technology (STS) sensibilities, namely, that 'innovation isn't linear' (see MacKenzie 2009, p. 31-32 for a summary of how 'all aspects of a linear view of innovation have been criticized for several decades'). Not the least, the effectiveness approach requires a more layered analysis of the 'performative effects' of theory, especially given that it is an economic theory (Callon 2007).

In the second analysis, nudging is a mode of governance (see Calo and Rosenblat 2017; Fourcade 2017; Rosenblat and Stark 2016; Susser, Roessler and Nissenbaum 2018; Wu, Taneja and Webster 2020). The canonical example is Yeung (2017) who coins the term 'hypernudging' to describe 'the mode of regulation by design' that platforms exercise over users. The author proposes that we can consider all 'big data-driven decision guidance techniques' to be working in the mode of the 'deceptively simply design-based mechanism of influence' of the nudge (p. 119). Schüll (2016) applies a similar thinking to digital self-tracking devices and Christin (2020) to 'data'. As a mundane mode of governance, nudge

⁷ See also <https://datacolada.org/> accessed February 2024.

appears to straddle well the two dominant ways of seeing platforms, as surveillance systems or as two-sided markets (Caliskan, Callon and MacKenzie Forthcoming): it is subtle enough to allow for free market actions (as with libertarian paternalism) and yet geared towards influencing action in a way that warrants concerns for platform power.

In speaking to behavioural experts about their everyday work, and therefore, studying nudging as a work practice in an organisational setting, this thesis offers a third perspective. This proves to be a productive perspective from which to revise some of the received ideas. I find that while nudging is ubiquitous across the platform economy, most of its empirical instances are in fact decoupled from behavioural science, behavioural expertise, or behavioural experts. Nudge theory and behavioural economics have indeed become a shared background to platform interaction design; they readily make sense to actors and supply conceptual and justificatory repertoires – and as explored in Chapter 3, for a mix of social and cognitive reasons. But actors only selectively activate scientific rhetorical sources; and to fulfil organisational or marketing functions, such as justifying an intervention (Chapter 3), elevating their position in the company (Chapter 4), repairing the experimental apparatus when it fails (Chapter 5) or differentiating a product proposition (Chapter 6). Another thread that runs through the substantive chapters is that ‘applications’ of behavioural theories overflow the linear, hypothesis-driven frame of nudge; behavioural experts necessarily draw on bricolage and heterogeneous forms of knowledge when they are working to ‘get people to do things’.

Equally often interviewees describe the purpose of their work to be ‘to improve user metrics’ that track individual user actions (e.g., clicks, purchases, pageviews, scroll depth) and aggregate userbase engagement and growth rates (e.g., daily/monthly active users, number of transactions, time spent). These metrics are closely monitored as product and

marketing teams (in which behavioural experts are embedded or directly working with as consultants) continuously deploy changes to the code to move them ‘up and to the right’ (Shestakofsky 2018, p.19). The changes need to be small and incremental so they can be tested as components of A/B tests – a key device to evaluate product changes, and by extension the performance of the team responsible for them. The tests create problems well known to sociologies of quantification and datafication (Espeland and Steven 2008; Kitchin 2014), and importantly they shape the output itself, reinforcing incremental, ‘piecemeal’ and thus ‘A/B testable’ (as interviewees refer to them) changes. The ubiquitous nudging – in the sense of producing continuous, incremental, and testable alterations – is therefore better understood, as an *effect* of these technical, organisational and market arrangements, rather than as a set of specialised techniques that moved into the field for its inherent efficacy in moving users.

Studying nudging as a situated practice also reveals the tensions that are still alive for actors, which appear resolved when nudging is viewed as a mode of governance. Actors question whether nudging is the right method to retain users, and whether product changes are effective when selected ‘for how they perform in experiments’ (Chapter 4). There are competing modes of accounting – giving accounts, accepting accounts – for how to establish a cause-effect relationship to prove that the intervention has worked, and isolated measurements, while the gold standard of causality may prompt a client to question ‘why did [they] pay somebody to change *a word*’ (Chapter 5). Neither are users the acquiescent receptors of nudges; rather they resist interventions, and it is difficult to ascertain if they are nudged into overengagement or to prevent their impending disengagement (Chapter 6). Throughout the chapters, interviewees navigate practical arrangements and technologies

‘made durable’ (Latour 1990) in the platform economy, at times praising, at times repairing, at times rejecting them.

In making visible the everyday work realities of nudging, this thesis aims to contribute towards developing an empirical understanding of how the platform economy ‘moves’ us. In the meantime, the thesis moves the analytics of market studies into the platform literature. In particular, it seeks to understand how platform-economic actors move our actions in ways that are both generic to economic life and specific to platform economy, and in ways that are messier than our current accounts have it while still containing their own patterns.

The Thesis Plan

The next chapter begins with a selective review of the empirical literature on the platform economy. It then assembles under the title, “‘pragmatic’ studies of markets, organisations, and technologies’, key theoretical and methodological insights from across the subfields of economic and organisational sociology, anthropology of computing, and the new pragmatist sociology, that have informed the inquiry design. The chapter concludes by describing the research design and spelling out key decisions and developments in how the research was conducted.

Chapter 3, ‘The Google Earth of user behaviour’, is the first of the four successive empirical chapters of the thesis. Serving as a brief historical overview, the chapter highlights the key moments, events, and actors in how the behavioural expertise network extended itself to software product development, design, and marketing. The analysis begins with B.J. Fogg and Nir Eyal, two popular figures in Silicon Valley, often imagined to be the master minds behind its behaviourist tendencies. In retelling their stories with details often left out, the chapter shows that while Fogg and Eyal are important actors, it is not because they strongly

influenced the designs and designers of software products, but rather because they laid the discursive groundwork for a behaviouralist conception of interaction design to take hold. Yet it would be behavioural economics which would sustain the approach, supplying it with portable and scalable ideas, justificatory frames, conceptual repertoires, as well as people who would carry them forward. Indeed, as noted above, over a period of a decade several thousands of professionals have successfully claimed behavioural expertise as their own, moving it into their respective fields and organisations. The second half of the chapter proposes several explanations for this, being attentive to the necessarily ‘iterative’ and ‘co-constitutive’ nature of demand and supply (Callon 2021), in this case, of behavioural expertise.

Chapter 4, ‘Platform companies through the keyhole’, takes us, if not inside the company premises, then to their doorstep, and offers peeks into the everyday work of developing and optimising products at platform companies. The empirical data is based on the professional experiences of behavioural economists and behavioural scientists who either worked for or consulted with platform companies, complemented with leaked documents, journalistic exposes, and trade literature that offer additional ‘keyholes’ to look through. The ‘keyhole’ metaphor is borrowed from anthropologist of technology, Lucy Suchman, who used it to emphasise the limited view expert systems have on their users, which fail to see the wealth of actions performed around the system. Platforms, by contrast, have a reputation for being *intrusive*, as they capture real time, continuous, granular data on their users’ behaviours. As expected, the chapter finds that product metrics that derive from this data are a key device in organising and valorising the work performed in the companies, yet they come with unintended consequences. Metrics determine what kinds of interventions are permissible, and they are mobilised in the micropolitical struggles between different product

teams. Behavioural economists are suitably hired to ‘move the needle’, by putting their expertise to work in nudging users to click, comment, review, rank, in short, to stay active on the platform. The key to *locking* users *in*, to continue the metaphor, is sustaining active usage, rather than passive consumption of content, goods, or services.

Chapter 5, ‘The world’s largest controlled experiment’, follows the device of ‘A/B testing’ – a standard user testing method heavily deployed by internet companies – out the platform company and into the wider field, to trace its effects on smaller websites that are compelled to adopt experimentation, and domain experts forced to compete with it. The chapter commences with the assertion that the internet has evolved into ‘the world’s largest controlled experiment,’ noting that this statement is not merely descriptive but also normative. In fact, platform company practices and the business literature elevate ‘data-driven experimentation’ to the status of the final arbiter in all product, design and marketing decisions, as the gold standard in establishing causality and for finding surprise improvements. It is the discursive and material construction of ‘the experimentation imperative’ and the routinisation of A/B testing that interests this chapter, rather than the moral outrage that accompanies certain controversial experiments that made the headlines in recent years. Studying the practical organisation of experimentation reveals that it is challenged by expert groups – among which are behavioural experts – who trade in offering ‘causal accounts’ that are predicated on alternative modes of causality. The chapter proposes to understand the imperative to experiment as an instance of the standard setting power of the ‘Big Tech’ or ‘the coding elite’, although contested even from within.

Chapter 6, ‘Designing for the disengaged and the irrational’, similarly anchors in a device, ‘the behaviour change app’, but explores a different set of questions relating to markets and products, propositions and attachments. Behaviour change apps promise users fit

bodies, calm minds and better finances, by correcting for their excesses or inadequacies using science. Accordingly, behavioural economics features more prominently in this chapter, animating value propositions, sales pitches, and creating sociotechnical niches in which its theories work. A variety of products fall under this product category, but they are informed by a uniquely behavioural economic concept, ‘hyperbolic discounting’ – the idea that people value immediate gratification over future benefit. The chapter describes how actors decide what product to build, which features it should have and how to design the user experience, all with a view to rearranging the action routines of the ‘disengaged’ user to equip them with rational agential capacities that they otherwise lack. The emphasis on disengagement and activeness suggests an alternative to the prevalent addiction frame, while the analysis reveals that strictly focusing on the frequency of repeated interaction is also empirically inadequate. The products are rather designed into things that users ‘cannot do without,’ not because they are addictive, but because they are made indispensable to the actions that they target.

The conclusion constructs the relevance of the analysis offered in the thesis to scholarship and for the wider public. This short chapter has two foci: the current state of nudge epistemologies and the possibility of a platform critique that could serve as an alternative to ‘surveillance capitalism’ (Zuboff 2019). I review my findings and arguments to speculate what they might mean for the durability of the nudge proposition beyond the platform economy, and for developing an empirically driven critical research programme into how platforms nudge, move, and hold their users.

Chapter 2: Theory and Methodology

The Platform Economy Literature

The platform economy was first discerned from the vantage point of its ascent. In one of the literature's most influential articles, 'The Rise of the Platform Economy', Kenney and Zysman (2016) propose the term to refer to the constitutive role and growing significance of Google/Alphabet, Facebook/Meta, Amazon, Uber, Airbnb (and the likes) *qua* companies and software products for the economic arrangements in which they intervene. While platforms had already been studied, and continued to be, in the fields of economics, management and innovation studies (see especially Rochet and Tirole 2003; Gawer 2009; Evans and Schmalensee 2005 and 2016), media studies and the satellite 'internet studies', 'software studies', 'app studies'⁸ (see Gillespie 2010; Helmond 2015; Plantin et al 2018; Poell, Nieborg and Van Dijck 2019; Van Dijck, Poell and De Waal 2018), Kenney and Zysman's piece mark the start of a distinct and focused research programme that has taken shape and attended to the political economic and sociotechnical dimensions of how platforms restructure market relations.⁹ This section selectively reviews some of the key observations from this literature that are helpful in contextualising the workings and effects of nudging practices in platform-economic relations. The review also hints towards some notable absences in the literature, namely, on the question of how interactions and products are designed, which, if attended, tends to be under theorised and empirically under investigated.

⁸ 'App' is a shorthand for software applications. In this thesis, I specifically focus on consumer-facing apps that are accessed on smartphones, and occasionally on web browsers.

⁹ Several special issues have been dedicated to the platform economy in recent years. See especially: 'Power and Control in Platform Monopoly Capitalism' in *Sociologica* (Pais and Stark 2020), 'Understanding the Platform Economy: Socio-Economic Dynamics in new Digital Markets' in *Socio-Economic Review* (Schüßler et al 2021) and 'Forum on Big Tech' in *Science as Culture* (Birch and Bronson 2022).

The first set of claims in the literature concerns the special relationship between platform owners and platform users: while they are not in a formal employment or exchange relationship with the platform firm, users are essential to platform's value creation and capture; and consequently, platforms closely *control* users' actions, albeit through unconventional means (Culpepper and Thelen 2020; Kenney and Zysman 2016; Rahman and Thelen 2019; Stark and Pais 2020).¹⁰ Yet, by the same token, platforms are *dependent* on users: most of them are simply useless if no one is using them, and all work better if more people are using them (Hindman 2018, p.18-19).¹¹ In the early days of platformisation, this dependency was interpreted in binaries: 'the sharing economy' *versus* 'platform capitalism'; with 'digital emancipation', self-employment, and solidaristic consumption on one side, and 'digital manipulation', labour and data exploitation through 'gig work' or 'prosumption' on the other (Cochoy et al 2020; Langley and Leyshon 2017; Pasquale 2016). Although the literature now synthesises platforms as 'contested relational structures' of at once 'mutuality, domination and autonomy' (Schüßler et al 2022), of the three, 'domination' continues to receive the most attention.

An important example, Rahman and Thelen (2019), locates the market power of the platform companies in their '*structural position* that enables it to control market flows in both directions', reinforced by the 'massive data-mining properties' of the platform technology 'that enables ever more fine-grained control over workers, contractors, and third-party firms engaged on the platform' (p. 179-183). Stark and Pais (2020) call this mechanism 'co-

¹⁰ Langley and Leyshon (2017) emphasise the 'distinctive platform intermediary logic'. According to their definition, price comparison, review-based, or even 'mainstream' e-commerce websites that have been around since late 1990s are *not* platforms, because 'they do not seek to facilitate and capture value from the interactions and circulations of Web 2.0' (p. 6).

¹¹ This is the result of what is commonly referred to as 'network effects' but as Hindman (2018) cautions: "“network effects” is often, and inaccurately, used as a synonym for all economies of scale. Not every size advantage is a network effect. A social network with no users is useless, while a search engine or an online app like Google Docs might still be valuable even before becoming popular.' (p. 18-19)

optation’: ‘actors in markets *contract*, hierarchies *command*, and networks *collaborate*, platforms *co-opt* assets, resources, and activities that are not part of the firm’ (p. 47). They approach it from the emergent managerial problem of how to control value-creation activities that take place *outside* of the firm. They see the ‘enrolment’ of users in supervisory roles with ranking and rating devices that ‘control’ the behaviour of other actors as existential to the workings of the platform. Let us note that the ‘hacks’ and ‘virtues’ that workers themselves are forced to develop are as much essential to making the platform work (Gregory and Maldonado 2020; Gregory and Sadowski 2021; Shestakofsky and Kelkar 2020). While there are studies that show how both consumers and workers resist, subvert or domesticate platform’s control projects (Ramizo 2021; Qadri and D’Ignazio 2022) the consensus is that the data that platforms have on users, and the enclosed nature of it gives platforms an asymmetrical power over users’ behaviour (Sadowski 2019; Wu and Taneja 2020; Zuboff 2019).

Another prominent theme in the platform literature focuses on the financing arrangements that lie behind the platforms, namely, venture capital, and their impacts on platforms’ business and revenue models, product and market strategies (Balzam and Yuran 2022; Birch, Cochrane and Ward 2021; Cooman 2022; Kenney and Zysman 2019; Narayan 2022; Shestakofsky 2024). These studies show how the assetization logic of venture capital drives the ‘high growth’ and ‘blitzscaling’ strategies of platform businesses (Pfotenhauer et al 2022) where the near-term goal is to capitalise on ‘network effects’ with the end goal monopolistic domination of a market (Hindman 2018). One result of this dynamic is the continuous deployment of new features and functionalities to keep the userbase engaged and locked in, through scaling the product (Gurses and van Hoboken 2017; Ziegler 2022). A case in point is Airbnb, and its trajectory from starting as an accommodation booking platform, to

transforming into a fully fledged travel experience company (McGowan Forthcoming). The literature also attracts our attention to how a variety of businesses are pivoting towards the platform model to attract venture capital and to generate sustained revenue in the long run (Peters 2022). As Balzam and Yuran (2022, p. 7) succinctly put it, under the VC logic, ‘the product is the vehicle for applying the business model, rather than the business model being the vehicle to distribute the product.’

How do the technoeconomic pressures to grow the userbase and to align user behaviours with platform interests shape the design of the platforms, their architectures, algorithms, or interfaces? Several studies show how ‘the structural position’ of the platform in controlling the market flows is maintained through infrastructural design decisions. Van der Vlist and colleagues’ (2022) meticulous study of the ‘API’ (application programming interface) structure of Facebook and the different actions that it affords to the platform’s third-party partners is an exemplary one. Likewise, Viljoen, Goldenfein and McGuigan (2021) and Lehdonvirta (2022) show how economic theories and ‘mechanism design’ is mobilised in online advertising markets and marketplace auctions to advantage the platform. Beyond their ‘infrastructural power’ (Plantin et al 2018; van der Vlist et al 2022) platforms govern user behaviours through algorithmic and managerial control mechanisms embedded in their design (see Gorwa 2019 and Ramizo 2021 for reviews). However, as Franck Cochoy (2023) observes in an unpublished paper, most of the platform economy literature strictly ‘approach(es) the object from a macro perspective’ and only ‘few studies look closely at how these platforms present themselves on our phones and computer screens’ (p. 1).

Cochoy’s intervention reminds us that platforms, among the many other things that they are (Gillespie 2010), are also objects of or arrangements for consumption, and as such, they ought to inspire pleasure, if not simply, convenience, to move our actions. How do

platform apps on our phones compel us to use them? To return to them on a daily, hourly, sometimes, even ‘minutely’ basis (Galanos 2023)? How do they ‘persuade’ the rest of the platform-economic actors, the workers, advertisers, content creators, at the very point of contact that is the interface where actors access the platform’s ‘economization stacks’ (Caliskan 2020)? This is how ‘nudges’, as subtle suggestions that imply a softer modality of platform control, come into play, bringing with them an abundant press and business literature on how apps ‘hook’, ‘trap’, ‘addict’ users through notifications, infinite scrolls, autoplays and so on. As the brief review in the Introduction chapter noted, social science literature largely draws on these examples (e.g., Rosenblat and Stark 2016), or mainly approaches nudging as a mode of governance (see Fourcade 2017; Schüll 2016; Yeung 2018; Zuboff 2019) and not as a specific practice that platform companies engage in to keep the userbase engaged. As a result, we have repetitions of the same limited set of design interventions, as though they alone explain what platforms do to us and what their designers, product managers, user researchers, data scientists, do at work all day.

More broadly, the empirical attention that the more ‘technical’ platform design, market design, auction design has received, has not been repeated for ‘interaction design’ or the level of user-product ‘attachment’ which ‘orchestrates’ ‘sentiment’ as much as ‘technique’ to borrow from McFall (2014). A notable exception is Nick Seaver’s work on music recommendation algorithms (2019, 2022), which attends to the mix of the technical, business, and cultural knowledges behind the algorithms, describing with an anthropologist’s eye to detail what it really means to ‘hook’ music listeners. Another is Shestakofsky and Kelkar’s study that brings to the fore ‘the human labour’ of managing relationships and accounts to ‘secure users’ long-term attachment to digital platforms’ (2020, p. 864).

Seaver, Shestakofsky and Kelkar are in fact part of a new generation of anthropologists of technology who have followed platforms, algorithms, data, into the company offices, as well as the incubators, accelerators, bootcamps, co-working spaces that their developers and marketers typically inhabit (see Haines 2014; Irani 2019; Jervis 2020; Kelkar 2016; Lalvani and Gupta 2021; Lindtner 2020; Seaver 2022; Shestakofsky 2018). These ethnographies have provided rich insight into how work is organised socially, technically, spatially, and relationally within technology companies. Yet instead of offering a sustained engagement with the technology/platform company as ‘a formal organization as an object in and of itself’, in Du Gay’s (2020, p. 469) phrase, they treated the organisation as an ambient background to the primary object of interest, that is the platform’s sociocultural effects. Ziegler (2022) highlights this tendency, asserting that the ‘second nature’ of platforms as ‘tech companies’ have often been neglected and ‘the work that is done inside these companies *to create and provide Internet applications* at global scale has largely gone unnoticed’ (p. 4). I add the emphasis to be fair to the ethnographies of work mentioned above, but we should also note that Ziegler’s focus is more specific: the author proposes to understand tech companies as ‘as a commercial strategy which centers around the continuous development, operation, and monetization of Internet applications’ and to look inside them to see the ‘complex and messy social processes’ through which ‘product and market strategies’ are iteratively figured out (p. 5-6).¹²

The present study aims to precisely do that, approaching the work of prototyping product and market strategies, from the role that data, knowledges, techniques, and technologies, that materialise, model, and intervene in user behaviour, play in the process.

¹² A useful guide on the software development frameworks is offered by Gurses and colleagues who highlight the impact of agile and modular software production on the work undertaken in companies (Gurses and van Hoboken 2017; Kulynych et al 2020).

While the platform economy literature rightly sees platform interactions as layered with power relations, existing accounts lack two important things. The first is an examination of *how* interaction is devised: the organisational, technical, cultural economic conditions under which people and practices in the platform economy design, maintain, and increment interactions. How is the abundance of data on user behaviour – which is at once real time, granular, and continuous – managed (Abbott 2014; Schwarzkopf 2015)? How are usage metrics interpreted, operationalised, for it is necessary that they are (Christin 2020; Poon 2016)? What knowledges, expertise, artefacts order data? These questions of how *they* know what *they* know, to paraphrase Cetina (2007), is indeed linked to current conversations in the social sciences on how *we* know what *we* know, as platforms, digital and data intersect in consequential ways with how we do social research and know the social world (Adkins and Lury 2019; Clough et al 2015; Lury 2020; Marres 2017; Ruppert, Law and Savage 2013; Savage and Burrows 2007). Approaching ‘the platformization of the epistemic infrastructure’ (Lury 2020) from the vantage point of its mobilisation by platform actors in their everyday work, therefore, might contribute interesting insights into these conversations.

The second absence in the literature is an exploration of the action consequences of platform interaction design: *what* are users nudged to *do*? To borrow from pragmatists, ‘through consequences that we know what kind of phenomenon we face’ (Timmermans and Tavory 2022, p. 74). This thesis addresses the question of consequences that platform interactions persistently raise, by empirically investigating what happens when actors are being nudged or are nudging others. To inquire what actors do on the ground, in the office, in the market encounter, with the implication that it would test, qualify, refute, or perhaps explain the macro accounts, is a move well rehearsed in several literatures, and the conditions for when this move ‘works’ can be identified. The next section reviews this body of work to

contextualise and justify why a ‘pragmatic’ study of platform nudging would make a compelling investigation.

‘Pragmatic’ Studies of Markets, Organisations, and Technologies

No theorizing, however ingenious, and no observance of scientific protocol, however meticulous, are substitutes for developing a familiarity with what is actually going on in the sphere of life under study. (Blumer 1969, p. 39)

A variety of work that belong to different research programmes is united by their shared commitment to ‘develop a familiarity with what is actually going on’ in the setting, with the process or the object that they investigate. It is typical that this motivation is stated explicitly and with a degree of defensiveness, in reaction to existing studies that investigate the same topic but ignore ‘the actual practices’ (Christin 2017), ‘what people and practices *do*’ (Tooker and Maurer 2016, emphasis in original), ‘the realities of “how things work” in organizations’ (Watson 2011), or ‘the empirical questions concerning how these organizations actually do their work’ (Krause 2014, p. 3).¹³ This section offers a selective review of relevant work, with the intention of identifying precisely when this research strategy is effective, compelling, powerful – in short, when it works.¹⁴

What reasons do researchers offer to explain and justify why they study the actual practices when addressing a given social science problem? Researchers do not always explicitly offer these justifications. In that case my question becomes: when are inquiries into the mundane realities of economic, organisational or sociotechnical life taken as noteworthy

¹³ Indeed, the word actual ‘means “real” or “exact”, and is often used in contrast with something that is not seen as real or exact’, at <https://www.oxfordlearnersdictionaries.com/definition/english/actual> accessed February 2024.

¹⁴ The implication is that there should be cases where this move would not work, in the sense that it would fail to produce effects or to be taken into account by the community of inquiry that it addresses. It is not in the sense that this move wouldn’t be challenged, critiqued, or outright rejected – as was the case with ‘what some regard as an overly descriptive and apolitical banality’ of actor-network theory inspired economic sociology (McFall 2009, p. 267, see also McFall 2015). Rather that it wouldn’t provoke conversation at all.

contributions that improve our understanding of said realities, by the communities of inquiry that they address? My claim is that there are several motivations and conditions that assure this. Inquiries are powerful when they seek to 1) disprove or displace rationalist accounts that are hegemonic in the field of research, 2) specify the logic of practice or stakes in a given professional field, 3) offer alternatives to the ‘criti-hype’ that contributes to hype around new technologies, especially when market and public stakes are high, 4) show both the creativity of actors, and the failing of it, on their own terms.

The following paragraphs review studies in economic sociology, organisational sociology, science and technology studies, anthropology of technology and the new pragmatist sociology, and tease out the collectively held, and at times routinised, motivations behind ‘studying actual practices’, gleaned from particular studies in these fields. Both the literatures and how the investigations are justified and practiced are intertwined: they overlap and make sense in relation to one another. The distinctions are for analytical clarity, and in accordance with what I think is epitomised in each literature.

I. Against rationalism and to show how markets are held together

The ‘pragmatic turn’ ‘in the study of markets and economic activities in general’ (Muniesa, Millo and Callon 2007, p.1) acquired its force from the double opposition that it mounted against, on one hand, the hegemonic account of economic action that neoclassical economic theory presented, and on the other, the dominant approach in its home discipline economic sociology, ‘the embeddedness paradigm.’ Both approaches, pragmatists argued, tended to abstract away from the observable realities of economic action, either in favour of economic rationalism, or sociological value- or network-centricism. By contrast, *Market Devices*, one of the founding texts of the field, in announcing ‘the pragmatic turn’, a turn that will sustain

its momentum for the next 15 years (and counting),¹⁵ argue that the new studies ‘avoid ex-ante explicative principles,’ ‘adopt an anti-essentialist position that is particularly suited to the study of situations of uncertainty,’ ‘focus on actors’ capacities to operate across multiple spaces and are attentive to the empirical intricacies of agency,’ and ‘pay particular attention to the trials in which actors test the resistance that defines the reality of the world surrounding them’ (2007, p.1). The result was an expansive body of literature that attended to the minutiae of economic action, details of practical market work, and the unfolding of agencies across consumer markets – and the work of marketing (Callon, Méadel, and Rabeharisoa 2002; Cochoy 1998), retailing (Callon and Muniesa 2005; Cochoy 2007), advertising (Ariztia 2015; McFall 2004; Nava et al 1997), branding (Lury 2004), pricing (Caliskan 2007; Moor and Lury 2018) – to business (Muniesa 2014) and finance (MacKenzie 2008).

Market studies, as the field is now called, is a remarkably generative collective exercise in what Abbott (2004, p. 7) identifies as the research heuristic of ‘switching the question.’ While markets were a given fact of life in economics, and normatively opposed in sociology, market studies instead inquire *how markets are held together* and *how calculative, rational market action becomes possible* (McFall 2009). For example, McFall’s (2014) study of ‘doorstep finance’ begins with an original manoeuvre: moving a question as simple as ‘what and how the poor consumed’ that has nevertheless been disregarded, into a realm where it demands explanation and can be explained. Arguably, studies of advertising and marketing practices were especially convincing in justifying their insistence on exploring what is actually going on in these fields. With ‘marketing’ ignored by economics, and ‘advertising’ elevated to the single most important engine behind capitalist consumerism by

¹⁵ The ‘interdisciplinary’, and equally characteristically, ‘empirically driven’, market studies continue to be a lively field as evidenced by the new edited collection Geiger et al (Forthcoming), after the classic MacKenzie et al (2007), McFall et al (2017), the biannual IMSW conference, and the *Journal of Cultural Economy*.

cultural studies, research had rarely focused on what marketing practitioners and practices actually *do* (McFall 2004; Slater 2002a, 2002b, 2011).

Against this intellectual backdrop, calls to study the everyday work of marketing practitioners offered an expansive body of work and innovative insights (Araujo, Finch and Kjellberg 2009; Kjellberg and Helgesson 2007; Zwick and Cayla 2011). Studying the historical production context of advertising challenged ‘the epochalist tendency’ that had created an artificial dichotomy between early advertisements as informative and later ones as persuasive, by revealing the contingency of persuasive effects (McFall 2002). Ethnographies of the day-to-day practice of practitioners manifested the interweaving of economic and cultural calculation in marketing work, and the ‘material social’ character of marketing practice (Slater 2002a; Zwick and Cayla 2011). Attention to the minutiae of daily practice also showed the contingency inherent in the decisions of practitioners as they go about their business, as well as the durability of devices they turn to justify their actions, like ‘references’ in advertising (Ariztia 2015). These studies constitute important reference points for studying how ‘platforms’ are held together, against accounts that overly rationalise them.

II. To trace the dynamics of convergence-divergence and identify specific logics

In organisational sociology, too, what would later become an important theoretical perspective emerged in opposition to the hegemonic rationalist accounts of its object of study (Alasuutari 2015; Alvesson and Spicer 2019). The ‘new institutionalism’ rather argued, if we observed organisational practices, we would find that most ‘rationalising’ technologies are adopted, not to make the organisation more effective or efficient, but to give the organisation a veneer of legitimacy. Further, often they were not adopted as widely and embedded as deeply into organisational routines, rather there is a ‘decoupling’ between the uptake viewed

at the managerial level and the actual uptake at the bottom (Meyer and Rowan 1977; DiMaggio and Powell 1983). Meanwhile, while ‘neo-institutional approaches have used the concept of “field” to emphasize shared norms’ the equally if not more influential Bourdieusian tradition ‘emphasize[s] competition and symbolic divisions’ (Krause 2018, p. 11). And it is rather these dynamics of *convergence* (shared norms, practices, assumptions within a field, ‘isomorphism’) and *divergence* (differentiation of fields, competition over stakes in the field, or ‘decoupling’) that primarily preoccupy researchers and make it a worthy contribution their decision to be attuned to the detail of practices, structures, and ‘what is actually going on’ at the level of the organisation or the field (see Caplan and boyd 2018; Christin 2017, 2020; Krause 2014; MacKenzie 2018; MacKenzie, Caliskan and Rommerskirchen 2023; Stark 2009).

Instructive examples in this strand of work do not stop at the claim that organisational fields are characterised by a divergence or convergence dynamic but seek ‘to specify the particular logic’ that unifies the field or identify the particular ‘stakes’ and ‘structures’ around which actors compete in the field.¹⁶ Consider Krause’s (2014) ethnographic study of what desk officers in international humanitarian relief organisations do in their day-to-day work. While the rationale for the research design is constructed in reaction to traditional approaches that see humanitarianism as either a globalising force or an imperialist ‘governance mechanism’, which do not ‘suffice’, to paraphrase Abbott (2004) once again, to explain why one population is targeted over another as the beneficiary of relief, the investigation ends up revealing, through the close study of the criteria and devices such as the log frame that desk officers use in selecting beneficiaries, the specific ‘logic of the field’ to be ‘to produce a good

¹⁶ Field theoretical research more generally is geared towards identifying the stakes and field-specific capitals in specific fields (see Krause [2017] and [2018] for more on field theoretical tradition).

project’ for donors in the quasi-market of relief projects. In later work, Krause (2017) defines ‘field theory’ as ‘a sensitivity to a possible pattern’ whereby actors are oriented towards shared stakes. What those stakes are, in symbolic, monetary, political, legal, and also material terms, is another empirical question. MacKenzie’s (2018, 2019) study of high frequency trading, and with colleagues, of AdTech (MacKenzie, Caliskan and Rommerskirchen 2023), shows how material arrangements – underlying the interactions of ‘making’ and ‘taking’ trading algorithms or where bids are collected in advertising auctions – are highly consequential for the shape competition and distribution of economic rewards take in respective fields. Without developing a ‘deep’ familiarity with the field under study, these consequential details simply remain inaccessible to social scientists, and without these details, investigations yield less interesting theory let alone substantive contribution to knowledge.

III. To deflate technological hype and ‘criti-hype’

Social studies of science, technology and human-computer interaction are characteristically attuned to the ‘situatedness’, ‘distributedness’, and ‘contingency’ inherent in technology development and use, and therefore to a general pragmatic stance (see e.g., Law 1994; Hutchins 1995; Suchman 1989). This is because the studies attempt to temper technological determinism, deflate hype, and destabilise binary narratives of progress versus doom (Neyland 2016; Vinsel 2021). In response to the current moment, as we have been going through the accelerated hype cycles of ‘crypto’ (Swartz 2022), ‘web3’ (Sadowski and Beegle 2023), ‘generative AI’ (Vinsel 2023), (and to a lesser extent, ‘autonomous vehicles’ (Tennant and Stilgoe 2021)) in the short lifetime of this thesis alone, the motivation is as well to counter what STS scholar Lee Vinsel has called ‘criti-hype’, the tendency for critical seeming

discourses to capitalise on and inadvertently contribute to the hype by not questioning the claims of market actors (Vinsel 2021).

There is a growing literature that carries this motive. Neyland (2016) observes of academic and popular reports, ‘we are told that algorithms trap us and control our lives’ (p. 51), but his ethnomethodological account of algorithmic surveillance systems reveals the heterogeneity inherent in how actors make sense of algorithmic outputs. Phan, Goldenfein, Mann and Kuch (2022) warn of criti-hype in the context of ‘AI ethics’, as a recent article wryly draws attention to how ‘deployed AI systems often do not work’ (Raji et al 2022). The authors go on to list all the times AI systems are found to misdiagnose – even report 100% error rate – while still being hailed as the cutting-edge technologies (idem). Catanzariti (2023) argues, using the case of facial recognition systems and the antiquated emotion science underlying the systems’ design, that the ‘agnosticism’ of practitioners vis-à-vis science can allow the continuation of problematic practices. Presenting a good example of a different yet equally commonly deployed tactic, ethnographer Angele Christin (2017) zooms in on two case studies of predictive policing and journalistic production, to demonstrate how algorithmic systems in use are ‘decoupled’ from the managerial and societal discourses on their widespread usage. Similarly, McFall, Meyers and Van Hoyweghen (2020) question the commonly alluded ‘individual and social harms’ arising from the application of big data analytics in ‘insurtech’, and Tanninen (2020) finds in reviewing sociological and critical data studies literature on insurance, that big data analytics have much lesser purchase due to legal and actuarial constraints than assumed in critical discourses that perpetuate an image of highly personalised and discriminatory insurance. Ruckenstein and Granroth (2020, p. 16) cast doubt on the assumed precision and power of targeted advertising, highlighting

‘marketing failures’ where ‘ads are also seen as completely irrelevant. Online marketing is frequently not appreciated or reacted to; it is merely digital noise or waste.’

To reiterate, these studies are impactful, and their attention to empirical detail yields substantial results, because they upend the common conceptions, proving them to be misconceptions. It is the hype and the criti-hype, that gives this move its elegance and force.

IV. To appreciate actors’ creativity and failings on their own terms

Contra-hype and contra-criti-hype studies rightly deflate the claims of efficiency and effectiveness that individual and institutional market actors make in relation to the technologies they market and the organisations they represent. But the situated actions of these actors can still make legitimate and generative subjects for inquiry on their own right. To borrow the provocative title of an organisational decision-making classic, one can offer ‘a science of “muddling through”’ (Lindblom 1959). This is taken as a research objective most explicitly in the ongoing turn to ‘the tradition of classical American pragmatism’ in sociology that mobilises the tradition’s core philosophical precepts, language, and substantive interests in new contexts (Bernstein 2010; Gross, Reed and Winship 2022, Silver 2011).¹⁷

Interdisciplinary studies of markets, organisations and technologies have already drawn from American pragmatism. Notable examples are McFall (2014) who ‘unearthes’ William James’ ‘very dirt of the private fact’, and Muniesa (2007, 2014) and Stark (2009) who find continuous inspiration in John Dewey’s understanding of valuation.¹⁸ These literatures have

¹⁷ This intellectual project is typically associated with Charles S. Peirce, William James, and John Dewey, and is characterised by a distinct philosophical stance that approaches and evaluates the truth of statements and the conduct of actors from the vantage point of their practical contexts, uses and consequences.

¹⁸ The anthropological strand in human-computer interaction (e.g., Suchman 2007 [1989]; Hutchins 1995) has also been explicitly influenced by American pragmatism: Suchman’s landmark study of the interaction between expert systems and users draws on ‘symbolic interactionism’ to propose the model of situated action (see Hennion and Muecke [2016] for more on this).

also subscribed to a primarily pragmatic approach to ‘agency’. Yet, it is ‘the new pragmatist sociology’ that centres and elaborates ‘the pragmatist theory of action’ in discussions of economic and organisational action, mobilising its vocabulary and ‘terms of art’, such as ‘ends-in-view’ or ‘habit’ (see Gross, Reed and Winship 2022).

Particularly salient in this literature has been ‘the image of people as problem solvers’ that ‘remind sociologists to embed people’s actions in the proximate setting of the situation rather than in the shifting sands of ultimate ends’ (Tavory and Timmermans 2022, p. 171; Prasad 2021). Recent case studies on topics as varied as the 2008 financial crisis (Flores and Gross 2022) or Boston’s community-police partnership in the 1990s (Winship 2022) demonstrate the explanatory potential of studying how actors manage or fail to overcome problems with their creativity, experimentalism, and at times through serendipity, for our understanding of broader socioeconomic and sociopolitical developments. (Chapter 3 expands on these two studies relating them to my findings.) In these studies, not only are social actors problem solvers, but the problems they grapple with are not limited to ‘utility maximization’ (Gross 2009). ‘The situations humans experience as problems may involve utility maximization – for example, the need of businesses to generate revenue’, Gross (2009, p. 367) clarifies, ‘but the kinds of problems of concern to pragmatists range much more widely and include all the difficulties humans or collective actors face in life, from the need to remain healthy to the need to find meaning and purpose in existence.’ Such problems are indeed active in economic and organisational life too. In one example, Cluley’s (2013) investigation of ‘what buzzwords do’ in organisations show that they fulfil certain functions for managers, such as signalling authority, displacing responsibility and facilitating action. In a similar vein, Cohen and Dromi (2018) pay attention to how advertising practitioners manage the moral stigma attached to their work with three prevalent ‘narratives of the

common good’: caring for the clients, helping the consumers, or creating artistic value. These examples point to the different kinds of work that textual and material devices can do in the ongoing of organisational life, as well as the diversity of problems that the actors need to grapple with.

My starting point in this thesis is existing accounts of online nudging suffer from the same weaknesses that justify empirically driven studies of markets, organisations, and technologies. In the popular critical and academic accounts of platform nudging, as reviewed in the introduction chapter, platforms are *over-rationalised* and users are *over-behaviouralised*. There is a visible hype and criti-hype around the effectiveness of data-driven behavioural technologies, epitomised in terming these as ‘means of behavior modification’ (Zuboff 2019). We know little about the internal operations of platform companies, how the product and design work is *actually* carried out, as a result of which companies appear as monolithic and perfectly functioning entities. Neither do we know according to which specific logics the products, and the interactions and experiences users have with them, are designed. Nor consider the possibility that the uses of behavioural scientific rhetorical sources might have other functions in the organisational setting. These are the motivations behind the pragmatic emphasis in this study of online nudging. The next section delves deeper into further decisions taken during research design.

