EPFL

Thèse n° 10 018

Entrepreneurial Opportunities and Threats in the Era of Grand Societal Challenges

Présentée le 24 janvier 2023

Collège du management de la technologie
Chaire entrepreneuriat et commercialisation de technologies
Programme doctoral en management de la technologie

pour l'obtention du grade de Docteur ès Sciences

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École polytechnique fédérale de Lausanne

2023

Acknowledgments

I owe a debt of gratitude to an unexpectedly large collection of individuals who have helped me on my four-year journey through my doctoral research. My intense and fruitful interactions with all of them not only made the experience of pursuing my PhD, usually conceived as a long and arduous process, feel swift and painless, but they also developed my knowledge and thinking in ways I would never imagined when I started my research.

My first thanks and acknowledgments go to the members of the research community I have found myself embedded in throughout my program.

My supervisor, Marc, welcomed me with open arms—his office doors were always open, a symbol of his open-mindedness. He also fostered my personal and professional growth with not only his deep knowledge, but with his contagious and unflagging optimism, his commitment to intellectual freedom and facilitation of research into any topic that fascinated me, and his willingness and ability to help me overcome every technical stumbling block I encountered.

Each member of Marc's *Entrepreneurship and Technology Commercialization* research group similarly lent me their insights and intellectual stimulation. I am particularly grateful to my colleague and co-author, Shirah, for her invaluable contributions to the development of our study. And to Davide, who mentored me through the last two years of my research, offering both constructive criticisms and convivial support, blending insight with humor, and ultimately becoming not just an amazing colleague but a close friend.

The *College of Management* community, who all, students, professors, and staff alike, shared my passion for advancing knowledge in the field of management studies, also supported me in near-countless ways. I am particularly indebted to the *EPFLinnovators* program, which provided financial support for my doctoral studies and encouraged me to pursue research on innovation and social challenges with the potential to yield significant academic and practical impacts.[1] I offer special thanks to my thesis committee—Philipp Thalmann, Matthias Finger, Nettra D. Pan, and Sabrina Cipullo—as well, especially for accepting positions on my committee with no hesitations, and for the time and effort they have put into discussing my research with me.

As a doctoral student, I have also had unique (and often under-recognized) opportunities to access diverse organizations, broaden my professional network, and even meet experts in my fields of study who I consider heroes, like Bertrand Piccard, founder of the Solar Impulse Foundation (SIF). The fieldwork I conducted for my doctoral research especially has led me to exciting collaborations. I wish to express my particular appreciation, and admiration, for the entire SIF team and its community of sustainability issue experts, as well as the *helpfulETH* community, for granting me access, and the opportunity to work with them, in order to conduct my research. Witnessing and gaining a deeper understanding of their work has inspired me in ways that transcend any reflections contained in this thesis. All of my work throughout this PhD journey, actually, will shape my life moving forward, in ways that go beyond the raw accumulation of knowledge gleaned from coursebooks, articles, and software analyses.

Finally, I wish to express my endless love and support for, and trust in, my family—especially my partner, Coline, to whom I am profoundly and perpetually indebted.

Lausanne, October 24st, 2022

[1] This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 754354.

Abstract

We live in an era defined by attempts to grapple with an ever-expanding array of grand societal challenges (GCs). These challenges comprise transformational social and environmental issues, such as environmental degradation and global pandemics, and the critical barriers toward addressing them. If research ought to prioritize addressing questions that are 'worth answering,' then GCs should not just be *a* topic of interest for researchers, but *the* focus of and motivation behind most scholars' research agendas. Management research in particular can and should focus on addressing GCs by examining how individuals, organizations, and societies can and/or do make sense of, navigate, and respond to these sorts of challenges.

Critics of business-as-usual often characterize businesses as major contributors to or sources of GCs. However, some businesses instead endeavor to help address GCs, by reconceptualizing these challenges not as intractable problems but as entrepreneurial opportunities waiting to be tackled, and by developing and/or promoting solutions-oriented and socially responsible innovations. By asserting their role as key actors in efforts to address GCs, these entities are reorienting perspectives on the almost 50-year-old question, "what is the business of business?"

This work consists of three studies, each of which examines a different facet of the ways in which organizations engage with GCs, while addressing internal and external threats. In an attempt to provide a comprehensive and holistic organizational perspective on a topic as large, complex, and characterized by uncertainty as GCs, the core thesis that undergirds these studies is multi-faceted, employing diverse theories drawn from several distinct streams of scholarly literature and discourse, and grounded in both qualitative and quantitative data. Ultimately, though, this work aims to set forth novel and unconventional perspectives on GCs and efforts to address them through management research.

Study I is an in-depth inductive examination of Swiss famed pioneer Bertrand Piccard and the *Solar Impulse Foundation* (SIF), an organization created to document and curate clean technology solutions, and by so doing to help policymakers identify approaches to achieving their sustainability goals. It addresses the fact that, while celebrity entrepreneurs, like the SIF's Bertrand Piccard, can use their status to marshal resources for their organizations and accelerate their missions, they also use organizational resources to sustain their personal brands, ideally to reinforce their status and thus their utility to the organization. This *hybridity* may not be communicated explicitly and one mission may remain *implicit*. This study explores the meaning and effects of such an implicit mission, and how organizations, like the SIF, respond to a growing awareness of their implicit mission. This study's findings demonstrate that the maintenance of such an implicit mission may pose organizational challenges that ultimately hinder the furtherance of a celebrity entrepreneur's personal brand, and thus of their ability to draw resources to a venture, eventually wearing away at this mutually-reinforcing system.

The SIF notably issues the "Efficient Solution Label," one of Europe's premier sustainability certifications, to projects created by sustainable ventures, firms created to pursue entrepreneurial opportunities that achieve both social and/or environmental impacts and financial goals. The process of assessing an application for receipt of such a certification involves a complex consideration of multiple evaluative criteria. **Study II** outlines a novel, holistic framework for understanding how the SIF and similar organizations engage in decision-making in the context of these sorts of complex and multi-faceted considerations. It uses multi-level modeling to explore three key factors in this decision-making: proposal characteristics, contextual factors, and evaluators' individual characteristics. It offers new insights into both the direct and interaction effects that these factors can have on ultimate evaluations, and notably demonstrates that (perhaps surprisingly) evaluators who express higher levels of *other-orientation* issue harsher assessments of sustainable ventures' applications for the SIF's sustainability certification.

Research on entrepreneurship focuses predominately on venture formation, growth, and survival, but rarely considers their termination. **Study III** uses an inductive study of *helpfulETH*, an organization created to respond to the needs of overburdened healthcare personnel and hospitals in the early stages of the Covid-19 pandemic, to examine the termination of entrepreneurial projects related to efforts to address GCs. It specifically analyzes the fates of 25 distinct projects *helpfulETH* oversaw. This study's findings outline three distinct pathways that lead to project terminations, each with distinct effects on involved individuals' emotional reactions to a project's termination. Notably, they show that, contrary to expectations created by extant literature on project terminations, when projects terminated because they became "obsolete," either because the GC-related issue they set out to address became less relevant or because another entity effectively addressed them first, team members predominately expressed positive rather than negative emotional reactions, and made sense of and learned from these terminations, to their own benefit and that of *helpfulETH* as an organization, faster than those whose projects terminated following pure failure to deliver on their goals.

Most GCs transcend organizational, disciplinary, and geographical boundaries. This complexity presents to researchers across disciplines novel opportunities to collaborate and share perspectives in order to improve understandings of and responses to these particular challenges. This work specifically operates on the belief that management scholars are ideally situated to engage future business leaders in discussions about their capacity and positioning to impact GCs, in both positive and negative ways. As such, it attempts to advance this engagement moving forward by consolidating and expanding the field's understanding of the nature of GCs and the best business-led means of addressing them.

Keywords

grand challenges, sustainable entrepreneurship, heropreneurs, hybrid organizations, decision-making, sustainability certifications, social identity, prosocial motivation

Résumé

Nous vivons à une ère caractérisée par des luttes incessantes envers les grands défis sociétaux (GDS). Ceux-ci constituent les enjeux sociétaux majeurs, tels que la dégradation de l'environnement et des pandémies dévastatrices, ainsi que les obstacles à leur résolution. Si la recherche se doit avant tout d'aborder des questions qui valent la peine d'être résolues, ces GDS devraient représenter non seulement *un* sujet, mais *la* perspective et la motivation derrière nos efforts de recherche. En particulier, la recherche en management peut et devrait se concentrer sur la résolution des GDS en examinant comment les individus, les organisations et la société donnent un sens à ces défis et y répondent.

Jusqu'alors considérées comme étant les responsables—et souvent à l'origine—des GCS, certaines entreprises ont entrepris des actions afin de répondre aux GDS, en reformulant ces défis non plus comme insolubles mais comme des opportunités entrepreneuriales en attente d'être saisies, tout en développant et en promouvant des innovations responsables. En revendiquant leur rôle clé dans les efforts fournis pour répondre aux GDS, ces entités réécrivent la perspective dominante sur la question vieille de près de 50 ans « Quel est le but des entreprises ? » (en anglais, *What is the business of business?*).

