

**FROM ‘PUBLISH OR PERISH’ TO SOCIETAL IMPACT:
ORGANISATIONAL REPURPOSING TOWARDS RESPONSIBLE
INNOVATION THROUGH CREATING A MEDICAL PLATFORM**

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Acknowledgments: We thank *Patient Innovation* for allowing us generous insights into their organization, and honest reflections on their journey. We are also indebted and grateful to the individuals of patients, families and non-professional caregivers allowing us a glimpse into the reality of affected by a rare disease or other sicknesses by sharing with us their personal stories and experiences. We thank Woody Powell, Chiqui Ramirez, Marc Ventresca, Renate Kratochvil, Gorgi Krlev, Georg Reischauer, and Robin Schnider, for discussions and comments on earlier manuscripts, and seminar participants at Stanford University, University of Oxford, WU Vienna and University of Sussex, and the JMS R&R Workshop in Paris, France in October 2019, EGOS-track on Responsible Innovation in July 2020, and the Virtual Academy of Management in August 2020.

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ABSTRACT

Why would an academic project incentivised towards scientific publications be repurposed to become a medical platform for responsible innovation? *Patient Innovation*, a non-profit medical platform that focuses on the sharing and dissemination of innovations to find solutions for rare and chronic diseases, was initially set up as an academic research project. However, team members reframed their core purpose from conducting research on user innovation to providing global access to these innovations and creating societal impact. Using a framing lens to understand organisational repurposing, we illuminate how serendipitous inspiration, moral emotions and the power of socially conscious users and catalysts drove this emergent reframing of core purpose and develop a model of organisational repurposing. We show how a frame drift towards a change in purpose occurs spontaneously in interactions, as actors frame and reframe situations and feel inspired and morally motivated to transcend their immediate self-interests and serve collective goals.

Keywords: framing, grand challenges, moral emotions, responsible innovation, serendipity

*Never doubt that a small group of thoughtful, committed citizens can change the world.
Indeed, it's the only thing that ever has.*

Margaret Mead

Chance favours the prepared mind only.

Louis Pasteur

INTRODUCTION

Why would an academic project incentivised to produce scientific publications be repurposed to become a non-profit medical platform pursuing responsible innovation for social impact through disseminating affordable patient- and caregiver-led solutions for rare diseases? More broadly, how and why may an organisation repurpose itself towards a goal that it has no direct incentive to pursue?

Healthcare is a grand challenge (e.g., Ferraro, Etzion and Gehman, 2015) and one of the United Nation's key Sustainable Development Goals (SDGs). Although on average, people live healthier lives today, many still die from preventable diseases. One culprit is the *demand-driven* focus of the pharmaceutical industry, which makes costly investments in high-margin treatments for 'rich men's' problems while neglecting commercially unattractive rare and 'poor men's' diseases (e.g., malaria) (Austin and Dawkins, 2017; United Nations, 2018). As 'market failures' have shown, markets do not necessarily yield societally beneficial innovation (Kucukkeles, Ben-Menahem and von Krogh, 2019). The 2020 pandemic exposed the fragility of our healthcare systems and the innovations we prioritise, as even cutting-edge innovations could do little to stop the coronavirus.

While some businesses are shifting towards socially responsible practices (Friedland and Jain, 2020; Girschik, 2018) and a range of social enterprises have emerged, some social innovations are still not 'responsible' in terms of achieving socially desirable ends (Hess and Warren, 2008; Owen et al., 2013). Indeed, social innovation studies have largely stopped short of assessing social impact, focusing on specific stakeholder benefits rather than overall societal impact (Barnett, Henriques and Husted, 2020). For an innovation to be considered responsible, it needs to meet three key criteria: (1)

innovation avoiding harm, (2) innovation to ‘do good’ and (3) responsible governance (e.g., Scherer and Palazzo, 2011; Voegtlin and Scherer, 2017). While stakeholder pressures have pushed some companies towards attending to the societal impact of their innovations (Georgallis and Lee, 2020), we still know little about what may prompt organisations to repurpose towards creating collective-oriented societal impact despite being neither incentivised nor under external pressure to do so.

To understand such organisational repurposing, we draw on framing literature (e.g., Goffman, 1974) which explains how social reality is not objectively given but is ‘framed’ by interested actors (Blumer, 1971) and, thus, is amenable to being re-signified (Snow et al., 2014). A framing lens provides insights into ‘major shifts in organisational or societal behavior’, particularly into the ‘processes that initiated the change and propelled its amplification’ (Purdy, Ansari and Gray, 2019, p. 416). Even though framing is an inherently interactional process, many studies focus on the strategic deployment of well-crafted frames to persuade audiences and achieve intended goals (Benford and Snow, 2000, p. 614), rather than on their emergent production and use in social interactions (Gray, Purdy and Ansari, 2015; Lee, Ramus and Vaccaro, 2018). Few studies have examined spontaneous frame shifts enacted at the *organisational* level and how situational interactions and spontaneous occurrences may foment such shifts (Reinecke and Ansari, 2020).

To understand the reframing of organisational purpose towards responsible innovation (RI), we conducted an inductive, qualitative study of *Patient Innovation*, a non-profit medical platform comprised of academics and doctors. The organisation ‘aims to create a knowledge commons for patients and nonprofessional caregivers to share knowledge and disseminate innovative solutions to medical care-related problems through an online platform’ (Oliveira, Zejnilović and Canhão, 2017, p. 301). Before the inception of *Patient Innovation*, a group of academics had been studying user innovation in healthcare. Over time, they repurposed their original core goal of producing scientific publications for

professional career advancement and created a social platform that provides global access to affordable ‘homemade’ user-driven solutions to rare diseases. As creating social impact became the organisation’s core mission, it put academic research on the backburner despite pressure to publish.

We offer three contributions to the literature on frames, RI and innovation, respectively. First, we explain how an organisation not set up to pursue RI unexpectedly reframed its mission during interactions with its audiences to pursue RI and meet all three of its dimensions (e.g., Khavul and Bruton, 2013; Voegtlin and Scherer, 2017) despite professional disincentives. While such reframing is often attributed to disruptive jolts or pivotal events (Meyer, 1982), social movement activism (Georgallis and Lee, 2020) and strategic actions (Zald, 1996), we draw on an interactional framing lens (Gray et al., 2015) to show an emergent and spontaneous process of ‘drift’ precipitated by unanticipated contingencies (Portes, 2000). Following Snow and Moss (2014), we highlight the importance of ‘spontaneity’ as a salient but neglected aspect of shaping the course of change that is often predicated on strategic and ‘overly-organised’ conceptions.

Second, we provide a model depicting how framing in social interactions (Goffman, 1974; Gray et al., 2015) produces an unanticipated frame drift towards organisational repurposing. We derive three mechanisms underpinning such a drift that induces an organisation to embrace RI and explain both halves of the dyad – responsibility and innovation. Specifically, we show 1) how ‘serendipitous inspiration’ makes room for ‘happy accidents’ (Dew, 2009) and triggers creative behaviour; 2) how moral emotions prompt questions of right and wrong (e.g., Haidt, 2003; Klein and Amis, 2020) and reorient people from the pursuit of self-serving actions towards espousing a collective cause; and 3) how the power of socially conscious users and catalysts precipitate such drift.

Third, we shed light on the power of the platform model for RI through which user communities produce and disseminate important innovations in commercially unattractive realms. The

democratisation of the innovation process by users is well established (Chesbrough and Bogers, 2014; von Hippel and von Krogh, 2003). We extend this idea to show how an innovation platform (Gawer and Cusumano, 2002; McIntyre and Srinivasan, 2017) connects fragmented but socially conscious users and enables the scaling of responsible innovation (Logue and Grimes, 2019; Yoo et al., 2012) to collectively address a grand challenge, where innovation occurs *with* the users rather than *for* the users.

THEORETICAL BACKGROUND

‘Grand challenges’ such as poverty, pandemics and climate change – often termed wicked problems (Rittel and Webber, 1973) – pose formidable challenges for humankind. Organisations can address such challenges through innovation – ‘the generation, acceptance and implementation of new ideas, processes, products or services’ (Thompson, 1965, p. 2) – specifically RI (e.g., Scherer and Palazzo, 2011), to make progress towards achieving the UN’s SDGs (Voegtlin and Scherer, 2017). Scholars have urged businesses to reorient themselves towards achieving these goals (Doh, Tashman and Benschke, 2019; Hess and Warren, 2008; Voegtlin, Patzer and Scherer, 2012) and even business schools to reframing their purpose of business education (Friedland and Jain, 2020). However, organisations continue to pursue self-serving innovations that do not benefit society.