Research Design and Methods

This thesis is primarily based on 30 semi-structured, in-depth interviews with practitioners who work broadly within the platform economy, as marketers, product managers, product strategists, user researchers, data analysts, or designers. They additionally draw on behavioural concepts or methods in their work, if not directly have the job title of ‘applied behavioural scientist’. Seven of the interviewees had a PhD and eight a master’s degree in

behavioural sciences broadly defined (behavioural economics, psychology, decision science) or relating to methodologies typically used (business analytics, statistics). While the rest were ‘self taught’¹⁹, some members of this latter group were remarkably influential actors in the expert network without a formal training in the sciences, leveraging instead their acumen in their home fields, namely, advertising, product management or design (and one of them, financial services). More than a half of all interviewees had more than a decade long professional career before starting to incorporate behavioural science vocabulary and practices into their work, while a quarter self-branded primarily as an applied behavioural scientist, with little professional experience to draw on.

These characteristics were methodologically important, but they also mattered substantively, in that they captured the fluidity and heterogeneity of what I consider to be a ‘network of expertise’ rather than a bounded professional group (Eyal 2013; cf. Abbott 2014[1988]). The interviewees are ‘experts’ in the sense that Bogner, Littig and Menz (2009) use the word in ‘expert interview’ to denote the unique ‘practical knowledge’ they possess ‘of organizational processes’ they are ‘involved in’ themselves, which constitutes ‘the target of investigation’, rather than ‘the subject area’ they are ‘knowledgeable about as an observer’ (Krause 2014, p.10). This also meant that while all interviews could provide valuable insights into the everyday work realities, they differed in how well they could interpret or contextualise these within the broader organisational or market structures, as a function of differences in professional experience.

The interviewees were recruited largely on platforms, namely LinkedIn, WhatsApp, and Slack, although these platforms proved to be more than recruitment tools, acting as

¹⁹ There are many certificate programmes offered within the field, such as Behavioral Economics Bootcamp by Irrational Labs or Applied Behavioural Science Course by Ogilvy (see for a non-exhaustive list: <https://www.behavioralscience.org/behavioral-science-programs> accessed February 2024.)

quasi-field sites. I had a LinkedIn account prior to this research, which was tweaked and tailored (through adding a brief, joining certain groups, following certain figures) to convey to potential interviewees an easily understandable researcher profile and signal my familiarity with their field. The recruitment started with ‘batch messaging’ potential interviewees that I identified through searches within the platform, or events outside of it (such as the Market Research Society Behavioural Summit) – at one point LinkedIn identified me as a ‘bot account’ for the unusual amount of activity, a warning normally reserved for preventing professional recruiters from using the service without paying for premium features. Later, snowballing replaced cold calling as the interviewees started referring me to their colleagues who might be interested in taking part in the research, which for the most part resulted in positive responses.

As to WhatsApp and Slack, each platform had closed, invite-only groups: ‘BehSciClub’ with 351 participants and ‘The Behavior Slack’ with 471 participants. These were highly active groups in which members engaged in daily discussions, shared job adverts, conference or workshop invites, opinions on current events that were seen as relevant to the network. I came across both groups on LinkedIn –which also had its own closed groups (in fact several of them), although the public feed was livelier than these enclaves. Here, networks formed around vocal figures (‘Top Voices’) who offered op-eds on methods, controversies, futures of the field. I was *embedded*, as it were, in these platforms for the duration of my interviews (starting in September 2021), observing interactions, identifying key informants, recording career progressions, at times participating in ongoing discussions with questions, but mostly keeping tabs on what was relevant, significant, meaningful to the network with a view to refining and revising the interview protocol.²⁰ The number of

²⁰ Indeed, these observations were also research inputs *in themselves*; they informed and influenced my analysis throughout. However, since the ‘public availability’ of this data cannot act as a ‘consent waiver’ (Ravn,

interactions on these platforms can be overwhelming and they are automatically captured, recorded, timestamped, and are thus available for analysis outside of the moment of their ‘happening’ (unless the authors of the posts, comments or messages delete them). To make it manageable, I used platform affordances such as the ‘Saved items’ feature on LinkedIn or took screenshots and field notes on things of interest. These were fed back organically into interview situations, and I stopped following closely what occurred on platforms after interviews were completed in June 2022 – although could never fully disentangle myself from the networks.²¹

The interview protocol had three main parts: 1) career trajectory and involvement with ‘nudge’ 2) experiences and observations of the field, and 3) everyday work. The parts correspond to and specify the key research questions in the thesis, how *nudge* spread as a frame and a network and how nudging *works* in practice. The interviews began with ‘a guided grand tour question’ (Jimenez and Orozco 2021) on what the interviewee did for a living and how they came to be interested, involved with behavioural science in their work, which served the function of easing into the interview situation and soliciting key points for later exploration, as Jimenez and Orozco (2021) identified. Responses to this question were, however, also informative in uncovering how individuals entered the network or the network extended itself to individual practitioners (coming across the book *Nudge* was an overwhelmingly common point of entry). I built off of this question by discussing further what the ‘appeal’, or ‘value’, or ‘unique selling point’ of behavioural science was for the

Barnwell and Barbosa Neves 2020), I only directly quoted content published as a blog article, and not content that is ‘intended for a small audience or network’ (Freelon et al 2018), for example, comments left on a post.

²¹ Nor did I entirely want to, at least until the project was concluded. I shared on LinkedIn the news of the first publication from my thesis, thanking my informants and inviting any comments they might have on the contents. I ended up receiving a number of private messages and public comments on my post, from practitioners I did not interview, saying they appreciated how much the analysis resonated with their experiences in the field.

private sector, and especially for platform companies and software start-ups. If interviewee was a consultant, the question was followed by how they sell their services, and who buys them (which clients, in which markets), to solve which problems (e.g., new product adoption or optimisation of existing products or flows? User engagement broadly defined, or behaviour change for good?).

In the second part of the interviews, I asked interviewees to walk me through a day at work, or through a project from conception to completion, focusing on the division of labour, exercise of decision-making, relevant stakeholders, different forms of expertise (e.g., data science and qualitative user research), and significant material devices, which collectively bear on and organise the work in one way and not the other. As the interviews progressed and I developed a thicker empirical understanding of the typical product development process, I started probing interviewees to reflect on how the predominant frameworks, technologies, and cultures (e.g., ‘lean start-up’ methodology, ‘just-ship-it’ culture, A/B testing) worked with or against nudging or other applications of behavioural science. The interviews lasted between 30 minutes and one and a half hours; most falling between 50 minutes to one hour. They were all conducted on Zoom.

Given the character of the interviewees’ work, mine was the challenge of ‘the eager respondent’, as opposed to the reluctant one identified in the literature on professionals (cf. Holstein and Gubrium 2003; Souleles 2018). Some of my interviewees performed as regular (micro)bloggers or podcasters (calling themselves ‘evangelists’ and ‘thought leaders’) promoting the field, alongside their usual discursive work of marketing particular services to particular clients. Some of them had given more interviews than I have interviewed, some were interviewers themselves, and therefore had a degree of familiarity with the interview script that would not be expected from the naïve interviewee. In response, I developed a host

of ‘deflationary’ (Neyland 2016) prompts or follow up questions, in case there was a sense of opacity, of not being able to see what the interviewee actually does at work, or a dissonance in the responses that the interviewee gave at different points in the interview. An example of this would be ‘behavioural science will play a core place as the market matures’ or pronouncements like ‘you can use your powers for good or evil’ or ‘with great power comes great responsibility’ (power, here, referred to behavioural science) right after the interviewee talked about how difficult it was to engage users or convince clients of the effectiveness of interventions.

As Seaver (2022, p. 34) observes, a considerable amount of ‘scale climbing’ (Irvine 2016) happens in the tech industry where ‘we are not talking about minor acts of coding’; and, we may add, of designing or maintaining, ‘but about enduring problems of existence.’ An interactional counterpart of this, I suggest, is what pragmatists call ‘upshifting’ or generalisation or typification from a situation (Tavory and Timmermans 2022). This is very typical in public pronouncements on behavioural biases and nudges, and some interviewees engaged in that within the interview situation. Yet, upshifting typically provokes downshifting, resistance against generalisation (idem.). I would therefore ask questions eliciting precision, e.g., ‘can you give me an example of that?’, ‘what is the business problem that behavioural science solves?’, or comparison: ‘what are some of the less sophisticated or effective applications?’. In my case, downshifting was especially important for epistemological purposes, and for navigating the affordances and constraints of my chosen methods.

In addition to managing the interview situation, I triangulated interview findings with other available sources, and had initially planned to conduct participant observation, which unfortunately never materialised due to the Covid-19 pandemic lockdowns and the slow pace

of return to the offices that ensued. The silver lining to the pandemic was the movement of trade meetings and conferences to online which allowed me to participate in twelve trade events across different localities, including a two-day conference and a day-long behavioural design workshop. These participant observations were complemented with a review of the trade literature: books, blogs, and manuals on applied behavioural science, and also on product management and strategy, digital optimisation and experimentation, and entry level data analytics.²² The documentary sources equally included a selection of ‘insider’ books on the platform economy (such as *Chaos Monkeys: Obscene Fortune and Random Failure in Silicon Valley* [Martinez 2016] or *Facebook: The Inside Story* [Levy 2020]) and leaked documents, namely ‘The Facebook Papers’²³, that were exceptionally useful for gathering data on mundane aspects of product development within platform companies as formal bounded organisations, in addition to exploring the work across the platform economy writ large. These sources helped complement my interview data on the organizational processes within large platform companies, as a third of the interviewees ($n=10$) were employed by or consulted directly and regularly with a large platform company based in the US or South and Southeast Asia. (In addition, one interviewee worked for a platform startup.)

In the data analysis stage, I coded manually parts of the interview data and extracted excerpts for comparison across different interviews.²⁴ I was, however, equally interested in interview transcripts in their entirety and as a representation of the interviewee’s experiences

²² The books were: *Andorsky (2020)*, *Blank and Dorf (2020)*, *Bucher (2020)*, *Buisson (2021)*, *Croll and Yoskovitz (2013)*, *Eyal (2014)*, *Kohavi, Tang and Xu (2020)*, *Olsen (2015)*, *Wallaert (2019)*, *Wendel (2013)* – and, of course, *Thaler and Sunstein (2008)*.

²³ ‘The Facebook Papers are a massive set of Facebook internal documents that whistleblower Frances Haugen provided to Congress and news outlets around the world. These documents formed the basis of more than 100 news stories and counting, catalogued here.’ at <https://facebookpapers.com/> accessed February 2024.

²⁴ I also ‘read the interviews or my field-notes a dozen times and found myself thinking about the patterns I may be finding as I try to go to sleep, or in the shower’, as Tavory (2023) depicts the data analysis stage, to convey an ‘intensity of engagement with the materials’ that traditional methodological measures or accounts cannot capture (p. 1046).

of the field. Codes that ‘already speak to bodies of literature’ (Timmermans and Tavory 2022, p. 72) were used; an example would be the ‘data *versus* theory’ dynamic. Simple keywords such as ‘the client’ (or ‘the marketing department’) were also useful in linking the interview data with analytical concerns: in this example, how institutional arrangements shape work practices. I paid particular attention to ‘misfits’ in my data, especially the puzzle of the two interviewees who did not identify as behavioural experts, largely looked down upon behavioural theories and yet were engaged in almost the same practices as the rest of the interviewees (i.e., experimenting with user behaviours and producing isolated interventions). While I cannot say that this research was in any way ‘inventive’ with its methods (Lury and Wakeford 2012), its problems were consciously allowed to be ‘formed and transformed’ as the research evolved (Lury 2020). In fact, the main argument of this thesis came about from transforming the problem of ‘how nudge theory is mobilised in product design’ into simply trying to understand ‘what nudging is’ and if instances that we have of it ‘are actually it’.

Table 1 Interviewees

	US	UK & Continental Europe	South & Southeast Asia	South America	Total
Behavioural science or economics consultant	Meryl,* Adam,* Liam, Ryan, Nick	Carlos, Emma	Antonio, Ross		9
Behavioural expert at platform company	Anthony, Joseph, Mark		Priya, Aisha, Khan, Arjun		7
Behavioural expert at advertising, marketing, or design agency	David, Simon	Sophie, George, Martin			5
Behavioural expert at other type of org. (e.g., insurance company, regulator)	Valentin, James, Andrew	Charlie, Bilal		Diego	6
Doesn't identify as a behavioural expert	Jo,* Michael,* Ethan				3
Total	16	7	6	1	30

*Consults regularly with major platform companies.

Table 2 Characteristics of Interviewees

Pseudonym	Title	Organisation	Location	Date
Jo	Product Manager	Experimentation Consultancy	US	15 October 2021
Charlie	Behavioural Scientist	Government Regulator	UK	29 October 2021
Sophie	Behavioural Insights Advisor	Advertising Agency, Healthcare Company	UK	29 October 2021
Bilal	Senior UX Designer	Retail Company	UK	1 November 2021
Michael	Data Analyst	Experimentation Consultancy	US	4 November 2021
Martin	Market Researcher	Marketing Agency	UK	5 November 2021
Ethan	UX Designer	Advertising Agency	US	22 November 2021
George	Advertiser	Advertising Agency	UK	10 December 2021
Emma	Consumer Researcher, Founder	Behavioural Science Consultancy	Netherlands	24 January 2022
Arjun	User Researcher	Platform Company	India	3 February 2022
Aisha	Behavioural Scientist	EdTech Platform Company	India	4 February 2022
Khan	User Researcher	Platform Company	India	5 February 2022
Valentin	Behavioural Science Manager	Insurance Company	US	7 February 2022
Diego	Program Manager	Telecommunications Company	Peru	11 February 2022
Chris	Behavioural Researcher	Platform Company	US	25 February 2022
David	Senior Designer	Design Agency	US	4 March 2022
Nick	Co-founder and CEO	Behavioural Design Consultancy	US	18 March 2022
Priya	Behavioural Insights Lead	Platform Company	Singapore	7 April 2022
Anthony	Head of Behavioural Science	Platform Company, Design Agency	US	15 April 2022
Simon	Account Manager	Design Agency	US	21 April 2022
Ryan	Behavioural Product Strategist	Start-up Foundry	US	25 April 2022
Andrew	Co-founder and CEO	Software Company	US	26 April 2022
Ross	Founder	Behavioural Design Consultancy	Thailand	27 April 2022
Carlos	Behavioural Scientist	Behavioural Science Consultancy	Spain	28 April 2022
Antonio	Designer	Behavioural Design Consultancy	Thailand	4 May 2022
Liam	Chief Behavioural Officer	Marketing Agency	US	13 June 2022
Mark	Senior User Researcher	Platform Company	US	16 June 2022
Adam	Behavioural Economics Consultant, Founder	Behavioural Economics Consultancy	US	17 June 2022
James	Founder and CEO	Software Company	US	21 June 2022
Meryl	Managing Director	Behavioural Economics Consultancy	US	18 August 2022

Chapter 3: The Google Earth of User Behaviour

Introduction

‘Every human tool’, Lucy Suchman writes, ‘relies on and materializes, some underlying conception of activity that it is designed to support’ (2007 [1987], p. 31). Suchman’s now-classic book, *Plans and Situated Actions*, ‘examine[s] an artifact built on a *planning model* of human action’ (idem, emphasis in original). The artefact is Xerox 8200 photocopier and its ‘expert help system’, designed to help users when they fail to accomplish the tasks of printing, scanning, or copying. Indeed, in the ‘rational actor’ model that Suchman examines, users interact with technical systems to accomplish a ‘purposeful action’ and the systems are in turn designed to execute such ‘plans’. While Suchman instead proposes to foreground the ‘situatedness’ inherent in how humans and machines act together, which necessarily diverges from the unfolding of a predetermined plan, the ‘Xerox machine’ earns its place as a ‘model case’ (Krause 2021) in anthropology of technology, embodying one of the longest standing cultural frames of human-computer interaction. That is, of course, until computers get embedded in ‘slot machines’.

Slot machines are rather designed to support *inactivity*, as Natasha Dow Schüll (2012) emphasises in her turn of the century ethnography of machine gambling in Las Vegas. Here, computers are not agents of purposeful, instrumental, procedural action but of affect and *pleasure*, at times to the point of *addiction*. Schüll examines with meticulous detail how ‘the zone state’ is created and sustained by an entire ‘orchestration of technique and sentiment’ (McFall 2014, p. 7): from interior design of the casino layout, through sensorial experiences encompassing music, odour, lighting, to interaction with hardware that comforts and software that enchants. Algorithms ‘programming chance’ are designed to keep gamblers pulling the now proverbial handle, but this is a more holistic operation. ‘Music that is too varied’, for

example, is avoided for its potential to ‘disrupt gambling activity’, ‘for it “restores ... your cognitive state to where you can make rational decisions,”’ as Schüll quotes from a casino design analyst (p. 49).

For anthropologists of *markets*, the problem is the inverse: their ethnographies seek to explain how actors are brought to a state where they *can* make rational decisions. In pursuit of this problem, Franck Cochoy ‘walks’ his readers ‘around in a French supermarket’ (2007, p. 123). Through the ethnographer’s eyes we reacquaint with a familiar scene: shoppers pushing and filling up trolleys, facing shopping lists, or facing shelves, reading price tags, flags, or boards. Indeed, these ‘market devices’ are what enables calculation and choice to take place, extending persistent invitations to shoppers to ‘embark on qualifications’ of the goods on offer (Callon et al 2002). Platforms, too, invite consumers to calculate, search and evaluate, and in the meantime revise their needs and know themselves better. This is how Michel Callon narrates his experience of ‘pass[ing] through Amazon’s site’, prompted by its recommendation engine (2021, p. 222). While not convinced by the offer on the ‘you may also like’ email he received based on a past book purchase, Callon nevertheless embarks on a journey of revising his literary preferences and reflecting on previously unnoticed commonalities between authors the algorithm found similar.²⁵ In the end, he proposes to theorise the platform as an ‘exploratorium’, a space of exploration and choice, providing actors with tools to ‘redefine’ their needs and tastes, and engage in novel calculations,

²⁵ ‘And at the end of the experience framed by Amazon’s algorithms, I have changed. I have learned things. My evaluation of Houellebecq has been confirmed, whereas before it had no doubt been a bit shaky; second, it is not because I read Piketty that I should read Houellebecq; and finally, an unexpected result—I know better why, having read Piketty, I didn’t really like it, contrary to what Amazon asserts (“You liked Piketty...you may also like Houellebecq”). I see certain traits they have in common that I had not noticed, such as a similar way of considering the world as something that escapes us and a set of cultural or political structures to which we must submit or against which we must fight. I am more aware of the fact that submission and radicalism are just two sides of the same feeling of powerlessness and that this book, the one you are reading, is a very modest way of imagining another way.’ (Callon 2021, p. 198)

‘getting closer and closer to the rational being portrayed in the first pages of economic textbooks’ (Callon 2023).

Callon’s is an unusual account, despite, or perhaps because of, the elegance and authenticity with which it portrays the platform user (Callon himself). The more culturally salient representation of the platform user is not ‘equipped with rationality’, nor is s/he ‘rational by nature’ like the imagined user of the Xerox machine. The platform user is rather ‘predictably irrational’ (Ariely 2008). In this sense, this figure bears a resemblance to the figure of the machine gambler, but it is not necessarily driven to a state of *inaction*. Instead, the platform user is continuously invited to *act*, to further her/his projects, but along with those of the platform. Platforms are superior to any other interactive machine with their intricate ‘choice architectures’, and the diversity of habits and routines they can create. They ‘provoke’ (Muniesa 2014) and prolong interactions not only predictably but also justifiably. Their primary instrument is the small and subtle intervention that nevertheless has powerful effects on users’ actions. The source of action resides in the nudge, and not in the agents prompted by them.

This chapter traces the rise of the nudge frame of platform interactions described above. As the fragments just presented remind us, there are other frames that are available and that have been applied to explaining our interactions with machines and with markets. (Both are relevant since platforms are at once technical systems and market arrangements.) The chapter seeks to find answers to why nudge has become the dominant frame in describing, explaining, and designing platform interactions, approaching the *explanandum* as at once a representational and pragmatic achievement.²⁶

²⁶ Even if this is a ‘why’ question, I cannot claim that I will offer causal claims or causal relationships. Rather, the present one is the more modest attempt of identifying and describing what have been called ‘the conditions of possibility’ or ‘enablers’ in ‘what-makes-it-possible’ inquiries (Abend 2022). As sociologists, writing about fields as different as humanitarian relief (Krause 2014) or business ethics (Abend 2014) have highlighted, what

The analysis begins with narrating a series of consequential events that surrounded two popular figures in Silicon Valley, B.J. Fogg and Nir Eyal, who although not behavioural economists themselves, were crucial to the establishment of ‘behaviouralist’ approaches to interaction design as they responded to the new demands and possibilities that the ongoing ‘behaviouralisation’ of software production and usage placed on product and business developers. With that, I refer to the extensive quantification or ‘datafication’ (Van Dijck 2014) of interactions through the proliferation of what is called ‘exhaust’ or ‘feedback’ data, ‘by-product of another activity’, such as ‘clickstream data that record navigation through a website or app’ (Kitchin 2014, p. 2). Fogg and Eyal’s intervention, as this chapter understands it, had the effect of collapsing these two separate dimensions, the material changes and the discourses proposed to operationalise them, onto one.

The chapter has two aims in narrating these events. First is to demonstrate that while Fogg and Eyal are key actors, it is not because they strongly influenced the designs and designers of software products, as has been previously argued (see especially, Beattie 2022; Martin 2022; Zuboff 2019; cf. Seaver 2022 who offers a different kind of interpretation). Instead, they are important because they laid the discursive groundwork for a behaviouralist conception of interaction design to take hold and make sense to actors involved in the field. Second is to bring to the fore the problems that these two figures grappled with – problems starting with how to replicate the virality of the first social applications on the Facebook Platform launched in 2007, to later how to create continued engagement for established

makes possible social phenomenon *X* is not only discursive formations, but also material, institutional, and political economic conditions. For example, for Krause (2014), the condition of possibility for humanitarian relief to exist ‘in the way that it exists today’ is the creation of the planning tool of ‘the logframe’, responsible for introducing to the field ‘an emphasis on clear goals and evidence for results’ (p. 11).

products – to demonstrate how the problems offer insight into the changing organisational and market dynamics, more than the solutions that Fogg and Eyal popularised.

‘Radical transformations’ in how software products are developed, distributed, and monetised form the background of these events (see Gurses and van Hoboken 2017; Morris and Elkins 2015; Nieborg 2015; Nieborg and Helmond 2019; Ziegler 2022). The starting point of my analysis is that the totality of these sociotechnical and political economic shifts presented what pragmatist sociologists call ‘a problematic situation’ for actors engaged in market and product strategy practices. This happens when ‘the situation feels novel and unfamiliar’ to actors who are ‘lacking the habits needed to cope with circumstances at hand’, although these situations ‘can also become the occasion for productive inquiry and experimentation’ (Flores and Gross 2022, p. 89), prompting ‘creative action’ (Joas 1996). Pragmatist sociology is mostly concerned with micro-situations pertaining to the interactional plane, yet meso- or macro-situations can also lend themselves to pragmatist analysis. An interesting example offered by Flores and Gross (2022) is the 2007-8 financial crisis, in which the authors argue that the regulatory actors mismanaged the crisis because they ‘misassessed’ a problematic situation for a routine one. Presenting another intervention into conventional pragmatism, Winship (2022) argues that the creative actions or discoveries that problematic situations prompt need not follow ‘a formal deliberative process’ or ‘originate from individual agents actively experimenting with alternatives’ (p. 309). Solutions might equally result from the ‘wandering’ and ‘muddling through’ (Lindblom 1959) of actors until they stumble upon ‘accidental discoveries’ that ‘may simply appear’ – although ‘they are solutions only if they are recognised as such’ (idem).

My contention is that when habitual ways of making and selling software products no longer applied to the new software market situation, several solutions were either

‘deliberately created’ or ‘stumbled upon’. When habitual practices failed to give satisfactory answers to the newly configured problems of product adoption, market growth, business and revenue models; new frameworks and specialisations, such as ‘the lean start-up methodology’ (Ries 2011), ‘the one-metric-that-matters principle’ (Croll and Yoskovitz 2013), ‘growth hacking’ (Ellis and Brown 2017) emerged. And ‘nudge theory’, as this chapter contends, was among these solutions that market actors reached for to realise the actual or perceived rewards in the new market for software products.

The section titled ‘The rise of behavioural experts’ marks the beginning of the second half of the chapter which brings the focus back to the ‘network of expertise’ (Eyal 2013) of nudge theory. By virtue of having already established prestige and recognition in other fields, and by articulating itself well to address the problems in the software industry, the behavioural expertise network has become a source of portable, scalable, and testable solutions for market actors to try out in grappling with these problems. While product designers to an extent ‘stumbled upon’ nudge theory as a fertile resource, it was not haphazard to the degree that certain key actors have provided creative rearticulations of the field to serve the organisational needs of the designers.

While that section documents the spread of the network in academia, public and private sectors, each one of the following three makes a case for a particular aspect of behavioural expertise that facilitated its spread in software product development. The aspects I unpack and the corresponding functions are as follows: 1) the linear mode of problem solving offered by ‘behavioural economics qua heuristics-and-biases programme’, which provided a form of expertise easy to move and clothe oneself in, 2) the dual systems theory, which served as a legitimation and sense-making tool for practitioners, and finally, 3) the expanded and multi-scale concept of behaviour, which allowed for different scales of user

interaction to be connected in one framework. These sections also offer a peek into behavioural expertise in action, revealing its divergences from the stylised accounts of nudge theory – a theme that the subsequent chapters take up more explicitly and further unpack in the organisational and field contexts.

Platform

B.J. Fogg left the launch of ‘Facebook Platform’ at the San Francisco Design Center on 24 May 2007 with profound intellectual excitement, and an idea for a new course to teach at Stanford where he had been an adjunct professor since earning his doctorate in 1998. He kept thinking to himself, ‘This has never existed before. This is interesting. This is powerful. I want to understand this. I’m going to teach a class on this.’²⁷ He emailed Prof. Terry Winograd who oversaw teaching at the Computer Science Department straightaway: ‘There’s this new thing at Facebook, it’s called Platform, anybody can create apps within an ecosystem ... and you could get metrics every day.’²⁸ Within a few weeks he put together ‘CS377W: Create Engaging Web Applications Using Metrics and Learning on Facebook’. The students were expected to design and implement actual social applications and would be evaluated on the number of users they would *persuade* to use their products within term time.²⁹ In return, Fogg and his co-lecturer Dave McClure, offered a star line up of guest speakers from Google, Facebook and outside experts like Dan Olsen, who would share their savvy on aspects of user engagement, including niche expertise areas like ‘viral loop

²⁷ ‘Guy Kawasaki’s Remarkable People Podcast Episode 112’ at <https://guykawasaki.com/bj-fogg/> accessed February 2024. Quotes in this paragraph are from the same interview.

²⁸ Fogg was invited to the launch event as a ‘developer partner’ to ‘demonstrate what a third-party developer could do with the Facebook Platform.’ ‘Overall, about 60 third-party apps were on display’ in the exhibit hall on the launch day, and some of the apps would be highly successful, although the two that Fogg’s team created were not among them (Fogg 2008, p. 24).

²⁹ More precisely, ‘For their first app, students would aim for distribution. In the second app, students would aim for user engagement. Both were measurable through Facebook statistics in combination with Google Analytics’, and these metrics would determine students’ grades (Fogg 2008, p. 25).

optimisation’.³⁰ Experimental in the way it assessed learning and well-networked in the way it delivered teaching, the class was an instant hit with the infamously entrepreneurially minded students of Stanford University. And it would only get bigger with them.

By the end of the term, the apps that the students created, with juvenile names and aims (such as KissMe, Send Hotness, LoveChild, PickMeUp, DodgeBall) amassed 16 million users, going on to 25 million within the next few months (Fogg 2008, p. 25).³¹ This was half of Facebook’s total user count at the time. Some of these apps reportedly earned 500,000 US dollars in ad revenue during the ten-week term time, some were acquired by large companies not long after, and the founders of others moved onto product and engineering positions in companies like Google, Facebook, or Uber (Fogg 2008; Stolzoff 2018). While others would start careers in ‘tech evangelism’ or ‘anti-tech evangelism’ as with Tristan Harris, the founder of the Time Well Spent movement (Leslie 2016). Dubbed as ‘the Facebook class’, ‘the class that built apps and fortunes’, the episode had since been covered by *The New York Times*, *The Economist*, *Wired* and *Vox*, portraying Fogg as a guru, a legend, an unlikely leader, a millionaire maker, and later the Faustian scientist behind surveillance capitalism (see Helft 2011; Leslie 2016; Lieber 2018; Stolzoff 2018).³²

Fogg’s interest in the new area he designated as the intersection of computing technology and psychology of persuasion, however, predated the platform era. In fact, he came to Stanford in 1993 to study precisely that at a time nobody cared much about it. ‘Computers weren’t initially created to persuade; they were built for handling data—

³⁰ Fireside Chat with Behavior Design Expert BJ Fogg and Dan Olsen at Lean Product Meetup at https://www.youtube.com/watch?v=2jBQcYbGi3Y&ab_channel=DanOlsen accessed February 2024.

³¹ The final presentations of students can be found at https://www.slideshare.net/StanFan?utm_campaign=profiletracking&utm_medium=sssite&utm_source=ssslideview accessed February 2024.

³² Invoking this media coverage, Kawasaki asks Fogg: ‘Tell me about the Facebook class, was that your [Stanford] prison experiment?’ at <https://guykawasaki.com/bj-fogg/> accessed February 2024.

calculating, storing, and retrieving.’ (Fogg 2002, p. 1) That’s how *Persuasive Technology* based on Fogg’s PhD dissertation starts. It continues to mount a programmatic call to explore how ‘interactive computing systems’ are currently being, and could better be, designed to ‘change people’s attitudes and behaviours’ (idem). As his mentor, social psychologist Philip Zimbardo explains in his foreword to the book:

“Captology” is the term that B.J. coined to capture the domain of research, design, and applications of persuasive computers. It is an acronym for computers as persuasive technologies. I predict it soon will be coin of the realm for all those interested in how interactive technologies can operate to change opinions, attitudes, and values and to affect the behavior of people—in short, for understanding how these new machines can change old minds in specific, predictable ways. (Fogg 2002, p. x)

In a recent interview, Fogg said: ‘The response to my book was a big yawn. Nobody seemed to care. At the time people cared a lot about usability.’ (Fogg and Euchner 2019, p. 19) It is important to note that Fogg had a very peculiar understanding of the problem of persuasive technology, reinforced by his dissertation committee, comprised of Clifford Nass, Byron Reeves, Terry Winograd and Philip Zimbardo. Nass, his principal advisor is now known for the ‘Computers are Social Actors (CASA)’ paradigm that he spearheaded (Kuang and Fabricant 2019). Zimbardo, with whom Fogg worked as a teaching assistant in his course on ‘the psychology of mind control’ (Fogg 2002, p. ix), the social psychologist behind the Stanford Prison Experiment, presumably needs no introduction. Operating within the CASA paradigm and working with Zimbardo, Fogg understood human-computer interaction as a *social interaction* – in the strictly social psychological sense of the word – as invoking certain social rules and dynamics, like ‘compliments’, ‘similarity’ or ‘reciprocation’. His proposal was to design computers with these traits in mind, consciously and strategically, to turn them into ‘likeable’, ‘supportive’, ‘charismatic’ and thus ‘persuasive’ agents that can move or mobilise people, preferably to good ends, such as adopting good habits. He continued this

social psychology focus, in other work that focused on issues of web credibility, mobile persuasion, and ‘mass interpersonal persuasion’ phenomenon presented by Facebook: for him, computing systems were ‘persuasive’, because they could mimic charismatic personality traits, and with greater success than humans, thanks to their ‘persistence’, superior ‘data handling’, ‘networked nature’ (Fogg 2002, 2008) – a vision of how computers were better than humans in persuading, but an essentially anthropomorphic one nevertheless.

It was not surprising that the press was quick to establish *a causal relationship* between Fogg’s academic research into the tellingly named ‘captology’, ‘persuasive technology’ or ‘behavior design’, and the jarring success of his students in getting millions of people to use their apps. The academic accounts did not diverge from this consensus either. Consider Martin (2022, p. 223) who writes, ‘Fogg’s textbook, *Persuasive Technology: Using Computers to Change What We Think and Do*, has been available since 2003. Looking back at its content now is slightly shocking, knowing as we do how its *ideas* have been used and how long they have been available’ (emphasis in original). But *what* of the book’s *ideas* were used in the students’ apps? While Fogg continued using the language of ‘psychology of persuasion’, it was in a more generic sense, disconnected from the theoretical framing in his social persuasion work, and instead oriented towards an empiricist approach (see especially Fogg 2008; Fogg, Cueller and Danielson 2007). Fogg (2008, p. 25) recounts that ‘rather than having students guess about what name to give their Facebook apps, we wanted them to test various options and use data to support their decisions. We encouraged a metrics-driven approach to designing the user experience, including details like creating an interface button: What should the button look like? Where should the button be located in the UI? What text should be on the button?’

Both Fogg and his students, notably Ed Baker, the creator of Send Hotness, ‘a Facebook application that grew from 0 to 5 million users in 5 weeks, and was subsequently acquired by SpeedDate’,³³ said in interviews that they did not use any ‘clever tricks’, rather, the key to their success was ‘simplicity’ and ‘math’ (Adweek 2007). Around the same time, Fogg published his second most influential work, ‘A behaviour model of persuasive design’ (2009), where he articulated the three components of behaviour, ‘motivation, ability and trigger’ and proposed to design interactive systems that targeted these. Some of the ideas that would be frequently cited in critical accounts were first verbalised here (such as the idea of creating triggers to pull users back to the apps, which inspired some uses of notifications). However, the model was not as elaborate as the accounts presented it, as one interviewee puts it, ‘all it says is make it easy.’³⁴

Persuasive Technology was in the essential readings for the course, but its findings were not used in any substantive way. Fogg’s theories and models on psychology and the design of human behaviour, only made a small part of the network of human and non-human actors that he had assembled for his experimental course.³⁵ I will even claim that it was not the persuasion model that he developed, but his success in assembling and mobilising a network that imbued the subsequent events with impact and significance.

The most evident was the enrolment of the platform. As venture capitalist and Silicon Valley ‘legend’ Marc Andreessen noted upon the launch of Platform, Facebook’s configuration of its platform, and particularly the feature that notified users when their friends started using a new application, allowed for applications to reach hundreds of

³³ Baker’s subsequent positions included Facebook’s Head of International Growth and Uber’s VP of Product and Growth. This information is publicly available on Ed Baker’s LinkedIn profile at <https://www.linkedin.com/in/edbakerag/> accessed February 2024.

³⁴ Interview conducted on 17 June 2022.

³⁵ The syllabus for Fogg’s course can be found at <https://web.stanford.edu/group/captology/cgi-bin/facebook/syllabus.pdf> accessed February 2024.

thousands – even millions – of users in very short times.³⁶ (This was in fact something Andreessen saw as a potential pitfall for app developers who may not have the resources to maintain such a fast upscaling.) The question was of course if any application would reach such virality and whether this can be controlled - the problem that interested Fogg in the first place.

To that end, Fogg enrolled the emergent technical-epistemic assemblages of behavioural data analytics, and iterative product development, which would later be specialisations or frameworks on their own right, in the form of ‘growth hacking’ and ‘lean start-up’. Answer to the problem of maintaining scale, on the other hand, would be ‘deep pockets of venture capital’ or else acquisition, which human networks allowed. The final demo was attended by 500 people among which there were venture capitalists (Fogg 2008). Yet most apps, being closer to features than full applications, would be acquired by Facebook itself, in accordance with their founders’ aspirations (Hellman 2022), and with the relationship between the new iteration of the software commodity and the platform (Dieter et al 2019; Morris and Elkins 2015; Nieborg and Helmond 2019).

The Facebook class was a significant event, although its significance has hitherto been misconstrued. Fogg did not have the key to persuasion, but he had a good insight before many others. His students ‘muddled through’ a dramatically changing landscape of producing, financing, and commodifying software. In the software industry, there did not exist a blueprint for replicating the virality of successful apps, and Fogg’s captology record was a convenient account to tap into as a formula for those who wanted to ‘engineer’ consumer demand, desire, and even addiction. Yet, as we shall see, it would not have a

³⁶ Andreessen (2007) ‘Analyzing the Facebook Platform, three weeks in’ at https://web.archive.org/web/20071021003047/blog.pmarca.com/2007/06/analyzing_the_f.html accessed February 2024.

lasting influence over actual product development practices, despite one of its alumni being a leading success story. (In fact, the most notable alumnus of Fogg was enrolled in the class that took place the year before the Facebook class. In 2006, ‘two students in Fogg’s class collaborated on a project called Send the Sunshine ... One of the two students, Mike Krieger, went on to co-found Instagram [Leslie 2016].) What had proved to be much stickier, however, were the consequences of these changing circumstances that have turned Fogg’s once rather *fringe* research interests into a *mainstream* matter of concern. As soon the idea that addiction can be engineered – and (software) engineers were in the business of addiction – would not be unfamiliar at all.

Slot Machine

The next decade saw Facebook grow to over two billion users across the globe. In the same month Facebook Platform was launched, the first iPhone debuted in stores and brought with it the AppStore and an entire ‘app economy’ (Dieter et al 2019). In the middle of this happy and prosperous growth phase – in hindsight, a fleeting moment before the eventual ‘techlash’ (Feroz 2018) – ‘The Habit Summit’ met for the second time. It was an initiative of Nir Eyal, a former student of Fogg, currently teaching and consulting in user psychology and product design. Fogg was bringing together ‘experts, entrepreneurs, and industry insiders to share their hard-won insights on how to build habits’. As the Eventbrite page announced:

Prepare to crack open a treasure trove of secrets from psychology, design, and behavioral science to learn what really moves us. This event is for product designers, executives, visionaries, and marketers: anyone whose product or company would benefit from repeat customer engagement.

Sessions will cover:

- How Twitter, LinkedIn and Facebook design high engagement technologies
- Practical insights to create user habits that stick
- Forming personal habits to increase productivity and well being
- The potential of social change through habit formation

... and more!³⁷

Among the speakers were Josh Elman, early product lead at Twitter, Facebook, LinkedIn, and Venture Capital Partner at Greylock Partners; John Kim, Chief Product Officer at Expedia, Julie Zhuo, Director of Product Design at Facebook, and many more from companies such as Airbnb, MyFitnessPal, and Stack Overflow. The question put to them by Eyal was how was it that their companies managed to build such *habit-forming* products, what was the formula behind the sticky interactions they seemed to keep creating. And so, while the question for Fogg and his students in 2007 was how to get users to use, sign up, refer to friends (i.e., the problem of ‘growth’) the question for Eyal and the employees from the not so nascent companies, working on established products, was how to get users to keep using their products (i.e., the problem of ‘retention’). Where Fogg saw persuasion as key to growth, Eyal was formulating the question of retention as one of ‘habit’.