Ce travail consiste en trois études qui examinent une différente facette dans la manière dont les organisation s'engagent face aux GDS, tout en répondant aux menaces internes et externes. Dans un but de fournir une perspective organisationnelle holistique et exhaustive sur un sujet aussi large, complexe et incertain que les GDS, la thèse qui sous-tend ces études est aux multiples facettes ; elle emploie diverses théories tirées de plusieurs courants de pensée et de littérature, et embrasse à la fois des formes qualitatives et quantitatives de données. En définitive, ce travail s'efforce de développer des perspectives nouvelles et non-conventionnelles sur les GDS et des actions pour y faire face à travers la recherche en management.

L'**étude I** est le résultat d'une étude inductive approfondie du célèbre pionnier suisse Bertrand Piccard et de la *Fondation Solar Impulse* (FSI). La FSI est une organisation créée dans le but de documenter des solutions concrètes de technologie propre afin d'aider les décideurs politiques à atteindre leurs objectifs de durabilité. D'une part, les entrepreneurs célèbres, comme Bertrand Piccard de la FSI, sont bien placés en vertu de leur statut pour mobiliser des ressources et accélérer la mission durable de leur organisation. D'autre part, les ressources organisationnelles sont utilisées pour soutenir la marque personnelle de l'entrepreneur, créant ainsi un cycle vertueux. Cependant, une telle « hybridité » peut ne pas être communiquée explicitement et une mission peut rester implicite. Cette étude s'intéresse à la signification d'une telle mission implicite et à ses effets, et à comment l'organisation fait face à l'éveil à une mission implicite. Les résultats de cette étude démontrent que le maintien d'une telle mission implicite crée des défis organisationnels qui peuvent entraver le cycle vertueux de la marque personnelle des fondateurs et d'une mission durable se renforçant mutuellement.

Notamment, la FSI délivre le « Efficient Solution Label », l'un des premiers labels européens destinés à des entreprises associant un impact social et/ou écologique positif à une rentabilité financière. Le processus d'évaluation des entreprises candidates à cette certification implique un examen complexe de plusieurs critères d'évaluation. L'**étude II** offre un nouveau cadre holistique pour comprendre comment la FSI et des entités similaires s'engagent en prise de décision dans ce contexte complexe et aux multiples facettes. Elle emploie une modélisation à plusieurs niveaux qui inclue trois facteurs pertinents : les caractéristiques des entreprises candidates, les facteurs contextuels et les caractéristiques individuelles des évaluateurs. L'analyse offre de nouvelles perspectives sur les effets directs et conjoints de ces facteurs sur les résultats de l'évaluation. Notamment, elle démontre que les évaluateurs exprimant une plus grande « orientation vers les autres » sont systématiquement plus sévères dans leurs évaluations des entreprises candidates au label de durabilité de la FSI.

La recherche en entrepreneuriat se concentre majoritairement sur la formation, la croissance et la survie des entreprises, mais considère rarement leur fin. L'**étude III** utilise une étude inductive de *helpfulETH*, une organisation mise en place pour aider les hôpitaux surchargés à surmonter la pandémie de Covid-19, pour examiner la fin des projets entrepreneuriaux répondant aux GDS. Elle analyse le sort de 25 projets distincts supervisés par *helpfulETH*. Les résultats de cette étude décrivent trois voies possibles menant à la fin des projets, ayant chacun des conséquences affectives distinctes pour les membres de leurs équipes. Notamment, ils démontrent que, contrairement aux attentes créées par la littérature sur la fin des projets, lors de l'arrêt de projets qui se sont avérés « obsolètes », les membres de l'équipe ont affiché des réactions émotionnelles positives, plutôt que négatives, et ont entrepris un processus d'apprentissage et de création de sens qui s'est révélé bénéfique pour eux-mêmes ainsi que pour *helpfulETH* en tant qu'organisation.

La plupart des GDS transcendent les frontières organisationnelles, disciplinaires et géographiques. Une telle complexité offre aux chercheurs de toutes les disciplines la possibilité de trouver des moyens communs d'avancer dans un effort conjoint pour créer une compréhension et une action partagées visant à relever ces GDS. Ce travail en particulier œuvre dans la confiance que les chercheurs en management sont idéalement placés pour engager des conversations avec les chefs d'entreprise de demain quant à leur capacité et légitimité de prendre des décisions qui peuvent affecter les GDS, de manière à la fois positive et négative. Cette thèse vise à contribuer à cet effort, en consolidant et en élargissant nos connaissances sur la nature des GDS et sur les meilleures pratiques managériales pour y répondre.

Mots-clés

grands défis sociétaux, entrepreneuriat durable, heropreneurs, organisations hybrides, prise de décision, certifications de durabilité, identité sociale, motivation prosociale

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Chapter 1 Introduction

1.1 Grand societal challenges

It is almost a given that we live in an era defined by grand societal challenges (GCs). In 2022 alone, the global consequences of climate change, environmental degradation, the Covid-19 pandemic, violent conflicts, mass migrations, and more GCs have caused numerous widespread and severe disruptions to everyday life and large social systems. When faced with these GCs, scholars have convincingly argued that is not practical or reasonable for either individuals or organizations to remain neutral (Gatzweiler, Frey-Heger & Ronzani, 2022), much less to deny their reality or the risks they pose (Calderón, 2017). After all, actors traditionally tasked with addressing GCs, like governments and non-governmental organizations, have proven incapable of tackling many such issues on their own. However, addressing GCs could "help solve an important societal problem with a high likelihood of global impact through widespread implementation" (George, Howard-Grenville, Joshi, & Tihanyi, 2016: 1881). All of this amplifies the need for all-hands-on-deck responses.

Accordingly, ever-fewer individuals in society accept the notion that "the business of business is business," and therefore these entities have no social responsibility save profit maximization (Friedman, 1970). Practically as well, it is also clear from the disruptions of GCs like the Covid-19 pandemic that "models of organizational adaptation remain inadequate in the face of the new normal [and] managerial choices that are effective in the face of economic and technological challenges are not only inefficient but also counterproductive when deployed against physical and emotional threats" (Mithani, 2020: 509). These factors put specific pressures on businesses to find new ways of responding directly to GCs.

Many GCs transcend organizational, disciplinary, and geographical boundaries (George et al., 2016; Grodal & O'Mahony, 2017), affect multiple groups of actors holding diverse interests (Mair, Wolf, & Seelos, 2016), and are often intertwined with each other's causes and effects—all of which can make them difficult to address. For example, following the World Health Organization's March 11th, 2020 declaration that Covid-19 had become a global pandemic, many countries attempted to control its spread by imposing local, regional, or national lockdowns, but this solution lead to employment challenges for many workers, widespread mental health issues, and the general exacerbation of other issues like social, healthcare, and economic inequalities and instability (Schoeneborn, Vásquez, & Cornelissen, 2022). Scholars have also convincingly argued that many GCs "can be plausibility addressed through coordinated and collaborative effort" (George et al., 2016: 1880). Still, it is not necessarily clear how businesses specifically can or should respond to address GCs.

Organizations have nonetheless made efforts to adapt their economic and managerial practices to respond to GCs. Notably, since the release of the Brundtland report (WCED, 1987: 8), which defined "sustainable development" (as "meeting the needs of the present without compromising the ability of future generations to meet their own needs"), economics, management, and entrepreneurship researchers and practitioners have attempted to find ways of harmonizing what once seemed like mutually exclusive goals to many: environmental protection *and* economic development. In recent years, a growing number of entrepreneurs, ventures, organizations, and communities have also emerged with the explicit goal of addressing GCs (or more generally creating social and/or environmental value) while also pursuing economic objectives (Austin, Stevenson, & Wei-Skillern, 2006).

1.2 Sustainable entrepreneurship

Since the publication of Schumpeter's seminal works, management scholars have viewed entrepreneurship as a key driver of innovation, economic growth, and societal prosperity. Scholarly recognition of several salient aspects of entrepreneurs has led researchers to focus on the entrepreneurial activities of small firms, and sometimes individual entrepreneurs. Namely, scholars have characterized entrepreneurs as central forces in the identification of and generation of responses to new opportunities (Kuckertz & Wagner, 2010; McGrath & MacMillan, 2000; Spence, Gherib, & Biwolé, 2011), and as particularly efficient and creative resource utilizers (Alvarez & Barney, 2007). They have also noted entrepreneurs' propensity for radical innovation and market disruptions (Schumpeter, 1942; Eckhardt and Shane, 2003; Shane and Venkataraman, 2000). Thanks to these traits and tendencies, researchers point out that entrepreneurs and entrepreneurship in general have the potential to transform entire industries (Hockerts & Wustenhagen, 2010) and in some cases to identify and act on opportunities related to social and environmental issues, enacting positive social impacts while still achieving their financial objectives (Cohen & Winn, 2007). Accordingly, an increasing number of entrepreneurs specifically have emerged in recent years that focus on pursuing core socially-oriented missions (Doherty, Haugh, & Lyon, 2014; Short, Moss, & Lumpkin, 2009). Scholars refer to this as *social entrepreneurship*.