While traditional approaches to corporate social responsibility (CSR) have attended to the sourcing and manufacturing aspects of innovative processes, their broader effects on people and the environment have received less attention. Even well-meaning social innovation can end up harming target audiences, such as the Fairtrade certification’s disenfranchisement of smallholder farmers (Reinecke & Ansari, 2015). Indeed, many social innovations do not meet the criteria of being ‘responsible’ and creating a positive societal impact (Barnett et al., 2020).

RI is broadly defined as ‘a collective commitment of care for the future through responsive stewardship of science and innovation in the present’ (Owen et al., 2013, p. 36). The idea is to prioritise

the social and ethical aspects of innovation in terms of how they affect safety, health, privacy and related values in society. Two different models explain firms' engagement in innovation (Voegtlin and Scherer, 2017; von Hippel and von Krogh, 2003). Under the 'private investment' model, organisations innovate for economic benefits and produce private goods based on a 'knowledge protection' regime. Under the 'collective action model', innovation is geared towards producing public goods based on a 'knowledge sharing' regime. While learning and reputational benefits are incentives to engage in collective action (Scherer and Palazzo, 2011; Voegtlin and Scherer, 2017), it is less clear how organisations shift from self-serving activities towards striving for the collective benefit of society.

The growth in social enterprises and changes in business practices represent progress towards making innovation processes more responsible (Owen et al., 2013; Scherer and Voegtlin, 2018). Triggers to shift organisations towards 'moral markets' include social movement activism and policy changes (Georgallis and Lee, 2020) that prioritise 'intentional actions taken by leaders to benefit the stakeholders of the companies and/or actions taken to avoid harmful consequences for corporate stakeholders and the larger society' (Stahl and Sully de Luque, 2014, p. 238). However, we need to learn more about how an organisation engaged in self-serving activities may unanticipatedly repurpose to pursue RI. Assessing such repurposing is vital to understanding the role of spontaneity in interaction and to avoiding the 'excessive voluntarism' (Steinberg, 2002) implied by purposeful accounts.

A Framing Lens to Examine Frame Shifts towards Responsible Innovation

A framing lens that can explain shifts of purpose in societies, fields, and organisations (Cornelissen and Werner, 2014; Gray et al., 2015) provides useful insights into how an organisation may reorient its core activities to target social causes. To frame is to 'select some aspects of a perceived reality and [...] to promote a particular problem definition, causal interpretation, moral evaluation, and/or treatment recommendation' (Entman, 1993, p. 52). Frames have often been conceptualised as

intentionally crafted ‘action-oriented sets of beliefs and meanings’ (Benford and Snow, 2000, p. 614) that can be manipulated by people to persuade audiences. However, such a ‘strategic’ perspective tends to privilege outcomes over processes and intentions over interactions (Reinecke and Ansari, 2020). While past frames create norms and expectations that guide behaviour, participants do not perfectly reproduce previous frames. Instead, situations present opportunities for people to ‘spontaneously’ rather than premeditatedly (re)construct meanings (Snow and Moss, 2014) and deviate from their goals.

While scholars have illustrated the use of discursive strategies to explain frame shifts in individuals, organisations and fields (e.g., Ansari, Wijen and Gray, 2013; Heimstaedt and Reischauer, 2019), more recent work points to leveraging emotional mechanisms to trigger frame shifts, such as invoking morally charged issues, shocking images and narratives (Giorgi, 2018; Voronov and Vince, 2012). Efforts to create moral resonance and spur support for a cause may involve purposefully invoking emotions such as empathy, guilt and righteous anger (Jasper, 2011). For example, in their study of conflict minerals, Reinecke and Ansari (2016) illustrate how NGO activists successfully roused emotional resonance for their cause to induce businesses to accept responsibility for a grand challenge (armed conflict). Similarly, Klein and Amis (2020) show how the shocking image of a migrant child lying dead on a beach in Turkey stirred emotions that radically transformed the framing of the European migration crisis. Changes in frames may occur through evoking emotions that cause a shift towards attending to moral causes as the ‘right’ thing to do (Wendt, 2001). However, while emotions may be leveraged as purposeful tools to create frame resonance (Giorgi, 2018), they are not necessarily purposefully invoked (Hallett, 2003; Reinecke and Ansari, 2020). Instead, they may be situationally produced in interaction to bind participants to a new frame and precipitate change.

In sum, emotional mechanisms may induce unanticipated frame shifts that induce people to pursue societally beneficial activities beyond their self-interests. Frame shifts may emerge through

situational experiences (Furnari, 2019) and arise unexpectedly (e.g., Austin, Devin and Sullivan, 2011; Dew, 2009). Can this be attributed to pure luck and the fortuitous circumstances of being ‘in the right place at the right time’ (Tilly, 2008), or to a sense of preparedness and readiness to change that enables opportunity recognition. As emotions connect people to social problems (Goodwin, Jasper and Polletta, 2001), either through their commitment to values or their compassion for a cause (Grimes et al., 2020), they also precipitate such frame shifts towards RI. More broadly, we ask how and why an organisation reframes its self-serving core purpose for the benefit of the wider collective.

RESEARCH CONTEXT

Case Selection and Research Site: *Patient Innovation*

We conducted an inductive case study at *Patient Innovation*, a non-profit organisation that shares solutions and ideas for managing personal health issues related to rare diseases. Officially incorporated in 2014, *Patient Innovation* hosts an information-sharing innovation platform that promotes healthcare solutions developed by patients and informal caregivers. *Patient Innovation* began in 2011 as a research project in which academics sought to study user innovation with no intent to create a platform, let alone a non-profit organisation with a social mission. However, inspired by the results of their research on user innovation, the academics scaled the project significantly in a short period. Shortly after the project’s commencement, patients, non-professional caregivers and collaborators from more than 60 countries had submitted more than 850 solutions. Today, *Patient Innovation* is a multilingual platform that encourages people from all over the world to post, share, discuss and evaluate solutions, advice and adaptations for improving the lives of people affected by rare diseases. Numerous distinguished individuals support the platform, including Nobel laureates Sir Richard Roberts and Aaron Ciechanover, as well as renowned academics from MIT, UC Berkeley and NYU who serve on the platform’s Advisory Board. The medical conditions vary from genetic disorders, such as Angelman

syndrome malaria, and Alzheimer’s disease. They also vary in technological sophistication, from ‘small’ technological inventions to codes for 3D-printed prosthetic hands (see pictures 1 and 2).

INSERT PICTURES 1 AND 2 ABOUT HERE

Patient Innovation has received many awards and gained recognition for its efforts to develop a sharing platform that addresses SDGs 3 and 9. Commendations include ‘Non-Profit Startup of The Year’ in 2016, being named one of five projects that serve as an example of ‘Commitments to Collective Action’ at the ‘Summit on Science and Technology Enablement for the Sustainable Development Goals’, and recognition by the UN’s former Secretary-General Ban Ki-Moon.

This organisation and its industry offer a fertile setting to study RI and the repurposing of an organisation that had no intention of becoming a social organisation. First, *Patient Innovation* provides the rare opportunity to access and observe the creation of such an organisation from the very beginning. Its relatively small size, young age and the unplanned shifts it has experienced enabled the undertaking of an in-depth study. Second, the healthcare industry is characterised by a strong impetus for profit-oriented innovation, where RI is less common. Third, while we have no financial relationship with *Patient Innovation*, we obtained rare access to a non-profit social platform that successfully addresses societal problems in an industry characterised by market failures.

Data Sources

We chose an inductive case-study design and relied on a broad range of data sources (see Table I), including interviews, internal documents and non-participant observations.

Semi-structured interviews. We conducted 49 semi-structured interviews (45 to 180 minutes in length, 64 hours of audio data) with the founders, staff members, board members, caregivers and patients, including those who upload home inventions, and active users of the *Patient Innovation*

platform. Drawing on industry knowledge derived from prior web research, we asked open-ended questions regarding the sharing platform’s establishment, management and governance, and the challenges and opportunities it faces. All interviews were transcribed verbatim. We also conducted a follow-up interview with one founder in 2020 to discuss the tension between the pressures for publishing and creating societal impact.

Archival and internal documents. Before entering the field, we collected publicly available data, such as website content, industry reports, press articles and medical articles about medical innovations. We also collected founder interviews conducted before 2017. Furthermore, *Patient Innovation* generously allowed access to confidential documents (e.g., funding presentations, strategic activities, grant applications). When available, we added the document’s timestamp when referring to internal documents (Tables I and II).

Non-participant observations. Following our initial round of interviews, the first author conducted non-participant observations in 2018 by attending meetings and presentations by *Patient Innovation*. She also spoke with them in informal settings and sought clarification about topics that emerged during the interviews or from internal documents.