The odd one out among the invited speakers was Natasha Dow Schüll who had just published her monograph based on her ethnography of machine gamblers. Although *Addiction by Design* was indeed a rare accomplishment of offering a balanced analysis while still being interesting for the general public. The book had already caught the eye of tech reporters, particularly Alexis Madrigal of *The Atlantic*, who observed that the way he interacted with Facebook was eerily similar to the interaction patterns Schüll relayed of her interlocutors, the gambling addicts. Transporting onto the smartphone what Schüll termed ‘the machine zone,’ the affective space that users put themselves in, to detach from the outside world and stay in a state of suspension, Madrigal’s was one of the first analyses that would relate to platform interactions with the grammar of ‘designed addiction’. As such,

³⁷ <https://www.eventbrite.com/e/habit-summit-tickets-9663783637?aff=oddttdtcreator> accessed February 2024.

Madrigal took a relatively marginal experience of ‘machine addiction’ and moved it to the mainstream: ‘If books can be tools’, the journalist mused, ‘*Addiction by Design* is one of the foundational artefacts for understanding the digital age – a lever, perhaps, to pry ourselves from the grasp of the coercive loops that now surround us’ (The Editors 2013).³⁸

There were some things about apps and platforms that were similar to slot machines, and thus made this account hold. Time-on-device, a metric central to slot machine design that referred to the amount of time spent interacting with the machine, was a key business metric for social media and game platforms which primarily had ad-based business models. Further, as internet applications and optimisation systems, that collected and continuously optimised real-time feedback on user behaviour (Gurses and van Hoboken 2017; Ziegler 2022), these agile software products optimised engagement at a pace and granularity that slot machine designers can only dream of. Retrospectives on the Habit Summit would be highlighting its ‘dark side’ in line with this interpretation.

There were other things about apps and platforms that were different from slot machines, which the account and its subsequent iterations kept omitting. One key difference, for example, was platforms did not only need users to consume content but also to create content. In addition, they had to appeal to different kinds of users that would have different ways of engaging with the platform. In fact, a closer look at the Habit Summit reveals just that: product developers trying to figure out how to ‘entangle’ products into users’ action routines in their daily lives, more so than trapping them into a state of inaction. Consider, Elman’s problem at Twitter when he joined in 2009.³⁹ There was a lot of public and media

³⁸ In 2023, *Addiction by Design* continues to make the lists of news editors’ yearly favorites, see ‘The Verge’s favorite books from 2023’ at <https://www.theverge.com/23971310/verge-2023-favorite-books> accessed February 2024.

³⁹ ‘Habit Summit: How Twitter Built User Habits, Josh Elman’ at https://www.youtube.com/watch?v=HNTkQA2ggzw&ab_channel=HabitSummit accessed February 2024. Quotes in this paragraph are from the video.

interest in Twitter, ‘but people were not adopting it in their daily habits except for a select few’ who felt comfortable broadcasting their thoughts to the world. In order to encourage usage, the company had to redesign their messaging to appeal to the persona of ‘someone who wants to know what’s happening in their world’ by checking the platform on a regular basis. They needed to figure out how to create a daily habit by understanding what *actions* users would be comfortable taking regularly, before they could start focusing on increasing engagement.⁴⁰

One source that Eyal tapped into in search for answers to problems of user engagement, growth and retention was: behavioural economics. Eyal makes his first foray into the subfield in his book, *Hooked*, to then continue it through including behavioural economists in ‘the group of experts’ he assembled for the Habit Summits, and the ensuing ‘Product Psychology Course’ that together they designed for consumer technology start-ups. It is not surprising, given the growing recognition behavioural economics had been gaining beyond academia since *Nudge* showed how the teachings of the subfield (which was now presented as ‘combines elements of economics and psychology to understand how and why people behave the way they do in the real world’⁴¹) can be applied to real world problems and help people lead ‘healthier, wealthier, happier lives.’ Why couldn’t they be applied to business problems?

For Mark, a behavioural economist who attended the Habit Summit, the change in the status and the purchase of the field was striking. ‘Behavioural economics was rising in awareness among economists after Dan Kahneman won the Nobel Prize in 2001’, he says in our interview, which was around the time he started his PhD in Economics in California, but

⁴⁰ As Twitter’s demise is underway, Siple (2023) similarly emphasises the centrality of the experiences of ‘lurkers’ for ‘building an academic twitter’ on a new platform.

⁴¹ This is how the University of Chicago explains what behavioural economics is to a lay audience at <https://news.uchicago.edu/explainer/what-is-behavioral-economics> accessed February 2024.

‘it still seemed like a fad to most people.’ This would dramatically change by 2013, when he made his return to West Coast from the East, where he had gone in search for jobs:

When I moved back to California [again] after finishing Grad school, and got immersed in this tech sector, I realised that behavioural economics had gone from this academic fad to something that was really sought after in that sector. And so, I went from being someone who had a hard time finding a job in academia – because this field wasn’t very popular, there weren’t a lot of job openings – to this whole sector in Silicon Valley that was dying to get their hands on it. There were a lot of people that sort of talked about behavioural economics as their thing but there weren’t that many people that were formally trained. I guess my knowledge and skill in that area became very valuable when I wasn’t paying attention. And then I came back, and all of a sudden I could work anywhere I wanted.

According to people who were ‘paying attention’ to the trends in Silicon Valley at the time, Duke economist Dan Ariely was a key figure in ‘popularising’ behavioural economics. Adam, a behavioural economist consultant working in the Bay Area, explains:

After Dan published *Predictably Irrational* that sold a million copies and was a very accessible introduction to the field and it created real ground swell of enthusiasm.

The book was a springboard to the annual ‘Startuponomics’ conference Ariely started organising, ‘which trained company founders in the basic tenets of behavioral economics, pitched as tactics for retaining employees or drawing users down the “product funnel” (i.e., turning them into paying customers or long-term users)’ (Seaver 2022, p. 53). He was also giving regular talks at software companies like Google and Intuit, which Adam describes as follows:

What Dan’s MO [i.e., modus operandi] was at that time, it was also the case at Startuponomics, is to give a kind of behavioural econ in ‘a bouillon cube’ kind of presentation, maybe talk for 90 minutes, start with some jokes, use some examples about how everybody wants to lose weight, but nobody actually does it. We all want to exercise more, but we don’t. We all want to pay off our credit cards, but we are unable to. Things that everybody can relate to.

The accessibility of Ariely’s message was strengthened by strategic collaborations he initiated with major tech companies. In fact, Ariely’s marketing and consultancy firm, *Irrational Labs*, was originally founded as the ‘Behavioral Economics Lab’ at Google and

operated from within the company for the first three years of its life. As an interviewee noted: ‘People pay attention to what Google’s doing, they want so they start to hear about each other, it becomes trendier.’⁴²

The spread of behavioural economics, however, cannot be solely attributed to Ariely’s success. He was in fact leveraging the traction that the subfield was simultaneously gaining outside of Silicon Valley, in public and private sectors in the US, the UK and Europe, and creating itself a multitude of application domains in health policy, personal finance, human resources, marketing and advertising and product design. The dominance and legitimacy of the behavioural economics approach came from several places, and the next section begins to discuss the alignments that contributed to the subfield’s growing influence. But before moving onto that discussion, it is important to note that the expansion of this new network of expertise also meant it would overshadow the Fogg-Eyal vector which had originally supplied the vocabulary to relate to the changing conditions of business and engineering in the Valley. While Silicon Valley was going through a technical, financial, and cultural transformation that more and more foregrounded behaviouralist frames in interaction, nudge theory would be the project to offer a systematic way to operationalise, reproduce and maintain the behaviouralist frame within the organisations and across the field. In other words, it would be ‘nudge’ that institutionalised the ‘fad’.

The Rise of Behavioural Experts

The Action Design Network (ADN) directory of behavioural teams ‘now has over 880 organisations’ and the convenors of the network are ‘actively expanding it.’⁴³ That is 880

⁴² Interview conducted on 18 August 2022.

⁴³ The directory can be found at <https://www.behavioralteams.com/teams/> accessed December 2023. While revising the thesis, I learned that the network’s name had been changed to ‘BeScy’.

governmental, non-profit, for-profit or academic organisations around the world ‘that have behavioral scientists on staff’ or ‘teams applying behavioral science to the development of products, communications and policies’ (Wendel 2020, p. 1-2). In addition, a total of 617 practitioners responded to the ADN’s survey of ‘Behavioral practitioners across the world’, dated July 2023. Survey results show that ‘51%’ of behavioural practitioners ‘are in full time “official” behavioral science or behavioral design roles’ while ‘38% are applying behavioral science through another discipline, like design or product management’ and the final ‘11% are doing *besci (sic)* as a side job.’⁴⁴ A partner in the survey, Applied Behavioral Science Association, distinguished in their report between the roles of ‘behavioral science associate: someone who holds a traditional role (e.g., market analyst, user researcher, project manager) and uses behavioral insights to provide additional value’ and ‘behavioral science professional: someone whose primary job is using applied behavioral science to establish projects, create interventions, and impact end-user behavior.’⁴⁵ In a similar spirit, to set clear guidelines to counter the proliferation of self-proclaimed behavioural scientists, The Global Association of Applied Behavioral Scientists, ‘the world’s first independent organisation representing the interests of applied behavioural scientists, primarily working in the private sector’ was launched in September 2020.⁴⁶ The Association’s website welcomes visitors with a quote from the Nobel Laureate cognitive psychologist Daniel Kahneman: ‘Given the increased interest in applied behavioural science’ Kahneman announces, ‘the formation of a society representing the skills, conduct and practices of professional members is a sensible move at the current time.’ The association lists 153 members on its website.⁴⁷

⁴⁴ <https://www.behavioralteams.com/practitioners-results/> accessed February 2024.

⁴⁵ <https://www.behavioralscience.org/standards> accessed February 2024.

⁴⁶ <https://gaabs.org/> accessed February 2024.

⁴⁷ https://members.gaabs.org/members/addressbook?membership_status=valid accessed February 2024.

Although this peculiar network continues to raise questions about its identity and boundaries, which its members are actively grappling with, there appears to be a consensus on its genealogy. The 27 people that I interviewed from the network unanimously traced the origins of their field to the publication of *Nudge*, and the subsequent establishment of ‘nudge units’ within the UK and US governments, achieving commendable success (see e.g., John 2018; Strassheim, Jung and Korinek 2015).⁴⁸ The impact of nudge in policymaking, interviewees observed, prompted increased interest among marketing and market research practitioners – a trend exacerbated when Rory Sutherland, the then President of the Institute of Practitioners in Advertising, UK’s national trade association, made his leadership agenda to incorporate behavioural insights into the advertising profession (between 2008 and 2012).⁴⁹ Subsequently, numerous ‘marketing firms’ began ‘investing in BE [i.e., behavioural economics] units and expertise’ (Nadler and McGuigan, p. 8). In the next couple of years, ‘behavioral insights and interventions’ would get repeated so frequently that Leigh Caldwell (2012), one of the pioneer practitioners, called behavioural economics, ‘the Kylie Minogue of market research’: just like ‘the catchy tunes’ of the pop sensation, behavioural insights were ‘quite fun, memorable even ... the first time you heard them,’ ‘but then they got more airplay, and more, and more.’

But perhaps it was not yet ‘time to reinvent it’ as Caldwell concluded back in 2012. Those with PhDs in behavioural economics, as with Mark and Adam above, were finding new private sector jobs available to themselves, and those who did not have academic training were able to find behavioural economics ‘a profitable business to extend to’.⁵⁰

⁴⁸ Three of my interviewees did not identify as a behavioural expert, one was a conventional user researcher, the other two a product manager and a data analyst at a digital experimentation consultancy.

⁴⁹ ‘IPA Rory Sutherland on behavioural economics’ at https://www.youtube.com/watch?v=jDmYxiLNcMs&ab_channel=InstituteofPractitionersinAdvertising accessed February 2024.

⁵⁰ Interview conducted on 17 June 2022.

Valentin, another interviewee with a PhD in behavioural economics, who worked for a large insurance company, said in our interview, ‘I’ve never looked for a behavioural science job’. It was rather his company, as with many others, that was looking for someone with his expertise for the manager position that he ended up getting hired for.

The expansion of the behavioural field has expectedly prompted ‘boundary work’ (Gieryn 1983) to distinguish the ‘real’ ‘Behavioural Science’, although this work is undertaken by a specific camp within the network that itself needs to be distinguished. When recounting the history of the field, David, a senior experience designer leading the behaviour change practice at a large design agency based in the US, remarks that ‘on the other side of the fence’ (that separated behavioural economics) was ‘Susan Michie and the lab at University College London, the Centre for Behaviour Change’, who were similarly extending *their* ‘behaviour change models and techniques’ into the private sector, and notably to digital products and services. These ‘behavioural scientists and health psychologists’ had been ‘working on tools and frameworks to help interventionists code their interventions for research’ and to standardise ‘how interventions were reported’, and now were they ‘looking at how to apply theory into health interventions’ through digital commercial products, such as, mobile applications, the internet of things, sensors and devices (see e.g., Bucher 2020). While the kind of ‘behavioural science’ that the ‘digital design space has had a love affair with’ was ‘not based on anything in particular’, adds Emma, another consumer experience designer that draws closely on Michie’s approach in her work, the behaviour change frameworks developed in public health psychology was ‘validated again and again’ in ‘several hundred papers’.

Ideals of scientific and methodological rigour play an important role in defining the different groups, and observable epistemic differences exist among them. Yet, at the same

time, ‘the real scientists’ are cognizant of the fact that they operate under different evaluative criteria when working in business (e.g., Bucher 2020). Furthermore, they continue to seek membership in ‘catch-all’ associations, attend conferences that may not strictly adhere to ‘science’ as they would prefer, and become part of initiatives involving less rigorous approaches. This is because, to reiterate what I proposed in the methodology section, ‘applied behavioural science’ is better understood as an ‘expertise network’ in the sense of Eyal (2013), staying liminal to established jurisdictions and not confined to a bounded professional field. It thrives on being adjacent to different fields, lending generously ‘its coloration’, to borrow from Rose (1992) who observed the same of ‘psychological expertise’, to their problems, applications and justifications, rather than seeking closure and exclusion.

What explains the rise of behavioural experts and the dominance of nudge theory in this rapidly grown network? This question can be broken down to two related but distinct ones. First, how is it that thousands of professionals could, over a period of a decade, have successfully claimed behavioural expertise as their own, clothed themselves in it, and moved it into their respective fields and organisations? And second, why has nudge theory become something that was ‘profitable to extend to’, which is also to say, why was there private business interest in nudge theory to the extent that it created ‘this whole sector in Silicon Valley that was dying to get their hands on it’ as Mark described it? Bringing these two dimensions together, what made nudge theory and behavioural expertise a successful and durable proposition? The rest of this chapter proposes several explanations of how the demand and supply for behavioural expertise was created, emphasising their co-constitutive and iterative nature (Callon 2021).

A Hundred Biases and the Portability of Expertise

Let us begin by acknowledging the tremendous success that behavioural economics had as a scientific research programme, epitomised in the three Nobel Prizes awarded to its leading figures, Richard Thaler in 2017, Daniel Kahneman in 2002, and Herbert Simon in 1978.⁵¹

The reasons are well documented and analysed in the literature. Here, the success of the ‘new behavioural economics’ programme is often credited to how Kahneman, Tversky, and later Thaler, reformulated ‘the rational actor model’ of neoclassical economics to be a ‘normative’ ideal rather than a ‘positive’ claim, on the account of its failure to accurately describe actual human decision making (Heukelom 2014). In this way, instead of outright rejecting *homo economicus*, as with Simon’s ‘old programme’, ‘the new behavioural economics’ ‘offered it an honorable way out’ (Heukelom 2011, p. 30). At the same time this reformulation turned the subfield into the study of ‘deviations from the benchmark of rationality’ (Sent 2004, p. 747), using the device of ‘field experiments’ that played an equally important role in the successful claim behavioural economics could make to ‘empirical realism’ (Berg and Gigerenzer 2010). To identify ‘systematic deviations’, behavioural economists have developed a unique methodology in which an aspect of rational choice theory would be selected, experimentally falsified and codified, for example, as ‘loss aversion’, or ‘availability heuristic’, or ‘present bias’ (Berg and Gigerenzer 2010; Sent 2004; Schmidt and Reid 2021).

These systematic deviations also enabled a new vision of ‘governmental intervention into problems of human choice-making’ (Schüll and Zalmot 2011, p. 515), while the resulting policy making programme of ‘behavioural insights and interventions’ continued the emphasis on experimental evidence. In fact, many argue that nudge programmes acquired

⁵¹ Herbert Simon is included if we take the broad definition, see Heukelom (2014) for a detailed discussion of the changing boundaries of the subfield.

their persuasive power from the unique combination of ‘using easily understandable experimental evidence, that appeals to common sense reason, while at the same time being linked to scientific norms and standards’ (Strassheim, Jung and Korinek 2015, p. 255).⁵² More specifically, behavioural expertise was ‘being linked to’ randomised controlled trials, ‘which randomise the message or nudge to an intervention or a control or non-intervention group, comparing outcomes, such as payment rates, between the groups’ and which as John (2018, p. 5) explains, offer multiple advantages:

This procedure reaches a high standard of evidence in attributing a causal relationship between the nudge and the intervention (Gerber and Green 2012). It also creates headline results that are easy to interpret as percentage point differences, which can translate into benefits to the agency, such as increased revenue. This combination between respectability in methods, easy-to-understand headline results, and information for cost and benefit decisions has helped assist the dissemination of behavioural insights, within and across governments.

Above all else, it was this degree of legitimacy, authority, prestige, and popularity that behavioural economics and nudge theory had accumulated in academic and policy fields that attracted the attention of the private sector and placed demands on its professionals to respond to this emergent ‘buzzword’ (Cluley 2013). Martin, an experienced market researcher that I met at the ‘Behavioural Science Summit’ organised by the UK Market Research Society,⁵³ speaks to this: ‘in client conversations and briefs, the majority of the time they have some kind of “we want to have a behavioural angle in this, we want behavioural science in this”’:

To be honest, if you're working in the private sector, clients typically want to be seen to be doing the next thing and to be seen to be doing things that kind of, for a better word, sexy. That just tends to be what they like, so any buzzword they'll ask “are you doing anything about ‘agile’ or have you got ‘scenario thinking’?” So quite often we come at it from an angle, “Okay what can we learn from it” but then you've

⁵² In addition to the ‘fundamental characteristics of this knowledge form’, scholars attract attention to historically situated field dynamics in the discipline of economics and public policy making that help explain the embrace of behavioural economics as an alternative to the dominant paradigms in each field (see Sent 2004; Strassheim, Jung and Korinek 2015).

⁵³ The summit itself stands as a testament to the influence of behavioural science.

got the external pressure of going “Okay, this is a buzzword, we're going to have to kind of incorporate and talk to this because we're going to get asked about it.”

This ‘dazzling’ buzzword quality (Cluley 2013) is something that ‘behavioural science’ acquired ‘as soon as *Nudge* came out’ and ‘framed’ what is ‘essentially behaviour change’ as ‘behavioural economics’, reinforcing its association with the discipline of economics. ‘Behaviour change’ was the field in which Martin started his career, working for transportation companies, and he is amazed by how the field has changed ‘within 10 years’: ‘it’s been remarkable how it was very much fringe to begin with, and to be honest, at the beginning of my career, it was more of a turn off than a turn on for most clients – “what is that we don't really understand it sounds quite dull.”’ And how ‘that framing changed everything quite quickly’: ‘because it had the word ‘economics’ in it, it caught people’s attention particular in the private sector.’

George, a senior figure in the UK advertising industry, confirms this observation – ‘when you added economics to something, policymakers, and business decision makers and people in finance felt they had to know about’ – and adds, ‘there’s nothing new about it’, nothing that ‘direct marketers’ did not already know about consumer behaviour or had been doing to influence it.⁵⁴ But, and more importantly, behavioural economics brought legitimacy and added weight to marketers’ existing knowledge. In practical terms, this meant that, by justifying the marketer’s approach to economic decision making, which differed from the ‘standard economics’ view, behavioural economics authorised marketing to try out things that were not previously perceived as valid ways to affect consumer demand.⁵⁵ As George explains:

⁵⁴ David, a senior experience designer, describes his own field’s current interest in nudge similarly: ‘You know, old things are new again, but this time there is also a more rigorous science behind it.’

⁵⁵ Note how behavioural economics reshuffles the antagonism between economics and marketing, that is ‘the monstrosity’ whose existence economics cannot accept (Slater 2011).

The value of behavioural science is simply that it broadens the number of hypotheses you get to test. Because if you only test the hypotheses, which are logical, or the hypotheses, which are already based on what you already know, you're in danger of getting trapped into incrementalism... If you're left with *standard economics*, you basically go make the product better, [or] reduce the price, okay? If you're presented with *behavioural economics*, it provides you with maybe 27 different ways you could actually create perceived value for the product, not confined to just improving the objective qualities of the product or reducing what it costs.

Note the crucial difference between how George explains the value of behavioural economics for his profession, and the claim that 'for marketers and advertising strategists, BE [i.e., behavioural economics] offers the promise of revealing the processes that drive consumers' purchasing decisions – especially those less deliberative decisions' (Nadler and McGuigan 2018, p. 5). In fact, one of the founders of the subfield, Amos Tversky, has once said that they had 'merely examined in a scientific way things about behavior that were already known to "advertisers and used-car salesmen"' (Freeman 1996). While it is the legitimacy that behavioural economics lends to existing practices (rather than 'the promise' of new knowledge) that pulls practitioners into the expertise, this is not to say that the form of behavioural economic knowledge does not matter. In fact, this very codification of tacit marketing techniques into a set of 'testable hypotheses' was equally crucial to 'the success of' behavioural economics 'in spreading through the social world', to paraphrase Latour (2005), in diffusing and 'attaching' itself to more and more people (McFall and Deville 2017).

It is important to note that behavioural economics has not always been a programme of producing testable hypotheses, in fact this particular approach has its origins in the 'heuristics-and-biases programme' that Kahneman and Tversky pioneered in the 1970s. The programme's 'bias message', Gigerenzer argues, 'single-handedly shaped the emerging field of behavioral economics' and generated not only '27' but over a hundred different ways in which consumer decision making deviates from the rational model. Gigerenzer (2018)

mockingly observes that ‘175 or so biases’ are ‘listed on Wikipedia’ (the count stands at 188 as of writing. The full list is in Figure 1).

This ever-growing catalogue of biases, along with the ‘linear hypothesis-driven mode of problem solving’ that is used to generate them (Schmidt and Reid 2021) was *the behavioural economics* that was moved outside of the academic field and into the various application domains. Ariely, for a notable example, trained tech companies and practitioners in Silicon Valley in the following way that Adam describes:

He had this worksheet ... it’s a set of about five pages of behavioural biases and, they were somewhat organised ... it was about 20 different levers or effects that are known to the literature. And it was a table where it would be the name of the thing [for example] “smart defaults”, then another column that would be a definition that tried to explain what it was, and then the final column would be an example application. And so, then he reviewed that with the 20 people [in the workshop] ... People love hearing all these things, they think it’s really exciting. And then the second half of the day, they brainstorm possible ways to use those ideas in the product.

The bias approach was not uncontested in the scientific community, nor in the community of ‘behavioural designers’. Gigerenzer, the most vocal critique, argues ‘behavioral economics qua bias research’ is ‘tainted with a bias bias’, that is, ‘the tendency to spot biases even when there are none’ (2008, p. 305). Furthermore, it has frequently disregarded scientific evidence in psychological research that falsified its conclusions, along with some essential features of human intelligence and communication, in favour of logical formalisms (idem). Jason Collins, academic and founder of PwC’s behavioural science practice, recently complained that they ‘don’t have a hundred biases, they have the wrong model’ (2022). In our interview, Anthony, a senior applied behavioural scientist, called this type of applications, ‘translational research’ and ‘not really behavioural science in [his] view’. Design scholars, Ruth Schmidt and Sarah Reid (2021), in the *Journal of Design Strategies*’ special issue on ‘persuasive design’, argued that the problem-solving model that nudge theory has ‘perfected’ is not a good fit for the wicked problems of policy, nor business,

which defy hypothesis-driven frameworks. If nudge theory wants to stay relevant to design, the authors argued, it needed to decouple behavioural insights from the methodology used to uncover them.

But despite these perceived shortcomings or perhaps *because of them* ‘the hundred biases’ approach ‘works’ in practice. Meryl, the managing director of a behavioural economics consultancy, plainly explains, ‘I think the biggest story here is just seeing some of the results, the case studies of the interventions we do and how they can be effective.’ Yet also plainly apparent is how readily the approach lends itself to measurement, a crucial aspect for its ability to obtain easily communicable ‘results’. (The upcoming chapters will delve into the specifics of the measurement and evaluation systems in product development.) In this sense, the trajectory of nudging techniques can be situated within the broader ‘import of theory’ in the human-computer interaction field, where, as Rogers (2012, p. 15-16) observes, ‘quantifiably measurable’ ‘micro-theories that address a specific phenomenon that can make predictions about certain behaviors’ have been particularly salient for the ‘testable hypotheses’ they offered to the field. While cognitive science and social psychology has written ‘the laws of efficiency’ in user experience, nudge theory and behavioural economics is writing its ‘laws of persuasiveness’ (Schaffer 2009).

On the flip side, ‘the hundred biases’ is a uniquely portable, repeatable, and scalable model that allows, to return to the question posed earlier, thousands of professionals to successfully clothe themselves in the expertise and move it into their respective fields within a very short period of time. And importantly, more so than B.J. Fogg’s ‘captology’. The rivalry between Fogg and ‘nudge’ became clear to me during fieldwork, and that Fogg was the one on the defence. At an ‘Ask Me Anything’ session that I attended in 2022, Fogg criticised nudges for being ‘spices’ but ‘not the recipe’ arguing that his own work provided a

more comprehensive framework for behavioural design.⁵⁶ It was interesting to see how much his influence had decreased over time; the session was attended only by a handful of people. Interviewees have in fact offered several explanations for this, ranging from how ‘he trademarked everything’ (Emma, Anthony), to how his model was easily understandable but lacked ‘empirical backing’ (David), or how he was associated with the dark patterns (Mark), but the most striking one is the simplest one mentioned earlier; ‘all’ that his model ‘says is make it easy’ (Adam). By contrast, the biases programme has offered practitioners an entire catalogue of over a hundred biases to try out in solving various user behaviour problems, and a method to generate even more. As such, nudge theory has created a clear way to scale its findings and their applications, in an industry where scalability is among the highest values (Pfotenhauer et al 2022).

⁵⁶ Not that Fogg tried very hard to compete with nudge in commercial domains, after the negative attention he attracted for his earlier work. He voiced his heartbreak over these reactions in several interviews and his lab currently pursues behaviour design only in connection to ‘higher social goals’ such as climate action. (Fogg and Euchner 2019, see <https://behaviordesign.stanford.edu/research-projects> accessed February 2024.)

Dual Process Theory

A mode of problem-solving that is intuitively understandable and seemingly infinitely scalable is not the sole offering of nudge theory to the aspiring behavioural expert. Alongside *Nudge, Thinking Fast and Slow* (2011) – another widely circulated artefact embodying another highly impactful teaching of behavioural economics – propels the expansion of the frame and the network, providing additional moral and creative license that traditional behaviourism cannot supply. As the literature notes, a key achievement of behavioural economics is that it broke out of the behaviourism - rationalism binary by revitalising the dual process theory of cognition. Made famous by Kahneman (2011), dual process theories, which have a longer history partly obscured by the popularity of Kahneman (see Evans 2006 and Valasek 2022 for overviews), conceive cognition as having two modes. The first is the fast, intuitive, automatic System 1 and the second, slow, deliberative, effortful System 2 (Kahneman 2011). While both systems have their rightful jurisdictions, with System 1 applying in situations that require innate skills and System 2 in situations that require analytical reasoning, problems routinely arise when the ‘overconfident’ system 1 takes over the ‘lazy’ system 2 in situations outside its jurisdiction. This is the premise behind nudges, which are at their core behavioural interventions that are designed to safeguard or reinstate the priority of System 2. Kahneman proposes to read this tension as ‘a psychodrama with two characters’ (2011). This psychodrama, I argue, serves a dual purpose in facilitating nudge theory to further spread: first, as a strategy for ‘sensemaking’ and ‘maintaining moral worth’, and second, as a socio cognitive device that organises creative work when nudges fall short.

Social scientists have drawn attention to the work of justification, or deflection, that dual process theory does for the software and digital advertising industries where companies, while being engaged in behavioural interventions that imply an influenceable subject, can still continue to claim that the interventions are in service of a broader social purpose or of

the principle of consumer sovereignty. Anthropologist of technology Shreeharsh Kelkar (2020), in the provocatively titled, ‘Are Surveillance Capitalists Behaviorists?’, observe that ‘the designers of recommendation algorithms seem to be motivated less by behaviorism proper than by behavioral economics’ and see themselves ‘as choice architects.’ This solves ‘the contradiction between shaping human behavior to make humans even more autonomous and free’, ‘because on a broader conceptual level, everything in the post-cognitivist conceptual apparatus is modeled as decision-making at different levels of abstraction (machine, individual, organizational, social).’ McGuigan and colleagues (Goldenfein and McGuigan 2023; Nadler and McGuigan 2018), in a more alarming tone, argue that the influence of behavioural economics in marketing and digital advertising have allowed for a ‘radically inconsistent’ image of the user-consumer to be productively deployed in justifying user engagement tactics and sustaining platform capitalism’s contradictions.

While these analyses have been useful in explaining the justification mechanisms at the industry and company levels, dual process model equally plays an important role at the level of practitioners’ own ‘sense making’ (Weick 1995) and ‘maintaining moral worth in a stigmatized profession’ (Cohen and Dromi 2018). The ‘stigmatized profession’ that Cohen and Dromi (2018) are writing about is the advertising profession – ‘long been stigmatized as complicit in exploitative capitalist mechanisms and cultural degradation’ – although we see similar allegations now levelled against behavioural designers (see Seaver 2022, p. 66-7), who are similarly in need of deflection strategies.

Aisha, a behavioural scientist working at an education technology (edtech) platform at the time we spoke, offers one, in an ironic twist, by comparing her job to ‘advertising’. She argues, in advertising, ‘behaviour change is very short term’; ‘you put down an ad and the consumer react to that ad ... you can see the impressions and engagement.’ By contrast, the

start-up she is working for is among the ‘set of companies which are looking for our long-term behaviour’, in the case of her company, ‘looking at changing the way teaching happens in classrooms and in the online spaces.’ They are interested in understanding ‘how do you teach effectively’ amid the pandemic and the digital divide. In this context of the company’s ‘mission’, she makes sense of the work that she does, which is to design interventions to increase user – engagement with the platform – that is, the teachers, tutors or students using the platform – in the following way:

I’m working on a platform, the platform keeps evolving, we keep having revisions, one after the other, because that’s how things are, [and] behind those revisions there’s a lot of experimentation that’s ongoing. I don’t consider them as short-term behaviour changes, I consider them as part of the long term change that you want to bring in ... The teachers need to teach effectively, now to reach that, I’m going to keep doing experimentation and adding more features, more design to see where the outcome gets achieved or not.

Not only that, Aisha further claims, ‘the behavioural scientists are the guardians of ethics in an organisation’.

The dual process assumption can also work ‘in the background’ as a socio cognitive device that organises idea generation and creative problem solving, without its justificatory function being activated. This second function is comparatively latent, and harder to pinpoint. It acts in a way akin to what Agre (1993, p. 62) calls ‘a worldview’ – ‘a largely unarticulated system of vocabulary, methods, and values shared by a research community’ or simply, ‘a way of looking at things’ (p. 62), a worldview ‘helps its owner interpret observations and guide further studies’ (Norman 1993, p.5). As the upcoming chapters will show, the behavioural worldview is much more active in practice than linear applications of nudges.

Consider the following example: Arjun, a senior user researcher who works for a mobile marketing platform, and his team, were ‘exploring the concept of a widget’ that shows different information such as weather, trending news, relevant sales, and games to

play. The widget was designed to by default ‘take up *the entire screen*’. Arjun was concerned that users would respond negatively, because the designers were ‘removing’, even ‘hijacking’, ‘the sense of autonomy’ that users have ‘with respect to [their] phone and [their] screen’. However,

After we did research, we figured out that people don’t have a problem with the size of it ... it’s a question of control and *illusion of control*. The control is what is being shown, and illusion is how it’s being shown ... Ideally, if you give me control over what is being shown, I can make peace with how it’s being shown. Because I’m putting in the effort, there’s that whole *endowment* aspect of it coming in... “I’m invested in this, I’m curating what is getting shown.”

Another example we can give here is from Mark. When he was working for sharing platform, Mark had to find a way to increase the accuracy of reviews that users leave after using the platforms’ services. ‘My overarching theory about this’ he says, that a lot of the inaccuracy in reviews ‘had to do with not the objective quality of the experience, but how the experience compared to their expectations.’ The idea of an ‘experience-expectation gap’, as well as the notions of ‘illusion of control’ or ‘endowment’ are taken directly from behavioural economics research, but they are not applied linearly. Instead, they guide the reasoning of practitioners. Seeing users as caught in the ‘psychodrama’ of their ‘fast and slow thinking’ is a generative tool to produce interventions.

The Google Earth of Behaviour

While the catalogue of biases provides a fruitful source for thinking up interventions, and the dual process theory opens an additional space of legitimacy and creativity, it is the very notion of ‘behaviour’ that holds the expertise network together and sustains the appeal of the expertise with its versatile simplicity. Indeed, behavioural experts often insist that they ‘work with behaviours’, and not attitudes, subliminal desires, cognitive processes like ‘persuasion’, or the all-encompassing ‘user experience’, to distinguish themselves from other groups. (Note

that even B.J. Fogg rebranded his concept of ‘persuasive technology’ as ‘behavior design’.) But what do they mean by behaviour and why is it such a useful concept? This section unpacks what actors mean when they use the word ‘behaviour’, following Gabriel Abend (2008, 2018, 2019), to understand the functions that the word serves in the social worlds it is mobilised.⁵⁷ As we shall see, behaviour is used to encompass what are conventionally different kinds of things. Yet, through having multiple uses and pertaining to different scales of interaction between users and technical systems, it has become particularly useful in the context of contemporary interaction design.

What is ‘behaviour’ taken to be? First, it is taken to be observable and readily available to senses, unlike things like attitudes, opinions, preferences, or intentions, which require mining.⁵⁸ It is also taken to be transparent, unlike the accounts that people offer of their own experiences that are subject to a number of biases and require debiasing by the researcher. Martin emphasises the ‘objectivity’ of behaviour in contrast to the traditional market research methods and outputs:

Traditional market research asks people. If it’s trying to understand decision making, it asks people ‘what do you do, why did you do that, will this make a thing’... There’s been questionnaires, the focus groups, telephone interviews, one-to-one in depth interviews... And so, it wasn’t really good at capturing behaviour because for many different reasons; we’re not very good at recall, we rationalise things, etc, etc. So, where behavioural science, I think, has helped or comes to add value is the fact that it has placed far more emphasis on observation.

⁵⁷ Abend applies this research protocol in studying ‘decision and choice concepts’ in society (2018), and the uses of ‘theory’ in sociology (2008). The starting point of both articles is the decision to address the concept under discussion with an empirical or semantic question (‘what is *X* taken to be’) instead of a normative, ontological or evaluative one (‘what is *X*’ or ‘what should *X* be?’). The former is marked and distinguished by an interest to document and analyse what the actors who use the concept refer to when they use it, with the aim of pinpointing the work that the concept does within the social contexts in which it is mobilised.

⁵⁸ Or require to be ‘provoked’ (Muniesa 2014) into the observable plane via surveys (Osborne and Rose 1999), focus groups (Lezaun 2007, Grandclement and Gaglio 2011) or user studies (Woolgar 1990). The corollary claim is that behaviours are readily ‘manipulable’ (Marres 2018) and the results of manipulation are less disputable given one can observe and compare the before and the after situations of the intervention.

Nick, the CEO of a behavioural design consultancy, makes a similar point about the way product companies do research, which he says is ‘very predicated on human-centred design and design thinking where you go and interview your users’. ‘But’ he continues, ‘as you know’,

We’re not really aware of what drives our decision making. So, if I ask you, you know, why did you work out yesterday, you’re going to tell me a story, right? But often, that story is pretty incorrect. There’s a lot of reasons as to why you worked out that you’re not even consciously aware of, if you’re not consciously aware of that, how can you articulate it?

Behaviour is ‘what’ people actually do, as opposed to what they say they do.⁵⁹ But behaviour also implies its own explanation; it is ‘why’ people actually do something, as opposed to why they say they do it. There is a plethora of writing and podcasts⁶⁰ on ‘the science behind’ ‘why we love Spotify’s wrapped’ (Fomina et al 2021), ‘how Netflix gets us to binge watch’ (Mobayed 2021), ‘how Peloton gets us to exercise’⁶¹ or what’s ‘appening’ (sic) when we are using Tinder (Haisfield 2018). These explanations of why we scroll, watch, swipe, are *possible* because scrolling, watching, swiping are understood as ‘behaviours’ and not ‘actions’. Consider the following example Harry Collins (1990) uses to distinguish the two concepts (as he writes in the context of the artificial intelligence debates of the 1980s):

Punching keys on a computer, enclosing a written slip in an envelope, moving a piece of wood seem very different, but might all be making the same chess move. Conversely a series of acts of writing a name on a slip of paper and putting it in a box look the same, yet might be casting a vote, spoiling a ballot, taking part in a raffle, etc. (Baker and Hacker 1985, p. 166, cited in Collins 1990 p. 33)

The way behavioural experts deploy the word ‘behaviour’ to encompass actions, eschews this distinction and the semantic variance associated with actions that are more than

⁵⁹ The former is the famous ‘intention-behaviour gap’ in behavioural sciences (Sheeran and Webb 2016), for a sociological rendering of the same problem, see Jerolmack and Khan (2014).

⁶⁰ Such as <https://www.setsail.co/podcasts> accessed February 2024.

⁶¹ Interactive case study at https://www.habitweekly.com/peloton?utm_sq=gz8cvzwm59 accessed February 2024.

their ‘mechanical counterparts’, as Collins calls behaviours.⁶² As a result, more things lend themselves to being labelled as behaviours.⁶³ Recall in the previous section, Aisha spoke of both ‘how teaching happens in classrooms’ and ‘reacting to an ad’ as behaviours – implying that both *large* and *small* phenomena can be understood and represented as behaviours. When taken as behaviours, in turn, more things lend themselves to modelling and engineering. (Similarly, to how ‘plans’ rather than ‘situated actions’ are easier to model and engineer Suchman 2007 [1989]).

Yet, there is an additional practical value to representing more things as behaviour, which has more to do with the connections across units than the units themselves. While behavioural experts rarely feel the need to explicitly argue that a thing should be thought of as a behaviour rather than an action or an opinion, they often explicitly articulate and model the relationship between different kinds or levels of behaviours (see for example, Cole-Lewis, Ezeanochie and Turgiss 2019; Wallaert 2019; Wendel 2013). In these models, we are urged to ‘think of’ behaviours ‘like a chain’, as Anthony, a senior applied behavioural scientist, explains:

Think of [them] like a chain. At the end of the day, I want people to meditate. In order to [get them to] meditate, I'm going to get them to watch this video. Well, watching the video is a behaviour. So, then I can think about, ‘Well, how do I get them to watch the video?’ And let’s say the way to get them to watch the video is to download the app. Well, I can think about how do I get you to download the app? Right? There’s this chain of behaviours that happens.