Research on the phenomenon of social entrepreneurship has largely focused on "how opportunities to bring into existence future goods and services are recognized, developed, and exploited by whom, and with what economic, social and ecological gains" (Binder & Belz, 2015). Research notes that social entrepreneurs usually locate these opportunities by considering market failures and imperfections (Kirzner, 1979; Dorado, 2006; Cohen & Winn, 2007; Dean & McMullen, 2007; Lumpkin, Moss, Gras, Kato, & Amezcua, 2013), technological advances (Schumpeter, 1942; Shane, 1996), unmet social needs (Shaw & Carter, 2007), and social and ecological problems (Dees, 1998). But despite this line of scholarly interest, research into social entrepreneurship overall remains scattershot, and leaves observers with limited understandings of how organizations can and do contribute to sustainability.

Notably, researchers have not suitably defined sustainability, sustainable entrepreneurship, or how organizations in general can contribute to sustainability (Short et al., 2009; Gupta, Chauhan, Paul, & Jaiswal, 2020). (As Robinson noted, sustainability "means so many different things to so many different people and organizations" [2004: 373].) Some studies link sustainable entrepreneurship to the operations of non-profit organizations (Lasprogata & Cotton, 2003) or philanthropic initiatives (Ostrander, 2007), while others argue that for-profit ventures managed by non-profit organizations (Wallace, 1999) or those grounded in both social and/or environmental as well as profit goals (Dorado, 2006; Mair & Marti, 2006), can practice sustainable entrepreneurship as well. Different streams of research also use distinct terms (e.g., "sustainable entrepreneurship," "social entrepreneurship," and "grand challenge venturing") at times seemingly interchangeably and at times to describe distinct phenomena that may overlap to varying degrees in their efforts to advance sustainability. (For a detailed analysis of the distinct and often malleable definitions set forth to describe sustainable entrepreneurship, see Zahra, Gedajlovic, Neubaum, & Shulman, 2009.) This "lack of a unified definition [of sustainability and/or sustainable entrepreneurship] makes establishing the legitimacy of a field or construct difficult… It also hinders empirical research seeking to examine the antecedents and consequences of [sustainable] entrepreneurship" (Short et al., 2009: 162).

1.3 The role of management research in grand challenges discourse

As novel problems often necessitate the development of unprecedented solutions, resolving issues related to ever-unpredictable and -evolving GCs will likely require bold new ideas (Eisenhardt, Graebner, & Sonenshein, 2016; Ferraro, Etzion, & Gehman, 2015). This in turn suggests the need for novel research geared towards identifying new insights on or approaches to management (Alvesson & Willmott, 2013; Shepherd, 2020) that challenge traditional business organizational practices focused on profit maximization and instead foreground a focus on social value creation, and advancement of the "common good" (Ansari, Wijen, & Gray, 2013). In line with this logic, not only the general public but academic researchers have placed increasing focus on efforts to address GCs over the last decade (Ferraro et al., 2015; Gehman, Etzion, & Ferraro, 2022; George et al., 2016; Gümüsay, Claus & Amis, 2020). This focal shift has transformed

discourse on new management and organizational theories or approaches suited to this task from marginal concerns to increasingly mainstream and prominent topics in the literature (Howard-Grenville, 2021).

Management research first addressed GCs in 2011 (Colquitt & George, 2011). In 2016, an editorial by George and colleagues, introducing a special issue of the *Academy of Management Journal* (AMJ), officially solidified the field's conceptualization of and focus on GCs, characterizing them as topics that could "inspire researchers and focus them on problems that were both interesting to advancing the field, and potentially useful to society" (Howard-Grenville & Spengler, 2022: 281). To wit, it conceptualized GCs as a valuable source of perspective in research, which challenges individuals to rethink the functions of and approaches to organization and management. In the years since that editorial's publication, management and organizational scholars have dedicated increasing attention to GCs and GC venturing, with a focus on understanding how organizations can make sense of, navigate, and can ultimately help address GCs (Shepherd, 2020; for a review of management research on GCs, see Howard-Grenville & Spengler, 2022).

In the following works, I hone in on two ideas that have grown out of this increasing management and organization research-specific exploration of GCs: (1) The potential of efforts to address GCs to generate innovations and more general forms of progress (Howard-Grenville & Spengler, 2022). (2) The importance of multi-level actions, conducted by diverse stakeholders via "collective, collaborative, and coordinated effort" (George et al., 2016: 1881), to efforts to address GCs. These foci, and scholarly recognition of the potential of entrepreneurship to fuel social change, further lead the following works to focus on the entrepreneurial opportunities—and on opportunities for developing new forms of for-profit ventures, non-profit foundations, community groups, and more—that examinations of GC-related issues can inspire.

1.4 Entrepreneurial opportunities for addressing grand challenges

Critics of business-as-usual often characterize organizations as part of the problem, entities that help to generate GCs in the first place—e.g., by engaging in environmentally unsustainable practices. Entrepreneurs, however, identify broad market failures rather than specific organizations' flaws, and opportunities for new ventures within those failures that may generate novel solutions. Notably, sustainable entrepreneurs look at sustainable development goals not as costly barriers to free competition and business goals overall, but as sources of new insights on potential new entrepreneurial foci and endeavors (Binder & Belz, 2014). As Hart and Milstein claimed back in 1999, "innovators and entrepreneurs will view sustainable development as one of the biggest business opportunities in the history of commerce" (Hart & Milstein, 1999: 25).

"Opportunity recognition" is the starting point for all sustainable entrepreneurial ventures (Austin et al., 2006; Mair & Marti, 2006). It is the mechanism by which sustainable enterprises disrupt the status quo surrounding the entrenched GC-related issues they are trying to address, and seek to play the role of an equilibrating mechanism following adverse shock events, such as natural disasters or the Covid-19 pandemic (Shepherd & Williams, 2020). Entrepreneurial actors' personal values (Borquist & de Bruin, 2019), identities (Fauchart & Gruber, 2011), and actions regarding these matters additionally play a major role in "making sense of, and giving sense to, societal grand challenges" (Kroeger, Siebold, Günzel-Jensen, Saade & Heikkilä, 2022; 18). To wit, their identification and movement on opportunities can play profound roles in shaping societies (Chatterjee, Cornelissen, & Wincent, 2021). Scholars have also found that sustainable enterprises tend to identify more openings when compared to their purely for-profit peer organizations (Austin et al., 2006; Dorado, 2006; Mair, 2006; Corner & Ho, 2010).Yet, while the extant literature suggests that opportunity recognition develops differently depending on the goals an organization is trying to achieve through it (Shepherd & Williams, 2020), researchers still do not fully understand how entrepreneurs recognize opportunities through which they can create both environmental and/or social and economic gains, although they have found.

1.5 Entrepreneurial threats in addressing grand challenges

Businesses and entrepreneurs may struggle as they try to balance competing objectives. By responding to novel opportunities, entrepreneurs also frequently run the risk of pursuing equally novel but ultimately unsustainable managerial

and/or organizational practices. But perhaps most importantly in the context of this work, their approaches to addressing GCs may have unintended consequences that lead to unexpected negative, and at times ethically questionable, consequences.

Notably, ventures may turn to digital tools and platforms to address GCs related to the decent work agenda (Gegenhuber, Schuessler, Reischauer, & Thäter, 2022; Ghezzi, Gabelloni, Martini & Natalicchio, 2018). For example, firms such as Amazon, eBay, and Etsy have developed digital tools that make it easier for many individuals to create a business and generate income, but their platforms also arguably create high levels of competition, and with them venture asymmetries, precarity, and "winner-takes-most outcomes," all of which pose significant challenges for many entrepreneurs (Cutolo & Kenney, 2021). Digital platforms' use of algorithms that draw on the big data they manage also allows them to measure the impact on a large-scale social issue, but if not properly managed these tools can implicitly encode and perpetuate negative trends hidden in their data, such as discrimination and inequality (O'Neil, 2016).

Scholars have also noted that sustainable ventures often ride social trends, using their social and/or environmental foci as means of differentiating their products or gaining a competitive advantage over other ventures "through the so-called greening of products or the building of 'environmentally friendly' or 'sociably responsible' corporate images" (Alvesson & Willmott, 2013: 15).

Addressing systemic and complex GCs often requires engagement with and the involvement of multiple sets of stakeholders (Freeman, 1984), as well as the mobilization of substantial resources to develop and scale high-impact solutions (Ferraro et al., 2015; George et al., 2016). Celebrity entrepreneurs (Knoke & Burt, 1983; Stinchcombe, 1965), or those who have cultivated more niche yet strong individual brands within the entrepreneurial space (Staskeviciute-Butiene, Bradauskiene, & Crespo-Hervas, 2014), can use their profiles to marshal attention, stakeholder engagement, and resources. However, research suggests that these potent entrepreneurial actors can at times place the development of their personal image ahead of their sustainability goals (Zahra et al., 2009)—acting as "heropreneur[s]… who overemphasizes their role as founder, overshadowing teams, collective impact, and building upon the ideas of others" (Papi-Thorton, 2016: 3)—which can in turn threaten the purpose and functionality of their organizations.