INSERT TABLES I AND II ABOUT HERE

Data Analysis

We used an open-ended and inductive analytical approach (Corbin and Strauss, 2008) following a processual lens (Langley, 1999). First, we created a database to which we uploaded all material gathered from the various data sources and used qualitative analysis software (NVivo) for further analysis. At the outset, we were intrigued by how the group publicly admitted that they established *Patient Innovation* ‘only by accident’ and that ‘it wasn’t planned but simply happened’. This admission sparked our interest

in how an academic group with a strong focus on publishing reframed their purpose to set up an NGO. As the first step, we developed an event history database (Van de Ven and Poole, 2002), in which we developed a ‘visual map’ – a timeline of important events and activities. We wrote a detailed narrative of *Patient Innovation*’s development, strategic initiatives and motivations for change. As the second step, we relied on ‘temporal bracketing’ (Langley, 1999) to delineate different periods within the organisation’s history and considered developments before it became an NGO. We searched back to 2008, when the ground was laid for the organisation’s emergence. In line with interpretive research (Lincoln and Guba, 1985; Scherer, 2003), we constructed a timeline of key events to which we attached memos if further clarification was needed. This procedure helped us to prepare for interviews. We paid attention to the purpose and timing of different data sources to address potential biases in retrospective narratives (Golden, 1992). To reduce such biases, such as presenting a ‘socially desirable image’ (Miller, Cardinal and Glick, 1997, p. 189), we followed Huber and Power’s (1985) guidelines and used ‘follow-up probes’ to ensure that our interview questions were understood.

We noticed that perceptions of *Patient Innovation* as an organisation changed significantly over time and that members highlighted the ‘serendipity’ dimension in both the archival data and the interviews. For example, from archival documents, we could see how, in 2008, members applied for formal grants to engage in research on ‘user innovation in the health industry’. However, in the interview and internal documents, they often expressed ‘surprise’, that ‘this wasn’t planned’ and that ‘one thing led to another’ when asked about past events and the beginning of *Patient Innovation*. For example, members described the survey result of ‘8% of patients innovating novel medical solutions’ as a ‘revelation’. Members often described how this ‘opened their eyes’ and affected them emotionally. We paid close attention to how group members described these events, such as ‘spoke to my moral side’. Consulting the existing literature, we noticed that few studies examine the role of ‘moral

emotions' (Haidt, 2003), 'serendipity' and 'surprising discovery' (e.g., Busch, 2020). We observed and systematically investigated different occurrences of what members described as 'lucky coincidences' and 'surprises', but also how members experienced such instances and what they described as 'morally uplifting' and 'motivational'. We noticed that the group's focus changed over time as they began to question the purpose of their activities.

In the next step, we followed well-established approaches to studying framing dynamics. Drawing on the work of Gray et al. (2015), we noted that interactions in a situation encompass multiple levels of analysis – that is, interactions among individuals, groups, organisations and fields. Plotting our data into different temporal phases enabled us to identify linkages between the research frame and the 'drivers' of change (mechanisms) that led to the diminishment of the core research frame and the ascendance of the peripheral societal-impact (responsible innovation) frame. We drew on Weber's (2006) notion of social mechanisms describing patterns at an analytical level above description and below universal laws (Gross, 2009; Hedstrom and Swedberg, 1998), much like what Langley (1999) refers to as 'process drivers' (p. 904). The frequent and explicit use of the terms 'moral feelings', 'responsibility', 'luck' and 'patients and caretakers' facilitated the selection of passages in texts. We then categorised the *in vivo* codes, which served as the basis for subsequent comparative analysis (Locke, 2001). For example, noting several codes around 'feeling empathy' towards those affected, the moral obligation to help, and the urge to 'do the right thing' pointed to 'moral emotions' as a key mechanism of change. Similarly, we identified 'serendipitous inspiration' through codes pertaining to the 'surprising occurrence' and 'a wow accident,' and the 'power of users and catalysts' through codes related to 'an opportunity of a lifetime', 'immersive encounters', and going beyond the 'call of duty.' This referred to patients, professional caregivers and influential individuals such as Nobel Laureates. These mechanisms were key drivers in strengthening the 'societal-impact' frame (Table III).

INSERT TABLES III ABOUT HERE

We used axial coding to discover relationships among the categories. We consistently compared our informants' reports discerning differences across time and groups and iterated between data and literature to generate theory-driven second-order categories. In the final step, we assembled different pieces into a process model describing frames (circles), key mechanisms (big arrows), and their influence (small arrows) on the existing core frame in each of the four phases. We tracked the initial emergence of each mechanism and identified key moments in its evolution and enactment. It became apparent from the analysis that mechanisms play a different role and vary in salience across the four different phases. For example, while serendipitous inspiration was necessary at the beginning of their endeavour to recognise the opportunity, the power of users and catalysts and moral emotions became more salient in later phases. We continued to plot these observations (Langley, 1999) to identify links between the mechanisms and frames over time. This process led us to identify their role in the ascent and descent of the two frames, e.g., enabling and impeding (phase two), fuelling and dampening (phase three), and prioritising and de-prioritising (phase four). The core frame became side-lined, and a peripheral frame became ascendant. We call this process a frame drift. We discussed our findings with members of the research group to increase confidence in our analysis.

FINDINGS

From Self-Serving 'Publish or Perish' to Collective-Serving Societal Impact

How is organisational purpose framed and reframed as people interact in different situations? Our case shows how moral emotions, serendipity and the power of socially conscious users and catalysts play a role in the ascendance of a non-profit platform towards sharing and disseminating knowledge for people in need. This gradual drift in organisational purpose occurred in different phases related to key

events. We describe the ascent of the ‘societal impact’ frame and the side-lining of the ‘research’ frame in these phases and identify distinct mechanisms that underpin the gradual frame drift.

Phase I: Focus on research. In early 2011, a research group comprised of researchers from different institutions was awarded a large research grant to follow up on their previous research and publications in the field of user innovation and study ‘user innovation in the healthcare sector’. The group members had already worked together on research on user innovation in banking. Inspired by his stint at MIT, Pedro, an assistant professor, applied for a prestigious grant to continue this research trajectory and build his academic tenure case. With this goal in mind, the group also hired a PhD student to join the project and write his dissertation on the topic. The project’s goal was clearly to produce research output that could lead to publications in top tier journals. Despite the group members being at different stages of their academic careers and different institutions, they were all playing the ‘publish or perish’ game (Interview 12). This phrase refers to a popular alliterative aphorism in academia that describes the pressure to publish papers to succeed in academia (Case, 1928). As one team member noted,

We all adhered to the publishing game. More papers published, more bonus, more recognition, more citations, less teaching, bigger research budgets, more TAs.... Two more 4* to get to the next career step.... Incentives are very clear in our system. (Interview 14)

The research group shared a strong research focus, their predominant frame, giving only peripheral importance to the societal impact of their academic research, even amidst increased calls for dissemination and ‘impact’ at universities. We describe how this peripheral frame became a core one over time as the research project evolved.

Phase II: A ‘surprising’ finding (the 8%). After getting the research grant, the team conducted studies on health solutions for patients by drawing on research on user innovation. The group surveyed over 500 patients with rare diseases and their caregivers to explore what drives

patients to develop and share solutions. Notably, 40 participants in the study, or 8% of the sample, reported engaging with innovations that were evaluated as novel by two medical professionals. These results were ‘pivotal’ for the shift in trajectory. In the words of one team member:

[We] always strive for significant results, meaning p is below 0.05, but our results from the survey were more than this. They were significant, statistically speaking, but they [the results] were more than simply significant; they were mind-blowing when thinking of the magnitude and opportunity. (Interview 11)

The group was ‘surprised’ by and ‘intrigued’ about the potential of their project but, at the same time, ‘less certain what to expect’ (Interview 14). In one team member’s words, ‘We were looking for A, but this A had such a magnitude that was wow. It was a Pandora’s box because we didn’t know if our results would hold true when looking further at the phenomenon.’ (Interview 11) However, team members had high stakes in producing publishable research (e.g., tenure packages and a PhD dissertation). Despite the critical importance of the research project for his dissertation, the team’s PhD student, who was hired on the basis of the research grant, stated that:

Looking at the data... I mean it was like realising that whatever we could potentially do would probably have more impact than anything else I could do as a PhD student. This was very powerful. The thought of empowering patients. The people who are already disadvantaged. (Interview 35)

The narrative around the 8% played a pivotal role, as members often referred to this percentage in their comments; for example, ‘Thinking of this consequence that actually 8% in our study are affected was fascinating’ and ‘we must talk about millions’ were recurring sentiments. This awareness planted the seeds to transform the dominant frame of conducting research based on a ‘self-serving’ interest, such as fulfilling tenure criteria, into one that could help people with rare or chronic diseases. As stated in an internal memo:

If anything like this fraction of innovators holds for the overall population of hundreds of millions of people worldwide estimated to be afflicted by rare diseases, patients and their caregivers may be a tremendous potential resource to improve management and care for many who are similarly afflicted. (Internal Document 110)

The recognition of the 8% allowed members to increasingly see their research findings in a broader societal light, beyond the need to ‘publish or perish’. The research frame began to lose some of its allure. Inspired by the initial results of their studies on user innovation in healthcare, the team became motivated to further investigate the topic in a follow-up study. They discovered not only the ‘surprisingly’ high percentage of patients innovating and its positive impact on their quality of life, but also that only a tiny fraction of the patients who developed these novel solutions were effectively sharing their discoveries with other patients: 89% of innovators acknowledged that they had shared their solutions with other patients, whereas 37% stated that they had shared their ideas online, such as on websites, blogs or social networks. However, only 5% of those patients were actively discussing their solutions with medical doctors or documenting their innovations for future use (Internal Document 739, follow-up study). These results confirmed the team’s previous hunch about a significant opportunity associated with the 8%. This confirmation is further underlined by the statistics of the European Organisation for Rare Diseases (2005): 5,000 to 7,000 distinct rare diseases exist, and 6–8% of the European Union’s population is affected by at least one rare disease. The team’s knowledge of healthcare and their experiences working in the medical industry made them aware that this discovery had ‘gigantic’ implications; they knew that Big Pharma engages in R&D with ‘big profit margins, high demand and many people affected by a disease’ (Interview 12) and ‘has no or very little incentive to look at small batches such as rare diseases’ (Interview 22).

Phase III: Influential support and direct encounters with affected people and their solutions. Inspired by the results of their studies, which were not only ‘surprising’ and ‘something nobody expected’, but also spoke to the emotional sides of the research group, the group’s interest in the project was amplified. External feedback and encounters with others also contributed to the increasing importance of ‘societal impact’ (Internal Document 474, 2012). Pedro revealed this

sentiment when he described encountering a Nobel Laureate scientist after he had presented the team's initial results regarding the 8% at a conference. As Pedro notes in a presentation,

After I had [made the] presentation, there was a guy. I had no idea who he was. So, he wanted to talk to me, and he said, 'You made a very interesting presentation, but it is also very obvious you are not a medical doctor... But I could help, and I could probably contribute with some of the medical knowledge you don't have, and I could even invite some friends to help you'. And I was like, 'Who the hell is this guy?'...but then he finally told me, '... And, by the way, this is my email. my name is Richard Roberts, and I got the Nobel Prize for Medicine, and I was thinking that I could even bring along some of the other Nobel Laureates. I mean, we call ourselves Nobel friends, and we could eventually help as well'. And, you know, suddenly I start paying attention. And you know, yes, these guys were extremely important for what happened afterwards. (Field note)

Such encounters with influential individuals were 'very motivational' (Interview 35) and the support of individuals such as Sir Richard acted as a 'catalyst' in moving the team away from a sole research focus. Personal and immersive encounters with those affected also contributed to the team going beyond the 'duty of a research project', as they evoked compassion and empathy. For example, the research group interacted with people who had unique stories about remarkably innovative solutions but had not shared them. One example is the collaborative development of the 'Robohand' by a carpenter from South Africa, who had lost parts of his hands, and a hobby puppeteer from the US. Also, a personal encounter with Tal Golesworthy, who became an avid supporter of the project, marked an important moment for the research group:

We did more and more research on the topic, and came across stories such as that of Tal Golesworthy, who was a trained engineer who told himself he needed to find a solution "because this is just a plumbing problem". This plumbing problem Tal referred to is when your aorta is dangerously expanding and the aortic root becomes weak and dilated, which is also known as Marfan syndrome...I mean it's simply beyond impressive. So, the question at hand was really, is it really just publishing out of this project, or is there more? (Interview 12)

Team members began to question their purpose when confronted with such encounters, describing them as 'revelatory', 'deeply moving' and drawing 'deep admiration, awe and respect':

Once you hear a handful of stories of those people who were initially surveyed and what they had to go through, one simply cannot treat this as any research project. Behind each case,

behind each participant, there is a very personal story of pain, suffering, and fate.... In the personal contact with them you get so much insight about their personal misery and how the health industry fails them, and no solutions or medicine [are] available for their condition and they are sort of on their own. (Interview 29)

Drawing on such encounters, actors described their feeling of empathy towards patients and their families, as well as disappointment that their innovative solutions were not being shared more widely, especially considering Big Pharma's neglect of people with rare diseases. However, despite the power of such stories and encounters, it was not an easy decision for the group to shift their focus. After all, the academic incentives for career advancement are 'pretty clear on what gets you to the top' (Interview 11). However, the commitment by influential people like Sir Richard encouraged them to shift towards the societal impact of their research. Pedro noted that he frequently sought advice from Sir Richard, who, instead of simply answering his questions quickly via email or phone, changed his travel plans to spend time in person with the team in Portugal:

I asked Sir Richard Roberts a question on a certain topic but instead of answering well the question, he simply said, 'How about I come by in Portugal and visit you and then we talk?'.... This kind of commitment by him but also others was simply wow.... Beyond what one could ever expect. (Interview 10)

Also the involved PhD student described this encounter with Sir Richard in Portugal as pivotal, when he took the time to speak with the PhD student about his dissertation, and, more specifically, about a Portuguese boy, Goncalo, diagnosed with Angelman syndrome (under-developed motor skills). Joaxina, Goncalo's mother, filled helium balloons to encourage Goncalo to get up to grab the balloons and walk by himself.

I reported this [reference to Goncalo] to Sir Richard Roberts; I was surprised how he seemed genuinely interested and fascinated. His very positive feedback and engagement was very important. This talk was very inspiring – this positive feedback from a Nobel Laureate winner who, in the same capacity, was also a person directly affected by a family member afflicted by a similar disease and who could hence relate to my findings. (Interview 35)

The enthusiastic support of influential Nobel Laureates and encounters with caregivers and affected people stirred members of the research group as they came to realise the tremendous implications of their research beyond academia. According to Pedro, ‘There was a moral obligation to consider our findings thoroughly’ (Interview 10). Continued engagement and the increasing realisation of its impact inspired further changes in how the team viewed their research, even though ‘tenure criteria didn’t change or requirements to finish a PhD dissertation by our institution’ (Interview 10). The team’s PhD student on the project admitted that, ‘A lot of time I should have been doing stuff for my dissertation, but instead I spent my time doing background information searches on rare diseases, and what that means for those affected’ (Interview 35). In particular, the innovative power of the community of users and catalysts, as well as their moral calling, helped strengthen their resolve to serve the community directly, beyond papers and publishing. This realisation generated emotional energy for team members to focus on creating impact.

Phase IV: A failed experiment turning into a platform. In the following months, the team sought ways to further probe into the problem identified in the data. Several patients developed novel solutions that improved their lives, but only a fraction engaged in the wider diffusion of these solutions. The team agreed to investigate the willingness of patients to share their solutions on an online platform. As illustrated in an interview:

In an experiment in 2014 we realised was that there are a lot of people interested in sharing. More specifically, we created a platform to share what they did. We advertised this with many patient associations internationally – everywhere from Australia to the US. (Interview 10)

Based on the team’s previous efforts to recruit patients and caregivers from diverse backgrounds and countries, people started to participate rapidly and enthusiastically, beyond the team’s expectations. However, in building the experimental design, the researchers had inadvertently not implemented a cap on the number of participants, which is typical in the design of experimental studies. Without

such a cap, ‘several thousand started to participate and were all of a sudden sharing their experiences and solutions’ (Interview 09). As one team member reflected on the ‘failed experiment’:

Having my researcher hat on, it was simply wrong of us that we didn’t put a limit on the number of participants on the platform. We did not take into consideration that we should administer the number of participants needed for an experiment. But exactly this lack of a cap or limit was one of the keystones of what *Patient Innovation* is today. (Interview 22)

As the quotes show, participation ‘far exceeded’ the group’s expectations, and they ‘were simply overwhelmed by the ideas and commitment that patients and caretakers actually have’ (Interview 16). They noted that, ‘It was clear with this reaction what the right thing to do [was].’ (Interview 13).

Because ‘thousands of users were active and uploading and sharing their ideas’ (Interview 10), the team began to investigate how to turn a ‘failed experiment’ into a full-blown sharing platform to serve patients, and moved away from pure research (Internal Document 145, 2014). Pedro noted:

In a way, it became a problem for my life because I wasn’t planning to do a platform or manage an NGO. [...] Without it [*Patient Innovation*], I would probably spend my time differently. Maybe more papers, more publications.’ (Interview 10)

According to Pedro, academic publishing took a backseat. Prioritising ‘societal impact’ entailed defining the platform’s ‘terms and services’ to help society. Partly sensitised by their research on user innovation, as well as by their experience as medical doctors, the team was confident about specific platform attributes – that is, it was open and offered free access (Internal Document 98, 2014).