⁶² See also Grandclement (2019) who applies Collins’ distinction to explain the ‘happening’ of electricity consumption behaviour.

⁶³ It becomes much more difficult to establish a one-to-one relationship between what is observed and what drives it when this premise is not upheld. Ryan, a behavioral product strategist, was one of the few people who expressed an unease with this type of explanations: ‘Here’s one of the parts that always trips me up about applying behavioral science. You could look at a social news feed and think about that in terms of ‘variable rewards’, or you could think about that in terms of ‘exploratory search’ and social science. You know, there can be like 10 different explanations for the exact same phenomenon.’ ‘What people are doing when they’re on their newsfeed’ can mean they are chasing after variable rewards, or it can be ‘essentially an exploratory search where they don’t have any goal, and they’re low energy, and they’re looking for a goal and that’s what the news feed does for them’. Exploratory research in motivation studies is defined as a type of information seeking activity that is associated with ‘creativity, innovation, and knowledge discovery’ (White and Roth 2009).

The framing continues to justify engaging in immediate behaviour modification in service of ‘higher order’ goal (Kelkar 2020), and, more interestingly, it starts to conjure up a new topography of the behavioural expert’s problem – one that is characterised by continuous scales of behaviour, rather than two discrete levels of short-term and long-term behaviour. Anthony describes this continuous scalar imagination with the analogy of different techniques of image digitalisation:

[This approach allows you to] zoom in and out, without losing fidelity. So, let’s take for example, JPEG image. A JPEG is a fixed number of pixels. So, if you zoom in it gets blockier, and if you zoom out too far, it gets pixelated because it has to collapse pixels. So, if you look at it at exactly, 21x21 release, that’s perfect right? And anything smaller, and anything bigger involves assumptions. That’s very different than something like a TIFF [tag image file format] file ... what it actually does is not map 1000 pixels to 1000 pixels, but instead says ‘this line and this line are supposed to connect’. And because those graphic illustrator files are like that, you can zoom in and they’re still perfectly clear, and you can zoom out and they’re still perfectly clear.

Consider how the work that the word ‘behaviour’ does here is not something that the concepts of ‘use’ and ‘user’, belonging to a single scale, can perform. (To continue the analogy, if ‘behaviour’ is TIFF, ‘user’ is JPEG.) While within the HCI community, there has been a critical evaluation of the concept of ‘use’, which is ‘a (if not THE) central guiding principle of Human-Computer Interaction’, as Lin and Lindtner (2021, p. 1) write, (Satchell and Dourish 2009 and Norman 2023), the limitation implied here is different. It rather results from the changes in the dominant regimes of computation, design, and marketing that Cluley and Brown (2018) describe. As authors observe, ‘the foundation of marketing practice’ used to be the *individual* consumer, constituted through ‘the imposition of a representational framework, or mask’ (p. 108). By contrast, contemporary analytics and personalisation systems summon up a new kind of consuming subjectivity, one that no longer fits the fixed, stable, and enclosed figure of the individual, instead is made up of fluid and functional modulations of *dividuals* (Cluley and Brown 2018; see also Moor and Lury 2018). The new

consumer/user is no longer ‘the monolithic entity’ that Woolgar observed in 1990 (p. 73), although it is ‘self-grounded’ in the assemblage of its own data traces (108). Against this backdrop, the concept of behaviour, used at once to refer to the ‘data traces’ themselves and the actions of subjects ‘assembled’ from them, applies to both levels of the dividual and the individual, presenting a possibility for forging a link between the two.

In *Sense of Place and Sense of Planet: The Environmental Imagination of the Global*, humanities scholar Ursula K. Heise argues, while ‘the iconic representation of the “Blue Planet” seen from outer space’ taken by the Apollo 17 mission on December 7, 1972, conjured up a global, interconnected imagination of the world, the invention of the online tool Google Earth supersedes the photograph, ‘in its ability to display the whole planet as well as the minute details of particular places’ and with ‘the infinite possibilities of zooming into and out of local, regional, and global views’ or ‘from one [particular place] to the other’ (2008, p. 10-11). The word ‘behaviour’, to link Heise’s remarks with Anthony’s imagery, similarly conjures up an interconnected imagination of platform interactions, while allowing for the navigation of its own instances across different scales, ‘zooming in and out, without losing fidelity’.

Conclusion

This chapter showed what needed to be in place for the nudge model to make sense to people, to spread and take hold, as a new frame of explaining the interactions between computing systems and their users. The social reasons, such as the networks formed around the figures of B.J. Fogg, Nir Eyal, Dan Ariely, and the new trade associations; and cognitive reasons, namely, nudge theory’s ‘cognitive simplicity’ (MacKenzie 2006), its academic prestige, along with the portable, repeatable, scalable qualities of the bias programme, were intertwined (as they necessarily are) in moving nudge theory into new settings and ‘grafting’

it onto new practices (Rose 1992). An example on point was the social legitimacy that the dual process theory gave to practitioners to continue nudging users for their own good.

Meanwhile the chapter noted that the rise of behaviouralist approaches had coincided with the unparalleled availability of real time, fine-grained, continuous, ‘big’, passive behavioural data on every action a user takes within these systems (boyd and Crawford 2012; Gurses and van Hoboken 2017; Kitchin 2014; Lazer and Radford 2017). I implicitly treated this ‘behaviouralisation’ of the production and consumption of everyday computing systems as a problem to which nudge theory offered a solution. Acting as the ‘Google Earth’ of user behaviour, nudge offered the conceptual framework to connect behaviours occurring at different scales of interaction, establishing a continuity between interventions to increase clicks, likes or swipes, with desirable effects of using the product, such as ‘getting people to meditate’ or ‘teachers to teach effectively’. Chapter 6 focuses on the distinct market proposition that partly follows from this conceptual framework and that animates consumer facing apps that seek to bring about socially desirable outcomes strictly through influencing ‘in-app’ behaviours.

The next three chapters more generally show behavioural expertise in action. In a sense, while this chapter attended to the ‘frontstage’ of behavioural expertise, the next three offer insights into its ‘backstage’ (Goffman 1959; see Ball and Feitsma 2020). As might be expected, how nudge theory is mobilised in specific settings diverge from how it is publicly promoted. To offer a simple example, the linear problem-solving model embodied in the bias programme that facilitated the spread of behavioural expertise, is hardly followed in practice. However, there are dimensions other than that of ‘bricolage’ that this example implies, that are explored in the upcoming chapters and that complicate the stories nudge tells of itself.

Chapter 4: Platform Companies Through the Keyhole

Introduction

Uber had a ‘Behavioural Econ Lab’ that was only really respected outside of Uber. The internal reputation of the team was a lot less prestigious ... Uber also had a microeconomist, Jonathan Hall, who hated, hated all the stupid things they said, and he eventually got the entire lab fired... There’s a *Harvard Business Review* article that says, ‘Uber shows how not to apply [behavioural economics]’⁶⁴ ... Whatever an outsider believes, it was not the case that the Behavioural Econ Lab had any impact on actual product decisions. They were much more of a prestige, this window dressing. And they were all so junior and just so earnest about their expertise and statistics that they probably didn’t even notice that nobody was listening to them.

The article Adam is referring to is a commentary on *The New York Times* investigation (Scheiber 2017) into the ‘psychological tricks’ that Uber uses on drivers ‘to pick up more fares’. The original piece at the time joined a larger series of news reports on Uber’s various instances of misconduct.⁶⁵ It was also the epitome of the particular genre of media outlets unearthing manipulative techniques that platform companies regularly deploy and that draw on behavioural and psychological sciences.⁶⁶ Adam is a behavioural economics consultant in Silicon Valley (with a PhD), who, over the course of his decades long career, advised many tech start-ups and several established companies on how to improve their products using the behavioural economic science. Having set foot into the companies, he has first-hand exposure to routine power dynamics, internal divisions, and the gossip – and knows for a fact, about the PhDs at the Behavioural Econ Lab, that ‘they had no influence’.

He makes a concession for other economists employed by the companies, or behavioural economists who were ‘actually hired as data scientists ... instead of going into

⁶⁴ This is Gino (2017).

⁶⁵ The latest being *The Guardian*’s Uber files, notably the investigation that revealed ‘Uber paid academics six-figure sums for research to feed to the media’, as part of ‘a global investigation revealing how Uber broke the law, duped police and regulators, and secretly lobbied governments across the world.’ at <https://www.theguardian.com/news/series/uber-files> accessed February 2024.

⁶⁶ From Leslie (2016) to one of the most recent, Shaw (2022).

this ghetto lab’. In particular, ‘the one from Harvard, she was David Laibson’s student’ who designed ‘the incentive structure’ for riders, ‘where the intention is to offer an incentive that marginally increases the number of rides that a driver does, but it is also set high enough that the vast majority of the drivers will chase it, but not hit it.’ He remarks that this was ‘valuable and manipulative and economically efficient’ and ‘it changed behaviour, and it used economics’ but ‘it was not strictly speaking, something that derived from behaviour economics in terms of its tradition.’ He lists many reasons, but above all, economic incentives are not nudges, as per the definition of Thaler and Sunstein (2008). Rather than a case of narcissism of minor differences, that ‘non-economic’ factors influence ‘economic’ decision making is a key distinction of behavioural economics from neoclassical economics. Yet, media reports, in addition to law and policy articles (notably, Calo and Rosenblat 2017; Kellogg, Valentine and Christin 2020; Rosenblat and Stark 2016; Susser, Roessler and Nissenbaum 2019) are largely evasive of this distinction, typically articulating, describing, and explaining all tactics, techniques, and practices – and harms purported to be caused by them – with reference to behavioural economics, if not to a broader construct of behavioural and psychological sciences.⁶⁷ There rarely is a mention, let alone critique, of something like ‘market design’, a subdiscipline that arguably has more demonstrable effect over platform design (cf. Lehdonvirta 2022; see also Callon and Roth 2021 for an overview of market design).

Adam is candid about his own influence too: ‘I’ve been doing this for 22 years and I have had incremental [i.e., small] impact.’ When I ask him why, he reminds me to *think sociologically*: ‘The major reason is that making product decisions is the expression of

⁶⁷ And behavioural *economists* – it should be noted that those interviewed for *The New York Times* article are all behavioural economics professors or consultants who offer ‘expert opinion’ on company practices and their consequences, regardless of whether they actually worked for the company or not.

power... If you were to look at the sociology internal to company decision making, you would see that status and power are the ultimate determinants of how products get made.' He continues:

There's very rarely an instance where the recommendations of egghead PhDs are going to compel product manager to modify their decisions... If somebody internal to a company like Uber presents a literature on 'motivation' or 'autonomy', 'how amplifying a sense of freedom of choice leads to greater intrinsic motivation', if the product manager was not already going to do that, they don't change. And if they were already going to do it, then they will put a spray-painted cover for their pre-existing commitment as if it was supported by that academic finding.

Mark, a former senior user researcher from a sharing platform company, largely agrees with Adam: 'It's hard to imagine someone like a behavioural economist having large scale influence over all the changes that are made to product.' His explanation, however, invokes a sociology that is more 'materialist' compared to the traditional (or lay) sociology of Adam:

You know anytime you open a major app ... you're probably in or out of dozens of experiments with the page, small changes that you don't even realise ... Smaller apps you might see like 'Oh, we added this, we change this' but if you look at major ones like Facebook, it'll say: 'we're constantly updating to improve your experience.' That's all it will say... They're constantly changing, doing all of these experiments that designers are coming up with. It's very hard for— you know there aren't enough trained behavioural scientists to be driving those changes ... because there are just so many things there. They are just testing change after change after change and keeping what works.

Mark was hired by the company, ten years after completing his PhD in economics with an emphasis on behavioural economics and working in different jobs in between. When he graduated in 2003, there was no interest in the likes of him, neither in academia nor in tech, as the previous chapter also mentioned. Then ten years later, he came across a job ad and was intrigued by the assignment that was part of the application. Candidates were asked to determine 'the drivers of a guest review' looking at 'a sample data set.' Spending a weekend on the assignment, he had an 'overarching theory' about how actual experiences compared with expectations and that seemingly unrelated things, like weather or national

culture, bore on the experience, at times causing dissatisfaction, and resulting in a bad review. This they wouldn't expect from a typical quantitative user researcher. He thought it was 'interesting and inspiring' and so had the hiring team he presumes, as he ended up getting hired as a user researcher. He thought he was hired to work on solutions for coordination and trust problems in double-sided marketplaces, although gradually realised this was not going to be the regular scope of his work: 'What I thought I would do when I joined the company, most of the work I did, ended up becoming very different, which is why I left.'

The changing scope of his work had to do with the reorganization of teams as the company grew. During most of his 'tenure' at this company, Mark was embedded in one of the many 'cross functional team[s] in charge of a part of the product', doing 'whatever that team needed' – which, for most part, was 'testing user flows'. He eventually left the company, after realising the teams 'only wanted to make changes that they could test in individual components of an A/B test' – a standard user research methodology and 'the simplest type of controlled experiment that compares two variants: A and B, or a *Control* and a *Treatment*' (Kohavi, Tang and Xu 2020, p. 3).⁶⁸ Instead of being driven by innovative research, Mark said, 'It seemed like so many of the changes were determined by how it performs in experiments.'

Working the Keyhole

The fieldwork fragments presented above epitomise the key empirical and methodological findings that are explored in this chapter. The most striking set of findings, which the

⁶⁸ In its 'most common' version, 'users are randomly split between variants in a persistent manner (a user receives the same variant in multiple visits)', their interactions with the website are 'monitored and logged' and 'from the logged data, metrics are computed' in order 'to assess the difference between the variants for each metric.' (Kohavi, Tang and Xu 2020, p. 5-6)

chapter's title also hints at, concerns the inner organisational dynamics of platform companies. In the contemporary critical discourse, we almost always encounter platform companies as monolithic actors. In the above vignettes, however, they appear as the complex organisational entities, internally divided and ridden with 'micropolitics' (Burns 1961), that they more plausibly are. The platforms that they own are complex sociotechnical systems, too, broken down into and made up of smaller products, data assemblages, knowledge infrastructures. While platform literature has rarely looked at the internal organisational divides of companies, the heterogeneity and complexity of the sociotechnical system is more often accounted for. Several interventions rejected the oft-made simplification and objectification of complex systems as 'the algorithm' (Bogost 2015; Burrell and Fourcade 2021; Dourish 2016; Seaver 2017), or 'the platform' (Caliskan 2021), revealing them to be heterogenous assemblages sprawling the web, society and economy – and as we see in the examples above, the organisation. Platform and app studies scholars have offered and refined innovative ways to open the opaque boxes of platforms (Pasquale 2015), from studying 'hacks' like 'header biddings' (MacKenzie, Caliskan and Rommerskirchen 2023); to the burgeoning digital methods (Marres 2017; Rogers 2013), that reverse engineer, walkthrough (Light, Burgess and Duguay 2018), repurpose the platforms (Coromina, Tsinovoi and Munk 2023), or study them through the material traces they leave behind (Helmond and van der Vlist 2019).

It had been more difficult for researchers to open 'the techno-economic "black box" represented by these Big Tech firms' (Birch and Bronson 2022, p. 2) as formal organisations, closed off with 'hidden meetings, reluctant interlocutors, non-disclosure agreements' (Seaver 2017; also, Bonini and Gandini 2019). Very few researchers could gain ethnographic access (a notable example is Waldman 2022), although as Seaver astutely argues, access is not a

threshold to be crossed; ‘the field site’ ‘a black box that can simply be opened’ (2017, p. 7); and ‘revelation’ the goal of social research (2022, p. 13). Rather, both access and that which is accessed are continual social dynamics, and in the case of the latter ‘not even people on the “inside” know everything that is going on’ (2017, p. 7). This is simply because they work on systems, and as part of organisations, that are both complex, distributed, technologically mediated. Accompanying Seaver’s intervention is the methodological innovation of ‘scavenging ethnography’, which attends to multiple localities, sources, and flows of information, ‘piecing together heterogeneous clues’ in order to *understand* – rather than reveal – how algorithmic systems work.⁶⁹ While seeking to understand how nudging works, this thesis stumbled upon another methodological workaround: following behavioural expertise into the platform economy proved to be an oblique enough angle, to allow me a view on platform companies. Because the research was not focused on a specific company or sector, to warrant discretion regarding trade secrets, current and ex-employees of companies were more comfortable speaking to me about their work. Meanwhile, consultants, fast circulating, even at a pace faster than ‘affluent tech workers’ themselves, offered a ‘peek’ into the routine and the gossip at different companies, along with a birds eye view of the field, having a unique vantage point for detecting patterns and making comparisons across companies. In a sense, my focus on behavioural expertise provided a ‘keyhole’, to borrow from Suchman (2007) (although not in the pejorative sense of its original usage) to look through, to understand platform companies better.⁷⁰

⁶⁹ ‘... the scavenger replicates the partiality of ordinary conditions of knowing – everyone is figuring out their world by piecing together heterogeneous clues – but expands on them by tracing cultural practices across multiple locations (Marcus, 1995) and through loosely connected networks (Burrell, 2009).’ (Seaver 2017, p.6-7)

⁷⁰ Leaked documents, insider biographies and journalistic exposés with direct access to the companies can be counted as other *keyholes* that the thesis has explored – and even subreddits that offer anecdotal evidence on the ‘internal structure of tech companies’, such as this post from r/ProgrammerHumour that visualise infighting: https://www.reddit.com/r/ProgrammerHumor/comments/6jw33z/internal_structure_of_tech_companies/ accessed February 2024.

The previous chapter explored how the frame and networked expertise of ‘nudge theory’ emerged and spread, this chapter focuses on what the behavioural experts and expertise do once they are inside the companies. What do behavioural experts offer to the companies that hire them? What role do they play in ‘actual product decisions’? What is the extent of their influence? The answers to these questions unravel in parallel to the insights gleaned from interview data on the inner workings of platform companies more broadly. While behavioural economists are not behind every product decision – as the opening quotes made clear – their expertise is still demanded, and as we shall see, for its presumed efficacy in solving user behaviour problems, and relatedly, in helping with the product teams’ metrics. Behavioural experts refine their propositions and positions within companies by demonstrating their ‘added value’ with regards to these questions. Furthermore, while their initial ‘selling point’ pertains to behavioural nudges, their actual approach to ideating, implementing, and evaluating product interventions, overflows the nudge frame. The overflows are caused by the perceived nature of the ‘problem statements’, which require the mobilisation of additional epistemologies, and by the existing organisational arrangements that they must work within, which are geared towards ‘rolling out features’ and ‘boosting product metrics’.

‘Problem statements’ and ‘product metrics’ are the two overlapping ends of what we shall call, ‘the product optimisation cycle’. A section is dedicated to describing the cycle, having established it in interviews as a key work process of the product teams within which behavioural experts are embedded. Many researchers and commentators have noted ‘data-driven design’ and the ‘build-measure-learn-iterate loops’ to be at the heart of product development in platform companies, noting the importance of metrics, data analytics and A/B testing to platform design (see; Gurses and Van Hoboken 2017; Hindman 2018; Kelkar 2016;

Seaver 2019; Seufert 2013; Shestakofsky 2018; Waldman 2021). Less explored are the implications the product optimisation cycle has for the character and process of work, and how it intersects with the distribution of material rewards internal to an organisation. The accounts offered in this chapter reveal that metric-driven optimisation can reinforce product changes perceived by interviewees as ‘piecemeal’ and not quite ‘holistic’, if not inefficient and prey to micropolitics between product teams. As a result, platform companies, however provisionally, cease to appear as a unity (Law 1992; Seaver 2022) as they often do in mainstream critical discourse that tends to ‘overemphasise [the] coherence’ (Martin 1998) of platform design decisions.

Circling back to the keyhole metaphor, originally used by Lucy Suchman to describe the limited vision that interactive expert systems had on their users – as though ‘the machine were tracking the user’s actions through a very small keyhole’ (2007, p.11) – we find that it holds a double meaning for the findings in this chapter. While Suchman’s usage emphasises the *obstructed* and *limited* nature of computer’s vision, and Martin (2022) continued this emphasis in applying the word to contemporary computing systems, the word’s second meaning denoting the qualities of being *intrusive* and *snooping* is equally, if not more, apt for ‘the age of the surveillance capitalism’ (Zuboff 2019). ‘Data is a strange product’, Neff and Nafus (2016, p. 69) write to convey this tension, it ‘often reveals more than its designers intended’ or its subjects consented to, ‘yet less than is required to be useful’ for the problems it is applied to. After the ‘big data revolution’, computing systems now have a higher ‘volume, velocity, and variance’ of keyholes to peer into users’ actions (boyd and Crawford 2012; Kitchin 2014). Platform literature has maintained that behavioural data is a resource that yields disproportionate improvements to their products and into locking users in (Hindman 2018; Zuboff 2019). The empirical observations in this chapter test these claims

and show product improvement processes to be far from driven by principles of efficiency or rationality in any straightforward way. The chapter further reveals, in inverting the snooping of platform companies on users by peeping into the companies themselves, that the data keyholes into users' lives are not merely obstructive or intrusive, but also generative, in the sense that they enact their own logics in organisational life.

Doctors, Evangelists, and Low Hanging Fruits

Joseph is a behavioural science evangelist. He holds a master's degree in Behavioural and Decision Sciences from one of the field's two leading universities offering programmes with a professional emphasis. Before the programme, he worked in consulting as a human resources specialist for a couple of years after college. He decided to make a pivot when a mentor of his told him 'If I wasn't already the Chief Data Scientist, I'd go and try to become a Chief Behavioural Scientist.' Since then, he held various 'behavioural' positions ('behavioural researcher', 'applied behavioural scientist') at three different technology companies in the last three years, putting his knowledge to work. As side projects, he co-founds and co-runs professional associations for behavioural practitioners in the public and private sectors, and posts regularly on LinkedIn about how to formalise and grow the field. Contrary to the resigned realism of Mark and Adam, Joseph is bubbling with ideas to make 'behavioural science applications in business' work. To every question I put to him about what behavioural science does, or what his role in the company is, he always adds what it could do, what he could be. He had just started his second job at the fitness start-up at the time of our meeting and tells me 'Where I am formally is within the research team of [the company]' but 'I don't think that is going to be the place that I stay.' The research team he's hired for produces 'external research to support the product' specifically in sports sciences, which caused problems when Joseph first started 'this new gig.' He explains:

I needed to put up some guardrails because a lot of people instantly slotted me– and especially given the domain that the company I work for now is in, people thought I was a sports psychologist and I’m not that. I’m not an expert of motivation theory... I like to make that separation, too, because a behavioural scientist shouldn’t be seen as just a social scientist collect all.

He likes to make that distinction, too, because it is key to ‘how [he]’s trying to carve [himself] into this new org’ and to the role he imagines which entails ‘working closely with Product.’ Joseph is not certain about how to define behavioural science – ‘if I ‘can help create that definition’ with my research, ‘it would be extraordinary’. But he reckons, ‘anything to do with ... the outcome that the user is trying to drive ... and anything that is going to influence that outcome is fair game for behavioural science.’ Drawing on this definition, he aspires to build ‘internal systems’ in the companies he works for, ‘to empower every individual in PM [i.e., product management], in UX [i.e., user experience], in Data Science and Research’ to be ‘thinking about those outcomes’ when they are building a product or a feature, ‘and so, each step of the way that is a checkmark that is tested.’ I write down ‘an aspiring obligatory passage point in the making’ in my interview notes.

Priya, who has her master’s degree from the other leading industry-oriented programme in London, has similarly faced confusion regarding her role in the company, when she was hired as the first behavioural scientist at a ‘super app’ company that began in ride hailing, as the *literal* ‘Uber’ of Southeast Asia:

After I joined, I realised that the person who hired me, like, quit. So, I was basically the first of the kind in the company and there was nobody who knew what I am supposed to do.

Her degree in behavioural science was her second postgraduate degree, after an MBA and five years of work experience in strategy and marketing. Priya used that to her advantage when she found herself with ‘a blank canvas’ in her new job:

But the good, the positive was– and I already had experience right, so I understood how business works and where I thought behavioural science could fit in. [The company] is like any tech company, Product is the core of a lot of things, Product

and Design. So, I realised that there was a lot of *low hanging fruit* there. So, then I started working with our Product and Design teams, helping them understand the user behaviour behind some of the problems that we were trying to solve and then helping them see how they can apply behavioural science to that.

She had been in this position for three years when we spoke – she still is at the time of writing – and over the years grew her team to ‘three people’ and ‘integrated [themselves] more closely into how the different teams work.’ Key to her success was her ability to find ‘low hanging fruit’, which also happens to be a product management term referring to ‘an easy product or feature change that can substantially improve metrics’. ⁷¹ A more pressing problem for her, though, was finding the niche, and differentiating the offering of behavioural science from those of the neighbouring expertise groups:

I walked in thinking that behavioural science is the solution for everything. But then, once you enter the industry, especially in big companies, you realise that you have overlaps with a lot of pieces. User research is already doing what you’re doing; they are speaking to people; they are trying to understand behaviours ... except that they’re not using the science part of it ... A lot of researchers come from psychology background as well ... Similarly, design already uses a lot of psychological factors. Data science uses a lot of data to understand behaviour.

So, I think that realization that there are overlaps with a lot of things is very humbling because then you realise that behavioural science needs to find the niche. It’s okay what the user research does, but then behavioural science adds a particular layer to it and that layer is important, *figuring out that layer is important*, because if you don’t, then you are basically walking on someone else’s shoes, right? They’re already doing something and you’re trying to get in there and say, ‘Hey I have a better way of doing this using behavioural science.’

The fields of ‘user experience’, ‘data science’, and ‘marketing’ come up in our conversation with Joseph, too, as comparable and thus competing fields. This might be due to the loosening up of the working definition, and the enlargement of the scope of behavioural science, which is no longer behavioural *economics*. Both Priya and Joseph belong to the second cohort of behavioural experts, having received their training in the specialism and

⁷¹ The entry in a glossary of product management terms illustrates with the following example: ‘For instance, adding a button to the homepage for users to purchase a product might be a “low-hanging fruit.”’ at <https://sumitkumarsingh.medium.com/product-management-cheat-sheet-d819e8502c58> accessed February 2024.

being subsequently hired by tech companies a few years after the initial behavioural economics ‘frenzy’ circa 2013 – 2014 – a time that Mark described in the previous chapter, as ‘Silicon Valley was dying to get their hands on [behavioural economics]’. Since then, many more have clothed themselves in the expertise, although the ‘doctors’ are sceptical of the expansion. Adam says, ‘My sense is about 80 to 90% of the people who consult in behavioural economics aren’t expert in it. They just think that it’s a profitable business to extend to... It’s not my assessment that behavioural economics is string theory or quantum physics. So, it’s not as if you can’t do useful things with the ideas unless you have a PhD.’ Mark doesn’t know ‘if the academic in me would even call them behavioural economists’, neither do they claim that title, but he accepts that there are ‘certainly applications of all kinds of behavioural research that they brought to bear on the user experience.’

This new cohort is also more engaged in strategic action to elevate the expertise and themselves in their respective companies, although always with reference to how behavioural economics or behavioural science can add value to business – ‘the only permissible mode of expression’ within the micropolitics of the corporation (Burns 1961: 260). They read up and draw on trade books and other resources⁷²: I have come across a more formalised version of Joseph’s ideas in a popular behavioural science book by Matt Wallaert (who Joseph described as a mentor and someone that he ‘builds himself off of’ in becoming ‘an influencer of behavioural science’). Wallaert (2019) proposes ‘behavioural statement’ as a device akin to the more conventional ‘objectives and key results (OKRs)’, that could similarly organise work at different levels of the organisation. In a similar vein, the low hanging fruits that Priya referred to is more systematically treated in a practitioner blog titled ‘The Future of Behavioural Science in Business’, in which the author argues that behavioural experts should

⁷² For example, *Building Behavioural Science in an Organisation* (Khan and Newman 2021), by the Action Design Network.

find ‘repeatable’ and ‘scalable’ deliverables to provide value (Buisson 2022). I inadvertently contributed to the blog post, named as a ‘sociologist of professions’, after chatting with its author.

One important area of micropolitical intervention for behavioural scientists is the company’s internal structures. To Adam’s story of the sharing platform company’s ‘ghetto lab’, and Mark’s story of his company’s reorganisation, Priya and Joseph add their own where they are the actual or aspiring protagonists navigating the organisational structures to their benefits. Priya has strategically aligned herself with the Product team because she knew ‘that was the core of a tech company.’ Joseph is remarkably attentive to how different tech companies are organised and where the various behavioural science teams fit in the organisation: he describes to me the different models of ‘internal consulting’ or ‘shared services’ (an independent behavioural science team takes on specific projects) and ‘business line specific’ (behavioural scientists are embedded in specific product teams). Consequently, he approaches the organisation of his company as something that is malleable, and his project of establishing a team to empower Product is based on what he knows of the internal structures of other companies, entailing an organisational rearrangement:

I’m modelling this off of Google’s ‘four in a box’ theory, and so they have, I have never actually been able to find anything published on it, but from people I work with from Google, I learned they have a model where any major product has a PM, a UX designer, a Data Scientist and then a researcher. And so, ‘four in a box.’ Those four people need to have signed off on something for it to proceed. And I like that philosophy a lot. [For] Google, [it] makes sense that they could have enough researchers that they could have fit in theory, four in a box, but most companies I know don’t invest in research as much as Google does. And [my company] has great research backing, they actually have enough to do this ‘four in the box’... which is uncommon for a start-up, I mean seriously uncommon for start-up. Umm it’s even uncommon for my previous employer and most big tech companies... that’s why I took this job because I saw this as being a potential place to show what could be done with this.

Joseph was unfortunately among those affected by the tech layoffs of the late 2022. He found another job soon enough at another tech company, and continues to evangelise

behavioural science, although his current job title doesn't feature any 'behavioural' qualifier.⁷³ Even if Joseph could not change the internal structure of the company, he was right to see it as a significant factor in the status and influence of the work behavioural expertise does in the company. As mentioned above, Mark, for one, increasingly grew 'dissatisfied with just what the job required' after his company was reorganised. When Mark was hired, his position was akin to an internal consultant, as he would be 'floating around, doing different projects...kind of a methodological specialist' but then 'they put researchers on particular teams and then we just work on that one team, and so that meant that I had to do whatever that team needed.' This meant he could no longer use his 'background and skills':

The truth was most of the day-to-day stuff I worked on... especially the last half of my tenure there, was doing more like user testing...the way that they use these researchers was you know testing user flows... Unless you're someone who's hired like a Chief Behavioural Scientist⁷⁴ or something where that's just explicitly your goal– What you do and how you're able to use those skills is really dependent on how the company is organised. And [the company] grew so fast, and it was reorganised so many times that it wasn't always like a clear 'this is what I do.'

While there was not a clear 'this is what I do' for Mark, there were clear expectations and objectives that accompanied the movement of behavioural experts into platform companies. As Priya noted above, behavioural experts were first and foremost hired to help product and design teams 'understand the user behaviour behind some of the problems' they were readily working on, problems always understood in relation to key metrics. It was very common for interviewees to bring up *metrics*, when asked to explain what 'the business case' for behavioural science was. Joseph attributed the interest in behavioural science to 'some

⁷³ All this is based on his LinkedIn profile, posts and comments.

⁷⁴ Chief Behavioural Scientist is an actual job title of some behavioural experts (though very few), although some interviewees are sceptical of the idea. One remarked in an unpublished blog post, which he shared with me, 'Certainly, you can call yourself a CBO if your boss is okay with that, but that's only for a fancy email signature unless you're actually reporting to the CEO of your company and engaging with other C-Suite leaders as your peers. For that to happen, I believe that behavioral science first needs to be an enterprise level function, which again requires repeatability. I find it telling that all the CBOs I have seen were in startup or consulting firms, none of which are public companies.'

great case studies out there’ that showed ‘how behavioural science has been used to increase the basic or foundational metrics of whether it be a tech company or just any company’, increasing ‘sales’, ‘engagement’, ‘customer satisfaction’ or ‘things like usage, retention, conversion’. Ryan, a behavioural product strategist, ‘would talk about metrics in a different sense than a lot of people’ when pitching to clients, because ‘a lot of people in tech’ and ‘particularly product manager type people’ were ‘looking for engagement and frequency metrics.’ Nick, also a consultant, described behavioural science as this ‘really, new, cool, shiny concept that all the competitors aren’t using’ and ‘if I use this, it’s going to help me with these two metrics’ that are key metrics for start-ups, ‘customer acquisition costs and LTV [i.e., lifetime value]’.

‘But’, Nick added, ‘if I told you I was going to use peanut butter, to increase LTV and decrease customer acquisition costs, and it works, they don’t care it’s peanut butter. They just care for the numbers. So, do they care [it’s] behavioural science? ... they just care that it works.’ That ‘a lot of people in tech’ mainly ‘care for the numbers’ was in fact a structural consequence of how work was organised in platform companies. The next section unpacks one of the typical workflows observed in product teams of large platform companies with an established product, teams within which behavioural experts were typically embedded, whether they liked it or not. As we shall see, while the competitive edge of the behavioural experts over their rivals (such as ‘the typical quantitative user researcher’) was their knowledge of behavioural science, in the end their success was measured for how well they managed to ‘move the needle’ in key metrics (Shestakofsky 2018, p. 20).

The Product Optimisation Cycle

Elif: What is the standard way of implementing new features or new product initiatives? If you don't have a behavioural scientist on the team, how does it normally work?

Mark: Normally, you have goals that are set by executives in the company, it might be— at [my company], a big one was increasing nights booked. And then you have these different cross-functional teams that were in charge of a part of the product. And it would have a product manager and several engineers and some designers and maybe a data scientist or researcher. And they would start with trying to understand what the pain points in the flow are [or] a part of the flow. Where you know there's a lot of brainstorming, there's a lot of sticky notes, there's a lot of like 'how can we improve this, what can we do'. A lot of design changes were just inspired by designers looking at the page and trying to improve it and then you would redesign that part of the flow, or the page, or whatever, the app. And researcher would start by user testing, maybe prototypes. Not like a full engineering build, but just something that would mock that flow and see if people liked it or if they're able to figure it out, or it seemed like improvement. And then you would build out the feature and then test it. Do like an A/B test. Data scientists would build a test of 'Here's how we're going to know.' We're going to launch this to like 1% of users and compare the metrics and see if we've actually made an improvement. And if you had an improvement, you'd slowly like push it to more people, and then you push the change to 100% of users.

All the descriptions that the interviewees offered of what we shall call 'the product optimisation cycle' similarly began with the articulation of a business goal and 'a problem statement' that translates this goal into something that the product team can tackle. For Priya, 'At one point, the problem would have been, how do I get people to accept surge price'. 'A business outcome that' Joseph was 'trying to create' in one case at the productivity platform company, was to 'increase well-being and productivity'. Mark's team was 'trying to reduce host cancellation', Adam's goal at a social media platform company that he consulted for, was 'selling more ads' by convincing advertisers of returns on investment. Meryl, who worked for a behavioural economics consultancy in Silicon Valley, in a collaboration with 'a company that helps gig workers book jobs', needed to solve the problem of 'how do we increase the probability that people will get through and actually complete the flow' when they registered. The business problems varied, from user acquisition and growth to product optimisation; solutions materialised differently as new features, new products, or the

optimisation of an existing flow; success of each was measured by different metrics. They all, however, followed the same process sketched out by Mark, going through the subsequent phases of ideation (research, brainstorming), implementation (building, releasing), evaluation (A/B testing against metrics) and roll out.⁷⁵

Behavioural experts propose interventions, to varying degrees of influence, to each step. Early on at the ideation stage, behavioural economics is figured to offer a ‘scientifically informed’, ‘research-based model’, or simply as a way to ‘think really intelligently’, as an interviewee put it, about the problem and its possible solutions, in place of ‘a lot of brainstorming and sticky notes’.⁷⁶ To increase well-being and productivity, Joseph consulted the literature and found ‘one way that there’s a decent amount of research literature on now is that you get people to disconnect during their away times... there’s good research now that says that doing that, especially for information workers helps with creativity, it helps with increasing productivity, when you get back it reduces burnout.’ Mark ‘pulled some data pooling of what predicts a host cancellation and figure out what...may be driving that’ and ‘looked at the flow, like the buttons you press to cancel a reservation.’ Meryl, the behavioural economics consultant, consulted the stock of heuristics and biases identified in the behavioural economics literature.

Although something similar was expected of Priya when her team was asked to solve the problem of ‘getting users to accept surge price’, instead of offering a set of nudges, she preferred to dig deeper. She explains her reasoning as follows:

Surge price is an economical thing, which is there aren’t enough drivers... it’s a very rational solution, a very economics-based solution, but people actually don’t

⁷⁵ The build-measure-learn loops are at the core of ‘data-driven’ design, as well as agile programming and lean start-up methodologies (Cagan 2017; Gurses and Van Hoboken 2017; Ries 2011; Seufert 2013).

⁷⁶ The pervasive use of sticky notes in design thinking are, in fact, ridiculed a lot – as the joke goes, ‘design thinking was invented by post-it companies to sell more sticky notes’ – and in turn defended by Nielsen Norman Group, the bedrock institution of UX design at <https://www.nngroup.com/articles/post-it-in-ux/> accessed February 2024.

like it so much, so ... ‘how do I nudge customers to accept the higher price’ ... Over time that problem changed to understanding *why do people not like surge price*. So, then you go back to the theory and then we will get papers and literature reviews and understand how reference pricing works, how reference prices are set. So, if my ride from home to office was \$10 and the same ride back, if it’s \$15 and nobody explained why the price’s changed, then people feel the system will be unfair to them ... we realised that people had questions on transparency... there were all these feelings of unfairness that was there, which nudge wouldn’t solve it. And nudge is basically pushing you more in the direction of a black box.

Once Priya has made the case that adding nudges to the existing product would not work, her research became the basis of a new product that would be ‘actually converting that black box into something that gives people real time information on why the price was the way it was.’ Based on ‘a bunch of signals that the system takes in’ the product ‘autogenerates a statement’, that is, ‘if it is the morning, then it says: Hey everybody’s going to the office like you! If it’s raining, it says: Everybody wants a cab ride right now!’ As such, the ideation and research are translated into ‘actual product design’. Similarly, Joseph’s research was tied to a new feature in the productivity tool that ‘would recognize Joseph is going on vacation because he has a vacation block on his calendar coming up, it would ask: Hey Joseph, do you want to prepare for your vacation?’ and so prompt the user to ‘do a series of steps, things like setting up away message, declining your meetings.’ Mark, after seeing that ‘there was a lot of things that show that if host felt like they were really disrupting a guest experience, they’d be less likely to cancel,’ had recommendations to improve the user flow:

And so, I suggested we change the host cancellation flow to show more information that picture the guests, like this is who you’re cancelling on, and this is who you are inconveniencing. ‘They’re coming from this far away and they’ve been planning this trip for these many months.’ And instead of having a little box that used to say, ‘Well explain to [the company’s] customer service why you’re cancelling.’ I suggested and we change it to say, ‘Explain to the guests, tell them why you’re cancelling.’ And so that was like a way to humanize that interaction a little more.