Similarly, sustainable ventures often aim to serve multiple sets of potential beneficiaries, but these groups may at times have not just differing but contradictory interests, forcing entrepreneurs to consciously or unconsciously harm one group as they directly help another—for example, by breaking rules, committing injustices (Gino & Pierce, 2010), or at least momentarily betraying some of their organizational goals in the service of others (Brief & Motowidlo, 1986; for a review of these issues, see Bolino & Grant, 2016). Research on moral disengagement suggests that entrepreneurs may justify these harmful acts on the basis that they serve the interests of at least one set of intended beneficiaries, thus permitting themselves to persist in them longer than they may otherwise consider doing (Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Bolino & Grant, 2016). Close interpersonal contact with beneficiaries can also create anxiety or suffering among over-invested social entrepreneurs (Adams, Boscarino, & Figley, 2006).

This work aims to contribute novel and often unconventional perspectives to the ongoing discourse on how sustainable organizations can address GC-related issues while navigating around these and other similar challenges and potential pitfalls.

1.6 Thesis structure

This work consists of three empirical studies (chapters 2, 3, and 4) that aim to advance theory on entrepreneurship and management. Taken together, these studies present a cohesive line of findings on GC venturing, with a focus on understanding how organizations can make sense of, navigate, and can ultimately help address GCs.

In line with Eisenhardt and colleagues' (2016) suggestions for lines of future research on GC venturing, I conducted these studies with a focus on the use of rigorous and transparent methods, presenting clear chains of evidence per the recommendations for conducting inductive research (Crosina and Pratt, 2019), and with an appreciation of the complexity

of their empirical settings. They all rely on a mixture of quantitative and qualitative methodologies. I present each of these studies' empirical settings and methods employed in Table 1.

1.6.1 Study I: Sustaining latent hybridity after awakening to an implicit mission: The case of grand challenge venture Solar Impulse Foundation

Celebrity entrepreneurs can leverage their fame and media attention to promote and advance their ventures' sustainable missions. However, they may also draw on organizational resources to maintain or grow their personal brands. This is a form of *organizational hybridity* (Albert & Whetten, 1985)—the coexistence of two or more "core organizational elements that would not normally be expected to go together" (Battilana, Besharov, & Mitzinneck, 2017: 128), and a characteristic common in GC ventures that balance distinct social and/or environmental and financial goals (Battilana & Dorado, 2010; Pache & Santos, 2013). Ideally, this type of hybridity leads to a cycle of mutual reinforcement, with personal brand building leading to perpetual gains for an organization, and thus for a celebrity entrepreneur as well. However, this hybridity is not always an explicit part of an organization's operations—to wit, an organization may be a *latent hybrid* (Seibel, 2015).

This study investigates the implications of an implicit mission to maintain a celebrity entrepreneur's personal brand on organizational members, especially as these individuals gain awareness of this implicit mission, through an in-depth qualitative analysis of a sustainable venture with this characteristic (Pratt and Foreman, 2000). Its findings suggest that celebrity founders whose ventures pursue such an implicit mission can "fast-track" the development of new ventures and thus their ability to address GCs (Ferraro et al., 2015; George et al., 2016; O'Neil & Ucbasaran, 2016)—but that efforts to maintain their personal brands can also create organizational challenges that disrupt the mutually reinforcing cycle of this form of mission hybridity.

1.6.2 Study II: Evaluating sustainable ventures: Toward a aodel of decision-making behavior in sustainability certifying organizations

The growth of ventures that identify new opportunities, and develop novel technologies, market applications, and/or business models, to address social and/or environmental challenges (Cohen & Winn, 2007) has prompted the development of "sustainability certifications," issued by independent, supranational certifying organizations to ventures they assess and deem have a high potential for or track record of achieving their beneficial social and/or environmental, as well as financial, goals. Research has found that the attainment of such a certification can have significant effects on ventures' future development (King, Lenox, & Terlaak, 2005; Terlaak & King, 2006). However, scholars do not entirely understand certifying bodies' decision-making.

This study develops a novel and holistic framework that advances understandings of this type of decision-making, based on multi-level modeling that considers three key factors: proposal characteristics, contextual factors, and evaluators' characteristics. It draws on a data set composed of assessments made by the Solar Impulse Foundation—one of the few bodies that consider both a venture's environmental and financial goals and prospects when deciding whether to issue its Efficient Solution Label certification—on 689 applications for project certification, submitted by separate sustainable ventures. Importantly from a theory perspective, this study suggests that evaluators' social identities—specifically their levels of *other-orientation*—can play a key role in their assessments of applications.

1.6.3 Study III: Born to die: The role of prosocial motivation in entrepreneurial project termination

Most research on entrepreneurship focuses on a venture's launch and growth phases, but not on the common phenomenon—especially in complex (Gassmann & Reepmeyer, 2005) and uncertain contexts (Balachandra, Brockhoff, & Pearson, 1996; DiMasi, Hansen, & Grabowski, 2003; Sarasvathy, 2001) like those ventures attempting to address GCs often operate within—of project terminations. As project terminations can have major effects on involved individuals,

developing a better understanding of the implications of different pathways to project terminations is important for understanding the full life cycles of ventures that attempt to address GC-related issues.

This study uses a multiple-case, inductive analysis of an organization established in the early days of the Covid-19 pandemic, which operated 25 projects, all intended to respond to emergency needs within Swiss hospitals and among medical personnel. It identifies three possible pathways leading to project terminations, each with a unique set of consequences for individuals involved with a given project. Notably, its findings suggest that, when projects terminate because their goals become obsolete following the natural resolution, or resolution thanks to the actions of a third party, of a GC-related issue, (perhaps counterintuitively) involved individuals express not only broad acceptance but also positive emotional reactions to these terminations, and can engage in rapid and effective sensemaking and learning from these experiences that ultimately benefits them and the organizations they operate within.

Table 1: Summary of studies, research questions, and contributions.

	Study I *(Chapter 2)*	***Study II*** *(Chapter 3)*	***Study III*** *(Chapter 4)*
Title	Reconciling with latent hybridity after awakening to an implicit mission: The three-stage multilevel response of grand challenge venture Solar Impulse Foundation	Evaluating sustainable ventures: Toward a model of decision-making behavior in sustainability certifying organizations	Born to die: The role of prosocial motivation in entrepreneurial project termination
Authorship	E. Bergamini*, S. Foy*, M. Gruber	E. Bergamini	E. Bergamini
Research question	How does the organization reconcile with latent hybridity when it awakens to this implicit mission?	How do venture characteristics, contextual factors, and evaluators' characteristics affect evaluators' decision-making in their assessments of sustainable ventures applications for a sustainability certification?	How do members of a GC-focused organization react to the termination of their project, especially when a third party resolves the GC they seek to address?
Theoretical perspective	Hybridity	Social identity	Prosocial motivation
Research method	Inductive, qualitative	Deductive, quantitative	Inductive, qualitative
Research model	Process model	Multi-level logistic model	Variance model
Main areas of contribution	• GC venturing • Hybrid organizing • Latent hybridity • Heropreneurship	• GC venturing • Sustainability certifications • Decision-making related to granting such certifications to sustainability ventures • Evaluators' social identity	• GC venturing • Individual emotional reactions to project termination • Prosocial motivation • Learning from failure

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Chapter 2 Reconciling with latent hybridity after awakening to an implicit mission: The three-stage multilevel response of grand challenge venture Solar Impulse Foundation

Enrico Bergamini[2*], Shirah Foy[*], & Marc Gruber

Abstract

Scholars have shown initial examples of latent goals in organizations. However, the literature on hybrid organizing has largely focused on organizations whose dual goals, identities, or logics are explicit, intentional, and—though perhaps disputed or refuted—equally understood across the organization. The concept of latent hybridity that we refine in this study challenges all three of these assumptions. We examine latent hybridity in a 29-month qualitative field study of the Solar Impulse Foundation, whose sustainable mission is accelerated by its celebrity founder. From inside the organization, we observe catalytic events awaken organization members to an implicit mission, invoking the organic construction of informal guardrails that preserve each side of the hybridity but also hinder operations. Dual mission synergies allow the organization to persist until they can explicitly reconcile both missions. Our model of reconciling latent hybridity explains how important ideographic elements (guardrails) emerge and we introduce holographic elements (centripetal forces) being established, thereby explaining how some organizations may arrive at the point of being able to sustain hybridity. Our results advance important conversations on hybrid organizing and entrepreneurship in response to grand societal challenges.

The Solar Impulse Foundation (SIF) was created in 2004 to develop an entirely solar-powered plane and complete the first ever round-the-world flight; it was a bold mission envisioned by Swiss pioneer Bertrand Piccard, set on demonstrating the possibilities of next-generation sustainability. By the time the Solar Impulse plane touched down in Abu Dhabi in 2016, completing the final leg of its world-record-setting journey, the state of the environment and the global *grand challenges* (GCs) for humanity had gained widespread public awareness—illustrated, for instance, by the adoption of

[2] Authorship notes: E. Bergamini carried out every aspect involved in planning the study, conducting fieldwork, and collecting and managing data. S. Foy provided advice and insights on data analysis processes, meeting regularly with E. Bergamini to discuss and refine coding schemes. E. Bergamini led the data coding process, with assistance from S. Foy, who acted as a secondary coder as needed. The two first authors met, at key research milestones, with M. Gruber to discuss iterations of their analyses; his questioning, insights, and suggestions played a vital role in advancing this work's theorizing. S. Foy led efforts to iterate data structures and theoretical models, with guidance from E. Bergamini in the form of empirical critiques and M. Gruber in the form of theoretical critiques. S. Foy wrote 80% of the final manuscript; E. Bergamini and M. Gruber made additional authorial contributions.