However, there were many obstacles to the design and governance of such a platform. For example, it was important that the ‘platform [be] international, multilingual, open, and free for use by patients and caregivers with any disease’ (Internal Document 230, 2014). The organisation determined that a ‘decision should be made about *who* could contribute content, *what types* of content could be contributed, and *which* contributed content would be displayed’ (Oliveira et al., 2017, p. 318).

Given their medical background, the team recognised the importance of doing this responsibly. Prioritising ‘societal impact’ entailed a focus on responsible governance by creating new

norms for the sharing platform, such as the ‘do no harm’ principle of RI: a minimum standard of humanitarians and doctors when treating patients and avoiding *inadvertent* harm. This focus was important in determining which solutions and devices to include and share (Internal Document 753, 2015). Many sharing platforms did not screen participants, let alone perform reliable medical reviews of submitted proposals. The team implemented a comprehensive medical review process to assess proposals before they could be posted on the platform – a distinct feature compared to medical platforms that upload ‘just anything’ (Internal Document 168, 2014). One team member stressed the moral responsibility of such a review process: ‘It was super important that we get this right. Only imagine if one patient gets this solution from our platform, and then something bad happens’ (Interview 13). Each solution had to be evaluated by a team of medical experts in the field to verify that it was safe for use by other patients.

The organisation was aware that providing a ‘sustainable knowledge commons’ could be achieved ‘based on our fundamental commitment to openness and free peer-to-peer sharing’ only (Interview 11). Hence, the organisation decided to structure itself as a non-profit by ‘only taking small portions [of money] from many’ (Interview 09). One respondent noted that, ‘to stay independent, we never really take a lot of money from one institution’ (Interview 15). The organisation maintained its independence by relying on public and private funding, including research grants and donations (Internal Document 95, 2015), and by ‘keep[ing] the commons governance free from conflicts of interest’ and ‘vested interests’ (Internal Document 89, 2015).

In 2014, in their first official newsletter as *Patient Innovation*, the group highlighted both the importance of moral emotions and the power of the community as a vital part in their development:

The invaluable endorsement of some truly amazing individuals, including Nobel Laureates Sir Roberts and Prof. Aaron Ciechanover, some of our most admired scholars, and many patients who suffer from chronic and rare diseases, fuelled us to do a bit more than we initially planned and to embark on building a global platform. (Internal Document 231, 2014)

Thus, between March 2011 and November 2015, a purely academic research project was transformed into a social platform. Today, the platform has more than a million clicks a year, with over 3,000 medically validated solutions and a growing international presence. The UN's former Secretary-General, Ban Ki-Moon, recognised the NGO, and it is now part of an international museum exhibition in 29 countries titled 'Beyond the Lab: The DIY Science Revolution' (Internal Document 320).

Today, while the group continues to run *Patient Innovation* as an NGO, they have not abandoned their interest in academia but do not see it as their core purpose. In a follow-up interview, Pedro stated:

Patient Innovation is a big part of my life. I use it often in teaching, and we have written a couple of chapters, too.... It [*Patient Innovation*] became a big deal. This was totally unexpected of what we planned in the beginning. (Follow-up interview with Pedro)

A MODEL OF REPURPOSING TOWARDS RESPONSIBLE INNOVATION

Based on our observations, we developed a model of how an RI frame emerges and congeals and the underlying mechanisms. Figure 1 presents our theoretical model.

INSERT FIGURE I ABOUT HERE

Everyday interactions can lead to a change in the core frame underpinning organisational purpose. In our case, the core frame – academic research – became peripheral and was supplanted by a new societal impact (RI) frame. We identify four phases and derive three underlying mechanisms that drive the emergence and expansion of a previously peripheral RI frame through a process of *drift*. 'Frame drift' describes an emergent and unanticipated frame shift in which a frame spontaneously emerges rather than being strategically deployed. We identified three mechanisms underpinning this drift that enabled both halves of the dyad of RI. In Phase I, the group had a core focus (Frame A) on academic research, while the 'societal-impact' (RI) frame was peripheral. In Phase II, the discovery and recognition of the 8% (serendipitous inspiration) enabled a shift towards Frame RI. In Phase III, direct

engagement with affected people, the support of influential actors, and the evocation of moral emotions strengthened Frame RI. In Phase IV, the group turned their failed experiment into a sharing platform and prioritised Frame RI, while side-lining Frame A despite institutional pressures to publish to advance their careers. We depict such a change with different-sized circles A and RI in Figure 1.

Mechanisms Underlying Frame Drift towards Responsible Innovation

The organisation's focus shifted from producing self-serving research and journal articles to establishing an innovation platform that served a societal purpose. Our analysis revealed that serendipitous inspiration, the power of socially conscious users and catalysts, and the moral emotions induced by their surprising and rousing findings led the academic team to reframe its core purpose.

Mechanism 1: Serendipitous inspiration. Inspiration is a motivational state that compels individuals to bring ideas into fruition and has three core characteristics: evocation, transcendence and approach motivation (Oleynick et al., 2014). Evocation refers to the fact that inspiration is stimulated by an idea, object or person, rather than wilfully initiated. Transcendence refers to gaining awareness of new possibilities that transcend ordinary concerns. Approach motivation refers to a compelling motivation to express and pursue the new vision (Thrash and Elliot, 2003). In Phase II, the surprising discovery that 8% of people had created novel medical solutions but did not share them shifted the team's attention away from pure academic research (Frame A) towards seeing their findings as 'inspirational' and from a different 'light of day' (Interview 11). However, inspiration may not arise through pure luck or careful planning, but through serendipitous events that precede inspiration, which requires flexibility and an 'openness to experience' (Thrash and Elliot, 2003) to make the most of surprises. Serendipity, defined as a 'search, with unintended discovery' (Dew, 2009, p. 735), is the 'distinct capability, namely that of recombining any number of observations... that appear to be meaningfully related' (Liu and De Rond, 2016, p. 434). It requires prior experience, previous skills, a

‘prepared mind’ (Pasteur, 1854; cited in Merton, and Barber, 2004) and purposeful action, but also favourable accidents that facilitate discoveries (Busch and Barkema, 2020; Dew, 2009). In our case, the core team members’ previous work in medical contexts had arguably primed them for such developments.

In Phase II, serendipitous inspiration played a central role as in enabling change, helping actors to recognise the discovery’s potential and ensuring that it could benefit more people in need. At the outset of the study, actors had no intention of creating a non-profit platform. However, their exposure to the non-profit sector increased the potential for opportunity recognition. Their growing realisation about the ‘bigger picture’ set off a fortuitous chain of events that eventually led to the emergence of a sharing platform. They realised that they were on to something much bigger than they had initially imagined. Hence, without the recognition that the ‘8%’ represents something novel and worth pursuing, *Patient Innovation* would not exist today, and the research findings would likely be confined to academic journals with limited readership, rather than benefiting the community at large.

Serendipitous inspiration is necessary for recognising alternatives and options, and to trigger innovative behaviours that deviate from established paths – in this case, academic research. Serendipitous inspiration is thus salient for the *innovation* aspect of RI. However, while serendipitous inspirations are part and parcel of innovation (Austin et al., 2011; Garud et al., 2011), they may not necessarily motivate actors to pursue RI, transcend self-serving interests and devote themselves to responsibly serving a collective cause in the absence of moral emotions.

Mechanism 2: Moral emotions. The second key mechanism is moral emotions, which amplified the potential impact of the project and generated the emotional energy (Collins, 2004) necessary for team members to transcend self-interest and pursue a collective cause. In both phases III and IV, team members described how empathy for those affected and their families, including

personal encounters, and the aspiration to share solutions with the wider community were pivotal in the decision to move away from a research focus. Take, for example, the mother of a boy without hands coming to the university and asking them to print hands for her child (see appendix). Direct and at times immersive engagement with affected people and their personal stories led group members to move away from their focus on ‘seeing them as numbers and pursuing statistical analysis’ (Interview 35) from a strictly theoretical point of view (Frame A) towards relating to them at a more personal level as fellow humans. These experiences led them to increasingly question their purpose and to develop a sense of moral obligation to consider the wellbeing of their research subjects.