In these examples, Priya and Mark transcend the typical linear mode of problem solving embodied in nudge theory (Schmidt and Reid 2021). They draw on behavioural economics literature for ‘the principles and intuition and things like that’ (Mark) or ‘a

framework perspective’ (Priya), to approach the problem and develop an understanding of the user’s situation, but as Priya describes the difference, ‘it’s more nuanced; you spend more time to understand the problem better, you spend more time to figure out a range of different things you can do, and you’re not boxed into “I need to have this nudge”’. Their working methods are notably different – for their hybridised nature and the tacit elements they carry – from how behavioural expertise is promoted to the public and marketed to the clients by large behavioural consultancies such as *Irrational Labs*⁷⁷ or *BEworks*⁷⁸ (Following from that, behavioural expertise in action is also notably different from how I presented it in the previous chapter, where I attributed the success of behavioural expertise to the portability of its biases-and-heuristics model.) Compare Mark and Priya’s approach to how Meryl, who manages a large consultancy, explains their process:

We do a behavioural diagnosis, which is a deep understanding of the decision-making environment... we look at every single step that the user has to take there, and then we apply psychological biases to each step. So, what’s happening in the user’s mind at each step, what principles are coming into play? So, for example, if there’s 17 steps, they’re getting cognitively fatigued by a certain point.

Here, the exploratory research Priya and Mark necessarily engages in to understand ‘all the things that could be happening that are causing a customer to feel that way’ is replaced by a fixed set of behavioural levers that can be pulled to optimise any user flow, to ‘boost the metrics’ – Meryl proudly shares that ‘with [an advertising platform], for example, we help them increase retention by 14%’. Although, at the end of the day, any product change is as good as the dent it makes in the metrics. As Mark complained about earlier, the product teams are driven by how changes ‘would perform in experiments’: ‘there’d be all these sticky notes on the board and then they’d hone in on different ones that they would want to focus on’ ‘it’d be just like let’s test this, let’s test [that]’. And ‘if changes disrupt the

⁷⁷ <https://irrationallabs.com/> accessed February 2024.

⁷⁸ <https://beworks.com/> accessed February 2024.

flow of something that you know users are in the habit of doing, you can certainly have a dip of a learning curve, may reduce conversion [i.e., when a user performs a desired action] for a while and increase it as it [gets] used to it.’ Another interviewee says the worst moment of her career was when her team did ‘a complete redesign’ of a webpage, and it ‘tanked conversion’.

Testing proposed changes against key metrics such as conversion, to determine if they will be implemented, is the final and *the most important* stage of the product optimisation cycle. Business literature and platform discourse boast of prioritising a ‘metric-driven’ mindset in approaching product changes: Amazon attributes its success to ‘working backwards’ and being ‘customer obsessed’ (Bryar and Carr 2021). At platform companies, ‘metrics is what people [use to] justify [if] a feature or a product is working or not’ says Arjun, a senior user researcher working at one of the first ‘unicorn’ companies of India. For the product line he is working in – a mobile news platform – the key metric is time on device. Although ‘usage and engagement’ are key metrics also for Joseph who works on a productivity platform, as they are ‘the metrics to see how people are reacting to a feature’. As a product manager explains to privacy scholar Ari Ezra Waldman during his ethnography at a large unnamed platform company, engagement has a broad definition: ‘Engagement is use, it’s the amount of time people use it, how much they use it, how often they click on what we want them to click on, how often they buy things. Engagement with the product.’ (2021, p. 20)

For the behavioural expert, Joseph thinks, this emphasis on usage and engagement metrics invites an intervention to go beyond measuring ‘how people are reacting to a feature’. As the feature he designed aimed to help workers disconnect during their away time, Joseph did not want to measure ‘just if people used it’, because that measurement would only be

‘simulating the effect of disconnecting during away time, but we wouldn’t know that it’s actually doing something.’ Instead, he borrowed the gold standard in behavioural economics for impact evaluation, the randomised controlled trial, or the ‘RCT’:

We took that feature, and we created two groups. It wasn’t in a real time RCT, but it was kind of a retroactive RCT using behavioural data. And we were able to create a control group who didn’t use the feature and a treatment group who did. We use the matching algorithm to get those people to be as similar as possible on multiple variables. ... similar in the amount of time they took off ... in amount of hours that they worked per week ... and we’ve found through that that the people who use the feature almost never joined meetings, they were less likely to both receive and send emails... So doing those steps we then found actually was creating the outcomes ... that people who used it were exhibiting the behaviours which we then were able to connect back to increasing productivity and well-being.

The example is an exception for a platform company; many interviewees expressed the difficulty in getting product teams to run an RCT, one calling it ‘an overkill’⁷⁹. Presumably, in Joseph’s case, it was enabled by the fact that, as he mentioned previously, his company employed an uncommonly large number of researchers. By contrast, Priya, for instance, mentions ‘convincing people to do experiments and building that mindset’ is one of the big challenges she encounters as a behavioural expert. When I asked her to elaborate on that, thinking A/B testing is a key step in the product optimisation cycle, and a highly celebrated part of tech company cultures, she explains the difference between the two as follows:

Normally the experiments would be; if I’m releasing a new feature, then I will release every two variants of the feature to two different groups or maybe I’ll release it to one group and the other is control and see whether or not that affected the metric. What we need to convince them about is nuances in the feature that need to be experimented on. So, for example...the surge pricing feature where you’re showing different kinds of statements, should I be invoking empathy for the driver, by saying ‘This driver’s working very hard, hence the surge price,’ or should we be very practical and say, ‘... he needs more money that’s why we are doing this.’ So, trying out different variants of that statement ... those are the kind of experiments that behavioural science would be more on ... they don’t come natural to them. For them it’s more about the product and launching a feature and rolling it out.

⁷⁹ Interview conducted on 27 April 2022.

Very often, nudge applications that are circulated in the behavioural expertise network and that feature in public demonstrations claim randomised controlled trials are diligently used to precisely test the kinds of ‘nuances’ of features that Priya doesn’t observe to ‘come natural to’ product teams. This speaks to a general disconnect promotional discourses might have from practical work realities, although it is important to emphasise that product optimisation cycle is about ‘launching a feature and rolling it out’ instead of ‘go[ing] in depth and understand[ing] behaviour’ as Priya put it. On the other side of it, while product optimisation is not about testing ‘nuances’, it is also not about making big, innovative leaps. The organisational and technical arrangements consolidate a specific way of doing product development, which as the next section explores, might have adverse consequences.

‘I’m in Charge of Making my Metrics Better’

At the beginning of the ‘educational technologies (edtech) and entrepreneurship’ course where I was the teaching assistant, the professor said to the students: ‘I’m an organisational theorist. And if there is one universal rule of organisation it is this: if you measure something you change it.’ Business school professors have a knack for making bold statements, but this one is a good place to start thinking through the implications of the measurement infrastructures that were, to borrow the evocative description of Kjellberg and colleagues, ‘silently assisting the consummation of’ product changes described above (2019, p. 223). The interviewees, in relaying their everyday work experiences, brought to the fore these measurement infrastructures, explicitly or implicitly, as they were consequential in shaping the form and the value of their work within the organisation.

Mark has already hinted at the first one in the introduction of this chapter, when he observed that the key measurement device, the A/B test, reinforced a particular logic of design. He further explains:

There are lots of assumptions that these A/B tests made about the additive separability of different features, and so made it difficult to have a larger, listed change happen. Because [product teams] only wanted to make changes that they could test in individual components of an A/B test. It's hard to have, to make substantial changes, like to the ecosystem, just with these piecemeal testing, these piecemeal changes... it seemed like so many of the changes were determined by how it performs in experiments.

In *The Internet Trap*, Matthew Hindman describes a similar case of Google's chief designer leaving the company 'because of the clash between his classical design training and Google's obsessive culture of data' (2018, p. 25). The next chapter delves deeper into the assumptions behind and the mechanics of A/B testing and the implications of its dominant position for the different forms of expertise that exert competing 'jurisdictional claims' over the same area of practice (Abbott 2014).⁸⁰ What Mark describes here (and what the Google case hints at) however, emphasises the impact that the measurement practices have as 'the redefinition of work' and the altering of 'organisational scripts and procedures'. Espeland and Sauder (2007) identify 'redefinition of work' as a specific modality of the 'reactivity effect' – the idea that things change upon their evaluation, measurement, quantification, numbering, as the above quote plainly put (see also Espeland and Stevens 2008; Christin 2020).⁸¹ The metrics address the product team as evaluations of the team's performance, and not the users whose interactions are numbered. Therefore, rather than changing users' interactions, the reactivity effect is observed in the way the team changes the way they work.⁸² In this case,

⁸⁰ Shestakofsky (2018, p.19) observes a similar tension at an early-stage marketplace platform start-up: 'This ethos became a source of frustration for some product designers, who believed that the company's "data-driven" philosophy devalued their specialized knowledge and aesthetic judgment. Some complained that management would generally prefer a design change that boosted key metrics, even if it detracted from a more elegant and user-friendly interface. This resonates with research in other settings in which the emergent authority of data scientists has superseded subject-matter expertise (e.g. Kelkar 2018).' What Mark, and I, are highlighting here is the implications of 'data-driven design' for the design work and process itself, rather than for designers.

⁸¹ Espeland and Sauders use 'reactivity', rather than 'reflexivity' or 'performativity' for the associations the word has with concerns of 'methodological validity', concerns also shared by Mark, a methodological specialist.

⁸² As Christin (2020, 2017) clarifies, the direction of reactivity is determined by who the numbers and metrics are for, illustrating with the example of internet metrics in journalism, that 'clicks, comments, reading times' address journalists, not readers, and therefore have an effect on the former's, not the latter's behaviours.

making it harder and undesirable to have a ‘larger’ ‘listed’ ‘substantive’ change to the ‘ecosystem’.

In trade literature, this refers to the danger of reinforcing what digital marketing specialist Eric Seufert (2014) calls ‘local optimisation’, at the expense of taking a global view to the product. As Seufert explains, ‘optimization takes two forms: *local optimization* improves the performance of a process, while *global optimization* improves the overall performance of the product’ (p. 9). Although these two levels of product changes can sometimes result in ‘competing effects’:

Both forms of optimization are necessary, but global optimization is more abstruse and requires a broad understanding of the user experience and a definition of product success (usually related to revenue). Whereas local optimizations are easy to undertake and evaluate—a process either improves relative to its previous state or it doesn’t—global optimization requires a much longer measurement scope and the organizational wherewithal to think about the product in the abstract. For these reasons, local optimizations are potentially easier to both execute and build design decisions around, but the gains made from local optimizations may be illusory if they haven’t been thoughtfully considered as part of a global optimization strategy. In fact, local optimizations may produce negative long-term results when undertaken aggressively or without considering the secondary effects on other processes or performance metrics. (Seufert 2014, p. 9-10)

In addition to the tension between local and global levels, the fragmentation of the product into parts that are each owned by a different team, may also create negative effects on the overall experience. In this case, ‘piecemeal changes’ and a lack of attention to ‘the cohesive experience’, may be further deepened by the material organisation of data flows in between different product teams in the organisation. When Jo, a product manager, was consulting for a large advertising platform company, she was surprised to see that the company ‘doesn’t let teams within [the company] share data between them’ even those that were ‘very closely related would not be able to share data with each other’:

Everybody would be running experiments and sometimes people would run the same experiments in different silos because they had no idea that anybody else had run it already... That’s a really interesting organizational problem because– I

understand why they do it, because there's just so much to be done, there's so much that can be managed and thought about when you have a big site like that, on a small, on an individual page, but... who's in charge of the cohesive experience? Again, that's just not how— customers don't experience this as individual pages. You know, who's tying this together to make the overall experience good?

Jo is also a consultant, like Adam and Meryl, but not in behavioural economics. Her field is called 'digital experimentation and optimisation', although she was one of the first people that I interviewed. (After listening to a presentation that I gave on the applications of behavioural economics in digital advertising, Jo reached out to me saying she 'did that work and have a bunch of contacts that did that work in case [I] need people'.) Jo's company offered 'data-driven optimisation' services (which Chapter 5 explores in detail), mainly to e-commerce businesses and large brands, but they also had clients within large platform companies. With one sharing platform company, they worked with 'an entire team' 'all of whom were in charge of nothing but experimentation for their parts of the product!' When I asked why the company needed an extra hand, she explains, 'Sometimes, it's that even if they have a ton of Dev [i.e., development] resources theoretically, they don't have Dev resources that can be freed up to run experiments. Sometimes they've been doing it for long enough that they've run out of their own ideas to test and so they're like let's just get new ideas from other people.'

In client work, Jo has witnessed a great deal of 'the internal politics of businesses'. Sometimes, the organisational subdivisions 'basically would make it more difficult to actually implement changes because things wouldn't be considered quite as holistically.' This is not due to 'broken data' (Pink et al 2018) as it was above, or lack of knowledge of what other teams' are experimenting with, but an active blockage of certain changes by another team that made 'their metrics worse'. In one example with a large brand, she recounts:

One person would be the product owner of just the page that displays the shoe with the 'Add to cart' button and then somebody else would own the page that displays the list of all of the shoes ... And they would be running different experiments and

their metrics would impact each other, obviously, because the experience is continuous for a client. So, it's like if they get screwed up on the list view, they might never make it to the PDP, the product display page. So, that kind of siloing mostly created— really all it created was issues I think around whether or not something would be implemented because somebody, for example, the owner of the PDP could legitimately say 'Hey I don't give a shit if it made your metrics on the list view better because it made my metrics worse, and I'm in charge of making my metrics better.'

Jo had a similar experience when optimising the funnel of becoming a rider with a platform company: because the experience is continuous, changes in different pages would impact other teams. This hints at the second dimension of the quantification of teams' work, whereby metrics can be mobilised in the 'micropolitics', that is, the pursuit of material rewards within organisations (Burns 1961). In this classic article that was also mentioned earlier, sociologist Tom Burns (1961, p. 261) notes, 'In fact, members of a corporation are at one and the same time co-operators in a common enterprise and rivals for the material and intangible rewards of successful competition with each other.' In organisational studies, 'micropolitical approaches' have been used to 'open up the perspective for organisational tactics which are not in compliance with the overall goals and interests of the organisation', to make visible 'the efforts to advance egoistic self-interest, that in the end can be to the detriment of the organisation as a whole' (Adler 2022).

It is an open empirical question what level of micropolitics is at play in any given platform company and how it affects the platform design – along with the question of whether local optimisation is prioritised over global optimisation in any adverse way. Yet, what the interviewees emphasise, and what can reasonably be expected from 'any corporation of any size' (MacKenzie, Caliskan and Rommerskirchen 2023, p. 7; see also Seaver 2015, p. 32), reminds us not to presume that there is a total unity or coherence in product decisions.

From Keyholes to Lock-In

That data built the Big Tech, and the remaining platform companies that exert a comparable influence over societies and economies, has now become received wisdom (see Birch and Bronson 2022; Langley and Leyshon 2017; Narayan 2022; Sadowski 2019; Srnicek 2017; Zuboff 2019). Data is argued to be the engine fuelling the manifold operations of platform companies in their pursuit and maintenance of market power, notably, profiling, targeting, and prediction, and most relevant to the discussion in this chapter, ‘data is used to build stuff’ and ‘to optimise systems’ (Sadowski 2019, p. 5-6). The description above of the product optimisation cycle offered a sliver of this vast function of data, as interviewees sought to find insights in data for how to optimise the product and measured the success of the changes against metrics derived from usage data. ‘The process of converting data about user behaviour into product improvements that increase some performance metrics’ is precisely how ‘product optimisation’ is defined in the industry (Seufert 2014, p. 9).

Although this process, as we have seen, is far from straightforward – and neither is there a straight line from data keyholes into users’ actions, to ensuring their lock-in to the platform. To begin with, as the analysis has shown, metrics propel well established reactivity effects, in this specific organisational setting, potentially imposing a logic of local optimisation on product development and driving the micropolitical struggles of teams owning different parts of the product. These are significant findings also because performance metrics, and in particular, usage and user metrics, ‘measures like DAU, MAU, or “user base” are key metrics for these firms and their investors’ (Birch, Cochrane and Ward 2021, p.12) central to their financial valuations as well as internal operations, of which the literature emphasises our lack of knowledge (Mazzacuto et al 2023). User metrics *mediate* between, on one hand, the political economic imperative to grow the userbase and user engagement (Kenney and Zysman 2019), and, on the other, the organisational life and work

within platform companies, being ‘typically the primary consideration in implementing changes to the product’ (Shestakofsky 2018, p. 20), at start-ups and large companies alike. Mark Zuckerberg, for one, is famous for being ‘obsessed with metrics’ and particularly, with growth (Dwoskin, Newmyer and Mahtani 2021; and see Levy 2020 for a history of this), and ‘a metrics dashboard that the entire team fixates on was standard Facebook practice’ (Martinez 2016, p. 300).

The industry’s ‘obsession’ with user metrics can be best understood in relation to the paradoxical ‘fragility’ of platform power, and even platform monopolies (Balzam and Yuran 2022). While ‘digital survival depends on *stickiness* – firms’ ability to attract users, to get them stay longer, and to make them return again and again’ (Hindman 2018, p. 2, emphasis in original) stickiness is not a state achieved once and for all but needs to be recreated continuously. Consider Zuckerberg’s statement at the US Senate Hearing in 2018; ‘the average American uses eight different apps to communicate with their friends and stay in touch with people’ (Balzam and Yuran 2022, p. 108-9), or Facebook’s official communication in response to the CMA report, which cites ‘the successful entry and growth of competitors such as Snap and TikTok’ and Facebook’s ‘substantial and continuous investment in innovation in order to improve its services and remain competitive’ as evidence for their ‘lack of market power’ (Facebook 2020, p. 14). Indeed, in their SEC filings, Facebook has ‘for years warned investors’: ‘If we fail to retain existing users or add new users, or if our users decrease their level of engagement with our products, our revenue, financial results, and business may be significantly harmed.’ (Gizmodo 2022)

The examples in previous sections illustrate precisely *how* platform companies aim to retain existing users, add new users, or maintain user engagement with their products, while hinting at the distinctive nature of ‘product improvement’ as it applies to the platform. In the

accounts interviewees provided, users are nudged to accept surge prices, to not cancel on a guest, to complete the registration flow to become a service provider, to continue using the platform as advertisers, to leave accurate reviews on their transactions. While some of these actions may correspond to traditional usability or user configuration problems (Woolgar 1990), more often than not, they transcend the boundaries of ‘use as it applies to the core product’. Instead, they correspond to promoting auxiliary actions or making available actions less likely to occur.

Consider the example of the surge pricing feature, and especially in a ride-hailing company – a sector known for its competitiveness (Shapiro 2023). The problem pertains to the core action of booking a ride on a ride-hailing platform. However, the intervention is not focused on making the process more efficient for users who are already in the process of booking but is aimed at *re-enrolling* those who are on the verge of dropping off for various reason, with the feature justifying surge price.⁸³ Not only are the processes of improving the product for users and retaining the userbase intricately linked, but it is also difficult to determine whether any given user intended to book the ride or not, when the action of booking itself is construed so plainly as ‘something arising out of ongoing activity, enacted rather than predetermined’ (Suchman 2007 [1989], p. 177). Put differently, the question of whether users ‘decide’ or ‘choose’ to book a ride, to cancel a booking, to open an account, or to continue advertising at a platform, becomes incongruent when it is the ‘underdetermination of action’, to borrow from Latour (2005), that allows for the interventions to be proposed in the first place. This is also to say, from data keyholes to lock-ins, there lies a vast open space of dynamic, emergent actions and ongoing interventions that seek to bring them into being, the nature of which is difficult to capture with the concepts of decision, choice (Abend 2018),

⁸³ Compare this to Joseph’s case where he was improving the product for employee wellbeing not to increase any user metric but to improve the product for the purpose that it served.

or else, intention. Note the difficulties this presents for both nudge and its critique, such as the FTC complaint against Amazon dark patterns, which builds a case based on the presumed subversion of intent.

Conclusion

Where does all this leave us with nudges and behavioural expertise in the platform economy?

I draw two seemingly paradoxical conclusions from the observations in this chapter, taking my inspiration from Dourish (2021) who bring our attention to ‘the allure and paucity of design’ in the discipline of human-computer interaction and beyond, that there is simultaneously *more* and *less* nudging that platform companies engage in than we might think.

There is *less* nudging because, first, behavioural economics findings are claimed to be much more of a ‘window dressing’ or ‘spray painted cover’ for product decisions made independently, not the least, ‘there aren’t enough trained behavioural scientists to be driving those changes’. While this is not a sociologically surprising finding, it is still a worthwhile one to articulate, because the public perception and media coverage of platform nudging routinely imagines behavioural scientists or behavioural science to be behind product decisions. A notable example, also mentioned at the beginning of the chapter, is *The New York Times*’ Uber nudges story, ‘How Uber uses psychological tricks to push its drivers’ buttons’ (Scheiber 2017). Although it is part of a broader genre with headlines like ‘The scientists who make apps addictive’ (Leslie 2016), that has its origins in the success of the B.J. Fogg’s ‘Facebook class’ story. (The story continues to this day to prompt psychologists to denounce its unethical nature for the profession, e.g., ‘Tech companies use “persuasive design” to get us hooked. Psychologists say it’s unethical.’ [Lieber 2018]) Second, when behavioural experts and expertise *is* involved in product decision making, their actual work

overflows the frame of nudge, along with the linear model of innovation (Godin 2006).

Rather than applying academic findings off the shelf, behavioural experts develop an understanding of the user in a context, using bricolage and heterogeneous form of knowledge, for example, when they approximate user-centric methods to ‘humanise the interaction’ or to understand ‘why people don’t like surge price’. At times, they even outright reject nudge as the appropriate intervention form, for fear that ‘nudge is pushing you in the way of a black box’, and instead offer more transparent and therefore less ‘nudgelike’ interventions. Finally, it is unlikely that behavioural experts can conduct RCTs on behavioural nuances, as the end goal is ‘launching a feature and rolling out’.

At the same time, there is *more* nudging because in platform companies, product changes are implemented within sociotechnical and organisational arrangements that reinforce small, ‘piecemeal’, local tweaks over large, ‘listed’, global changes. The product optimisation cycle described in this chapter is an instantiation of the dominant culture of developing software products (and businesses) today, which ‘after the agile turn’ (Gurses and van Hoboken 2017) operates in the mode of ‘*continuous improvement* – small, incremental product *improvements* are continuous (*sic*) implemented based on behavioral user data’ (Seufert 2014, p. 41, emphasis in original). In this model, incrementality and modularity is preferred over the waterfall model where products are taken to the market after having been fully developed and packaged. Contemporary ‘tech companies’ are different from ‘classic software industry’ that ‘developed software, handed it over to the customer in a package’: ‘they instead are characterized by the fact that they use the Internet as an operating system for their applications’ (Ziegler 2021, p. 7). Products have ‘dynamic’ and ‘constantly evolving features’ responding to ‘real time user feedback’, to the extent that, ‘tight feedback loops between features and captured data means that they may eventually melt into each other’

(Gurses and van Hoboken 2017, p. 23). Accordingly, product teams that are also modularly organised to own parts of the product, continuously deploy changes to the code, test the changes against existing metrics or develop new ones (Gurses and van Hoboken 2017; Neff and Stark 2004; Shestakofsky 2018). These predominant cultures and arrangements of product development where the main output is incremental, testable, continuous changes, explains the appeal of behavioural experts and how nudge (which shares the same set of key features) could become part of the shared background to interaction design. It also explains why behavioural experts cannot use their ‘background and skills’ in ways that they think are substantively innovative, and instead end up ‘testing user flows’. As such, they are doing what the rest of the product team – designers, user researchers, product managers – is doing; participating in the ongoing ‘nudging’ that takes place independently of behavioural expertise, and rather driven by the iterative, data-driven, agile product development assemblage.

The next chapter continues to provide empirical evidence in support of this decoupling between nudge theory and actual nudging, through a more focused analysis of *online behavioural experiments* – imagined to be conducted by behavioural scientists, while in fact is more of the routine A/B testing that companies engage as everyday work. That said, while this chapter showed A/B testing to be a standard stage in product development at platform companies, the next reveals that it has also become a material-discursive imperative, applying much more broadly to the field. This ‘experimentation imperative’ compels *any* organisation engaging in any kind of online operations (e.g., having a website or running digital marketing campaigns) to undertake A/B testing to optimise their services, products, and messaging. In exploring its construction, we briefly leave the company of behavioural experts, for it is rather the ‘data-driven movement’ that spearheads the turn to

experimentation. In fact, behavioural experts offer a mode of accounting for behaviour that *competes with* the one embodied in the controlled experiment, making palpable more of the tensions present in behavioural designs.

Chapter 5: ‘The World’s Largest Controlled Experiment’⁸⁴

Introduction

2009 was the year Optimizely was born. The ‘up-and-coming’ web testing start-up of the Y Combinator would be profiled on *Wired* a few years later with the headline: ‘Want to build a perfect website? Don’t trust the designers.’ (Christian 2012) These were the times of ‘the end of theory’, as Chris Anderson infamously declared (2008), big data was *en vogue*, data scientist, ‘the sexiest job’ (Davenport and Patil 2012). What added to the fame of the start-up with an otherwise dull technical offering, however, was its co-founder’s ‘previous gig’. Before heading West to found Optimizely, Dan Siroker worked as the Director of Analytics for the campaign that helped the election to presidency none other than Barack Obama. In what would become the origin story, Siroker’s team raised an additional \$57 million by simply ‘A/B’ testing ‘donation buttons’ (Christian and Griffiths 2016). Simple variations of small elements on a page, it seemed, were all that was ever needed to better persuade, convince, influence voters and consumers alike.

Fast forward to 2019, The Behavioural Insights Team (BIT), popularly known as the Nudge Unit, is running its 6th Behavioural Exchange conference: the ‘BX2019’.⁸⁵ One panel, titled ‘Behavioural experiments on online platforms’, features an eclectic selection of speakers from Facebook, Uber, BIT and Freakonomics. Strangely enough, the researcher from Facebook ends his talk by saying, ‘I actually worry that tech has become too reliant on experiments’, ‘theory ... I’m afraid is slipping away.’⁸⁶ As the Q&A comes, the

⁸⁴ From Christian and Griffiths (2016) who observe that ‘the internet has become the world’s largest controlled experiment’.

⁸⁵ All quotes in this paragraph are from the video at https://www.youtube.com/watch?v=ge9KaKxiNuA&ab_channel=TheBehaviouralInsightsTeam accessed February 2024.

⁸⁶ This is Curtis Cobb, the Director of Research, Demography and Survey Science Group at the then Facebook, now Meta, also holds a PhD in Sociology from Stanford.

representative from BIT reveals the interest of policymakers in engaging in a conversation with platforms companies: to repurpose their experimentation infrastructure in policy research. She asks, ‘How is it okay to experiment on people’s emotions but not for public goods?’ A big applause ensues, as the elephant in the room is finally addressed; that is, the emotional contagion experiment in which Facebook ‘secretly manipulated the moods’ of its users a few years earlier (Meyer 2014). Civilly pestered from all sides, the Facebook researcher confesses that they learned their lesson, namely, they learned ‘to be more careful with even experimentation that might be beneficial for product development’.

The decade in between established, what this chapter shall refer to as ‘the experimentation imperative’, drawing on and extending the closely related ‘data imperative’ that Healy and Fourcade (2017) observe to be at play in contemporary organisations. Their concept refers to how ‘organizations are both culturally impelled’ ‘to collect as much data as possible’ – ‘even when they do not yet know what to do with what they collect’ – ‘and powerfully equipped with new tools to enact’ this data imperative (p. 9-16). I argue a similar condition exists in relation to data-driven experimentation: there is a widespread understanding that experimentation, and predominantly in the form of A/B testing, can bring *any* organisation inexpensive and otherwise inaccessible benefits. In addition, organisations are similarly, though far from evenly, ‘equipped with new tools to enact’ the experimentation imperative.

While the experimentation imperative cuts across institutional fields, there are two bastions that spearhead the movement and propel others to join it: ‘private tech companies’ and ‘government nudge units’ (Luca and Bazerman 2021). As economists Michael Luca and Max Bazerman observe, ‘In a dramatic departure from its historic role as an esoteric tool for

academic research, the randomized controlled trial has gone mainstream’ (p. vii). In a chapter titled ‘From Behavioral Insights Team to Booking.com’, the authors explain:

The culture of experimentation in behavioral economics and in tech companies was facilitated in part by circumstances that dramatically reduced the cost of experimentation in both fields. For nudge units, BIT realized it didn’t need to create an expensive new infrastructure in order to experiment—it could simply tweak existing processes, from tax letters to text messages. Tech companies came to a similar realization that small changes to a website could make a big difference and that they were already tracking enough data to start evaluating the results of experiments. (Luca and Bazerman 2021, p. 63)

Luca and Bazerman’s book, *The Power of Experiments*, is but one example of a burgeoning trade literature consisting of business bestsellers, high-profile op-eds and industry manuals that univocally call for this culture of experimentation to be extended to any type of organisation, and especially those with digital premises (e.g., Kohavi, Tang and Xu 2020; Siroker and Koomen 2013; Thomke 2020). As Kohavi and Thomke (2017) write in *Harvard Business Review*:

Any company that has at least a few thousand daily active users can conduct these tests. The ability to access large customer samples, to automatically collect huge amounts of data about user interactions on websites and apps, and to run concurrent experiments gives companies an unprecedented opportunity to evaluate many ideas quickly, with great precision, and at a negligible cost per incremental experiment. That allows organizations to iterate rapidly, fail fast, and pivot.

Central to this discourse are two ideas. The first is, organisations should be data-driven but not assume ‘the hype over big data’ means ‘causality isn’t important’, and causality is best established by experimentation (Kohavi and Thomke 2017). And second, small changes can lead to large effects, as demonstrated by numerous examples from trade conferences where ‘tiny changes with big impact are the bread-and-butter of talks.’⁸⁷ Meanwhile, Optimizely has grown into a large company that now serves tens of thousands of web-based businesses, marketing itself as ‘a website optimization platform that makes it easy

⁸⁷ ‘Trustworthy Online Controlled Experiments at Large Scale w/ Ronny Kohavi’ at https://www.youtube.com/watch?v=kTAFOCynWIg&ab_channel=Split accessed February 2024.

for any organization, from a one-person startup to a Fortune 100 firm, to do what the Obama team did on the road to the White House – with no degrees in statistics or dedicated engineering team required’ (Siroker and Koomen 2012, p. 8). Other middleware vendors, Monetate, Hotjar, Kissmetrics, have followed suit.⁸⁸ At the same time, platform companies institutionalised running tens of thousands of experiments per month on their users. As the previous chapter also showed, A/B testing is now an integral part of the product development cycle in tech, which transforms testing from being a temporarily isolated, ‘cut-off’ moment, as it has been traditionally conceived, to something seamlessly and continuously integrated, built into computational experiences across the board (Marres and Stark 2020).

The unprecedented pervasiveness of experimentation has ethical implications that have proved to be an engaging perspective on the topic in social sciences. The critical discourse around the infamous emotional contagion experiment (Kramer, Guillory and Hancock 2014) (and the likes) is coloured by a binary question: is this simply routine A/B testing that ‘happens *all the time*’ at software companies (as per the internet comment cited in Hallinan, Brubaker and Fiesler 2019) or the modern-day version of the morally apprehensive Milgrams of the past? But what if the historically developed ethics frameworks we have do not work for these new types of ‘experiments on human subjects’? This is the direction taken by Metcalf and Crawford (2016) who argue A/B testing is different from the kinds of experiments that gave rise to the Belmont Report on behavioural research ethics. While these earlier experiments were predicated on the ‘practice/research distinction’, the current A/B tests are firmly embedded in the product development cycle. ‘The iterative nature of algorithmically driven data analytics blurs the line between research and practice’, the authors argue (p. 5), experimentation does not constitute a separate, bounded research

⁸⁸ A/B testing features are also offered as part of Google Analytics and Facebook Ads Manager, two of the most widely used advertising and web analytics platforms.

activity, but forms part of the practice of data science. To reiterate Marres and Stark (2020)'s point, experiments are no longer an isolated moment, testing is built into the practice, and into the social life itself (see also Laurent et al 2021; Ruckenstein 2023).

This is where this chapter places its emphasis, namely in how testing is being embedded in organisations with the self-evidence that characterises the turn to experimentation, and how experimentation, as routine work, is practically organised. The analysis begins by teasing out how the need and pressure to experiment is discursively constructed. I show that the claim that experimentation offers a better causal alternative is constituted in its opposition against 'correlation' and 'opinion' and simultaneously mobilises relations of accountability, in the first instance, externally (vis-à-vis digital advertising and analytics platforms and vendors) and the in second, internally (vis-à-vis managers or domain experts). On top of the discursive elaboration of the experimentation imperative, the analysis accounts for its material foundations, which greatly owe to, along with the availability of data, the proliferation of instruments that 'radically simplify' testing, as one interviewee put it. These material-discursive arrangements together set as industry standard and make it into an opaque box A/B testing and the experimental design it carries.

The self-evidence and primacy of experimentation, the chapter contends, rests on the issue being couched in terms of *causality*, and specifically the 'manipulation-based understanding' of it (Hirschman and Reed 2014). It rests on making the case that other modes of knowing and 'accounting for' (Stark 2009) are less valuable because they lack something of a *causal quality*.⁸⁹ Of course, when subjected to the standard embodied by the randomised

⁸⁹ 'The concept of *accounts*', as Stark (2009, p. 25) astutely observes, 'simultaneously connotes bookkeeping and narration.' 'In organizations, as in everyday life, we are all bookkeepers and storytellers. We keep accounts and we give accounts, and, most importantly, we can be called to account for our actions. It is always within accounts that we "size up the situation," for not every form of worth can be made to apply and not every asset is in a form mobilizable for a given situation. We evaluate the situation by maneuvering to use scales that measure some types of worth and not others, thereby acting to validate some accounts and discredit others. How am I

controlled experiment, every other attempt at ‘causal accounting’ pales in comparison. Yet it soon becomes evident that online controlled experiments are limited in important ways, and are contested, interestingly by behavioural experts themselves, who reject or repair them to render suitable for the problems to which they are applied. First, data-driven experimentation requires ‘scale and resources’ to meaningfully function – which smaller sites lack. Second, it lacks explainability and prevents understanding – which larger platforms are also having issues with, as the opening fragment suggested. In response, behavioural experts offer a different mode of causality – and explanation – that is predicated on unearthing the mechanisms driving users and consumers’ behaviour. The chapter closes with a reflection on what the experimentation imperative means for, on one hand, the spread and practice of behavioural expertise, and on the other, the cultural economies of knowing and accounting for user behaviours, within the uneven playing field of the platform economy.

Data Analyst and the Difficulty of Identifying Causality

Coming from ‘a liberal arts sociology program’, Michael ‘was pretty skeptical of a lot of the claims of the industry, or at least not willing to take those at face value’ when he started working in ‘the digital analytics space’. The small agency he joined offered services on peer-to-peer fundraising while having a creative business on the side that created and sold advertisements. Yet it wasn’t until he had worked there for a while and started to get ‘uncomfortable with the promises being made about the quality and the ability of digital advertising to actually effect change in individuals’ that he decided to go back to school to

accountable? What counts? Who counts? Can you be counted on? Will you credit my account? By which accounting?’

earn a degree in applied statistics. This began his career as a data scientist in the burgeoning field of digital experimentation and optimisation.

Against his best intentions to ‘get away from this ad space’, he was convinced to work for a company that positioned itself as ‘the refereeing function’ for e-commerce businesses in their dealings with third-party marketing agencies. The starting point of the company, let us call it *Referee*, was that ‘a certain amount of [your] budget is going to be spent on advertising’ but ‘how do you actually maximise the impact of that’, or more broadly, how do you ‘optimise the fixed costs of your business.’ Referee could help you determine which of your investments, advertisements, initiatives ‘are delivering value’ by running data-driven experiments that would if not ‘concretely define a causal mechanism’ between interventions and their reported effects, then ‘build a better case than what a lot of people have done, which is basically just assuming the correlation is good enough.’

Referee’s proposition is worth unpacking for how well it captures the spirit of the moment. As the start-up was founded in the early 2010s (to be acquired by a large marketing consultancy five years later), Optimizely was in the headlines of *Wired* and *TechCrunch*. *Lean Analytics*, the data-driven software development manifesto, had just been published and Jo, the product manager from the previous chapter and a colleague of Michael at Referee, was told before her interview that her chances of getting hired would be higher if she had read the book. The experimentation ‘evangelist’ of Microsoft, Ron Kohavi, was making both the coinage ‘the highest paid person’s opinion’ and the crusade against it famous. Data-driven decision making was what was called for in the ‘abundance of data’.

Meanwhile, digital advertising and analytics fields were growing into ecosystems of large platforms and small vendors, ‘the middlemen’ that promised clients ‘massive’ returns on investments. A lot of ‘this vendor told us they got 600%, this other vendor told us they got

700% and we're going to combine those together and we now have a magical 1300 percent increase in our actual lift', as Michael describes it, 'when year over year your sales have increased by 20% maybe.' Abundance of data, then, but also bad metrics, which were gradually recognised for the misattribution problems they precipitated, preparing the ground for a referee that could 'come in' to judge, 'quantify' and 'establish uncertainty or risk parameters around those promises being made'. This is the context the company's proposition invokes when they claim they can 'build a better case' than 'a lot of people' who assume correlation was good enough.

It is also how Michael starts to explain to me the modern enterprise of digital advertising. He begins with 'the fundamental issue of advertising is attribution': 'we do not know which advertisements actually encourage people to engage in the desired behaviour.' He continues:

The promise of digital advertising was we can actually provide an attribution mechanism that can clarify that and will make all of these problems magically go away. For people coming from the old ad space, it was, "Don't do this ... you're opening a pandora's box" because you're suddenly ... giving people an impression of certainty and of certitude in data when frankly that is almost impossible to establish ... it is very difficult to identify a very clear causal mechanism. Instead, everything in the digital advertising space is predicated on correlation and correlated effects.

He clarifies that 'it is less that there is outright fraud or intentional deception', but 'a very, very, very large system where most parties ... are incentivised to continue believing that it is a legitimate enterprise.' But 'if we look at this from a causal inference perspective that case is not as strong.'

Michael is not alone in articulating the issues prevalent in digital advertising markets. In fact, he is drawing on two journalistic pieces 'quite heavily' in how he synthesises his own

experience of working in the field, which he shares with me after our interview.⁹⁰ The pieces in turn echo the findings of the CMA report on digital advertising that was mentioned in Chapter 1, which similarly concluded that ‘estimates of the effectiveness of digital advertising campaigns as measured by standard observational methods (such as regression analysis, propensity score matching)’ were likely to ‘suffer from significant problems of bias’ (CMA 2020, Appendix O, p. 26; see also Hwang 2020).