[*] These authors contributed equally.

the seventeen Sustainable Development Goals by all United Nations Member States (UNDP, 2020). However, no single global authority had taken on the documentation and curation of concrete clean technology solutions to move communities and nations toward those goals, leaving a number of existing solutions unapprehended. Bertrand Piccard and his team decided to mobilize the SIF to take on this GC. Leveraging the media attention earned with their exclusively solar powered world tour, Piccard announced their launch of "a world council for clean technologies" (Carrington, 2016) to bring one thousand solutions "that can protect the environment in a profitable way" to high-level decision-makers (SIF, 2017). Since then, the SIF has earned global recognition for clean technology advocacy (BBC, 2019, Fehrenbacher, 2020), achieving the goal of awarding their Efficient Solution Label to 1000 sustainable technologies just before Earth Day in April 2021.

We gained unique access to conduct research at the SIF in 2018 and began an in-depth inductive study with a broad goal of understanding how the organization's recent initiatives had so quickly earned such legitimacy as to have gained an audience among top European decision-makers, including invitations for keynote speeches at the Parliament of the European Union, the 2016 and 2017 United Nations Conference on Climate Change, and official visits with French President Emmanuel Macron (Lebleu, 2019; Gayet, 2019). Through participant observation within SIF, we became sensitized to the symbiotic relationship between the organization's sustainable mission and the founder's personal brand. The SIF is an example of an organization created by an established actor in response to GCs. Due to the systemic nature of problems that characterize GCs, the aim for scalable, high-impact solutions, and the significant resource requirements in order to do so (Ferraro et al., 2015; George et al., 2016), actors who are elite (Stinchcombe, 1965), legitimate (Aldrich & Fiol, 1994; Navis, & Glynn, 2011), prominent—i.e., central or prestigious (Knoke & Burt, 1983), or have a personal brand (Staskeviciute-Butiene et al., 2014) are uniquely positioned to draw attention and attract resources, especially when their organizations would not otherwise appeal to conventional investors seeking financial return (Molecke & Pinkse 2017; Zahra et al., 2009). However, it has also been suggested that such prominent actors risk becoming a "heropreneur… who overemphasizes their role as founder, overshadowing teams, collective impact, and building upon the ideas of others" (Papi-Thorton, 2016: 3). In other words, instrumentalizing a founders' legitimacy in service of an organization's social mission is recognized as both highly beneficial and potentially detrimental.

During our fieldwork at SIF, we watched the maintenance of the founder's personal brand surface as an end-goal in its own right, eliciting mixed responses across individuals and teams in the organization who perceived the emergence of this *implicit* mission as either reinforcing—or diverging from—their *explicit* mission to gather and curate clean technology solutions to contribute to a more sustainable planet. In this vein, scholars have drawn on the concept of hybridity to explain organizations that pursue multiple missions (Battilana & Dorado, 2010; Doherty et al., 2014; Ebrahim, Battilana, & Mair, 2014). Yet, most prior work on hybridity assumes that dual identities, logics, or goals are—even if not universally embraced—at least recognized by members of the organization and, thus, explicit. We know little about how hybridity plays out in organizations characterized by *latent hybridity,* in which at least one element of the hybridity is only implicit (Seibel, 2015). Latent hybridity is a particularly interesting case of hybrid organizing, as observers may only perceive the existence of the explicit mission and, thus, would not consider the organization to be of a hybrid nature in the first place.

Given the intriguing nature of the notion of latent hybridity and our dearth of knowledge in this regard, we refined the focus of our study to accomplish three main goals: first, to document and analyze what it means to have an implicit mission—namely, in this case, maintaining the founder's personal brand, which has been functionally reinforcing the explicit (sustainable) mission; second, to understand how the organization responds when it awakens to an implicit mission. And finally, upon finding the organization's initial response tumultuous, a third goal emerged to understand how the implicit mission could be reconciled with the explicit mission.

Our most important contributions are to the literature on hybrid organizing and entrepreneurship, as well as to emerging work on how organizations can address GCs. First, we refine the notion of latent hybridity and, responding to suggestions that latent elements lay dormant and may be awakened (Pratt & Foreman, 2000; Pratt & Rafaeli, 1997), we show various ways in which an implicit goal surfaces through an organization's daily operations. Our three-stage model

of organizational reconciliation with latent hybridity outlines the process of moving from an implicit mission that is an invisible source of tension in the organization *(Stage I),* through a period where synergies from the dual reinforcing mission alleviate but do not fully resolve the tensions *(Stage II),* to explicit hybridity that permits tensions to be formally addressed and reconciled *(Stage III)*. Within each stage, we observe three key steps: (a) the implicit mission being awakened by catalytic events, (b) the mission being (re)interpreted by individuals, and (c) actions taken by groups that emerged based on shared mission interpretations and which resulted in organizational behavior characterized by specific types of guardrails. In effect, our model illustrates how organizations may reconcile latency in their hybridity while sustaining operations. Second, by having gained rare access to a "celebrity founder" and to the organization he was in the process of establishing, we contribute to an important conversation in the entrepreneurship literature about the instrumentalization of individual founders—e.g., their prominence, their legitimacy, their identities—in service to their organizations (Navis & Glynn, 2011). Our findings not only show how the prominence of such founders can offer a "fast-track" towards overcoming the liabilities of newness in emerging organizations, but also reveal how maintaining their status carries its own demands that may create substantial challenges for the functioning of their organizations. We illustrate both the virtuous cycle of a founders' personal brand and a sustainable mission mutually reinforcing each other, as well as how internal perceptions of the mission can lead to limitations of this reinforcing mechanism inside the organization. Third, by combining our novel insights on latent hybridity and the role of prominent founders in the context of sustainable entrepreneurship, we are also able to advance research on how organizations may play a pivotal role in helping to address GCs (Ferraro et al., 2015; George et al., 2016; Markman, Waldron, Gianiodis, & Espina, 2019; O'Neil & Ucbasaran, 2016). Particularly in light of the large scale and scope of such GCs as well as their oftentimes pressing nature, our study provides interesting insights on how such individuals can leverage their status in order to address the significant resource and legitimacy demands associated with GCs, and provide solutions within an accelerated time frame.

2.1 Latency in organizations

2.1.1 Latent hybridity

Latent hybridity, originally coined in reference to informal institutional arrangements of sectors and governance mechanisms, was first defined in contrast with the "manifest hybridity" embodied in formal public-private partnerships (Seibel, 2015). Conceptual predecessors include Merton's (1968) discussion of organizations' manifest and latent functions, and Perrow's analysis of the "many unofficial goals" pursued in organizations (1961: 855). While unofficial goals may be introduced at many levels of an organization (e.g., in the overall mission, strategies, sub-groups and their missions, tactics, individual member goals, etc.), we are primarily interested in end goals at the level of the organization's reason to exist, which is consistent with the level of focus in the hybrid organizing literature more broadly. The literature on hybrid organizing has examined hybridity in three main elements of an organization: its goals or reason to exist, its identities (i.e., central, enduring, and distinct values and beliefs [Ashforth, Harrison, & Corley, 2008]), and the institutional logics guiding its behavior (Battilana & Lee, 2014). We incorporate this triad and build on prior conceptualizations of latency to define latent hybridity as the state of comprising one or more goals, identities, or logics that are informal, implicit and unofficial, in addition to those that are formal, explicit, and official. While the focus of this study is on organizational goals, our review of prior work reflects the scattered nature of scholarly attention to latency in organizations; thus, in addition to a focus on goals, we include work concerning logics and identities that may be relevant to latent hybridity.

The literature on hybrid organizing has largely focused on organizations whose dual goals, identities, or logics are explicit, intentional, and—though perhaps disputed or refuted—equally understood across the organization (cf. Albert & Whetten, 1985). The concept of latent hybridity that we have refined above, challenges all three of these assumptions. First, by nature of being implicit, latent hybridity is not explicit. In other words, a latent goal is not formalized in an organization's mission statement nor otherwise institutionalized as a formal goal, purpose, or raison d'être of the organization. Rather, it operates in the background, possibly—but not necessarily—inferred (detected) by organization members. Second, our definition of latent hybridity encompasses implicit elements that were both introduced

intentionally or emerged organically. While organizational goals are frequently viewed as being the result of a deliberate choice process, an implicit goal, identity, or logic, may also emerge without a singular intention (cf. De Souza & Klein, 1995; Gilpin & Miller, 2013; Nelson, Nels, Huybrechts, Dufays, O'Shea, & Trasciani, 2016). Third, our definition of latent hybridity makes no stipulations about organization members' awareness of an implicit goal existing alongside the explicit goal(s) until it is awakened. In this vein, Pratt and Foreman suggest that "latent identities may lay dormant until an organizational issue or other event triggers their awakening" (2000: 20). We use the term dormant latent hybridity when all or part of the organization is not aware of the implicit element, and the term awakened latent hybridity when the implicit element is realized. When organizational members are unaware of an implicit goal, identity, or logic, their awakening to the implicit element would not automatically transform the organization's latent hybridity into manifest hybridity—that is to say, until the hybridity became truly manifest by being made formal, explicit and official, it would remain latent. It remains to be seen whether, and how, unconscious latent hybridity, conscious latent hybridity, and manifest hybridity may function differently in organizations.