Moral emotions are ‘emotions that are linked to the interests or welfare either of a society as a whole or at least of a person other than the judge or agent’ (Haidt, 2003, p. 853) concerning what is right and wrong or good and bad. They are ‘feelings of approval and disapproval based on moral intuitions and principles... the satisfactions we feel when we do and feel the right (or wrong) thing, such as compassion for the unfortunate or indignation over injustice’ (Jasper, 2011, p. 287). Accordingly, what actors perceived as ‘hard to ignore’ created strong moral considerations to engage in an ‘adventure which we usually wouldn’t embark on’ (Interview 12). Our analysis indicates how actors were intrigued by compassion, empathy and feelings of ‘what is right to do?’ (Fan and Zietsma, 2017), produced in interactions. The mechanism of moral emotions explains the *responsible* aspect of RI. Moral emotions direct the innovation behaviour towards addressing a collective cause with a sense of responsibility (e.g., ensuring proper vetting and governance of solutions), instead of engaging in self-serving activities geared towards career advancement or self-promotion.

Mechanism 3: The power of socially conscious users and catalysts. A third mechanism that played a crucial role in the emergence and expansion of Frame RI in phases III and IV was the support of socially conscious users and catalysts. In Phase III, a group of motivated users who had

devised creative solutions ‘at home’ further amplified the significance of their research findings (e.g., the Robohand and solving the aortic root problem by treating it as a ‘plumbing issue’). The support of influential individuals, such as Nobel Laureate scientists, was also a powerful driver in stepping away from a sole focus on research. This effect was further amplified in Phase IV, in which they turned the failed experiment into a sharing platform designed entirely to create a positive societal impact. Again, energised by the potential to have an impact and serve the collective, influential individuals served as catalysts to spread the word about *Patient Innovation* and set up responsible governance structures, including a medical review process for the uploaded solutions. These catalysts facilitated scaling up the platform and their public endorsements led to its global recognition. The sheer number of patients and caregivers, the enormity of their homemade solutions, and their overwhelming engagement in sharing their solutions fuelled their conviction to prioritise Frame RI and neglect Frame A.

The role of users in generating innovation, including ‘household innovation’, is well documented (e.g., von Hippel, 2005). ‘Lead users’ seeking solutions to their needs innovate ahead of manufacturers. Benefits for users come from *using* rather than *selling* products; however, in our case, the users were also socially conscious about the need to address a ‘wicked problem’ in healthcare. Users’ commitment spurred the research team to realise that their project was ‘not simply a research project’, but a ‘tool of immense societal potential’. Actors could not ‘simply go back to regressions’ or ‘write another paper for a conference’ (Interview 35), even though their commitment to a societal cause diverted the research group away from their goals.

In sum, the three mechanisms of serendipitous inspiration, moral emotions, and the power of users and catalysts can prompt a shift in the organisation’s core purpose. Our model illustrates the role of spontaneity in the ascent of Frame RI, which moved from peripheral (Phase I) to core (Phase IV), supplanting the previous core Frame A, which moved from central (Phase I) to peripheral (Phase IV).

DISCUSSION AND CONCLUSION

Our case shows how a serendipitous discovery and a hunch that ‘there has to be more’ encouraged a group of academics to shift from ‘publish or perish’ to contributing to society at large. We drew on a framing perspective to illuminate the process through which organisational repurposing occurs. We make three interrelated contributions to the literature on RI, frames and innovation.

First, we explain the emergent repurposing of an organisation towards RI (e.g., Khavul and Bruton, 2013; Voegtlin and Scherer, 2017) despite adverse institutional pressures. While external pressures such as reputational crisis, activists’ campaigns or regulatory mandates may influence strategic shifts towards RI, we document a spontaneous frame drift that emerged in everyday interaction marked by contingencies and indeterminacies in the process (Portes, 2000). While framing research has focused more on strategic actions where frame shifts follow a neat, means-ends rational narrative about how things got ‘from here to there’, we use an interactional and emotive framing perspective (e.g., Gray et al., 2015) to depict an emergent and serendipitous process that we call a ‘frame drift’. Stirred by the opportunities and moral emotions produced through interaction, actors begin to prioritise the societal impact of their innovation. Examining this emergent change matters, as failing to consider situational spontaneity (Furnari, 2019; Snow et al., 2014) and serendipity can make outcomes seem more voluntarist and determinate than they are (Reinecke and Ansari, 2020) and miss out on the influence of indeterminacies in the choices people make. By highlighting the importance of ‘spontaneity’ as a salient but neglected aspect of spurring change in organisational purpose, we do not preclude purposeful change. Instead, we call for less reliance on ‘overly-organised’ conceptions of change (Snow and Moss, 2014) and stress the need to acknowledge the role of spontaneity in organisational processes.

Second, for the literature on responsible innovation, we offer three fundamental mechanisms that enable a frame drift towards both halves of the RI dyad and, therefore, creative deviation from intended paths. The mechanisms are serendipitous inspirations, moral emotions, and the power of socially conscious users and catalysts. Many innovative processes involve serendipity and numerous departures from the intended course (e.g., Austin et al., 2011; Garud et al., 2018), but the role of serendipitous inspiration for *responsible* innovation remains under-specified. As Busch (2020) stresses, ‘the process of serendipity is often a prolonged journey rather than an isolated moment, and we need to have sufficient motivation and *inspiration* to stay focused to make it happen’ (p. 97, emphasis added). In our case, prepared team members reframed the situation at hand to embrace the vast but unrealised potential and the societal impact of their work. We also illustrate how the process is fraught with moral emotions associated with doing the right (or wrong) thing (Haidt, 2003; Scherer and Palazzo, 2011) that, in turn, motivate actors’ commitment to ‘engage in projective agency that focuses on taking collective action in anticipation of a potentially better future’ (Fan and Zietsma, 2017, p. 2323). Moral emotions enable actors to move from an egocentric model of innovation to an allocentric collective model (Voegtlin and Scherer, 2017). In our case, a ‘research’ frame based on self-serving scientific publications changed to a ‘societal impact’ RI frame. Finally, socially conscious users and catalysts committed to serving the wider collective propel such a shift. While the role of users in fomenting innovations ignored by industry is well documented (von Hippel, 2005), we depict the power of socially conscious contributors in collectively addressing a grand challenge.

Third, we add to innovation literature by highlighting the power of the platform model to harness the innovative power of a community of socially conscious users and catalysts. In doing so, we follow calls by Yoo et al. (2012, p. 1405) and Austin et al. (2011) to study the ‘accidental and serendipitous nature of innovations that are becoming more pronounced during the era of pervasive

digital technologies’. Platforms enable dispersed and fragmented users to connect and access solutions globally without the need for substantial infrastructure investments, and the value for each user increases as more users join. While the platform model has permeated a range of industries, in social platforms where profit-seeking is not the primary motive (Logue and Grimes, 2019), users may be even more driven to contribute solutions for collective benefit. Using platforms to channel the collective power of highly driven users with unique access to the need-related knowledge of social communities is a potent means of engendering RI. Such platforms democratise innovations by directly engaging the user community (Kucukkeles et al., 2019) and catalysts in innovation, where innovation occurs *with* the users rather than *for* them.

LIMITATIONS, BOUNDARY CONDITIONS, AND FUTURE RESEARCH AVENUES

As we draw on a single case study, our objective is not to subsume specific instances into general laws but to promote analytical generalisation (Siggelkow, 2007) by refining what is currently known (Tsoukas, 2009). The study has several limitations and boundary conditions that open up avenues for future research. First, a ‘research’ frame that focuses on producing knowledge in the form of scientific publications is not antithetical to a ‘societal-impact’ frame that produces knowledge for the common good. Given the criticism that research and impact are decoupled (Bromley and Powell, 2012), academic institutions have faced pressure to conduct socially relevant research and channel it towards societal impact (Doh et al., 2019). However, while their autonomy or the ‘freedom of enquiry’ may, at times, clash with the moral responsibility to conduct socially impactful research, the ‘search for truth’ does not transcend other human values. Yet, and as we observed, it is seldom that academics shift ‘wholesale’ towards serving the needs of communities they study at the expense of publishing. Future studies can examine how organisations frame their goals and how different frames co-exist, overlap, clash or harmonise at different levels – individual, organisation and field.

Second, frame shifts towards RI may not always require serendipity, and may be achieved through deliberate planning. Also, managers may be reluctant to admit serendipity, preferring to credit their deliberate strategies rather than 'luck'. Nonetheless, serendipitous inspiration is common in innovation (Pasteur, 1854; Roberts, 1989), as in the discovery of Post-it Notes, and in medicine development (Liu and De Rond, 2016). For instance, Pfizer's sildenafil citrate was meant to address hypertension but became the key ingredient in its blockbuster drug, Viagra. Yet, serendipitous innovations may not necessarily turn out to be responsible in terms of their impact on target audiences, and this aspect demands further attention.