Neither is Referee alone in offering experimentation as a solution. Marketing scholars, notably Gordon et al (2016) and Johnson, Lewis and Nubbemeyer (2017), have similarly advocated the use of ‘randomised experimentation’, which ‘in the contentious world of causal claims ... represents an evenhanded method for assessing what works’ (Gerber and Green 2012, p. 7). Gordon et al (2016, p. 3) ‘quickly reacquaint the reader with the concept of causal measurement’ before they proceed to make their case:

In everyday life we don’t tend to think of establishing cause-and-effect as a particularly hard problem. It is usually easy to see that an action caused an outcome because we often observe the mechanism by which the two are linked. For example, if we drop a plate, we can see the plate falling, hitting the floor and breaking. Answering the question “Why did the plate break?” is straightforward. Establishing cause-and-effect becomes a hard problem when we don’t observe the mechanism by which an action is linked to an outcome. Regrettably, this is true for most marketing activities.

‘It is exceedingly rare’ they continue ‘that we can describe, let alone observe, the exact process by which an ad persuades a consumer to buy’ (p. 3). Which is why the question of whether the ad or something else made the consumer buy a product is ‘very tricky to answer’. One way to answer would be to construct two worlds that are identical except for whether the ad is shown to the consumer or not and compare how the consumer behaves in each world. The research method closest to this ‘nice thought experiment’ that mimics its

⁹⁰ These are Frederik and Martijn (2019) and Fishkin (2021). Michael wrote, ‘Each is focused more on advertising, but the organizational dynamics outlined are generally analogous to some of the bad incentives we can see with experimentation, personalization, et al’ in his email.

very logic is the randomised controlled experiment (Gordon et al 2016). Here, subjects are randomly allocated to treatment (shown the ad) and control groups (not shown the ad) and their behaviours are observed. What sociologist Monika Krause (2016, p. 48) distils from randomised trials is informative here:

In this vision, a comparison is like a race between two horses. Or rather, if the treatments are the horses, the comparison is the racetrack. The comparison is thus the staging ground of a competition, and the concern is for the competition to be fair. For this reason, the two groups (which are compared) need to be as similar as possible, except in regard to the treatment.

Krause is interested in ‘the clinical trial’ for ‘the privileged reference point’ it represents for social science methods. She argues that although it is ‘a very specific practice responding to a very specific research problem – the testing of medicines – with very specific units of analysis and elements such as individuals, diseases, and medical interventions’, the clinical trial nevertheless ‘has become central to how causality, and, by implication, explanation, is understood much more broadly’ (Krause 2016, p. 49). And much more broadly, in fact, than in social sciences. As Michael explains:

What a lot of companies have gravitated towards is: if we are able to use basically variations or permutations on the notion of a randomised controlled trial, we can eliminate a lot of confounding variables that can be driving ... or contributing to these problems of attribution, by removing some of those things just purely by randomisation. And that can go anywhere from: they have an actual operational or technological inefficiency of how their website is being run ... or we want to implement a new experience or redesign an experience, and to be able to quantify the impact of that on a scale that is greater than what people will be getting through, you know, behavioral sciences or observational studies or user experience research.

‘Randomised control trials’, Michael concludes, ‘are our primary validation mechanism’ for ‘particular research questions or hypotheses that we want to be able to validate or invalidate effectively by looking at [them].’ Michael emphasises that this is ‘the ideal’ ‘behind data driven experimentation’ because statistical rigour ‘varies deeply’ in the industry where experimentation has become ‘a buzzword’. Indeed, it is the role of ‘someone like’ him ‘who’s there in the weeds’, who’s able to ‘take a broad business priority or business

question’ and figure out ‘what set of methodologies and approaches and data collection do we need to actually be able to validate that.’

Michael is not what we might call an ‘instrument dope’. He says, ‘You know, we live in abject entropy, there’s very little in the world that we can ascribe two very distinct or very discrete causal effects.’ ‘It is just a lot of things happen’, he exhales, ‘modelling these behaviours is difficult’. That said, he continues:

To my mind, fundamentally we’re talking about risk, we’re talking about uncertainty and we need to be able to quantify those for other people. And it is my job to not only engage with those questions using a methodology or using an approach that is rigorous, but also be able to translate that into more concrete things... The peculiar thing about the data driven approach is that we’re trying to steer people towards making more rigorous decisions, or at least basing their decisions on some sort of data. With the very large asterisk placed on the end of it: We know that there’s no such thing as truly objective decision making, we’re just trying to encourage people to make slightly more objective decisions, or at least minimise the amount of subjectivity that’s being included into some of those processes.

By ‘subjectivity’, Michael means bias, perverse incentives, and bad metrics. Having a refereeing validation system in place and one that is regarded as the highest form of causal measurement, in this first instance, helps Michael’s clients hold platforms and third-party marketing vendors accountable. However, the above quote hints towards another function of experimentation for also battling the subjectivity that is more typically associated with ‘opinions’.

Hippos Kill More Humans Than Any Other Non-Human Mammal

Before the data driven movement ... when we’re making these decisions ... you’re making your best guess at what’s going to work... another thing [is] often decisions about what gets implemented are not necessarily tied in a particularly thoughtful way to actual business goals. So, it’ll be like, ‘Well, the CEO is tired of the logo primary colour being blue, so we’re going to change it.’ And it’s like does it achieve anything apart from— ... Does it hurt anything? You’ve got these kinds of questions ... And so, then *we could actually go in and test that*. An actual test that we did was the CEO is tired of the primary button being green. So, we tried other colours and, interestingly other colours tanked conversion. So, they didn’t do it.

This ‘phenomenon’ of the CEO or any of the ‘C-level executives or leadership generally within the company’ coming in and deciding on a whim is called a ‘HiPPO decision’. Jo explains: ‘it’s a way of doing development where whoever [is] the highest paid person in the room gets to make the decisions about what does and doesn’t get built, *regardless of how much merit their thing has.*’ She complains that this happens so often that the ‘Highest Paid Person’s Opinion’ earned itself an acronym.⁹¹ I come across a *literal* hippo on the cover of a high-profile experimentation guide by Ron Kohavi, Diane Tang and Ya Xu, of Microsoft, Google and LinkedIn, respectively (see Kohavi, Tang and Xu 2020). The figure of the hippo, it turns out, has become a key element in the branding of the data-driven movement for none other than Kohavi himself, who debuted the term in his first paper on the topic in 2007 and has popularised it in various talks, slide-decks, and memos ever since.⁹² The framing of Kohavi and colleagues is evidently more temperate than Jo, or Adam who in the previous chapter similarly alluded to the phenomenon with dissatisfaction (when he said that ‘status and power are the ultimate determinants of how products get made’). Kohavi and colleagues rather frame their proposal as to ensure ‘important decision makers have access to high quality data’ and ‘establish a data driven culture that informs rather than relies on hippo’ (p. xv), so that ‘hippos don’t kill humans’, humans standing for, in this case, good ideas.

The quote from Jo hints at several other key themes in the framing of the problem and its implied solution that feature prominently in the corpus of Kohavi and colleagues. Whereas for Michael the purpose of experimentation was to address misattribution, here

⁹¹ The ‘hippo’ of the day is arguably Elon Musk who at the time of writing, regularly broadcasts on Twitter claims on the company’s ad products, to be then corrected by employees who were involved in the development of said products (see Livemint 2023).

⁹² He mentions in one of his talks the title of this section: ‘hippos kill more humans...’ at https://www.youtube.com/watch?v=kTAFOCynWIg&ab_channel=Split accessed February 2024. Kohavi has even written up a history of the term to give due credit to all the people involved in its development. The blog post at <https://exp-platform.com/hippo/> accessed February 2024, features several famous tech leaders photographed with a mascot toy hippo on their shoulders, heads, or hands.

experimentation figures as a vehicle for having a data-driven decision-making culture *internally* and to keep power in check by taking advantage of the availability of ‘objective evidence’. Organisations need to recognise that they are ‘poor at assessing the value of ideas’, Kohavi, Tang and Xu argue (2020), and while ‘data trumps intuition (Kohavi, Henne and Sommerfield 2007), ‘controlled experiments are the best scientific way to establish causality with high probability’ (Kohavi, Tang and Xu 2020, p. 9). The justification for the method, already established elsewhere, only needs to be transported into the immediate context. Readers are briefed on how randomised controlled trial is the gold standard in medicine, occupying the top level in ‘the hierarchy of evidence’ where the bottom is reserved for ‘case studies, anecdotes and personal (often expert) opinion’ (the authors add ‘a.k.a. HiPPO’) (p. 9). Medical evidence is supported by an array of epigraphs, acting as rhetorical devices that intuitively convey the idea. Kohavi et al (2007) is opened with: ‘One accurate measurement is worth more than a thousand expert opinions.’ Later in the text we encounter Claude Hopkins, the founder of ‘scientific advertising’, declaring a century ago, ‘Almost any question can be answered cheaply, quickly and finally, by a test campaign. And that’s the way to answer them – not by arguments around a table.’⁹³

In this arbiter function for evaluating ideas, experimentation and the corollary hierarchy of evidence disrupts not only the organisational hierarchy, but also the hierarchy of expert groups. When Jo talks about ‘making your best guess at what’s going to work’, she has specific professional groups in mind, namely ‘the marketing teams’ that she frequently worked with:

⁹³ See McFall (2004) and Schwarzkopf (2009) for a history of how ‘what contemporary practitioners and social commentators understood and implied when they talked about advertising’ changes throughout the history of the profession (Schwarzkopf 2009, p. 3). This history is marked by a continuous battle between sales-driven and creative approaches to have the authority to establish what ‘advertising works’ really mean. Indeed, this is not a unidirectional and linear track toward fully quantified systems, but an oscillation between the two ends.

A lot of people that we were working with ... that ended up being high up would be very old school marketers, again referring to old school marketing beliefs like that one about people always prefer something with a person in it... I had that experiment that I ran where we had a picture of a person, and then we had a picture of the software and we ran against each other, and the picture of the software did better and then they didn't implement it because the VP of marketing was like 'No, people like pictures of people better.' And it was like ... the case we literally disproven! At least in this particular circumstance.

She likewise calls 'design best practices' 'essentially professional superstition':

'there's at this point so much blog information from designers to other designers about things that they think work ... most of which is backed with incredibly flimsy evidence.' In the specific case of designers, their penchant for 'the power of aesthetics' makes them want to do 'complete redesigns' which again 'tanks the conversion'. Admittedly, these cannot be properly tested either, as 'when you do big changes, there are too many variables to actually be confident about which one did or did not make the difference. So that's why typically you do small iterations.'

Rather than a hindrance, 'small changes' can be a source of creativity that remains otherwise inaccessible. In fact, another major perk associated with experimentation is the twin idea of 'incremental changes' and 'unexpected findings.'⁹⁴ It is argued that large scale A/B testing allows for the detection of small and unexpected changes that have large effects on user behaviour. As such, it can help organisations think outside the box, the box here figured as the worn-out ideas, 'superstitions' and 'complete redesigns' of marketers, designers and the like, who incidentally have to make big changes to have something to show to other stakeholders. Importantly, the unexpected findings do not need to be accompanied by an account as to why they work, the sort that is traditionally supplied by said groups. To return to Chris Anderson (2008), 'Out with every theory of human behaviour ... Who knows

⁹⁴ Kohavi et al (2020, p. 8-10) list the benefits under the subheading 'Why experiment: Correlations, Causality and Trustworthiness'.

why people do what they do? The point is they do it, and we can track and measure it with unprecedented fidelity.’

There is much to be said here about *whose account counts*, and in addition to Stark’s (2009) earlier work on ‘account’ability, his more recent observations on ‘the new knowledge class conflict’ are highly relevant. Stark and Pais (2020) draws our attention to the newly emerging conflict between, on one hand, ‘the professional-managerial class’ whose power derived from Taylorist scientific management, and, on the other, ‘the coding elite’ (Burrell and Fourcade 2020) whose ‘algorithmic management’ dispenses with domain expertise, Taylorism included. We could argue that a comparable dynamic is unfolding between the fallen HiPPO and the victorious data analyst. Appeals to the objectivity of numbers have long been around (Daston and Gallison 2007; Desroiseres 1998; Porter 1995), but the mode of problem solving that experimentation embodies has some new qualities (namely, its domain agnosticism and interventionism) that distinguish it from these other ‘objective’ quantitative approaches that scientific management is part of. Similarly, ‘the relational view on expertise’ that Stampnitzky (2023) offers to better theorise the crisis that expertise is perceived to be undergoing is helpful. The author argues that expertise should be understood as alliances between people, problems, and solutions whereby a new mode of problem solving might lend itself to the rise or demise of *particular* expert groups, rather than the *general* concept of expertise. We can likewise propose that data-driven experimentation is not so much about being against ‘experts’ but more about one alliance of expertise (computer scientists, experimenters, data-driven techniques, ‘incremental changes’) replacing another (domain-based expertise of marketing, design, user research, ‘complete redesign’).

As it is applied to more and more problems, the experimentation imperative is broadened out beyond the refereeing function for marketing platforms and vendors, or for

optimising fixed costs. A/B testing becomes the gold standard for evaluating ideas across the board, holding accountable any decision maker on any decision, turning into the dominant decision-making instrument for every innovation, product, design, marketing, sales, or pricing question. Kohavi, Tang and Xu (2020, p. 10) make a caveat: ‘Not every decision can be made with the scientific rigor of a controlled experiment. For example, you cannot run a controlled experiment on mergers and acquisitions (M&A), as we cannot have both the merger/acquisition and its counterfactual (no such event) happening concurrently.’ Yet, on the plane of the software, which expands to include more and more socioeconomic activities, a lot can be tested and can be safely figured out by testing alone. This level of dependence on testing, perhaps it is redundant to point out, requires a material infrastructure in addition to discursive justifications.

Vendors ‘Radically Simplify’ Testing

The material foundations of the experimentation imperative equally matter if not more.

Michael traces this recent history for me: ‘All the sudden we have more data than we know what to do with’ to ‘test hypotheses about specific behaviours or specific improvements, changes to platforms’, and yet, ‘the problem was that architecting those changes ... and administering those experiments was very difficult.’

Which is where your experimentation middleware vendors like Optimizely, like Monetate, they come into the space of ‘We’re going to *radically simplify* the process of how to say modify a website, modify an app and then collect all the data necessary just to determine whether or not that was successful or not.’ Then those have kind of broaden out because it is like many of these things that is more of a continuum than it is a series of the discrete options.... if we take Optimizely as an example. Optimizely, they started as an experimentation platform, then they got into the ‘Well, we can also help you deliver new features or help you roll out new features.’ Then, they also started getting into the personalisation space and we can help you personalise experiences.

Market researchers, too, more and more depend on tools that have proliferated under ‘MarTech’ [i.e., marketing technology], while the vendors in the ‘ad and concept testing’ space have likewise followed a similar trajectory of expanding into platforms with multiple product offerings. Martin, the market researcher turned behavioural designer, mentions ‘Zappi Store’ which is ‘the leading consumer insights platform’ according to their website:

They basically have several products for ad and concept testing. It is like a store so basically they’re really clever with the way they do that is they’ve got a number of products and you basically go into their website it’s like a store of what you want. So, you want eye tracking or you want just sentiment or concept testing and they’ve got a large selection of products. So we use Zappi Store quite a lot.

Martin uses Zappi Store because ‘it’s really difficult to predict and forecast people’s behavior’ which is why their ‘philosophy’ is ‘let’s just test it and it’s only when you test it, you know what’s going to work, what doesn’t work’. While ad or concept testing technologies are not designed the same way as RCTs or A/B tests, the case still speaks to how instruments that ‘radically simplify’ testing enable people like Martin to ‘get through the learn, test, cycle quickly’ for problems that were once dealt with differently.

Vendor tools radically simplify testing also in a second sense: they make ongoing controversies, such as on the adequacy of the method or the accuracy of the math, into an opaque box. ‘A/B testing is used far too often, for something that performs so badly. It is defective by design’ a commentator observes back in 2012, ‘Strangely, anything better than A/B testing is absent from mainstream tools, including Google Analytics, and Google Website optimizer.’ (Hanov 2012) The author proposes instead ‘multi armed bandit’ testing (or MABs) as the superior alternative to A/B testing because the latter suffers from ‘the control group’ problem where the traffic directed to the badly performing variant is inevitably lost. MABs, on the other hand, as adaptive learning systems, dynamically channel more traffic to the winner variant during testing (see also Christian and Griffiths 2016). It is

beyond the scope of this chapter to offer an answer to why A/B testing and not ‘anything better’ was embedded in the ‘mainstream tools’ but suffice it to say these critiques are also largely ‘absent from mainstream.’ Except, perhaps, for the controversy of ‘when to stop an A/B test’. As recounted in Kohavi, Deng and Vermeer (2022), ‘Optimizely’s initial A/B system was showing near-real-time results, so their users peeked at the data and chose to stop when it was statistically significant, a procedure recommended by the company at the time’ (p. 3173). But, authors continue, ‘This type of multiple testing significantly inflates the type-I error rates’, in which a null hypothesis that is actually true is rejected. The company eventually changed their experimental design after blogs like ‘How Optimizely almost got me fired’ surfaced.⁹⁵

However, other problematic experimental design decisions remain, justifying the need for ‘someone like Michael’ ‘who’s there in the weeds’, even if tools for experimentation that require little technical knowledge on the user’s part are available for his clients. To explain this problem, Michael takes a brief historical detour. ‘Prior to the web’ he begins, ‘it was very difficult to source data from customers... to go do market research’ and thus statistical sampling was the primary means of knowledge production: ‘we cannot evaluate a whole population, so instead we’re going to take a sample’ that is representative of the population and draw inferences from that. ‘With the advent of digital technologies’ he continues, ‘that relationship suddenly changed because it became much less difficult for us to actually get data on *our entire population* that we are interested in’, namely the telemetry, logs, or behavioural data generated from using platforms. This is what enabled ‘large scale’ RCTs, or ‘variations or permutations on the notion of an RCT’ that A/B tests are. But the shift is also

⁹⁵ <https://analytical.com/blog/optimizely-got-me-fired> accessed February 2024. See also Kohavi’s Amazon review of Siroker and Koomen’s (co-founders of Optimizely) A/B testing guide at <https://www.amazon.co.uk/Testing-Most-Powerful-Clicks-Customers/dp/1118792416> accessed February 2024.

instructive for how randomisation is achieved on that scale, compared to how it had been done in the pre-online field study. Michael explains:

[In] a traditional study design... we have to be able to block on certain covariance like demography... all kinds of other attributes which we know about our subjects... A/B tests are saying that ‘Hey rather than actually be able to explicitly account for some of these attributes about the research participants ... because we’re operating at a much larger scale than we have been able to before ... a study is not collecting a few hundred participants, we’re collecting tens of thousands, if not hundreds of thousands of individuals ... *we can close our eyes and whistle past the graveyard*. Instead of being able to say explicitly this is what might be interfering with this analysis, we’ve collected so much data we don’t have to care about anything, and we can just assume that whatever effect we’ve identified as causal.’

The substitution of ‘variance’ for ‘volume’ can work as long as there is nothing else interfering with randomisation. However, as Michael and others (Eckles, Gordon and Johnson 2018; Johnson, Lewis and Nubbemeyer 2017) observe, the optimisation algorithms of both advertising and testing platforms routinely interfere with randomisation, creating selection and misattribution problems anew. (The platforms optimise the delivery of each ad by showing it to the user most likely to interact with it, the users are not randomly assigned to treatment and control groups.) Michael complains that ‘these companies made it very easy to extract data that was ostensibly useful, but in reality, was just noise’ and ‘what actually happened is that we just opened more and more vectors and dimensions for error to insert itself into this process’. For him, the solution is to go back to statistical sampling to verify results reported by the platforms.

The large platform companies, on the other hand, who have built proprietary experimentation platforms, thoroughly examine issues relating to experimental design. ‘Top Challenges from the first Practical Online Experiments Summit’, co-written by scientists from Microsoft, Google, Airbnb, Facebook, Lyft, Netflix, Yandex, Uber, Twitter, Amazon, Booking.com, emphasise the importance of ‘trustworthiness of experiment results’ (Gupta et al 2019). Kohavi, Tang and Xu (2020) summarise it as:

A concern we share is the need to evaluate the trustworthiness of experiment results. We believe in the skepticism implied by Twyman's Law: *Any figure that looks interesting or different is usually wrong*; we encourage readers to double-check results and run validity tests, especially for breakthrough positive results. Getting numbers is easy; getting numbers you can trust is hard!

Getting trustworthy numbers easily, however, is precisely what experimentation platforms promise for organisations who do not have the resources that large platforms can devote to tinkering with instruments. In fact, the imperative to centralise experimentation in organisational decision making and accountability relations would hardly extend beyond large platforms if it wasn't for the middleware vendors and their simplification of testing. These tools could therefore be considered the material *enablers* of what organisational sociologists call 'institutional isomorphism', across the field of internet-based businesses (DiMaggio and Powell 1983; see also boyd and Caplan 2018). This core concept of neo-institutionalism refers to how organisations become similar by adopting the incumbents' practices and technologies. But it also attracts attention to how new technologies might be adopted for the veneer of legitimacy rather than improving productivity or performance, and that their use might be 'decoupled' from what is claimed by organisations (Meyer and Rowan 1977). It would not be surprising, therefore, if we find that validity and efficiency issues associated with experimentation tools, may not be as much an active concern for some organisations, especially those that lack 'the scale and resources' to reach statistically – and commercially – significant results.

'Why Did I Pay All This Money for Somebody to Change a Word?'

'Very few companies have the scale and resources of Facebook' says Simon, who is an account manager in a behavioural design agency, with a long prior career in advertising. His agency works with healthcare, education, and charitable organisations, to help them optimise their websites, digital marketing campaigns, and messaging more broadly. Here, he is

referring to algorithmic personalisation, another form of data-driven optimisation that share the general logic of A/B testing in terms of genericness and incrementality:

[Facebook] is certainly using AI to personalise our information in a very effective way because they can tell this is the kind of story that you're most likely to react to and this is the kind of engagement that's going to keep you on longer. So it certainly can be done in a very machine learning sort of way, but I think that especially for smaller companies, often and I'll be more specific, a lot of companies we work with want to have 100 variables right off the bat, like let's learn everything we can about this person, their age, their gender, their location, all their different behaviours that they've done so that we can optimise the message to them. And that's very, very difficult to do I think on a smaller scale and oftentimes very unnecessary.

Echoing Simon, Hindman (2018, p. 27) soberly observes that 'smaller sites often do not have the hardware and staff to build this testing architecture, and they lack the statistical power to detect small effects.'⁹⁶ Ultimately, 'the predominantly data-driven approach' 'advantage large sites over their competitors' (idem). It is important to note, however, even platform companies that are not the Big Tech struggle with the problem of scale that meaningful execution of big data-driven methods and systems require.⁹⁷ The Uber representative at the panel that opened this chapter, humorously alludes to this by saying, 'we are not a company with 2.7 billion users', a threshold that Facebook has set. Jo's experience of working with a well-known gig work platform to optimise their ads for recruiting service providers, confirms this observation:

Ad testing is such a nightmare, it's just click through rates are so low. Just the first step in— you know you can make the click through rate your metric, but it's not a very good metric, because it doesn't actually tell you, if it had any business impact, right? It's like there's so few people that *even* click through that it's incredibly difficult to get to statistical significance on whether or not the ad had an impact ultimately.

⁹⁶ Kohavi et al (2020, p. 5) recognise the importance of having an infrastructure in place that makes experimentation easy and cheap: 'The overhead of running an experiment must be small. Bing's engineers had access to ExP, Microsoft's experimentation system, which made it easy to scientifically evaluate the idea.'

⁹⁷ Big Tech is typically defined as 'Apple, Amazon, Microsoft, Google/Alphabet, and Facebook/Meta' and while at times the definition is expanded to include 'other technology companies based in the USA (e.g. Uber, Netflix) and elsewhere (e.g. Alibaba, Tencent)' Birch and Bronson (2022, p. 2) argue in favour of keeping the definition narrow to distinguish 'these digital leviathans, their scale, and their scalability' from the 'oscillating political-economic fortunes of smaller technology companies (e.g. Uber).'

Jo emphasises that this was not any company but ‘a big recognizable brand’ and ‘they’ve got money to run [the ads] to like a Godzillian people’. However, they ‘just can’t get to significant finding on any tests, no matter how many people we run it to’, which is why they ended up ‘trying to do more traditional user research ... like the five second test’ where research participants are shown an ad for 5 seconds and asked to report on what they remember. ‘Which is not a good way of doing research’, Jo adds, but they had come to the realisation that ‘this is the only way to do this because we can’t actually get to anything with the experiments.’

Falling back on other types of user research is standard practice with any client that lacks ‘a certain amount of traffic’ that statistical significance requires. Yet, lack of traffic is hardly the only experimental design issue that can arise. Jo mentions another case where they told a client about an experiment, that they ‘need to run this for no fewer than three weeks before we can actually be confident about whether or not it has done the thing that we want it to do.’ However,

I think, after four days, they [i.e., the client] were like “Pull the plug! Turn it off!” Because the conversion rate was going like up and down, and up and down, and every single time it was statistically significant because it was swinging so wildly day to day in terms of how it was performing. ... “Oh my God, it’s performing too poorly, we have to pull it” whatever. And so, clients will make decisions that are the wrong decision... that’s the wrong decision, you have to just let it run until you actually have the sample.

Impromptu interventions can happen the other way round: that is, stopping the experiment when you reach ‘positive’ statistical significance, a practice known in academia as ‘p-hacking’ (Head et al 2015). Michael was thinking of this when he complained that the statistical rigour of corporate experiments ‘varies greatly’. He reiterates that while ‘most experiments result in inconclusive results’ what often happens is, ‘can we squint, can we come up with something?’. Note how Optimizely’s initial set up that enabled ‘peeking at’ the

results while the experimentation is still in progress, was criticised on the same grounds (Johari et al 2017).

While questionable from a methodological point of view, this might not, however, be a problem for consultants who need to show their clients that the interventions they implemented ‘worked’, and ‘the marketing departments’ who must relay to their ‘bosses’ ‘results’.⁹⁸ As Michael explains, even for clients who come to them because they want to be ‘data-driven’,

Probably the more realistic or more frustrating form of engagement is when we’re engaging directly with the marketing department, and they are ... very reluctant to start revealing that– you know... no one wants to have to go to their boss, and say “Hey, we engaged with this new agency and they’ve helped us do a really good job of identifying all these problems in our advertising chain. Unfortunately, I have let our company spend half of its advertising money on advertising that does not work.”

This highlights the important role that organisational and institutional arrangements play in shaping how experiments unfold (see also Vertesi 2020). What is more specific to the case of A/B testing is, though, that when there is not enough traffic and an experimentation infrastructure in place to exploit small and incremental changes, small and incremental changes start to look absurd. Nick, a ‘serial founder’ who at the time of our interview was the CEO of a digital creative agency with a behavioural emphasis, says, ‘In an ideal world, we would run true RCTs, hold all other variables sort of constant except for your intervention. It’s hard to do with client work.’ When I ask why, he explains:

It’s very hard to put out a study or research project where you’re only changing one little thing, because the client wants to see a complete redesign, they want to see like two completely different versions. Because if they go to their CEO, and they’re like, ‘Hey, look, we’re running a test, and we change one little word on three different versions of this whole [web]page’, their CEO is going to be like, ‘Why did I pay all this money for somebody to change a word’, right? ... So, a lot of times, the problem is really just the client wants to see more variation. And honestly, at the end of the day, when you’re in the academic side, you want to be able to say, ‘I use this intervention, and I saw this effect. And this specific intervention, this loss framing is driving that effect’ right? But if you change too much, you can’t make

⁹⁸ Like the dynamic observed in digital advertising (Rao and Simonov 2019).

that conclusion. The client doesn't usually really care... They're just like, 'Oh, well, the conversion rates went up, good, let's go with it!'

He adds, 'but yeah, we will run some type of split tests or multivariate testing to measure the outcome.'

Ryan, a behavioural product strategist who consults with early-stage consumer and enterprise technology start-ups, similarly observes that measuring isolated interventions are neither practically feasible, nor necessarily desirable:

I don't think most product companies do an RCT. Most of the time if you're like 'Hey, let's test both of these designs' then that means the engineers need to build it twice. That wastes a lot of time and you're not going to do that, like who does that? So, a lot of it really has to be a little bit more around how can we create the best hypothesis that we can and then just how do we give ourselves a feel of whether this worked or not ... it's hard to have a control in a lot of instances and it's also hard in a bunch of cases to roll out only one thing at once. If you're trying to solve a problem, behavioural problems, sometimes you need to package a bunch of things together.

While it makes little sense for small companies to run RCTs, they are likely to engage in some form of testing, since it is the predominant method in the field. However, these testing situations do not rigidly comply with the principles of the experimental design. The experimental device is rather enrolled to give the appearance of being scientific, than to prove a causal relationship between an isolated intervention and effect, as the proof, conceived as such, is not demanded to begin with. One-to-one interventions are challenged both by the client who 'wants to see more variation', and by the intervention designer who needs 'to package a bunch of things together' to solve a user behaviour problem, as many factors together, and in their togetherness, *cause* the effect to occur. As such, the behavioural experts' approach implies a 'mode of causality' that is different than the one epitomised in the device of the controlled experiment, where 'the notion of causation' is seen 'as a form of competition among treatments' (Krause 2016, p. 49) and causality 'flows from the manipulation itself' (Hirschman and Reed 2014, p. 262). Although this alternative way of

causal accounting is enrolled in response to practical problems – arising from lack of traffic or institutional arrangements between clients and consultants – it is not any less methodical than the experimental account. In fact, ‘packaging a bunch of things together’ and ‘giving ourselves a feel of whether it has worked or not’ is as much a structured and formalised ‘explanatory programme’ (Abbott 2004) as is online controlled experimentation.

Machine Gunning and Wildcatting

Simon has remarked that it is ‘oftentimes unnecessary’ to go down the road of the ‘brute empiricism’ of data-driven methods. He elaborates on this: ‘We believe that we can feed it enough data that it’s going to automatically optimise itself’ whereas instead ‘you could get someone who has a behavioural understanding and probably also a very good writer and write a very human message from one human to another.’ Having a behavioural understanding specifically refers to having familiarity with the behavioural scientific literature, as with, for example, Priya consulting the literature on ‘reference pricing’ to design an intervention to get users to accept the surge price, in Chapter 4. As emphasised by another behavioural expert on LinkedIn blogs page: ‘We are informed by the literature of behavioral science: it helps to know which effects were discovered, what theories exist... This enables us to generate hypotheses on stable grounds rather than approaching it as a clean slate (tabula rasa)’ (Cohen 2021). For Simon, too, it boils down to ‘having better hypotheses’:

If you had a UX team that didn’t look at behavioural design but did hundreds and hundreds of A/B tests today, eventually, they would get to the same place. Because they’re just trying to figure out what works and if you’re measuring it properly, you will get there. But I think with behavioural science, you can get there faster, because you have better hypotheses about why this should work or why this shouldn’t work. So that you can eliminate things that are probably less likely to be successful very early on.

Anthony, the senior behavioural scientist, formerly leading behavioural science at a major platform company, offers a direct analogy of data-driven versus behavioural hypothesis-driven experimentation, that similarly accentuates the latter's efficiency:

Let's imagine I have a target down the field, and I need to hit the target. I can machine gun: I close my eyes and I just go [mimics gunshot sounds], right? That's the like most extreme version of 'just-ship-it'. My favorite example of this is the Yahoo purple thing; when Marissa Mayer joins, she's just like "I'll test all 70,000 colours of purple." She's not aiming at all. She's closing her eyes and going [mimics gunshot sounds], right? ... What behavioural science tries to do is ... if you've ever shot guns, there's ... this notion of I'm going to aim, I'm going to shoot, I'm going to see where it hits the paper and then I'm going to say, "Oh, I need to go down into the left." Great shoot again and go down the left... I'm not machine-gunning it and I'm not aiming precisely to make only one sniperlike shot.

Marissa Mayer's is a widely circulated anecdote, although its details change with each telling (there are usually far fewer shades involved). Another behavioural expert uses the example in a blog, to build a similar case on 'what happens when behavioral science assists in decision making':

During the fabled early days of Google, Marissa Mayer bragged about testing more than 40 different shades of blue for link color. Studies bounced around in internal presentations. Belatedly, a data scientist saw the 40 data points. He redrew the data, simply using psychophysical equations of visual discrimination. Three to five blue-shady colors should've sufficed to plot the whole curve, without any dart throwing.

The history for the oil industry may provoke *deja vu*: Oil wildcat wells were 'drilled where little or no known geological information is available.' Cowboys at a crap-shoot became millionaires by sheer luck of the drill. As soon as possible, geophysics began to get more money than God because it reliably helps find black gold.

Today, the hypotheses behind A/B tests in every company come from almost anywhere, so our era remains inevitably wild-cat. Ask senior decision makers where they get hypotheses, and you'll hear a lot of hunter-gatherers answer: "I found this berry patch, and I've been hanging out here fiddling with the fonts." (Sas 2016)

He goes on to predict that 'behavioural data science' will soon be a sub-branch of data science, providing a 'supply of fresh hypotheses to test'. A high-profile academic example shows how behavioural science hypotheses allows for not only more efficient research processes but can also predict outcomes more accurately. In their contribution to the 'Google Flu Trends controversy' – 'once the posterchild of big data analytics' that soon revealed a

host of methodological issues (Halford and Savage 2017; Lazer et al 2014; Marres 2017) – Katsikopoulos et al (2022) propose that ‘a single data point from psychological theory’ is in fact better than ‘big data’ in predicting and modelling influenza outbreaks:

We show that the surprisingly simple recency heuristic forecasts more accurately than Google Flu Trends (GFT) which used big data analytics and a black-box algorithm. This heuristic predicts that “this week’s proportion of flu-related doctor visits equals the proportion from the most recent week.” It is based on psychological theory of how people deal with rapidly changing situations.

The authors continue to claim that ‘other theory-inspired heuristics have outperformed big data models in predicting outcomes’ (p. 1).

This tension between ‘heuristics’ and ‘algorithms’, or ‘hypothesis-driven’ versus ‘data-driven’ testing, which continually emerges in the work of the account manager to the eminent academic, in fact signals a higher-order tension between the two competing and coexisting programmes of causal explanation. The mode of causality embodied in the A/B test explains behavioural outcomes through the ‘intervention’, the intervention is the cause of the effect observed; meanwhile keeping all that is in between, be it social, cognitive, or technical facts or artefacts, as an opaque box (Burrell 2016; Gigerenzer 2020; Hirschman and Reed 2014). Operating from within this programme, the data analyst Michael, Ron Kohavi and other experimentation evangelists, sought to repair experimentation by improving methodological standards. But experimentation can face other technical and organisational limits, namely lack of scale and lack of communicability, which improving the methodology alone cannot overcome. We can therefore understand the alternative causal explanation offered by behavioural experts – that is, explaining behavioural outcomes with reference to the underlying ‘mechanisms’ that drive behaviour – as an attempt at overcoming these problems. While for smaller companies, behavioural expertise offers to enrol behavioural theories in response to a problem of *scarcity*, namely, of data points to reach statistically and

commercially useful effects, for large platforms, it addresses itself to the problem of *excess* data (Abbott 2014) – which as critical data scholars have argued, creates ‘knowledge without knowing’ (Andrejevic 2013 quoted in Beauvisage et al 2023, p. 2), if not ‘more *non-knowledge* which needs to be attacked by creating more data’ (Schwarzkopf 2015, p. 18).

Conclusion

This chapter has focused on online controlled experiments – a device of great importance to both nudge theory and software development, and to both corporate and public interests: Bechmann and Bowker (2019, p. 9) go as far as to call ‘A/B testing’, ‘the fundamental social test of our time in the data-driven society’. While these ‘experiments on human behaviour’ have attracted much attention for their ethical implications (Hallinan, Brubaker and Fiesler 2019; Metcalf and Crawford 2016; Stark 2018), the chapter’s focus was on their epistemologies and practical organisation. Examining the roots of the experimentation imperative placed on organisations, reveals that experimentation is discursively elaborated for being ‘a gold standard’ in establishing causality and for its cost-effectiveness in detecting small changes that yield large effects. This is incidentally a core proposition of nudge theory, even if the cultural and material turn to experimentation in the tech sector has emerged independently of behavioural expertise. When behavioural experts are involved in testing situations, they instead offer alternative or complementary accounts of user/consumer behaviour, which are predicated on a mode of ‘causality, and by implication, explanation’ (Krause 2016) that is different from the ‘data-driven’ controlled experiment. These alternative accounts render visible the material and practical limits to the experimentation imperative, with smaller sites lacking the user traffic and the statistical power to detect small changes, or clients simply not understanding ‘why’ they ‘paid all this money for somebody to change a word.’

Changing a word, of course, has different financial consequences for Facebook, a platform with 2 to 3 billion users, and for the e-commerce or non-profit websites that my interviewees sought to optimise that had daily visitors in the hundreds if not dozens. Meanwhile, changes to a word, or to the colour of a button, acquire their impact from the *sheer scale* of platforms' userbase and not how correctly they target underlying biases or behavioural mechanisms. To the extent that they can be considered 'nudges', these are in a special category of 'data-driven', 'unsupervised' nudges. In a similar vein, Bogost and Madrigal (2020) write in relation to Donald Trump's 2016 digital election campaign, that the campaign 'didn't master' 'psychographic exploitation' as commonly believed, but simply used Facebook's own optimisation system 'that works in a tangled, outlandish way that no human, not even at Facebook, can ever fully understand'. (The system in turn uses, according to the company, '2 million distinct "features"' and 'these might be the last place a person seeing an ad ate a hamburger, or the minute an ad auction was launched, or the percentage of battery life left on someone's phone'.) What large platforms gain from scale and optimisation algorithms; however, they lose in 'explainability' (Beauvisage et al 2023). As the Facebook researcher lamented the 'slipping away of theory' in the beginning of this chapter, 'how easy it is to run experiments lead to facts but not understanding'.⁹⁹

The 'data versus theory' dichotomy has been a familiar one since the recent dawn of 'big data' (Anderson 2008; Kitchin 2014), although there also exists a longer history of marketing knowledges that differently explain consumer actions in the competing registers of 'creativity' or 'effectiveness' (McFall 2004; Schwarzkopf 2009). Critical data and critical marketing scholars have destabilised these binaries, showing how data needs interpretation

⁹⁹ A striking example is Facebook's 'meaningful social interactions' algorithm meant to boost content that received more engagement, inadvertently started boosting hateful and angry content (Hagey and Horwitz 2021).

and narration (Dourish and Gomez Cruz 2018), at times invoking old ‘social categories’ (Kotliar 2020) and at times, ‘new interpretation skills’ (Cluley, Green and Owen 2020). But instead of mapping data-driven experimentation and behavioural expertise onto these binaries, I preferred to reshuffle them by focusing on the different modes of causality that are implied each time people invoke ‘data’ or ‘theory’. I did so in part because the case for experimentation is made with reference to causality. And in part because identifying the different modes of causality allows me to show how the proposition of behavioural expertise (mechanisms explain behaviour) is different from the experimental proposition (causality follows from the manipulation), and at the same time, part of a broader field of circulating specialised practices of understanding, reasoning about behaviour, of what counts as a causal account, or whose account counts as ‘brute empiricism’. By contextualising online controlled experiments in an *uneven* field of practice and construing experimentation as an *imperative* placed by large actors on smaller ones, this chapter sought to hint towards two things. First is the epistemic-normative power of the large platforms and ‘the coding elite’ in shaping how other market actors are to know, understand, reason about, account for ‘what really moves us’. Second is its material and organisational limits, which, when combined with the *opacity* of action (‘*what* really moves us’), nevertheless enable market actors to continue offering alternative causal accounts.