Drawing on some of the earliest studies of organizational hybridity (Michels, 1911; Selznick, 1949)—before it had been labeled as such—Seibel suggested that, "What we learn from [these examples] is that actual hybridity may originate from informal rather than formal arrangements and that there is good sense in acknowledging the existence of latent hybridities that do not appear on the radar screen when just looking for manifest, formal, and official combinations…" (2015: 698). Integrating empirical studies of latent hybridity into the hybrid organizing literature is an opportunity to expand our knowledge of how the phenomenon of hybridity unfolds in organizations, by studying those which do not obviously appear to be hybrids. It is also an opportunity to investigate how practitioner assumptions about latent hybridity play out in reality, because, while latent hybridity has drawn little attention in academic literature, practitioners have promoted its usefulness. For instance, the popular Social Entrepreneurship for Dummies handbook contains an entire section on "Unofficial Goals: Stuff you secretly hope to also achieve", describing them as "unstated, secret, or hidden objectives that are nevertheless important for some of the people personally involved with your enterprise" (Durieux & Stebbins, 2010: 120).

While we have few empirical studies of latent hybridity from which to draw, we can imagine how a number of phenomena associated with hybrid organizing may manifest differently under the circumstances of latency. For example, many of the mechanisms empirically shown to help managers address and manage hybridity—such as paradoxical frames (Smith & Besharov, 2019), and integration of the hybridity by every member (or at least every "internal unit") of the organization, as is the case in holographic hybrids (Albert & Whetten, 1985: 271)—seem to require a conscious awareness of both elements of the hybridity, something that latent hybridity does not guarantee. Similarly, organizations that cope with hybridity by embracing tensions created by dual elements and "the dynamic equilibria they create" (Mongelli, Rullani, Ramus, & Rimac, 2019: 302), thereby leveraging the strengths of each element of hybridity as well as their interconnections (Battilana, Sengul, Pache, & Model, 2015; Battilana, Besharov, & Mitzinneck, 2017; Smith, Besharov, Wessels, & Chertok, 2012; Ashforth & Reingen, 2014), might have trouble doing so if an element of the hybridity is only latent. In order to embrace each element of a duality, their tensions and interconnections, an individual must be, first, conscious of the duality, and at least accepting or approving of its existence—if not intentional about maintaining it. Further, disempowerment dynamics suggest it may not be appropriate to assume that each member of the organization is able to embrace the duality (Berti & Simpson, 2021). Another way organizations cope with manifest hybridity entails establishing guardrails—"formal structures, leadership expertise, and external stakeholder relationships" (Smith & Besharov, 2019: 27)—to represent the interests of each side of the hybrid in day-to-day operations. It is unclear how such formal guardrails could be established or function to support an implicit mission in organizations characterized by latent hybridity.

While latency might complicate or render certain coping strategies unlikely, an implicit goal, identity, or logic might also enable new coping strategies or otherwise benefit a hybrid organization. For instance, it remains to be seen how an implicit goal might contribute to mission spillover effects (MSEs)—that is, the benefits that help a venture pursue one mission as a result of pursuing the other (Siebold, Günzel-Jensen, & Müller, 2019).

Theorizing about latent hybridity is in a nascent state, leaving open key questions regarding the origins of latent hybridity, its potential for (counter)productivity, strategies organizations employ to cope, the perception of latent hybridity by internal and external stakeholders, and the effectiveness of managerial efforts—e.g., "by means of mere communication" (Seibel, 2015: 709)—to resolve frictions that may arise from maintaining an implicit goal alongside the organization's explicit goal. We know little about the potential benefits and challenges to an organization when one element of its hybridity is latent.

2.1.2 Latent hybridity and prominent founders

One way in which latent hybridity can be introduced to an organization is via prominent founders, who—beyond their goal to create an organization with an explicit goal—may have an implicit goal to preserve and aliment their prominence. Prior research has documented that prominent founders can bring legitimacy, visibility, and prestige to an emerging organization (Navis & Glynn, 2011), thereby helping the organization to attract key resources (Staskeviciute-Butiene et al., 2014) and to overcome its liability of newness (Brüderl & Schüssler, 1990; Stinchcombe, 1965). Put differently, prominent founders may "fast-track" their organization on its route to becoming an established, impactful player.

In addition to the legitimacy that prominent founders initially bring to an organization, organizations have long been a source of continued visibility and prestige for their founders and leaders.[3] The degree to which founder/leader prominence is embedded as an organizational goal, and the degree to which this is made explicit—thus creating a latent or manifest hybridity—may be linked to the perceived legitimacy of coupling the two goals, identities or logics that comprise the hybridity. The more acceptable the goal of maintaining founder prominence might be to internal and external audiences of the organization, the more likely the goal may be made explicit to each audience, respectively.

In sum, the purpose of the present paper is to investigate the nature of latent hybridity in a sustainable venture, focusing on how the organization repeatedly awakens to the implicit goal of maintaining the founder's prominence, and how cognitive and behavioral responses unfold throughout the organization as trigger events awaken the implicit goal over time.

2.2 Methods

We investigate our research questions in an in-depth longitudinal inductive, qualitative study (Gioia, Corley, & Hamilton, 2013; Langley, 1999) of the SIF, an organization established in 2004 by famed pioneer Bertrand Piccard, with the original goal to promote clean technologies and energy efficiency, and following a pivot in 2016, in pursuit of bringing a portfolio of 1000 feasible and profitable clean technology solutions to policy decision-makers worldwide. We combine archival data, interviews, and real-time ethnographic data—collected over a time span of 29 months—in analyses of the processes by which an implicit mission surfaces and is reckoned with, a rich data set that permits us to entertain multiple levels of analysis while emphasizing "processes rather than things [as] the primary focus of attention" (Langley, Smallman, Tsoukas, & Van de Ven, 2013: 6; Rasche & Chia, 2009).

The SIF is based in Switzerland and runs out of one office location, which is spatially divided according to three functional groups; a long hallway physically separates the top management team (TMT)—internally referred to as "Headquarters"—on one side of the building, from the Labeling team on the other. A third group, offering transversal administrative support (such as communications, diplomatic affairs, IT) to both teams, is scattered throughout the building. On the Headquarters side, the environment is comfortable, almost cozy, and familial; much of the team are long-time friends

[3] We have seen founder/leader prominence coupled with a public institutional logic in examples from heads of state that range from more to less explicit (e.g., Elizabeth II of England). We have also seen founder/leader prominence coupled with a business logic, e.g., Donald J. Trump and The Trump Organization, and actresses Jessica Simpson and Mary-Kate and Ashley with their respective fashion companies. Founder/leader prominence may be coupled with a social or sustainable mission, as seen with the Bill and Melinda Gates Foundation.

of the founder and his family. The offices of the Labeling team, on the other hand, are sleek, modern, and filled with young recruits. The organization, as a whole, experiences high turnover "by design," given that internships form the bulk of work relationships and enable the SIF to establish a significant workforce at limited cost. Among the 40 members of the organization employed when we conducted our first interviews in February 2019, only 22 of those 40 remained in February 2020, when the fieldwork on the premises of the SIF ended. Meanwhile, an additional 23 members were hired in that same time period.

Our data collection ended in April 2021, when SIF achieved the goal of awarding its Efficient Solution Label to 1000 profitable and sustainable technologies. The foundation's revenues come from corporate sponsorships and speaking engagements of its prominent founder. While revenues from the founder's engagements directly support the foundation, the founder does not receive any monetary compensation from the foundation.

2.2.1 Grand challenge context

The desired impact of the SIF—to see policy-makers and decision-makers implement clean technology standards and solutions in countries and trade regions—puts the foundation in the category of organizing in response to GCs. GCs, such as—but not limited to—those summarized in the United Nations' 17 Sustainable Development Goals (UNDP, 2020), are systemic in nature and require solutions that are high impact in both scale and scope (Ferraro et al., 2015; George et al., 2016). Effective solutions require the engagement of multiple stakeholders, potentially including those with considerable institutional power, and tend to necessitate cross-sectoral partnerships (Bode, Rogan, and Singh, 2019; Doh, Tashman, and Benischke, 2019).

Our awareness of contextual demands that make venturing in response to GCs an extreme context (i.e., scale, scope, and coordination of multiple actors) rendered us alert to factors that could enable an organization to overcome liabilities of size and newness under such conditions. Actors who are elite (Stinchcombe, 1965), legitimate (Aldrich and Fiol, 1994; Navis and Glynn, 2011), prominent—i.e., central or prestigious (Knoke and Burt, 1983)—or have a personal brand (Staskeviciute-Butiene et al., 2014) are uniquely positioned to draw attention and attract resources, especially when their organizations would not otherwise appeal to conventional investors seeking financial return (Molecke and Pinkse, 2017; Zahra et al., 2009). Given the pressing nature of many GCs, prominent founders may be key agents for addressing such challenges due to their ability to accelerate partnerships and key resources underlying scalable solutions.