Third, while our organisation was an academic research team, the insights from our case are relevant to scientific research institutes, incubators and even businesses. How do organizations with a 'goal-based purpose' (organization-specific) become 'duty-based purpose' (higher-order purpose that links to moral and ethical obligations) organization? (George et al., 2021)? As business innovations still need to generate profit, the motivations to pursue RI may differ in intent and identities. Also, a proprietary hold over knowledge may inhibit the production and sharing of societally beneficial innovations. However, inspirational events, moral callings and stakeholder support can precipitate even businesses to shift towards moral goals. External changes such as the rollback of the welfare state, ecological and social crises, and stakeholder pressures may prompt a moral calling and induce firms to reformulate their purpose. Similarly, disruptive shocks (e.g., the Covid-19 pandemic) may prompt 'soul searching' and prompt business leaders to revisit or reinvent their purpose. Internal drivers may also enable a shift in purpose towards a moral cause. For instance, change in purpose may be driven by organizational leaders who become inspired and morally committed to pursue social and ecological stewardship. Internal activists or 'tempered radicals' who 'identify with and are committed to their organizations, and are also committed to a

cause, community, or ideology that is fundamentally different from, and possibly at odds with the dominant culture of their organization' (Meyerson and Scully, 1995, p. 586) may also exert pressure on others to get on board toward the pursuit of moral causes. Consider an environmentalist working for an oil company or a moralist AI programmer at a tech company. Finally, organizations may be inspired by their user communities. 'Modes of organizing or new models of the firm' (Crane and Matten (2021, p. 283) that enable greater interaction with user communities may also inspire such repurposing to attend to social purpose. Future studies can examine how the mechanisms we identified are at play in both the external and internal drivers of organizational repurposing.

Finally, people may be so heavily entrenched in extant regimes that they find it difficult to shift. Consider the slow diffusion of open-access (OA) publishing to create a 'knowledge commons' (Suber, 2007), compared with closed (toll) access publishing. Toll access persists despite the societal benefits of open access. Professional pressure to publish in high-status journals, lack of familiarity with OA models and the reward and funding models have impeded open access (Thananusak and Ansari, 2019). 'Success' is thus not inevitable. The organisation we examined could have turned into a commercial venture with little commitment to social welfare. Mission drifts may also *derail* an endeavour away from social innovation. Future studies can focus on failures, where even promising innovation endeavours end up having little societal impact.

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Table I. Overview of Data Sources

Data type	Details
Interviews (49) and follow-up interview (1)	<ul style="list-style-type: none">• 49 Interviews from all hierarchical levels, and different levels of involvement and responsibility in the project: founder, team members, board members, platform managers, technical support staff, interns, supporters, <i>Patient Innovation</i> award recipients, patients sharing solutions and former employees. We conducted one informal follow-up interview. All interviews were audio-recorded and professionally transcribed verbatim.
Non-participant observations (30,5h)	<ul style="list-style-type: none">• Observations of strategy meetings, presentations given at public talks, panel discussions, and informal gatherings among group members discussing daily activities, which were recorded in detailed field notes.
Pictures (329)	<ul style="list-style-type: none">• Pictures covering <i>Patient Innovation</i> at presentations, talks and other events, innovations uploaded to the platform, and different ceremonies covering the period 2014–2019.
Internal documents (1023)	<ul style="list-style-type: none">• Access to internal documentation (e.g., reports, management summaries, grant applications, PowerPoint presentations to academic and non-academic audiences, statistics), findings from conducted studies within the scope of <i>Patient Innovation</i> across the years, all blog entries and newsletters covering the period, strategic projects for the future (e.g., establishment of awards and bootcamp), communication to stakeholders and anniversary handbooks, covering the period 2009–2018.
Videos (17h)	<ul style="list-style-type: none">• Recorded presentations to different funding bodies, external and internal events, and events such as <i>Patient Innovation</i> award ceremonies covering the period 2014–2019.

Table II. Representative Supporting Data

Aggregate Dimensions	Second-Order Codes	First-Order Codes	Selected Evidence
	Serendipitous inspiration	<p>Past experience and prior knowledge</p> <p>Opportunity recognition and the ‘prepared mind’</p> <p>Surprising occurrence</p>	<p>‘It was like a business opportunity, just in the wrong industry....’ (Interview 29)</p> <p>‘Chance of a lifetime to embark on this project. I was a student when I started working as a research assistant while finishing my master’s thesis.’ (Interview 22)</p> <p>‘<i>Patient Innovation</i> was an opportunity to have an impact as academics – an impact that academics can rarely have.’ (Internal Document 20, 2015)</p> <p>‘The opportunity was just there.’ (Interview 08)</p>
Mechanisms of repurposing	Moral emotions	<p>Feelings of sympathy and empathy towards patients and their families</p> <p>Moral obligations towards helping when in positions to do so</p> <p>‘Anger’ towards health industry for disregarding ‘rare’ disease/sole focus on profits</p>	<p>‘...I cannot describe it, other than stating that you become affected. It starts to affect you directly when you see that people could be so easily helped if solutions would be diffused. ...One feels so much empathy towards those affected; it is difficult to describe in words once you can see and hear those stories behind each single case.’ (Interview 35)</p> <p>‘A mother of a boy without hands came to our university. There was just no way of saying no to this lady. We had to figure out how to print 3D prosthetics by ourselves. ...I felt obligated and inspired at the same time. The possibility to have [a] positive impact was just breath-taking.’ (Interview 17)</p> <p>‘People were all over the world.... It was inspiring, captivating, deliberating, mind-blowing and simply impressive.... Other times, I was mad that nobody had helped them [patients] already.’ (Interview 2)</p>
	Power of socially conscious users and catalysts	<p>Caretakers and patients illustrate ‘immense’ potential of ideas</p> <p>‘Enormous’ engagement by patient groups</p> <p>Motivated individuals beyond the ‘call of duty’</p>	<p>‘The drive of the families is just breath-taking. They are in the worst possible situations most likely in their life [but], instead of giving up and [feeling] let down by society, they ask themselves: ‘How can I fix the problem of my son or grandfather?’ This is so powerful.’ (Interview 20)</p> <p>‘Moment you engage with them, one is just blown away by the sheer enormity of their individual ideas.’ (Interview 11)</p> <p>‘We advertised it, sort of, and, some instances later, our platform was full of solutions.’ (Interview 35)</p> <p>‘I walked into a meeting at BMW [with] a bunch of important guys super high up in Munich. I did my sort of standard presentation at this time about our research findings.... 10 minutes [later], I was called in, and they were on board [supporting the project financially].’ (Interview 10)</p> <p>‘It was astonishing to see how complete strangers, very accomplished people you think wowwww [emphasised] and they want to contribute to your [emphasised] project.’ (Interview 10)</p>

Frames	Research	Focus on research activities 'Publish or perish' Output-driven efforts	'I was on the tenure clock with a wife and kids at home. This was a very important time of my academic life, and it was clear that I needed to produce and deliver a research outcome.' (Interview 10) 'This grant application is based on a collaborative effort to build on previous research studying user innovation in the banking sector.' (Internal Document 209) 'Incentives in academia are clear at my institution. Within a timeframe of the next three years, it is to be achieved for the sake of the grant to show a considerable outcome.' (Internal Document 99)
	Societal impact (responsible innovation)	Focus on creating a collective good Norm-based and value-driven Focus on societal impact and positive impact	'It is our little tribute to making the world a better place. We simply connect people across the globe to diffuse their ideas.' (Interview 35) 'We changed our values.' (Interview 15) 'We have envisioned a platform that allows anyone to explore the world of patients, caregivers and collaborators who create solutions to overcome challenges presented by a health condition.' (Internal Document 256, 2014)
	Focus on research	'Publish or Perish' Acquiring a grant to research 'user innovation in healthcare' Putting together a research team	'This grant serves the purpose of producing research outcomes in the field of user innovation in the healthcare sector.' (Internal Document 27, 2010) 'We build upon the research that I did with Eric von Hippel at MIT and our published RP [Research Policy] on user innovation and the banking sector.' (Interview 10) 'With the grant money, we got a PhD [student] to write this dissertation based on the project.' (Interview 11) 'We brought people together to conduct research on user innovation in healthcare.' (Interview 10)
Frame drift	A 'surprising' finding (the 8%)	Surprising finding – 8% Inspiration from research results and potential for society Impeding research to enable exploration of societal potential	'There was something unusual about the findings.' (Interview 19) 'We did research, but the results just spoke a different language, indicating something far more interesting and strong implications which were not in line with the initial research we wanted to carry out.' (Interview 10) 'Something didn't fit and was not right about the findings.' (Internal Document 29, 2011) 'What are 8% but those [emphasised] 8%.' (Interview 35)