The next chapter similarly revolves around a device, ‘the behaviour change app’, but it explores a ‘sociotechnical niche’ in which behavioural experts’ accounts ‘work’ the best. Tracing the stages of product development, from the value proposition to the design of the user experience, the chapter addresses the question of how behavioural experts not only account for users’ actions, but also how they *move* them.

Chapter 6: Designing for the Disengaged and the Irrational

Introduction

People were very critical of [Trading App] for exploiting people's gambling addiction. When I worked [there] a big problem we had is people would come to the platform wanting to learn how to trade stocks, then they wouldn't know what to do. They would put money in their account and never trade it.

Most of the work that Mark did, as the Director of User Experience Research, was to devise interventions to get users to place a trade: micro lessons that teach them how to navigate the platform, well-timed messages that comfort and encourage, bespoke features, like 'fractional shares [where] you could trade a penny of [a stock],' that reassure and equip with the right tools – all to create for the user, and get them to exercise, new capacities to act as a 'lay-trader' (cf. Roscoe 2015). This was Mark's second job in Silicon Valley after leaving the sharing platform company upon his dissatisfaction with the reorganisation of product teams (as recounted in Chapter 4). That the trading app hired a PhD in behavioural economics for the job was not accidental. In fact, there is now an array of software apps that explicitly enrol behavioural economics, and economists, in their product designs, value propositions, or sales pitches, to afford users new capabilities in their daily lives (Wendel 2013). Despite their wide variety of markets, origins, and size – at once in the category are dieting and meditation apps, insurance providers, and financial roboadvisors – they all face the same challenge: a user that is prone to disengagement, in a market that wants engagement fast.

Engagement is of course a provocative word. 'A Silicon Valley byword for having users constantly coming back for more' (Kuang and Fabricant 2019, p. 400), the standard business metric is now considered by critics synonymous with technology addiction and manipulation of consumer behaviours and desires (see e.g., Zuboff 2019). Taking a cue from my interviewee, however, I will argue to the contrary: rather than manipulating the user into

overengaging with the product, behavioural economics applications tackle the threat of disengagement always present in market attachment (Callon 2021; McFall, Cochoy, and Deville 2017).¹⁰⁰ The way in which behavioural expertise dispels the threat is by rearranging the existing action routines of users or creating new capacities to act so that the product/intervention becomes the locus and the enabler of action. The market proposition here is that carefully designed interventions into the distributed agencies of users and products can provoke the action (of say, lay trading) that users on their own lack the agential capacity to perform. The proposition therefore marketizes the effect of *nudged agency*: *agency* because the purpose is to produce a desirable target action, *nudged* because said action cannot occur without the intervention. The latter part of this formulation owes a lot to behavioural economics' debunking of the rational actor model and proposing the 'predictably irrational' (Ariely 2008) and conveniently intervenable one in its stead.

This chapter examines how the behavioural economic position is elaborated as a *market proposition*, and how it is operationalised in software product development and marketing, in routine practices of product strategy (value propositions, business models) as well as product design (user experience, features). While the preceding chapters followed behavioural experts into any kind of company that sought their services, a more common experience among interviewees was to work on products that were 'ostensibly behaviour change apps'.¹⁰¹ Although these apps form a distinct category of consumer-facing products that propose to help their users 'develop good habits' drawing on behavioural science; as mobile apps distributed on the same platforms as any other app, operating within the same financial arrangements and with the same business models, their development process is not

¹⁰⁰ I argue this while acknowledging that my interviewee might be motivated to downplay the addictive effects of trading apps, that these are still relevant to app design, and that there is merit to the 'machine addiction' critique, Schüll (2012).

¹⁰¹ Interview conducted on 21 April 2022.

all that different. The chapter therefore offers insights into what is particular to behaviour change apps, with a special focus on how they construe the agency of users, as well as what is generic to how products and businesses are developed in the platform economy. While previous chapters narrowly focused on optimisation practices and ‘last-mile’ problems that nudging more readily lends itself to (Soman 2017), here behavioural expertise articulates with a broader range of practices attending to how the product is strategised, designed, tested, built, pivoted, launched, continuously optimised, or else dropped.

The empirical emphasis on practices was intentional and meant as a corrective to the literature that largely assumes nudges and other behavioural designs to work as advertised and in the restricted registers of ‘online manipulation’ (Susser, Roessler, and Nissenbaum 2019) or ‘behavior modification’ (Zuboff 2019). Instead, the chapter approaches behavioural economics applications as market work and seeks to tease out the different logics and patterns of attachment, that emerge from how market actors decide what product to build, which features it should have, and how to design the user experience. The material that is weaved together shows how behavioural product practices are ordered and how they unfold, to varying degrees of disorderliness, in the wild (Law 1993), in contrast to the more prevalent understandings of nudge in software development.

Nudge Goes to Silicon Valley

‘Nudge’ seems to capture well what they were trying to do, said the editor reviewing their book, originally titled *Libertarian Paternalism* (Thaler and Ganser 2015). In this ‘ingenious bit of accidental rebranding’,¹⁰² nudge became not only the book’s title but also the centre piece in Thaler and Sunstein’s political-normative program of libertarian paternalism. As the

¹⁰² Interview conducted on 10 December 2021.

introduction of this thesis observed, this simple formulation would have a strong performativity, further enhanced with the rise of the platform economy. The internet is awash with nudges, we are often told, or rather the surveillance economy has turned it into one big hypernudging system (Yeung 2017; Zuboff 2019). Zuboff (2019) locates the power of large platform companies in this very mechanism of influence: ‘power’ she argues ‘is now identified with ownership of the means of behavior modification’ (p. 691) while the old project of behaviourism is reincarnated ‘as a global digital market architecture’ (p. 598).

In fact, behaviourism is to software app design what psychoanalysis was to advertising in the heyday of *The Hidden Persuaders*. Much like the cultural coding of advertising as the technique of subliminal desire manipulation (McFall 2004; Slater 2011), critical work univocally finds ‘intermittent variable rewards’ to be *the* design intervention that explains the success of social media platforms in ‘hooking’ the users and keeping them ‘trapped,’ with routine references to Skinner’s box and Schüll’s (2012) ethnography of slot machines (see Alter 2017; Eyal 2014; Harris 2016; Kuang and Fabricant 2019; Leslie 2016; Martin 2022; Vaidhyathan 2018; Williams 2018; Zuboff 2019). While readings of Schüll’s book often miss the care with which the author eschews technological determinism, the claim here is that, just like slot machines, algorithmically curated newsfeeds are designed to show dopamine-inducing content ‘intermittently,’ to keep users coming back for more (Aagaard 2021; Helm and Matzner 2023). Variable rewards are complemented with other behavioural nudges that work to increase the frequency and length of interaction: features like the infinite scroll or auto-replay, whereby stopping a user activity is rendered harder than continuing it, extend user sessions; notifications, or ‘triggers,’ by calling users back to the system, reduce the time between sessions; habit-inducing streaks and badges gamify the experience and lock users in through the ‘investments’ they create within the system. The terms, ‘hook, trigger,

investment’ are from Nir Eyal’s *Hooked*, which is now considered, ‘the closest thing to a bible for designers who want to induce habits in their users’ (Williams 2018, p. 34). In the book, Eyal deciphers the design secrets of large platforms, to guide start-ups in their quest to similarly secure ‘mind monopolies,’ who in turn, ‘draw on the latest research in behavioural science to punch the right buttons in our brains as effectively and reliably as possible’ (idem).

In these accounts of software design, nudges figure as (1) targeting the mind and ‘the nonconscious dimensions of cognition’ (Dieter et al. 2019, p. 4) (2) working as predicted, intended and as powerful agents, (3) consequently, creating the effect of ‘manipulation’ understood as ‘the covert subversion of decision-making power’ (Susser, Roessler, and Nissenbaum 2019) or (4) behavioural addictions when deployed to create repeated and increasingly frequent interaction with the system. The latter is indeed a consequence of the changing regimes of marketisation and assetization of software, where repeated interaction measured through ‘the engagement metrics that track length and frequency of use’ now plays a central role (Seufert 2013, p. 97; see also Birch, Cochrane and Ward 202; Schüll 2012; Cooiman 2022).¹⁰³ Yet, to accept that tech companies are ‘in the business of ... surveilling and changing behavior’ as Birch et al cautions, is not to argue that their ‘techcraft’ ‘actually changes individual behavior’ (p. 4). The behavioural addiction and manipulation thesis regularly conflates the two, inadvertently exaggerating companies’ and their designs’ potency and influence over the users (Doctorow 2020).

It is even more suspect that *nudgers* have advanced the same critique of the attention economy business models, and the resultant operationalization of nudges in their service, except reminding everyone of the libertarian paternalist roots of nudges (see Lembcke et al.

¹⁰³ As Cooiman (2022, p. 6) argues: ‘VCs turn startups into assets. (...) VC firms set up a fund, which serves as an asset to them and their capital providers. The fund provides rents to both the venture capitalists and their capital providers when startups are successfully sold. Startups may, for instance, assetize data by creating and selling software-as-a-service (Birch et al. 2021).’

2019; Thaler and Sunstein 2021). Interventions, they have argued, were always supposed to be in the interest of the subjects, that is, meant to make them into self-interested actors, who approximate the rational, fixed preference, cost–benefit analysing, utility-maximising actor of neoclassical economics. In this proposition, the positive–normative distinction plays an important role: as Heukelom (2014) insightfully argues, even though behavioural economics challenges the descriptive accuracy of the rational actor model, it does not reject it as a normative ideal (as also mentioned in Chapter 3 when explaining the success of behavioural economics). In fact, we might add that behavioural economics links more and more actions with the aspiration for rational action, thereby rendering them ‘economic.’¹⁰⁴ Incidentally, the normative insistence on the rational actor model sets these applications apart from Skinner-type behaviourism that it is typically bundled with, and the ‘dark patterns’ or ‘sludges’ that work against *nudges*.

The decade following the publication of *Nudge*, the project extended into the consumer product space, as the practical application of behavioural economics grew beyond nudging, and through hybridization with ‘designerly ways of knowing’ (Cross 1982), into a design discipline, alternately called ‘behavioural’ or ‘behaviour change design’ (Datta and Mullainathan 2014; Schmidt and Reid 2021; cf. Michie et al. 2013). As Chapter 3 explored in detail, nudge travelled into Silicon Valley through more books, trainings, consultancies, and ‘gurus’ like B.J., Fogg, Nir Eyal, Dan Ariely who teach software developers how to use behavioural research in designing effective products (Beattie 2022; Martin 2022; Nadler and McGuigan 2018; Seaver 2019; Wendel 2013). However, teachings were put into practice more faithfully, in the new app propositions that spanned health and wellness, finance and insurance, education and productivity, where ‘behavior change is the core value of the

¹⁰⁴ This is not new or special to behavioural economics, rather it continues the existing neoliberal tendency ‘to apply economic analyses to completely new fields and domains’ (Foucault 2010 cited in Healy 2017).

product for the user’ (Wendel 2013). Here, behavioural economics figures more centrally and explicitly in business and product development: even if the idea still is to create sticky apps that users ‘become tied to and cannot easily leave’ (Sequoia 2018), these apps help users stick to a diet, an investment plan, a learning schedule, in any case, a rational long-term goal. Consequently, innovative although at times ambivalent takes on ‘engagement design’ proliferate (Beattie 2022; Jablonsky, Karppi and Seaver 2022). An important one for this chapter’s purposes is the frame in which in-app engagement and ‘behaviors within the product’ like ‘logins, clicks, swipes,’ are figured in service of a real-world behavioural outcome ‘within the users’ daily lives’ like meditating, sleeping, or stopping smoking, dubbed as the ‘big E engagement’ (Cole-Lewis, Ezeanochie and Turgiss 2019; Wendel 2013).

The behaviour change business intersects with other trends in the cultural economies of products and users, namely, co-optation of the attention economy critique and techno social practices of self-optimisation (Jablonsky, Karppi and Seaver 2022). Silicon Valley and its gurus’ move away from ‘persuasive technologies’ (Fogg 2002) and ‘habit forming products’ (Eyal 2014) to ‘good habits’ (Fogg 2019) products that’ll make you ‘indistractable’ (Eyal 2019) can be read as a response to the prominence of technology addiction critique. The prototypical example of this trend is the meditation apps that ironically confer ‘attentional sovereignty’ to their users and encourage them to disconnect and digitally detox (Jablonsky, Karppi, and Seaver 2022). These innovations afford new subject formations, capabilities, and agencies to users, yet for most part, critics conclude, they discipline users towards socially and ‘neoliberally’ desirable traits and ends (e.g., Berndt 2015; cf. Schüll 2016) while continuing the routine manipulative practices in software development (Sax 2021). Sax (2021) is a good example of the latter tendency. In reviewing health apps like

MyFitnessPal, Fitbit, Headspace, the author concludes that there is a discrepancy between the stated aims of the products (i.e., helping users lead healthy lives) and what their design appears to in fact optimise for in accordance with the business models (i.e., short term engagement). The mindfulness and meditation app, Headspace, for one, ‘entice[s]’ users-to-be by evoking ‘people’s natural desire for health,’ ‘luring people to the app’ with free packs of meditation sessions, yet with the aim of ultimately increasing their engagement with ‘revenue-generating features (e.g. premium features) and material (e.g. (native) advertising)’ (p. 348–50).

Let us note that these analyses do not study the actual practices of design empirically, keeping their focus strictly on the idealised effects of design choices rather than what drives the design process (Ash et al. 2018). And neither are ‘luring in,’ ‘enticing’ and ‘engaging,’ as analytical frames, exclusively within the purview of technology ethics scholarship. Refigured as the problem of ‘attachment,’ that is, ‘[Why] consumers attach themselves more to some goods than others, to the point of agreeing to pay for them?’ (Callon 2017, p. 180), it was ‘claimed for sociology’ and studied diligently in the intersecting worlds of economic sociology, cultural economy, and market studies (see McFall, Cochoy and Deville 2017). This literature has likewise produced original and provocative interventions on the notions of ‘agency’ and ‘action’ that the discussion on manipulative software keeps invoking. I will now review this work which imparts the tools for a rather ‘interesting’ analysis of behaviour change products, if we take the accounts that stimulate interest to be those that ‘constitute an attack on the taken-for-granted world of their audience’ (Davis 1971, p. 311).

Market Attachment and Distributed Agency

The analytic of ‘attachment’ is at once a conceptual and empirical intervention. Work in this tradition attends to the fragility as much as the resilience of market attachment, to ‘the

uncertainty, guesswork, sentiment, luck, mystery and failure that is also inherent in attachment’ (McFall, Cochoy and Deville 2017, p. 10). For example, Ash et al. (2018, p. 1138) challenge the ‘assumptions about the smooth manipulation of user action and experience’ in their empirical study of interface design practices behind High-Cost Short-Term Credit products, and instead theorise them as ‘an experimental process of managing friction.’ In addition to being a process of tests and trials, attachment also operates under various logics and modalities. ‘To entrap is not necessarily to manipulate’ Cochoy (2007) remarks, ‘to respond favourably to information, an advert, a commercial offer (to be captured) does not necessarily proceed from an error, a mistake in understanding or a cognitive imperfection, as is implicitly assumed by the notion of manipulation’ (p. 206–7). There can be willing submission, or ‘reciprocal manipulation’ launched by the user-consumer who have their own plans and projects. This intricate interplay ‘between hunter and prey’ is emphasised further in the anthropology of traps, Seaver (2019, p. 7) argues, which ‘drew no essential distinction between mental and physical capture, suggesting that trapping itself may always be both material and mental.’ Seaver turns to the literature on traps, to make sense of algorithmic recommender systems that try to ‘hook’ users.

The ‘hooking’ and the ‘attaching’ takes on a particularly iterative and data-driven form in software products under the paradigm of agile programming, while the mundane materiality of market attachment presents itself as another key focus of the literature. As previous chapters showed, product developers ‘continuously tweak, remove, or add new features using “build-measure-learn feedback loops”’ (Gurses and Van Hoboken 2017, p. 19). Furthermore, contemporary software systems are not only packaged market commodities but also marketing devices ‘listening in on’ their users which in turn are ‘looped back into production in a tighter temporal frame than imagined in most market models’ (McFall,

Cochoy and Deville 2017, p. 5). The increased ‘volume, velocity, variety’ of behavioural data capture radically transforms the processes of learning about and intervening in user behaviour. However, as case studies of behaviour-based insurance apps show, companies’ ostensible allusions to behavioural tracking and behaviour change techniques do more work to singularise the brand and create ‘brand attachment’ than accomplish effective behavioural modification per se (Jeanningros and McFall 2020; Tanninen, Lehtonen and Ruckenstein 2021). And even when apps do modify behaviour, in fact, that is how they produce durable attachment, by getting entangled with ‘users’ routines of action’ (Jervis 2020), this is in rather banal, unremarkable, everyday ways. To emphasise this, Morris and Elkins (2015) call apps ‘mundane software,’ ‘software that spreads out beyond the computer and into a vast range of everyday routines and activity,’ although with significant material consequences, as they ‘distill’ from these complex patterns, ‘partitionable processes that can be converted into software solutions’ (p. 65–76).

This last point summons the third key insight from the literature, that will be central to our remaining discussion: the notion of ‘distributed agency’ which denotes that action and meaning springs from assemblages of humans and non-humans, technical and textual elements (Callon and Muniesa 2005, MacKenzie, Muniesa and Siu 2007). Importantly, if differently aligned, these assemblages or ‘socio-technical agencements’ (Çalışkan and Callon 2010) offer different possibilities for action: a calculative agency is performed differently with the double-entry bookkeeping, the stock ticker, the shelves, packages, and price tags, as it is without them. The role of theories and artefacts in producing market action is well elaborated in sociological studies of markets, since Michel Callon’s field-defining provocation, ‘homo economicus ... is formatted, framed, equipped with prostheses, which help him in his calculations, and which are, for the most part, produced by economics’ (1998,

p. 51). Callon (2008) has also attended to the literal and not only figurative prostheses, in studying what he calls ‘prosthetic’ and ‘habilitation projects’ that seek to ‘restore the lacking competencies’ of persons with disabilities. These projects, he has demonstrated, create different agential consequences, while constituting a distinct modality of intervention into agency, one that is purposive and strategic.

Contemporary social and behavioural sciences, more generally, exhibit an ‘interventionist’ approach to socio economic relations and agencies which they treat ‘not as something given and un-changing’, as is the assumption in the performativity thesis, ‘but as a set of activities, patterns and forms that may shift, expand and are thus transformable’ (Marres 2017, p. 159; Marres, Guggenheim and Wilkie 2018). This is the line of argument I wish to take up and further here, for behavioural economic science and its corollary program of nudging fit right into this paradigm (Muniesa 2018). Animated by the normative-positive distinction, behavioural economics attempts to socio-technically engineer the homo economicus into existence, by modelling irrationalities that then serve as the bases for intervention (Heukelom 2014; Muniesa 2018). ‘One could frame the interventions in question as sociotechnical medicine that assembles a carefully arranged network of humans and non-humans.’ Berndt and Boeckler (2016, p. 23) observe, ‘In this assemblage, agency is purposefully designed as being distributed between heterogeneous elements’ (emphasis mine). We might add that not only is agency purposefully designed to be distributed, but also ‘the intervention’ is strategically constructed as the ‘agential peak’ (MacKenzie 2008), or the key ‘actant’ in the distribution. Self-tracking products are a good example of this: they are designed in a way that the user ‘passively delegate[s]’ the actions to the devices that micro-nudge them: ‘these devices transfer the burden of tracking – and, in some cases, behaviour change – from selves to sensors and computational algorithms’ (Schüll 2016, p. 323).

Building off this insight, the rest of this chapter unpacks the strategic design processes through which ‘the burden’ of certain actions ‘are delegated’ to behavioural economic interventions. The ‘behaviour change app proposition’ hinges upon the attribution of responsibility for the action to the behaviour change product. It is self-conscious and explicit about this fact of affordance: nudged agency is what it sells. On a deeper level, it also depends on the reconfiguration of the user’s network so that the action itself, and not only the responsibility for it, is durably delegated to that specific product and not any other device. This, I propose, constitutes a distinct logic of market attachment, and in the next three sections, I will show how it is activated and operationalised in market practices.

The following empirical analysis shows first, how the behavioural economic value propositions are constructed and what kind of market attachment logic they summon, second, how this logic is actualised in user research, product strategy, and interface design, and third, how it compares, contrasts, and at times hybridises with predominant modes of production in the attention economy. The three empirical sections are then followed by a discussion where I will reassess the suitability of behavioural addiction and manipulation frames for studying software design, given the empirical insights uncovered in the previous sections.

Constructing the Behaviour Change App Proposition

Behaviour change product space is large, and heterogenous in the consumer activities, markets, business models, financing arrangements, even particular traditions of behavioural research that are assembled in the development of different products. Notably, most digital health apps rely on motivational psychology and self-determination theory, and at times explicitly oppose to behavioural economics’ limited framing of human judgement and decision-making (Bucher 2020; Villalobos-Zúñiga and Cherubini 2020). I will nevertheless argue that it is a uniquely behavioural economic problem that forms the basis of and unites

the disparate market and expertise offerings in the field, at once performing the narrative function of business models (Doganova and Eyquem-Renault 2009; Geiger 2020) and helping behavioural experts frame the meaning and value of their work.

This is the problem of ‘hyperbolic discounting,’ a cornerstone of behavioural economics science and its applications alike (Heukelom 2014). Meryl, the director of a behavioural economics consultancy, colloquially explains it as follows:

We tend to favour things that give us immediate benefits and deprioritise and undervalue things that give us a future benefit ... I favour sitting on my sofa watching Netflix ... I’m less likely to get up from my sofa and go for a run ... It’s a hedonic immediate pleasure versus a long-term functional benefit ... Health is a classic example of that, finance is obviously another classic example: by putting money away for the future, I’m not getting to spend it on something enjoyable today.

‘Behavioural science,’ she continues, ‘is a great fit for anything that requires self-control or delayed gratification’ and that is why ‘health, fitness and financial decision making are some of the biggest areas’ in which they work and make an impact, despite the consultancy’s famed collaborations with large platform companies. Of the people I interviewed, most, primarily worked in these domains – and all, at least once – such that one practitioner called theirs the ‘fitness and finance’ industry. The trade literature of behavioural product design also mainly supplies case studies from these ‘most active and exciting areas of application’: the wearable space, medication adherence, mobile dieting, investments, and day-to-day money management (Wendel 2016, p. 98–102; also see Andorsky 2020; Bucher 2020; Wallaert 2019; Wendel 2013).

Noom and Betterment are two classic examples, illustrative of the fields’ co-existing divergences and convergences. Noom is a dieting app, Betterment is a financial roboadvisor. In the app economy where barriers to entry are low, ‘psychology is the lynchpin of Noom’s business model,’ informing the ‘habit-based’ approach to weight control that differentiates

the company from the market alternatives that promise quick yet impermanent weight loss while bolstering its subscription-based revenue model (Thau 2021). The app embeds behaviour change techniques like ‘goal setting, feedback, self-reward, social support’ to endow users with the capacity to ‘explore and develop habits.’¹⁰⁵ Betterment’s revenue comes from ‘management fees’ yet approach to investment is similar: investment is a lifelong activity and lifelong is it under the threat of the ‘irrational choices’ of investors (Hayes 2021). Behavioural finance is what sets it apart from other financial advisors: Betterment ‘explicitly applies’ lessons from the literature ‘to help investors avoid common mistakes,’ such as adding a ‘tooltip’ to their design, that warns users ‘about the dangers of hasty withdrawals’ ‘during market downturns’ where anxious investors wrongly ‘remove their money from the market’ when ‘their investments are then at their lowest value’ (Wendel 2016, p. 101).

The value proposition for users, then, is the product’s superior efficacy and effectiveness in achieving long term, lasting behaviour change or behavioural correction, by using science. The business, on the other hand, purports to create and capture value from long-term sustained behavioural outcomes, and not short-term engagement or enjoyment that the product inspires in the user-consumer. In other words, the products are economically valuable and profitable insofar as they are ‘behaviorally effective’; the product delivers sustained revenue or ‘an interested, engaged audience for advertising’ insofar as it succeeds in enacting the targeted behaviour (Wendel 2013; cf. Sax 2021). That is why for products targeting ‘a repeated behavior that people often want to change in their lives,’ standard business models like subscriptions, freemium, or advertising ‘work well and align user success with business success’ (Wendel 2013, p. 283).¹⁰⁶

¹⁰⁵ From slides shared with participants at an intervention design workshop.

¹⁰⁶ More idiosyncratically, the product could be paid for by a third party that benefits from behaviour change, such as an insurance provider, employer, or bank. In this incentive-aligned case, the ‘explicit’ value proposition for the third-party is decreasing the costs of their business, by securing consumer compliance. The practice is

Behavioural economics is an ingredient in the value proposition, but behavioural economics is also the backdrop against which this proposition makes sense. Both Noom and Betterment assume people want to act rationally but fail inexorably due to cognitive biases they cannot overcome. This failure is not a disease that can be cured, but a disability that needs to be compensated for with ‘prostheses’ (Callon 2008) that are life-long, habit-based devices that constantly and dynamically correct the user, and nudge agency towards rational behaviour. Homo economicus, now chronically dependent on his prostheses, pays for – or gets subsidised – to become and stay rational.

This makes the behavioural economics approach a distinct ‘sociology’ of users, products, and attachments between them (Cochoy 2007), putting in motion a development process focused on producing and monetising the action that the product targets while conjuring up a figure of the user different than the one in the designed addiction frame.

Designing for the Disengaged, Rearranging the Actor-Network

Because the end goal is to be the enabler of a particular action, behavioural product strategy ‘starts at the end’ (Wallaert 2019) by asking ‘what is the action that the user is trying to accomplish?’ and works backwards. Ryan, the behavioural product strategist who specialises in early-stage productivity applications, illustrates this:

One of my clients told me at one point that they want to replace a good amount of your time that you spend on Facebook news feed with their app. If you’re approaching this with the behavioural lens and you’re trying to think ‘Okay, what are people doing when they’re on their newsfeed?’ It’s essentially an exploratory search where they don’t have any goal and they are low energy. They’re looking for a goal and that’s what the news feed does for them. Do you have anything that could fit into that gap? ... because you’re not going to replace that time with a thoughtful activity.

particularly salient in behaviour-based insurance (see Jeanningros and McFall 2020; Tanninen, Lehtonen and Ruckenstein 2021), which ‘directly monetises the [behavioural] outcomes’ (Interview conducted on 15 April 2022).

This is ‘outcome-driven innovation’ where ‘effective customer segmentation relies not on ... demographics or location ... product features and prices –but rather on a deeper understanding of what the consumer is trying to accomplish’ (Thompson 2018). Part literature review of behavioural scientific research, part vernacular theories and practice-based knowledge of the expert, behavioural approach, by contrast, gets to the bottom of what the consumer is trying to really accomplish – ‘do people want to lose weight or actually do they want to feel more confident’– as ‘a behavioural scientist favorite tagline is people don’t always know what they want.’¹⁰⁷ Acting as ‘a technology of revelation’ (Schneider and Woolgar 2012), the behavioural approach ‘reads between the lines’ of what ‘your users are telling you’¹⁰⁸, and offers a deeper, truer, and causal, understanding of user behaviour that neither the unreliable user-centric research methods nor the correlation-based data analytics tools can supply.

Applying a behavioural lens, however, is not only about knowing, learning, and reasoning about user behaviour, but also about singularising, positioning, and ultimately ‘marketing’ the product. The start-up literature more broadly conceives of this co-elaboration of specific user needs and the corresponding product features as ‘the essence of product strategy’ (Olsen 2015, p. 7). The following example is illustrative of the behavioural version: A behavioural design and gamification consultant that helps web and mobile-based companies optimise their user experience, was hired to build from the ground up a fitness app that aimed to ‘target specifically people that don’t enjoy exercising.’ Knowing ‘extrinsic motivation works for people that are not naturally interested in an activity,’ they designed a micro incentive-driven rewards feature that gives users discounts at partner stores every time they hit a prefigured milestone. They did not, by contrast, include a social feature that e.g.,

¹⁰⁷ Interview conducted on 25 February 2022.

¹⁰⁸ Interview conducted on 18 March 2022.

allows users to compete with their friends, like the one market incumbent Fitbit has, because ‘Fitbit is not built for motivation, it’s for people that already like exercising’ and that is why ‘they have community [as] a core feature.’¹⁰⁹

We can see here how behavioural categories that help define the product’s customer segment (motivated versus unmotivated users) guide selection in the ‘modular, ever-expanding feature space’ (Gurses and Van Hoboken 2017), ‘singularizing’ the product, through differentiation from and imitation of the alternatives in the market (Callon and Muniesa 2005; Callon, Méadel and Rabeharisoa 2002).¹¹⁰ We can also notice the qualities of the imagined user-consumer of the product. The users enrolled are users who are unmotivated, who resist, and who are difficult. The field’s overall emphasis is on dealing with the hard, ‘wicked’ problem of ‘behaviour change’: the offering is to change complex behaviours that need to be studied, modelled, and intervened in carefully (Bucher 2020; Schmidt and Reid 2021). Importantly, this equally applies to consumption and technology usage behaviour, in contrast with the accounts of the same behaviours, typified in *Hooked*. An independent behavioural insights and strategy consultant with a 15-year career and a large following on LinkedIn, reproaches the book for creating a ‘Zombie-like caricature’ of users/consumers, in the following excerpt from one of her highly engaged posts:

[The] lack of empathetic consideration for users/consumers leads to a kind of Zombie-like caricature- and of course I can see why it’s every marketer’s dream to be able to increase the business’ return on investment indefinitely with consumers so “hooked” (addicted) to their product and watch the money roll in ... unfortunately life and behavior aren’t as simple as that – not even if you are training dogs instead of trying to “hook” people to using your products. Behavior is complex, contextual and variable – even the best dog trainers in the world cannot achieve the kind of “addiction” Eyal is promising you can with these techniques. So how could it possibly be so simple in humans? (Halonen 2022)

¹⁰⁹ Interview conducted on 4 May 2022.

¹¹⁰ Important to add that some features (e.g., for data capture) are also for the purpose of singularising the product for the VC (i.e., venture capitalist) as they are for the user. (Gurses and Van Hoboken 2017).

The consultant refers not only to the peculiar problem of behaviour change and the special status of the unmotivated behaviour change subject but the broader problem of market attachment and the user/consumer whose ‘default state of being’ is ‘not using your product’: ‘you’re trying to get them to do something different in using your product ... Remember, you’re competing against doing nothing and against pre-existing habits.’ (Haisfield n.d.) The evidence that supports this view range from general consumer behaviour explanations – ‘the psychology of new product adoption’ (Gourville 2006) – to those particular to the ‘app economy’ which emphasise the abundance of apps that enter the market, that are downloaded, ‘tested/tried’ and ‘forgotten,’ never to be re-engaged with (Morris and Elkins 2015). Computational experience, distributed across the many apps competing for attention, is thoroughly compositional, it cannot be comprehensively designed and thus controlled (Dourish 2021). You have the flip side of excessive engagement: this is designing for the always almost disengaged user.

Most behavioural design work corresponds to the optimisation of user flows to prevent users from dropping out at different stages due to distractions, negative reactions, or general disinterest (Wendel 2013, p. 40). The first target is onboarding, which in software app development refers to ‘the procedures for establishing or otherwise setting up a new user account’ (Dieter and Tkacz 2020, para. 5). Attaching during onboarding is considered important in the industry, for products across the board, as reflected in the wider start-up literature: ‘A user’s first session with a product is a critical determinant of the user’s lifetime with the product; it is therefore worthy of the product team’s when trying to optimise the user experience.’ (Seufert 2013, p. 98) One deadly sin is to ask open-ended questions during sign up as it puts extra cognitive burden on the user (Ariely, Hreha and Berman 2014).

Behavioural designers well versed in gamification pre-emptively design for ‘failure states’ to bounce back from drop offs.

A common intervention for onboarding optimisation is a ‘commitment device,’ an example of which was given by Nick – the ‘serial founder’ CEO of a behavioural consultancy from the previous chapter. He recounts how they increased the ‘pull through rates’ for the application process for a client that offered a personal loan product (similar techniques observed by Ash et al. 2018):

We said, “We know that your financial future is very important. It’s important to not only you but also to your family and those that you care about most. Help us understand what the purpose of the loan is” and we had a bunch of options. One was to provide relief for medical bills, etc. One is to provide vacation. You click it, and whatever you clicked in the next step of the application, it would have that there for you. So, you were constantly reminded that there is this sort of commitment device ... we pull that experience that was tied to this emotional personal goal through the application itself.

This is a typical nudge, acting, in its typical fashion, as a ‘critical actant’ in the action of applying for a loan. Yet one needs to be careful with nudges and their agential power.

First, all interviewees cautioned that a deeper appreciation of the context is a precondition for a nudge to work as intended. A report by the famed Irrational Labs confesses that the commonly used tactic ‘loss aversion’ ‘is a tricky force to wield—users are just as likely to flee from or exit from your product as they are to use it’ (Ariely, Hreha and Berman 2014).

Second, the loss of choice and autonomy inherent in nudges can at times be counterproductive as what begets engagement might also be the ability to choose, to ‘invest’ in the product to quote Eyal (2014) himself. On the other hand, as simple, easily transportable design interventions, nudges are bound to be easily adopted across the industry, slowly losing their effectiveness (Doctorow 2020).

Once the user is successfully onboarded, and all flows optimised, the key problem for behavioural design becomes how to secure repeat, continued, and even habitual usage. The

ideal of sustained engagement features centrally in the behavioural design literature, and for attaining it, authors advise tactics like the following:

Uniquely become part of the person's environment: One way to remind people to use a product is to ensure it's seen – by placing the Nike + FuelBand by the side of the bed or by making your application the home page on a browser. ... Uniquely become part of the person's expected routine: At a particular time of day (or situation), train the user to uniquely think of the application as a way to do something or relieve boredom ... ask the user to plan out a particular time to use the product ... Build strong associations with something that is part of the user's environment or daily routine: If you can't get in front of users' eyeballs directly or reserve a slot on their daily calendar, build on what's already there. (Wendel 2013, 279–80)

This resembles the idea of 'establishing a mind monopoly,' proposed by Eyal (2014), and received critical attention from social scientists (see Balzam and Yuran 2022; Seaver 2019), but where it differs is worth exploring. Building off Eyal's notion of internal cues like 'boredom,' Wendel (2013) extends his prescription to their material foundations, focusing on how to embed and entangle the product temporally, spatially, physically into the everyday. This is not so much about mind monopolies as is about rearranging the mundane, about 'entangling' the product in the everyday 'actor- networks and routines of action' that the user is already enmeshed in (Hodder 2012; Jervis 2020).

Ultimately, 'the goal of behavioral product strategy is to turn usage of your product into a default behavior for certain goals,' and even better, if the product can 'enable the user to accomplish multiple goals' (Haisfield n.d.). The actions to be delegated to the product, however, need not already exist; product makers can create them from scratch and then incorporate them into the users' lives. The example that opened this chapter is a case in point. We had a peek into the problem that Mark was trying to solve: the problem of how to get lay people to engage in trading. In contrast with the media reports that portrayed the trading app as 'exploiting people's gambling addiction,' he further explains that:

A big chunk of our users was nervous about trading. We built a new user flow that walked them through the process, the stages; instead of just saying ‘Here you go, you signed up, now you can start trading!’ and assuming they knew what to do. We would give them little lessons, walk them through different steps to take and nudge them on like ‘Okay how about placing a trade?’ Or even building features like fractional shares, ... then you could trade a penny of Apple or Tesla or something ... instead of having to buy a share of Google which was like \$1,000.¹¹¹

All design decisions are directed at ‘getting people to trade.’ By teaching, encouraging with words, and equipping with tools like fractional shares, the app creates for the lay trader, new capacities to act. Mark frames the process as helping users ‘do something that [they] came here to do’ and so, the manipulation frame fails to resonate with his experience, even if his work is to intervene in the agency of the users. The mode of intervention his account evokes is productive, it creates capacities of action that are previously lacking for the user as the individualised actor, while attributing the agential power to the individualised intervention.

This is not to conclude that increasing the frequency of use does not matter – in fact, the more trades a user places, the more money the app makes. Rather it is to show that the purpose of design is not always to increase the frequency of interaction, but sometimes to initiate the interaction and prevent it from stopping. In fact, the balance between designing for more frequent interaction (‘getting people to use the app more’) and designing for preventing the interaction from becoming less frequent (‘getting people to use the app, period’) arises as a key productive tension in behavioural design, as we shall explore in the next section.

Pragmatic Participation in the Engagement Economy

As previously noted, behaviour change apps are predicated on enacting a rational behavioural outcome, and the purpose of design interventions is to produce target actions, by affording or

¹¹¹ Before stock split.

constraining the user's agential capacities. This is the case in the commitment device that gets users to complete loan applications, the rewards feature that pushes users to work out regularly, and the tooltip that stops users from withdrawing their money during market downturns. The concern is not to increase the length or frequency of interaction with the technical object, but to design the object into a key actant in the action being performed.

It is important to stress this point, as it forms the basis of the behaviour change app proposition, and its market critique of the attention economy and its modes of production. Practitioners summarise the state of the field as: 'Let's move really fast, find something people will download and spend time on,' rather than building 'something that six months later they'll still be using, and they'll still have kept off the weight or increased the exercise or whatever the real-world behaviour is.'¹¹² Aisha, the behavioural scientist working for the edtech platform, shows just how fast start-ups move, and in contrast, how behavioural experts 'add some friction to a start-up mentality' and 'to their programming efforts':

When I wasn't there the MVP [i.e. minimum viable product] took like 22 days to get ready. Now I have come in, I know I'm going to take one quarter at least for the next version of the product to be ready, because I don't want to go ahead without getting any kind of feedback or not seeing the behaviour that I want to see.

The MVP is 'minimum viable product,' a cornerstone in the Lean Start-up Methodology or LSM (Blank 2013; Eisenmann, Ries and Dillard 2012; Ries 2011) and a key device for 'finding something people will download and spend time on.' Lean methodology contrasts with 'waterfall' methodologies of software development that takes a product to the market after planning and executing a full-blown production. Instead, the idea here is starting with 'an early product that is terrible, full of bugs and crash-your-computer-yes-really stability problems' (Ries 2011, p. 15), because it is 'the smallest thing you can build that will

¹¹² Interview conducted on 21 April 2022.

create the value you've promised to your market' (Croll and Yoskovitz 2013, p. 6) and will allow 'the product to be deployed and tested in the field' (Wendel 2013, p. 90). Serving as a device to test the market, MVP collects data on what to keep, what to change, whereabouts to iterate –briefly, to find out what 'the market actually wants' (Ries 2011; Wendel 2013).