2.2.2 Data collection

The model of organizational reconciliation with latent hybridity we develop is based on the following types of evidence (summarized in Table 2):

Table 2: Summary of data collected.

	Wave 1 Spring 2019	**Wave 2 Spring 2020**	**Wave 3 Autumn 2020**	**Total**
Interviews				**76**
Headquarters (HQ)	8	3	3	**14**
Solutions/Label (L)	18	13	2	**33**
Support (S)	14	11	4	**29**
Participant Observation				
Daily operations (in hours)	580	140	0	**720 hours**
Organization-wide meetings	8	5	2	**15**
Team meetings	50	4	2	**56**
Informal gatherings	9	7	2	**18**

Private events	8	11	11	**30**
Public events	3	1	2	**6**
Archival Documents				
Internal documents				**120**
Internal communications				**2372**
Website and online content by SIF				**60**
Media mentions: video and radio				**73**

Semi-structured interviews. Three rounds of interviews were conducted in 2019 and 2020. Specifically, a first round of in-person interviews was conducted with every member of the organization (40 people including the founder) between February and June 2019. All except two agreed to these interviews being recorded; for one of those two, notes were taken during the interview, and for the other detailed notes were typed up within one hour following the interview. Interviews lasted 30–120 minutes, with questions ranging from operational aspects of the individual's daily practice (e.g. their role in the organization) to more cognitive aspects (e.g. their motivations, goals, expectations, key elements of their worldview and significant life-experiences). While the initial interview protocol was mostly standardized across informants, it evolved for subsequent interviews in order to adjust on the fly as themes emerged in the data (Corley and Gioia, 2004).

A second round of interviews was conducted between March and September 2020, following publication of a new version of the mission on the website and an internal document that emphasized—explicitly, for the first time—the founder's prominence and role in the mission. This second round of interviews served as member checks with regard to our categories and process model, and also allowed us to extend our understanding of responses to this explicitness.

In October 2020, during an organization-wide meeting, the founder made the two missions of SIF explicit and explained the interplay between them. Following this announcement, a third round of interviews was conducted between November 2020 and January 2021 in order to understand the reaction of employees to this explicitness.

Participant observation. Positioned by the management as a researcher as well as an external consultant providing technical expertise brought in-house, one of the authors joined SIF's Labeling team for three and a half days per week, for five months in the first half of 2019. The remaining day and a half each week was spent in the university office with the research team, in order to step back, debrief, and discuss emerging findings (Cappellaro, Tracey, and Greenwood, 2020). More than 500 hours of ethnographic fieldwork were conducted, during which detailed notes were taken regarding employee interactions.

Management meetings. In addition to daily interactions in the offices, periodical meetings between the founder and leaders of each team provided insight into each team's perspectives, core interests, concerns, and the way these were expressed in the inter-team dialogue. One of the authors attended 9 consecutive management meetings, in which he was primarily an observer, with the exception of one time in which he was called on by name to contribute.

Events. The SIF engages in two types of events. They (generally, the founder) are invited to speak about their work—usually to high profile audiences including politicians and corporates, but also to startups—at public events such as the U.N. annual meetings on climate change, deep technology conference "hello tomorrow," and the impact-focused ChangeNOW Summit. The SIF also organizes a number of events to engage with their own network of experts who volunteer to evaluate solutions proposed for the Efficient Solution Label. Attending both public and private events provided opportunities to collect data on how the SIF engaged with stakeholders and partners, including those who provide financing and those who provide expertise. We also collected data on how stakeholders perceived the SIF, how they conceptualized the SIF's mission, and their own personal (or corporate) interests in supporting and contributing to the work of the SIF.

Secondary data. We gained full access to the organization's internal server database. This allowed us to analyze the way different teams framed the organization's overall goal(s) and positioned their work within that frame. We also consulted the SIF website and other public information (e.g. books written by the founder, magazine articles, public interviews, YouTube videos); these materials provided general background information about the SIF and its founder.

2.2.3 Data analysis

We employed techniques for analyzing inductive, qualitative data with particular attention to organization members' interpretations of events and the evolution of meanings (Gioia et al., 2013; Miles, Huberman, & Saldaña, 2014). Early on in the fieldwork, it became clear that individuals within the organization had different conceptualizations of the SIF's mission. An initial set of interviews revealed significant differences in employees' perceptions of the organization's mission, as well as the curious phenomenon of a number of employees, who identified strongly with the published social mission of the organization, voicing questions and concerns about the meaningfulness of their day-to-day work activities and their uncertainty about whether the organization's activities would and could accomplish the stated mission. To better understand both the origins and the outcomes of this inconsistency of mission accounts given by employees, we interviewed every member of the organization, including the founder. We iterated our interview questions to further explore mission perceptions and were able to tie each perception category to interpretations of a number of events that brought the founder's prominence—namely the organizational bandwidth allocated to maintaining his prominence—to the fore. Having established maintenance of the founder's prominence as an implicit mission embedded in the organization's strategies and operations, we formulated our focal research question: How does the organization reconcile with latent hybridity when it awakens to this implicit mission?

We worked iteratively and with a variety of data displays, following multiple sensemaking strategies for illuminating individual-level, team-level, and process dynamics (Langley, 1999). We linked insights from employees' individual interviews to spontaneous collective behavior in meetings. This allowed us to identify mechanisms that were constructed or evoked by organizational groups to protect the explicit mission from the perceived threat of the implicit mission, and, in turn, to protect the implicit mission from the operational overcomplexity created to protect the explicit mission. A year after beginning fieldwork, we observed a change in behavior: No longer did about half of team members feel the need to protect the explicit mission so vigorously, but rather showed more tolerance toward periodic allocation of organizational bandwidth to activities that supported primarily the implicit mission. This change in behavior spurred us to elaborate a timeline tracking important events in the life of the organization, as well as a second wave of interviews with members of each team. As a result, we were able to identify productive synergies between the dual missions as a tempering factor and distinguish between early-stage and later-stage responses to the surfacing of an implicit mission. Similarly, the third wave of data collection was sparked by an announcement from the founder making the implicit mission explicit, spurring us to conduct additional interviews with key informants.

Our data structure shown in Figure 1 indicates how we built on empirical themes to develop conceptual categories and derive aggregate dimensions for our theoretical model.

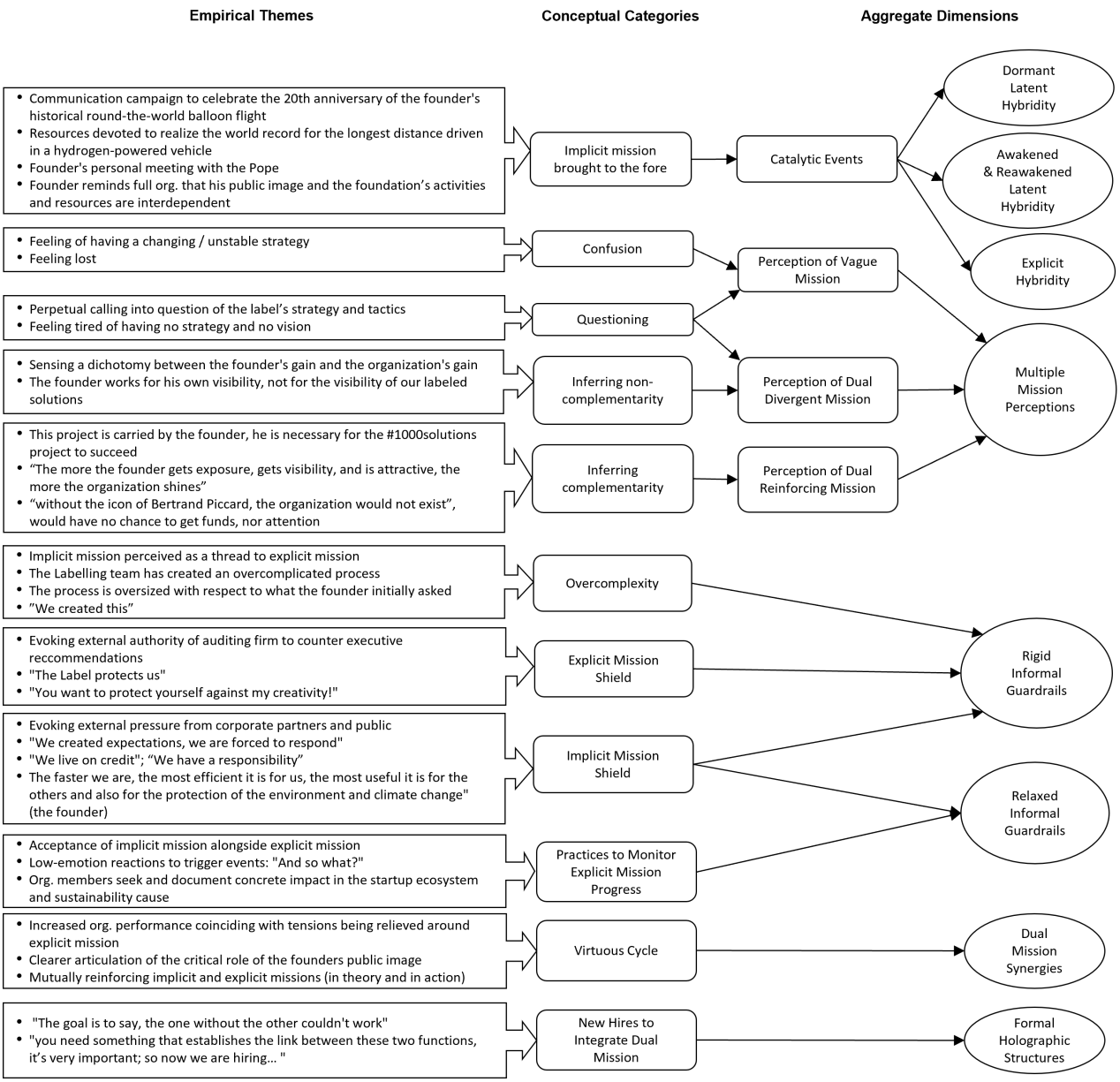

Figure 1: Data structure.