Influential support and direct encounters with affected people and their solutions	Finding ‘more and more’ powerful stories of affected patients	‘The purpose [of this meeting] was to ask ourselves, what is the essence of these findings?’ (Internal Document 120, 2012)
	Fuelling societal impact of research	‘Every time he goes back to his research paper in order to make it ready for publication, he cannot stop thinking about the opportunity thousands of patients are missing. The same thought crosses his mind all over again: <i>These people need to be linked to each other. Their knowledge cannot get lost</i> .’ (Internal Document 210, 2011; emphasis added)
	Dampening of research importance	‘We had people calling from the other side of the world, telling us their stories and ask[ing] if they could contribute. In the beginning, I thought, “I am not able to pay them or offer them jobs”, but they had no interest in jobs. They just wanted to help.’ (Interview 10) ‘I was supposed to write my dissertation on the data generated from the project... I never wrote my thesis on this project. The interest clearly shifted away from only publishing [to] being able to do more.’ (Interview 35)
Failed experiment turning into a platform	Prioritising societal impact over research	‘The platform is a project with potentially great social value.’ (Interview 35) ‘There was a need to create an online platform that made the diffusion of these solutions possible. And, from this, <i>Patient Innovation</i> was born.’ (Internal Document 256, 2014)
	De-prioritising research activities and instead focusing on a platform for good	‘The platform was great but simply not for an experiment.’ (Interview 35) ‘I could have published a lot more if we wouldn’t have gone down the road of actually making a sharing platform out of it.’ (Follow-up interview with Pedro)
	Establishing rules for running a platform responsibly	‘Establishing how we run and set up the platform was a big task as we all were not experienced in any way of setting up a platform.’ (Interview 21) ‘We have very lengthy discussions with lawyers on issues of liability.’ (Interview 10)

Table III: Coding Tree

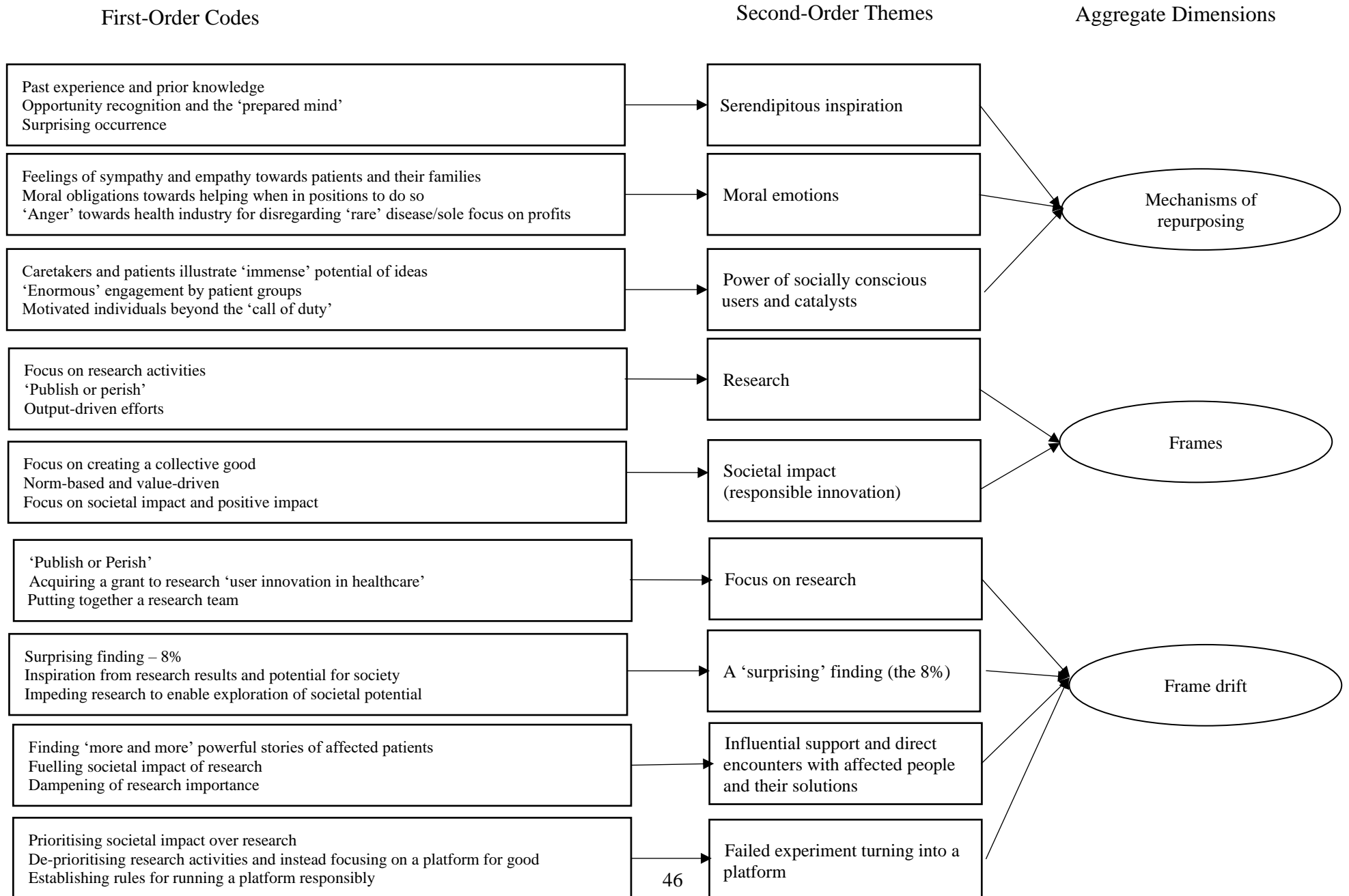
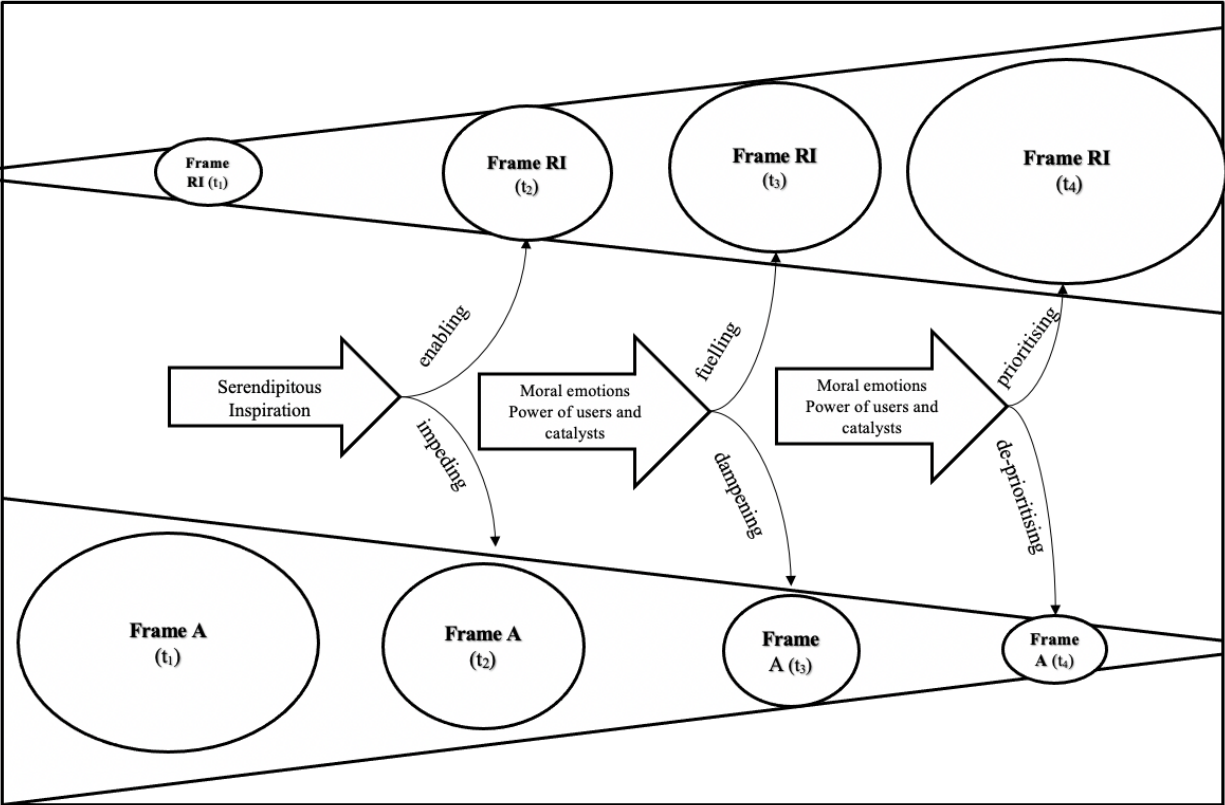


Figure 1: Model of Repurposing Towards Responsible Innovation



Picture 1 Robohand: First time grabbing a bottle



Picture 2 Robohand