Favoured is flexible pivoting and iterative research as opposed to following a predetermined plan, for start-ups do not deal with known variables but are 'temporary organization[s] in search of a scalable, repeatable, profitable business model' (Blank and Dorf 2020). The product can end up being quite different from how it was initially conceived – even switch to a completely different market than the one it was initially positioned – as it keeps responding to market signals. The market, on the other hand, speaks through metrics and data. As noted in Chapter 4, a key metric in the software industry is growth, 'growth in users, engagement, and conversion for consumer-focused startups' (Kenney and Zysman 2019, p. 43), reinforced by the intersecting forces of financing pressures to grow fast and platforms that render visible apps that are growing fast (Cooiman 2022; Sax 2021). As Simon, the account manager at the behavioural design agency, explains:

You can make a lot of money by just hooking people into X amount of time and then constantly flowing through more users' because 'you get rewarded by the promise you put on AppStore ... so you put pictures of beautiful people and say in 30 days you'll lose however much weight.

Equally important, though, is *continued* engagement. 'Engagement is one of the best predictors of success' argue the authors of *Lean Analytics* illustrating with a well-chosen example: 'Facebook's early user counts weren't huge, but the company could get nearly all students in a university to use the product, and to keep coming back, within a few months of launch' (Croll and Yoskovitz 2013, p. 47). Just as with product optimisation, engagement metrics take centre stage in new product development under LSM, taken as proxies for 'users' satisfaction with the product' (Seufert 2013, p. 98).

Behavioural experts oppose engagement-driven development on different yet related grounds. One dismissively says that ‘most companies just sort of build, put it out there and see what sticks’¹¹³, while another notes, ‘Lean Start-up is ‘all about’ ‘literally pivot[ing] to whatever people want ... it’s very hard to have a vision with that.’¹¹⁴ LSM is considered a poor fit when the goal is to build a product that is purpose-driven – a product that people should want – and one that is adopted for its use value, its success in getting users to accomplish a goal, not its cunning in ‘hooking’ them in the short term. ‘Easily calculated, usage and retention have become the default standard for assessing a “successful” product,’ an applied behavioural scientist complains in a blog post, and the standard privileges designing for frequency and length of interaction, over the product’s purpose in its user’s daily life (Joyce 2022).

Headspace embodies this problem and was brought up by several interviewees who had conflicting views on how its designers were mobilizing engagement. Anthony, the senior behavioural scientist who worked for a major platform, observes the following about the app:

The point of Headspace is to get people to meditate ... but that’s not actually what they monetise ... they monetise content. And really what they need to get you to do is engage with the app, whether or not you meditate is irrelevant to their actual business model ... If you look at the senior people at Headspace, they’re all content people, ex-content sellers, media people, etc. And ditto at Calm [another meditation app], you know the person who headed Product, just left but, Dun Wang ... what was her previous company? Zynga, right, games!¹¹⁵

Yet, for people to stick to their habits, and products to stick to their people (to echo McFall et al [2017]), investment in interaction might be necessary. In other words, ‘to captate’ (Cochoy 2007), the product also must entice, entertain, and engage as a consumption

¹¹³ Interview conducted on 18 March 2022.

¹¹⁴ Interview conducted on 25 April 2022.

¹¹⁵ According to their LinkedIn profile, Dun Wang served as the Chief Product & Growth Officer of Headspace, from October 2018 to February 2022. Previously was the Product Lead for Draw Something, a mobile game at Zynga, ‘with a focus on deeper monetisation.’

object – and in the app economy, on a daily basis. Simon, who also happens to be an avid user of Headspace has a different interpretation of the app’s design choices. He recalls when Headspace first started, they were ‘pushing forward courses’: ‘You want to manage stress, you want to manage sadness? Take these 10 or 20 different classes.’ Only later, ‘they have migrated to a place where now they pushed more stackable content.’ He continues:

Now I can be cynical and say that’s only keeping people in the app and it’s not actually helping them be more mindful, but I can also sympathise with Headspace that you have to get people form a daily habit of using the app first, then you can offer them opportunities to dig deeper, make a bigger commitment, work on one area for a longer period of time. I see in that the balance of the business need of if we keep pushing these hard things, people are going to go away, so you have to have both First, they had to create an experience that was sticky enough that you could form a habit around it.

Content stacking is an example of the behaviour change technique (BCT) called ‘graded tasks,’ in which the intervention designer ‘set[s] easy-to-perform tasks, making them increasingly difficult, but achievable, until behavior is performed’ (Michie et al. 2013).¹¹⁶At a design workshop that I observed, the facilitator, a senior interaction design consultant in the health and wellness domain, named seven more BCTs that Headspace uses to achieve their ‘primary target behavior’ of getting users ‘to meditate at least once per day.’¹¹⁷ In this framing, the app’s features are ‘specifically designed to influence’ health behaviour outcomes which in turn are dependent on the users’ exposure to these ‘active ingredients’ (Cole-Lewis, Ezeanochie and Turgiss 2019). The implication is to design an engaging experience to encourage users to have ‘the appropriate level of interaction’ with the product, so they could have continued exposure to the behaviour change interventions (Bucher 2020; Cole-Lewis, Ezeanochie and Turgiss 2019).

¹¹⁶ BCTs are different from nudges and are better understood as part of the public health and health psychology fields where they were developed (e.g. Michie et al. 2013). While the epistemic differences matter for the scientific community, they tend to blur as the techniques are moved into business.

¹¹⁷ These are ‘demonstration of the behavior, monitoring of emotional consequences, feedback on behavior, instruction on how to perform a behavior, information about health consequences, social support (unspecified), and social comparison’ from Michie et al.’s (2013) taxonomy.

Engagement is therefore pursued, according to this view, not as an end in itself, but as a means to securing long-term real-world behaviour change. The app's evident participation in the engagement economy is pragmatic, permitted by the habit-centered epistemology of behaviour change theory, which also happens to be a convenient framework for revenue models that depend on habitual usage. The emphasis on 'use value', however, is not a pretence, if not for the value propositions that promise long-term change, then for the market dynamics that are themselves changing. As Joseph, the 'behavioural science evangelist' profiled in Chapter 4, notes, 'companies are realising ... when you just build for usage, to get people to engage with it more,' it no longer guarantees market success. 'You could use every behavioural science principle in the world to get that to be the most engaging, gamified, super fun application in the world' but:

As consumers, I hate to say consumers get smarter because that's not exactly what I mean, ... as the market gets more saturated with applications that are intending to provide weight loss, ... just as the market matures, people are looking for solutions that actually achieve what they want.

Attachments of Various Kinds

The behaviour change proposition, as it applies to software development, is to create products that equip users with rational agential capacities that they otherwise lack. The product is strategised, developed, and designed to become something that the user cannot do without, not because it is addictive, but because it is made indispensable to 'the distributed action universe' of the behavioural problem that it addresses, to borrow from Caliskan and Wade (2022). This starts with the assumption that, left to their own devices, people cannot act in their best interest or rationally: they prefer sitting on their couch and watching Netflix to getting up and going for a run. Once inserted into the 'actor-networks' and 'routines of actions' of the user, the product can create the capacities for acting rationally. To create an

enduring attachment, the actor-network is rearranged to turn usage of the product into a default behaviour for certain goals, to the point that user-consumers agree to pay for it (Callon 2017).

On the other hand, the behaviour change proposition is a productive critique of the attention economy and its predominant modes of production. It argues that lean, iterative, metric-driven frameworks are good for ‘finding something people will download’ but not for building ‘something that six months later they’ll still be using.’ Products that are designed to ‘hook users for X amount of time’ do not help users ‘actually achieve what they want.’ The behavioural approaches offer an alternative framework and set of devices that are oriented towards optimising the product for its purpose, to ensure long-term retention, over frequent engagement. Put differently, the aim is less to increase the frequency of interaction with the system, than it is to prevent a decrease in frequency and ultimately stopping. My choice of the word ‘proposition’ is intentional: a proposition is a promise heavy with performativity yet only partially fulfilled in practice. The attachment logic behind nudging agency is an idealised form, and so it is certainly hybridised with existing logics of engagement or growth. Furthermore, we encounter a pragmatic stance towards the engagement economy: while actors emphasise their interest in designing for long-term, sustained behaviour change, they do not refrain from using techniques typically understood as manipulative or addictive design interventions. Finally, in application, it is often hard to disentangle what is implemented for behavioural effectiveness, and what is to make the consumption object more engaging. The behaviour change techniques and engagement techniques often mix, overlap, and intertwine.

The point, however, is not to offer a different, yet likewise purified, account of attachment, as the alternative to the behaviour manipulation frame. Rather, the point is to show that multiple logics of attachment exist in software design, and their effects and

marketisation functions vary: pictures of beautiful people, with promises of quick weight loss, are examples of attachment devices, good for growing the userbase, bad for retaining them, as the interviewee suggested, it is a short-lived, fragile trick that requires a constant flow of more users. This is assuredly a market that tends to privilege high growth at the expense of retention, yet times might be changing. ‘As the market gets saturated’ with alternatives, neither short-term engagement nor lean, iterative models are suitable. A software product that fulfils a user goal and becomes the default for that goal now appears to be considered more effective.

A dynamic perspective such as this one is lacking in the manipulation thesis, which has a rather atemporal, unchanging view of the so-called surveillance economy’s extractive projects. Similarly, the mundane materiality of attachment, made palpable in the attempts to put the software on the home page, the hardware on the bedside table, is not captured in accounts that appear to be obsessed with mind control. Finally, and perhaps most importantly, the passive and powerless, ‘Zombie-like caricature’ of the user in these accounts is challenged, along with the predictability, intentionality, and potency of nudges and behavioural designs.¹¹⁸ The disengagement frame that this chapter proposed in its place, corrects the overemphasis on the power asymmetry while not ignoring that software designers mobilise ‘technique and sentiment’ (McFall 2014) to influence their users, as well as investors and the public, on the success of their inventions – although definitions of success might be more contingent than we take them to be.

¹¹⁸ The dominant critical position also fails to account for how different user groups relate differently to technologies. Please refer to Lenhart and Owens (2020) and Amrute (2020) for more on this point.

Conclusion

This chapter continued some of the underlying themes and arguments of the previous chapters and offered some new ones. Contextualising the behaviour change app proposition within contemporary cultural economies of software products, the analysis continued to draw attention to the affinities, alignments, and resonances between behavioural expertise, on one hand, and existing product and business development practices, on the other. While Chapters 4 and 5 noted how nudging works well with the agile, incremental, data-driven processes of optimising *existing* products, this chapter showed how well it works with the predominant ways of developing and monetising *new* products. Namely, the habit-based epistemologies of behavioural science are well aligned with business models that hinge upon repeat engagement; and the catalogue of biases can be a productive resource for expanding the feature space during the continuous differentiation of the product from the market alternatives. The theme that was unique to this chapter, though, was its attention to how behavioural experts and product developers approached and constructed users' agencies. Paying attention to how interviewees talk about users reveals that users are understood as prone to 'disengagement' while products are figured as mundane, material interventions into their daily routines that seek to create for them new capacities to act.

I now propose that the threat of declining engagement applies beyond just behaviour change products, and so does the idea of 'rearranging action routines' or 'creating new capacities to act' to dispel that threat. As Docherty (2020) observes, social media platforms embed a normative ideal of 'active usership'. In a telling example, in 2018 Facebook changed its newsfeed ranking algorithm to promote posts that are likely to prompt active engagement in the form of 'likes, comments and shares' and to demote passively consumed video content. While the company framed it as a 'sacrifice' to time spent on platform, the leaked Facebook papers show that active interaction was in fact *financially* meaningful to the company and

was a reaction to declining engagement rates. As the *WSJ* reports, ‘Comments, likes and reshares declined through 2017, while “original broadcast” posts – the paragraph and photo a person might post when a dog dies – continued a yearslong decline that no intervention seemed able to stop, according to the internal memos. The fear was that eventually users might stop using Facebook altogether.’ (Hagey and Horwitz 2021) Promoting active engagement is a key business goal also for rising platforms, such as TikTok, named in 2021 ‘the app of the moment ... the app of the future ... the new Facebook’ (Stokel-Walker 2021), and speculated to ‘beat Facebook in time spent in 2025’ (Lebow 2023). As its ‘Global Head of Music’ says, ‘we are a platform that is about music engagement – not *consumption*. Whether that’s views, creations, Likes, or shares. It all mixes together in this kind of new form of fandom.’ (Ingham 2021)

Beyond the particularities of the different market strategies of each platform, let us consider what their shared insistence on active usage tells us about the nature of our interactions with platforms. Chapter 3 noted how the cultural frame of ‘human-machine addiction’, proposed by Schüll (2012), became highly influential in our understanding of ‘repeated interaction’ with machines beyond those that are built for gambling. Key to Schüll’s framework was the idea of ‘the zone state’: a state of ‘inactivity’, or rather of ‘active passivity’ (Hennion and Muecke 2016), in which all deliberate action and thought is suspended. While platforms do similarly create ‘enclaves’ of active passivities, as the Facebook and TikTok examples show, users are more often ‘pushed to act’ on the platform, to like, comment, share, or explore (as Lüders [2021] notes in relation to music streaming platforms). The platform ‘requires the active participation of the agencies involved’, Callon (2021) observes; users are active agents who ‘search, test, try, negotiate’ in this dynamic ‘exploratorium’ (p. 221). The platform ‘acts and makes act’. But, also importantly, it makes

actors ‘continue’ to act ‘with’ the platform; as examples in Chapter 4 showed, users are nudged to *continue* using the platform in the various social activities that they pursue, finding work, booking travel, placing ads and so on. Just as in the case of behaviour change apps, becoming ‘indispensable’ to the accomplishment of these routine actions, rather than becoming a vehicle for inaction, might explain better how platforms foster repeated interactions.

Chapter 7: Conclusion

Getting Rich and Getting Sued

Behavioural economics has had a difficult start to the 2020s, in stark contrast with the decade that came before and marked the field's seemingly unstoppable rise to prominence and popularity. The most recent controversy that struck the field has as its protagonists, the Data Colada blog dedicated to replicating behavioural science research and Harvard economist Francesca Gino who made a brief appearance in Chapter 4 as the author of 'Uber Shows How Not to Apply Behavioral Economics' published in *Harvard Business Review*.¹¹⁹

As The Harvard Crimson reported on November 28, 2023:

Gino — an HBS professor renowned for her research into dishonesty — was accused of committing data fraud by a series of blog posts this June by Data Colada. That same month, Harvard revoked her named professorship and placed her on administrative leave, and in July, she was notified that her tenure was undergoing review for potential revocation. On Aug. 2, Gino sued Harvard, Datar, and Data Colada for \$25 million in damages, accusing them of colluding to defame her and destroy her career and reputation. (Parker 2023)

That Gino researches dishonesty contributed an additional layer of newsworthiness to the case, while the 'ironic twist in the world of behavioral science' (Yang 2023) was twisted yet again: Gino was not the only behavioural economist accused of data fraud or data manipulation. 'They studied dishonesty. Was their work a lie?' reads the headline of a thought-provoking *The New Yorker* article published in the wake of the scandal (see Lewis-Kraus 2023). Alongside Gino, the Data Colada trio and the whistle-blower Zoe Ziani, the article profiles Dan Ariely – the other target of multiple academic misconduct allegations, the latest concerning his highly cited study on car-insurance and honesty pledges, based on 'a

¹¹⁹ Adam, the behavioural economics consultant, mentioned Gino's article to explain that 'Whatever an outsider believes, it was not the case that [Uber's] Behavioural Econ Lab had any impact on actual product decisions.'

field experiment with an insurance company in the southeastern United States’ (in a paper co-authored with Gino and Bazerman, the author of *The Power of Experiments* from Chapter 5). Ariely is a much more prominent figure than Gino, with tighter links to the industry and the Valley. He has also been one of the main characters in our story as the different chapters have alluded to his involvement with various platform companies.

In addition to his consulting work in Silicon Valley, Ariely was the ‘Chief Behavioural Officer’ of Lemonade, the insurtech start-up that was ‘betting big that behavioral economics will give them an edge over incumbents’ (Harris 2017). An honesty pledge signed at the beginning (rather than at the end) of the claims process was one of the innovations that the disruptor used to ‘build a stronger system of trust’ to continue processing claims as fast as ‘in just 3 seconds’ with which it ‘won itself headlines’ in 2017 (Harris 2017; Andorsky 2020). In 2021, the study that the design intervention was based on would be retracted after a separate Data Colada investigation found ‘strong evidence that the data were fabricated’ (Miller 2021). In 2023, the insurance company in the original study made a statement saying the ‘small pilot study’ completed back in 2007 had not found a ‘discernible difference between those who signed at the top and those who signed at the end’ and ‘the company never updated its forms, as Ariely had claimed’ (Lewis-Kraus 2023).

The Gino-Ariely case was not the only nor the biggest controversy that behavioural scientists have had to reckon with. Since I started observing the behavioural expertise network, it was already going through a large ‘replicability crisis’, which had reached its crescendo around 2017-2018 with the rebuttal of ‘the core findings of the field’ (Hreha 2018, 2021). These were ‘loss aversion’ and ‘priming’. A few years later, an audit of the studies cited in 11 chapters (out of 38) of Daniel Kahneman’s best seller *Thinking Fast and Slow* showed a general lack of replication with ‘the priming chapter’ being ‘the worst’ ‘with an R-

Index of 19’ implying there is very low chance of replication.¹²⁰ Kahneman ‘accept[ed] the basic conclusions of this blog’ although, as he emphasised, ‘(1) without expressing an opinion about the statistical techniques it employed and (2) without stating an opinion about the validity and replicability of the individual studies I cited.’¹²¹ Reviewing some other evidence that showed ‘actions can be primed’, he further added: ‘A case can therefore be made for priming on this indirect evidence. But I have changed my views about the size of behavioral priming effects – they cannot be as large and as robust as my chapter suggested.’ (idem) Along with the replicability crisis came an influential meta-study on the effectiveness of nudges (see Mertens et al 2022), which showed that, according to a commentary, when ‘publication bias is appropriately corrected for, no evidence for the effectiveness of nudges remains’ (Maier et al 2022).

The “‘do nudges work?’ debate’ (Hallsworth 2022), as it is now called by insiders, attracted mixed reactions from the private sector arm of the expertise network. Some prominent figures, like Jason Hreha, an early collaborator of Dan Ariely at Irrational Labs, and the former Head of Behavioural Science at Walmart, were ready to abandon the project and announce ‘the death of behavioral economics’, advising all those interested in influencing human behaviour, practitioners and clients alike, to ‘stay clear’ of the subfield (Hreha 2018).¹²² By contrast, Rory Sutherland, Vice Chairman of Ogilvy UK and former president of the IPA, rebranded the replication crisis as a ‘replication opportunity’, reminding the scientifically-minded that business thrives from the speculative nature of market

¹²⁰ <https://replicationindex.com/2020/12/30/a-meta-scientific-perspective-on-thinking-fast-and-slow/> accessed February 2024.

¹²¹ <https://replicationindex.com/2017/02/02/reconstruction-of-a-train-wreck-how-priming-research-went-of-the-rails/comment-page-1/#comment-1454> accessed February 2024.

¹²² It appears the hype around ‘Generative Artificial Intelligence’ is more impactful in pulling practitioners out of behavioural expertise than the controversies within the field itself. On LinkedIn, I see that many of the interviewees are now ‘integrating AI into business’.

experimentation and the ‘slightly contradictory’ principles of persuasion: as ‘an old saying in the ad industry’ goes, he says, ‘there are “two ways to sell a product: you either tell people that very few people own something, so it must be good, or you explain that lots of people own that thing so it must be good.”’ (Sutherland 2018).

There were others who continued the ‘speculative pragmatism’ of the ‘ad man’¹²³ (some directly responding to Hreha with blog titles such as ‘Is behavioral economics dead? We don’t really care.’), and those who resorted to enhancing the originally ‘predictive pragmatism’ of nudge theory. As Pedwell (2017) explains in comparing nudge with traditional American pragmatist thought, while both share an emphasis on the importance of habits and environmental fixes to behaviour change; they part ways on how calculability and temporality factor into their epistemologies. Unlike the speculative, responsive, open to the unexpected and the unintended logic of Dewey et al, nudge theory is rigid, calculative, predictive, actionable (e.g., Halpern 2015). It was not surprising then that a common response among nudge theorists was to promote methodological literacy when judging which findings to use, that ‘some studies are more valid than others’ – and there is reason to avoid studies of ‘celebrity behavioural economists’ incentivised to oversell their results (Halonen 2022, 2023). The field more generally had to come to terms with the overselling or stretching of concepts like ‘loss aversion’ to apply to contexts other than the ones they were discovered in (see especially Halsworth 2023). Richard Thaler, in an interview when asked about the replication crisis, responded that the *specific* effects that he and colleagues discovered in *specific* contexts continued to replicate: ‘Buying and selling prices are different. That, I’m calling loss aversion.’ (Nesterak 2021)

¹²³ As Rory Sutherland calls himself in his TED Talk from 2009, ‘Life lessons from an ad man’, which attracted 3.5 million views, at https://www.ted.com/talks/rory_sutherland_life_lessons_from_an_ad_man?language=en accessed February 2024.

As many have noted, however, ‘concept stretching’ and ‘ambiguity’ had been strategically deployed in upholding a persuasive ‘frontstage identity’ for nudge theory ever since Thaler first proposed the idea with Sunstein (Selinger and Whyte 2011; Feitsma and Ball 2021). (And one would be hard pressed to deny the role of ‘meme-able’ studies of Ariely and Gino in its spread in the private sector [Mastroianni 2023; Halonen 2023].) The public defences of behavioural expertise, on the other hand, were revealing the messy ‘backstage’ where it is necessary that practical judgement is exercised to assess the appropriateness of a tool or to finetune the intervention for the context. They were revealing, in other words, ‘the necessary overflows’, in Callon’s phrase, without which ‘it would not be feasible to add value locally’ (1998, p. 255). Publicly accepting the realities of innovation, however, was bound to have consequences for the tightly upheld coherence of the nudge frame.

The most damaging blow that nudge theory received to its public image, however, was the Covid-19 pandemic and the policy responses to it. It was David Halpern, the CEO of the now private Nudge Unit and advisor to ‘What Works Network’ on evidence in policymaking, who would first propose the highly contested notions of ‘herd immunity’ and ‘behavioural fatigue’, ‘for which he was widely blamed as soon as it became clear that such a strategy would come with disastrous health consequences’ (Feitsma and Whitehead 2022 p. 162). Halpern’s statements had implications beyond his individual self, bringing into the mainstream ‘a common critique of behavioural economics: some (not all) members of the discipline have a tendency to overclaim and overgeneralise’ (Sodha 2020). To distinguish themselves from the tainted nudge, Susan Michie, health psychologist and expert advisor to the UK government, publicly opposed it in April 2020, with a tweet that said: ‘Nudge is a particular group of techniques. Not = behavioural science. Behavioral economics is not behavioural science. “Behavioural fatigue” is not a scientific term & did not come from

SAGE behaviour sub-group made up of behavioural scientists.’¹²⁴ Even renowned behavioural economists were accepting that ‘the movement lost its way’ and needs to change its focus from ‘the i-frame’ to ‘the s-frame’, that is, to frame policy problems in systemic rather than individual terms (Chater and Loewenstein 2022). This would be picked up by a *Financial Times* commentary published with the headline, ‘What nudge theory got wrong: Is behavioural public policy a distraction from finding systemic solutions?’ (Harford 2022).

Vibrating Nudges

Considering this recent series of events, we might wonder how nudge theory has ever become so successful. Of course, critics of nudge had long been attracting attention to the questions that behavioural economists have only now discovered, denouncing the neoliberal and ‘neo-individualist’ tendencies of nudge for placing the blame on the individual (Berndt and Boeckler 2016) while explaining its success with reference to how it ‘coincided with the global financial crisis’ of 2007-8 (Davies 2019; Gane 2021). Alongside these ‘big picture’ analyses, ethnographic studies of nudging in particular contexts, in policy making (Ball and Feitsma 2020; Strassheim, Jung and Korinek 2015), international development (de Souza Leão and Eyal 2019, Brooks 2021; Schmidt 2021), markets for electricity (Grandclement 2019), insurance (Tanninen, Lehtonen and Ruckenstein 2021) and financial products (Kear 2018; Hayes 2021), showed how nudge’s local success depended on its mobilisation of a ‘standardised package’ of specific technologies that ‘immunised its individual components from challenges’ and provided a coherent ‘frontstage identity’ (Ball and Feitsma 2020, p. 571 drawing on Fujimura [1992] and Goffman [1959]) and a network of various actors and

¹²⁴ At <https://twitter.com/SusanMichie/status/1254350405166862337> accessed February 2024. Michie is also the author of behaviour change techniques framework mentioned in Chapter 6, and the head of the UCL Lab that senior designer David listed as an important centre of behavioural expertise, in Chapter 3.

devices necessary to conduct RCTs and evaluations (de Souza Leão and Eyal 2019), or simply improving citizens' experiences with online government services through making them more responsive and agile (John 2018).

This thesis contributed to these explorations with a study of how behavioural expertise *became locally meaningful and useful* in practices of product development and marketing across the platform economy. In explaining the spread of the behavioural network, Chapter 3 began by describing the discursive groundwork that B.J. Fogg and Nir Eyal laid for behaviouralist approaches to take hold and identified the different socio cognitive aspects of nudge theory that allowed it to become the dominant approach. These were the portability of the heuristics-and-biases framework, the justificatory and sensemaking functions of dual process theory, and the multi-scale concept of behaviour. These features made it easy and desirable for professionals in various business domains to clothe themselves in behavioural expertise. And they were particularly well-aligned with the ongoing trends of datafication and platformisation in software production, distribution, and consumption, which turned real-time user feedback and testing into a key device for product developers. As the platform economy 'matured' (Kenney, Bearson and Zysman 2021) the well-aligned tools of behavioural experts continued to create their appeal for platform companies, as explored in Chapter 4. They also appealed to other clients looking to optimise a variety of digital marketing touchpoints (websites, ads, and other marketing campaigns), as explored in Chapter 5. In addition, the uniquely behavioural economic problem of 'hyperbolic discounting' gave rise to a new product proposition, 'the behaviour change product', whose habit-based epistemologies had affinities with business models predicated on repeat engagement. Chapter 6 detailed how behavioural expertise adds to the value proposition, participates in the continuous differentiation of products in markets with low barriers to entry (Stark and Girard 2009), and

ultimately constitutes a distinct sociology of market attachment that seeks to engage the ‘always almost disengaged’ user.

However, my case was different from studies of behavioural expertise in other contexts in one important way: in the platform economy, behavioural experts did not initiate but rather participated in the already ongoing nudging and behavioural experimentation. Nudging was not a specialised technique, or a ‘standardised package’, that moved into the field from the outside. Rather it was an emergent effect of the existing technical, organisational, and cultural economy arrangements that reinforced incremental and testable changes to the products of the platform economy. In fact, it was only a small fraction of all online nudging that can be linked to behavioural economic *theories, methodologies, findings, or actors*, despite frequent connections made in the press or by the network itself.

Chapter 3 showed that as early as with the first apps that Fogg’s students developed for the Facebook Platform, the device of ‘usage and growth metrics’ was more active in guiding product and design decisions than any technique derived from ‘the psychology of persuasion’. Furthermore, the actors attributed their apps’ success in engaging large numbers of users, to ‘the viral engine’ of the platform and its social network, instead of any purposive application of behavioural theories. Chapter 4 built on these insights to show that small, incremental, and testable changes were in fact the product of a combination of predominant product development frameworks, primary evaluation devices within the organisation, and the organisational structure. Following behavioural experts into platform companies, this chapter identified product optimisation cycle as a key work process, described its different stages and presented some of the issues that interviewees identified with metric-driven optimisation in which A/B testing played a central role. In Chapter 5, the rise of A/B testing and online experimentation was traced through the changing technical, cultural and market

arrangements; including the increased availability and decreased cost of behavioural data, the emergence of new digital advertising markets and the associated issues of misattribution, the proliferation of experimentation middleware vendors, and the concerted efforts of industry leaders to build experimentation infrastructures within large platform companies. These developments, the chapter argued, have resulted in a generalised business discourse propagating an ‘experimentation imperative’ across organisational fields. While the behaviour change products that Chapter 6 focused on were a sociotechnical niche in which behavioural theories played the most active role, the nudges here as much resulted from agile programming activity and product differentiation by expanding the feature space, as they were in service of behaviour change.

It could be argued, however, that platform nudging has contributed to the durability of the nudge proposition despite occurring independently of behavioural theories. Especially if we consider how *the relationship* that nudge theory describes between small interventions and large effects *is brought into being* by platforms that have billions of users and an incremental product development system in place. I am purposefully using the language of ‘performativity thesis’ (MacKenzie 2004) to suggest that while nudge theory is not ‘performed’ by these market practices in which, as this thesis argued, it has limited practical use, it is possible that the theory is ‘amplified’ through a reality that emerged independently of it but ‘vibrates’ at the same frequency. These could be termed ‘vibrating nudges’, as an addition to the list of critics Selinger and Whyte who already in 2011 warned about ‘fuzzy nudges’ and ‘mistaken nudges’ that citizens should be aware of when ‘consider[ing] critically whether they should support ‘alleged’ nudge policies proposed by governments, corporations, and non-profit organizations’ (p. 924). They referred to circulating nudge examples that did not conform to core precepts of nudge theory, because they prohibited options, or because

they changed costs associated with the action and therefore did not ‘work with cognitive biases’. Indeed ‘working with a bias’ was crucial for something to ‘count as a nudge’. Platform nudges, the most striking examples in the current ‘nudge theory in action’ literature (see e.g., Chataway 2021; Wendel 2016; Luca and Bazerman 2021), do not necessarily ‘work with biases’ either; as this thesis showed, their designers are pragmatic (if not agnostic) towards what exactly it is that they work with – biases, incentives, calculations, prohibitions, something altogether different or nothing discernible at all. This is normal as they result from ‘data-driven’ product development and experimentation.¹²⁵ And yet regardless, these vibrating nudges of the platform resonate, possibly more forcefully than their fuzzy, mistaken or even true counterparts, contributing to the durability of the nudge proposition.

From Surveillance Capitalism Towards Practical Arrangements

Surveillance capitalists adapted many of the highly contestable assumptions of behavioral economists as one cover story with which to legitimate their practical commitment to a unilateral commercial program of behavior modification. (...) The result is data scientists trained on economies of action who regard it as perfectly normal to master the art and science of the “digital nudge” for the sake of their company’s commercial interests. For example, the chief data scientist for a national drugstore chain described how his company designs automatic digital nudges that subtly push people toward the specific behaviors favored by the company: “You can make people do things with this technology. Even if it’s just 5% of people, you’ve made 5% of people do an action they otherwise wouldn’t have done, so to some extent there is an element of the user’s loss of self-control.” (Zuboff 2019, p. 295)

We may have come to it at the end, but it all started with *The Age of Surveillance Capitalism*.

Shoshana Zuboff’s high profile volume is one of the ‘big picture’ ‘sociological imagination’ books ‘that commanded public as well as academic debate’ while not being written by a sociologist – a category that Mike Savage and Susan Halford (2017, p. 1135) construct from similarly celebrated ‘Thomas Piketty’s *Capital* (2014), Robert Putnam’s

¹²⁵ Although the opacity of practices continues to invite explanations – behavioural explanations included; e.g., ‘How Amazon, Netflix and Google use behavioral science to simplify the user experience’ (Chataway 2021).

Bowling Alone (2000) and Richard Wilkinson and Kate Pickett's *The Spirit Level* (2009).¹²⁶ I am taking the liberty to add Zuboff to the list – not only because the book has been on bestseller lists as long (and as surprisingly for a book of seven hundred pages – just like Piketty's volume whose density was noted by Savage [2021]), one of the largest distribution networks, Netflix, produced a docudrama based on its premise and featuring the professor herself (Lu 2020), while it enjoyed a wide take up in policy and civil society circles (I first came across the book at Amnesty International's headquarters through a poster on the wall).¹²⁶ In their 'review of reviews', Jansen and Pooley (2021) observe that the book 'has attracted an unusually large number of reviews: over sixty to date, appearing in both academic journals and popular print outlets, with one review running to 27,400 words (Cuéllar and Huq, 2020) and another 16,500 (Morozov, 2019)' (p. 2840). The authors continue to point out, 'But there was nothing typical about the debut of Zuboff's book, nor its promotion. It was a publishing event, complete with international book tour and major media coverage. The volume was almost immediately translated into multiple languages.' (idem)

Why has Zuboff commanded public attention so forcefully? I borrow once again from Mike Savage, who explains the success of the 'inequality' programme constellating around Piketty, by drawing attention to 'a huge public demand from large audiences trying to make sense of the rapidly changing world they were living in' (2021, p. 11). 'Platforms', have similarly, as Koray Caliskan puts it, 'caught societies and social scientists off-guard' (2020, p. 196). Our daily lives changed rapidly as we started *doing everything* on platforms – 'access information, watch movies, listen to music, read books, shop for all kinds of products, archive documents, and find partners ... get a ride, book travel, support a cause, order food,

¹²⁶ The hosts of public book talks include United Nations, European Parliament, OECD and UNESCO, according to the events page of Zuboff's personal website at <https://shoshanazuboff.com/book/events/> accessed February 2024.

or finance a project ... housekeeping, home repairs, medical advice, legal or accounting services, or lectures on any kind of topic?’ (Stark and Pais 2020, p. 48)¹²⁷ – while witnessing them transform into the largest and wealthiest companies day by day. Zuboff was offering an explanation ‘to make sense’ of these changes, of how we got trapped in platforms, albeit with claims that elicited quite a sensationalist sociology.

Indeed, a frequent critique that the book received was that it did not release us from platforms’ grip, on the contrary, trapped us further in political inaction. It did so by drawing attention away from, for instance, monopolistic concentration and new forms of antitrust that circumvent traditional theories of consumer harm, towards which activism could be more practically channelled (Doctorow 2020). It presented a criticism that Big Tech *could live with* (Vinsel 2021) or even refute: Facebook/Meta’s response to *The Social Dilemma* justly pointed out that the film ‘buried substance under sensationalism’ and ‘rather than offer a nuanced look at technology, it gives a distorted view of how social media platforms work’.¹²⁸ The tech giant’s attempt at an STS-type critique is certainly dwarfed by the burgeoning literature on how different end-users, from consumers to gig workers, influencers to advertisers, act with platforms, the emergent character of which cannot be explained away by ‘economies of action’ (see respectively Ramizo 2021; Ferrari and Graham 2021; Cotter 2019, MacKenzie et al 2023).

This thesis sought to contribute to this literature although following a slightly different direction to foreground ‘the everyday work realities’, ‘the actual practices’ or ‘the pragmatics’ of the kinds of activities that Zuboff groups under the term ‘behavior modification’. Her interviewees seem to lend support to this framing, even though what exists

¹²⁷ It is indeed a recurring motif in the literature, to count all the different everyday things people nowadays do on platforms.

¹²⁸ At <https://about.fb.com/wp-content/uploads/2020/10/What-The-Social-Dilemma-Gets-Wrong.pdf> accessed February 2024.

of a description in the above paragraph from ‘the chief data scientist’ about the design of ‘digital nudges’ is not practically very different from those described in this thesis, despite striking a radically different tone and leaving some inconvenient details out. By attending to product optimisation work as it unfolds at the organisational level in Chapter 4, tracing the material discursive construction of online experimentation in Chapter 5, and closely listening to product designers’ efforts to engage users who resist in Chapter 6, this thesis spent more time trying to understand how platform actors have come to say things like ‘you’ve made 5% of people do an action’ and what they meant by that. As such, the analysis sought to reframe these practices as ‘normal commercial practice’ – and not as ‘distinctive cultural, psychological, or signifying technologies’ – to borrow from Don Slater’s (2011) reframing of the previously mystified marketing practice.

Calling it ‘normal commercial practice’ is not to normalise it or take it outside of critique’s purview. On the contrary, Slater (1989, p. 29) argues, its purpose is to challenge viewing ‘consumption and material provision’ as ‘essentially private affairs’ and reveal their role in defining material cultures, producing and reproducing forms of life, calling attention to ‘the different logics by which this process can be carried out’. This thesis at its core was animated by this older research programme on advertising, marketing, and consumer culture (Lury and Warde 1997; McFall 2004; Nixon 2009; Slater 2002a, 2002b) that sought to end ‘the enduring fascination not with *advertising* but *advertisements*’ to open up space for studying practices and practical arrangements (McFall 2004, p. 2, emphasis in original). Consequently, a different kind of critique sprang into action from these studies – one that is not oriented ‘simply to accept or reject advertising on the basis of proven powers and “effects”’ but ‘of institutional arrangements which define needs and cultures in terms of instrumental rationality oriented towards profit’ (Slater 1989, p. 129). That the logics of our

‘entanglements’ with material things (Hodder 2012) and things of ‘intangible materialities’ (Dourish 2017) are set outside of collective deliberation and within private commercial settings is even more pressingly true with platforms and platformised consumption. We could, for instance, question if we want products that are subject to continuous, compulsive, opaque processes of optimisation. Agile programming and constant nudging raise serious questions regarding data privacy (Gurses and Van Hoboken 2017), and they are also quite ‘irritating’. And as Ruckenstein (2023) insightfully argues, low intensity feelings of ‘irritation’, ‘nuisance’ or ‘discomfort’ against algorithms can be a productive source for ‘an emerging form of social critique’.

Ultimately, this thesis marks a new space for a sociology of platform economies that empirically studies the problem of ‘how platforms move the actions of people who buy, sell, consume, work on them.’ This space is adjacent to the richly populated sociologies of platform labour, platform financing, platform epistemologies. (And in close proximity to digital sociologies of how platforms intersect with ‘everyday life’, ‘social institutions’ or ‘embodied selves’ [Daniels and Gregory 2016; Carrigan 2017]). But rather aligned with the sociology of markets (Callon 2021), its subject matter is ‘the understated loop that practically defines markets’ that is ‘what buyers/consumers do with products, what sellers/producers do to find this out and then what they do to products in response’ (McFall and Deville 2017, p. 112). What sellers/producers, and in our case, platform owners and a host of other platform professionals (advertisers, app developers) do is work (Cochoy and Dubuisson-Quellier 2013). This market work is accomplished in organisations (Ossandon and McFall 2014), and in organisations accounts of its worth are exchanged, decisions are made, habits are reinforced, dissonance is experienced, and creative action springs (Stark 2009; Gross, Reed and Winship 2022). Therefore, to understand ‘the engineering of’ *platformised* ‘attachments’

(McFall et al 2017), this sociology foregrounds the organisational, technical, epistemic, cultural, financial, in short, practical arrangements and the sociomaterial organisation of the work of engineering attachments, designing interactions and prompting actions. This thesis offered but one example, by focusing on nudging, a type of work routinely performed in the platform economy to move action; but my hope is that it gestured at new avenues to explore as much as it traversed some.

Can sober accounts of everyday work realities capture public attention as forcefully? Perhaps we can count on the ‘slightly contradictory’ principles of persuasion and trust that accounts *demystifying* how platforms work will be equally compelling.

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