2.3 Latent hybridity by design: The SIF grand challenge mission accelerated by a prominent founder

Stepping out of the *Solar Impulse 2,* the plane in which he had just successfully completed the first ever round-the-world flight[4] powered entirely by solar energy, acclaimed third-generation Swiss explorer and best-selling author Dr. Bertrand Piccard approached the press gathered on the Abu Dhabi tarmac and announced that he was creating "a world council for clean technologies" (Carrington, 2016) to bring decision-makers one thousand solutions "that can protect the environment in a profitable way" (SIF, 2017). Four months later, he was presenting his vision for the SIF's World Alliance for Efficient Solutions at the United Nations annual meeting on climate change:[5] In addition to shedding light on existing

[4] Co-piloted with André Borschberg.

[5] The twenty-second Conference of the Parties in the Framework Convention on Climate Change (COP22) took place in Morocco from 7-18 November, 2016.

solutions for fighting climate change, SIF seeks to federate all actors (e.g., companies, startups, investors, associations) in the field of clean technologies, facilitating the delivery of cleantech solutions that help policy-makers reach environmental targets.

Much of the early attention to SIF was garnered through founder Bertrand Piccard's vast social network and public audience spanning many domains of business, scientific, political, and social life. This is a network that he both received and cultivated—as grandson to Auguste Piccard, inventor of the pressurized cabin and stratospheric balloon, and first human to view the curvature of the earth from the stratosphere (in 1931); son of Jacques Piccard, the first human to dive to the deepest point of the ocean floor; and with his very own pioneering achievements, having set multiple world records himself—for instance, accomplishing the first non-stop balloon flight around the world in 1999. His March 2015 to July 2016 round-the-world flight in a solar-powered plane generated remarkable and sustained coverage from broadcasters. During this time frame, the *Solar Impulse* team organized 600+ one-on-one interviews, 28,590 English speaking broadcast clips (TV and radio) worldwide, 241 hours of news coverage across 53 countries, 69,865 online news stories worldwide in 11 languages, 130 billion media impressions.[6] The *Solar Impulse* project benefited from sustained broadcast coverage across international global media outlets such as CNN, BBC, Reuters, CNBC, Al-Jazeera and CCTV, channels whose reporting followed the flight plan regularly thus ensuring global visibility for the project [AD].[7]

At the beginning of one of the meetings that the SIF holds periodically with representatives of its industrial partners, Bertrand emphasized that the mission of the SIF is the promotion of clean technologies and to raise awareness around GCs. However, during the same session, the managers of SIF's corporate industrial partners—having observed that the founder's personal relationship with CEOs plays a key role in the agreement to allocate funds to the SIF—reminded Bertrand to maintain frequent contact with their CEOs. A SIF team member recalled this message from the industrial partners in an interview directly following the meeting:

> Today we see that ... that really struck me, each of the partners, even [name redacted] said, "You must keep in touch with our CEO, Bertrand, you have to keep in touch. Because for us, even if we say that [SIF] is great, it's thanks to you, thanks to your personal image that we are here." [HQ7]

A few team members also inferred the link between the founder's image and continued spotlight for SIF,

> All [the partners] appreciate the persona of Bertrand Piccard … The more Bertrand gets exposure, gets visibility, and becomes attractive, the more that shines on the Foundation [L14]

> Without him we can't do anything, so he works for the Foundation. He raises money for the foundation, he raises… all this is for the Foundation. [L11]

The media and public attention drawn by their celebrity founder clearly served to accelerate the sustainable mission of the SIF.

Our analysis of the SIF reveals an intentional reinforcing mechanism designed into the heart of the organization in the form of synergies between the organization's *explicit* mission to gather and curate clean technology solutions to contribute to a more sustainable planet and an unstated, *implicit* mission to maintain its prominent founder's personal brand. Together, these missions create a flywheel, sustaining the organization's financial resources and accelerating its impact.

While the utility and importance of these two engines was evident to the founder and his team in Headquarters, no formal communication had been made internally to educate the organization on the implicit mission. This implicit

[6] Additionally, they benefited from 24 million page views on solarimpulse.com, 8.3 million unique users on solarimpulse.com, 28 million live views across all media platforms, 1.18 billion impressions of #futureisclean on Twitter and 4 million engaged users on Facebook.

[7] Archival documents cited as [AD].

mission surfaced within the organization in a series of revelatory events, provoking different reactions across teams. Our findings focus on the organizational response and ultimately reconciliation with latent hybridity by making the implicit mission explicit and formally adopting it.

2.4 Organizational reconciliation with latent hybridity in three stages

During the 29 months that we studied the SIF, organization members were awakened and reawakened to the implicit mission and ultimately reconciled with latent hybridity in three distinct stages. While our focal interest in hybridity is on the level of analysis of the organization as a whole, we find that organization's evolution through the three stages is determined by important individual-level perceptions of the mission(s) that lead to emergent faction-like behavior at the group level, creating an organizational environment characterized by guardrails that begin as rigid, become more relaxed, and then are ultimately formalized.

In the three sections that follow, we describe the overall process of moving from latent hybridity that is an invisible source of tension in the organization *(Stage I),* through a period where synergies of the dual reinforcing mission alleviate but do not fully resolve the tensions *(Stage II),* to explicit hybridity that permits tensions to be formally addressed and reconciled *(Stage III)*. Within each stage, we observe three key steps: (a) the implicit mission being awakened by catalytic events, (b) the mission being (re)interpreted by individuals, and (c) actions taken by groups that emerged based on shared mission perceptions and which resulted in organizational behavior characterized by specific types of guardrails.

We pay special attention to the contingencies that permitted the SIF to proceed from one stage to the next. Specifically, the effects of the success resulting from dual mission synergies, which served to relieve pressure on the explicit mission and reinforce the importance of the implicit mission, moved the SIF from their Stage I to Stage II response. Subsequently, the organization did not move to the Stage III response until the implicit mission was made explicit.

2.4.1 Stage I: Response to emerging latent hybridity

In Stage I, an implicit mission came to the fore. Throughout our fieldwork, we observed a series of catalytic events bring the founder's prominence into the foreground in ways that revealed the maintenance of his prominent public-facing image as an implicit mission in the organization. Each of these catalytic events revealed to organization members that, in practice, a significant amount of organizational attention and resources were, at recurring intervals, diverted to communications and activities that primarily supported the founder's personal achievements and prominence as an end goal (i.e., an implicit mission). Based on organization members' capacity to infer the complementarity of this implicit mission with the explicit mission of delivering sustainable solutions, these events triggered a range of reactions, which are foreshadowed in the descriptions of each event below and explored in depth throughout the rest of the findings.

***Catalytic event: The balloon event*.** In March 1999, Bertrand Piccard completed the first ever round-the-world flight in a hot air balloon, doing so in twenty days and establishing a new world record. This costly monumental flight was sponsored by Swiss watchmaker Breitling, whose name was printed prominently on the silver foil balloon, and who later became a sponsoring partner of the SIF. In line with Bertrand's contractual obligation to promote visibility of the sponsored flight and leveraging the opportunity to draw attention to Bertrand and his current work as the head of the SIF, the SIF ran a large media campaign leading up to the 20th anniversary of this historical flight. While an objectively interesting opportunity for the SIF—and one of the only means by which the SIF could give back to its only non-tech sponsor—this campaign brought the implicit mission of maintaining the Bertrand Piccard brand into the foreground at a time (March 2019) when the Foundation had curated only 115 of the 1000 solutions it had promised by December 2018.

> I don't know why they decided—or [the project leader] decided—to do a whole big thing, a paid communication campaign, we spent a considerable amount of money to promote [online] posts, videos, we called on people all across the world to make posts. It was, in terms of workload it was even more than that… [the project leader] finished at 9 pm every night to finish this or that thing, make quizzes, make things. I was like, "Actually we don't really care". [We] could have written a three-paragraph LinkedIn post to say "it was such an amazing time" , period. We could have had just about the

> same visibility and that's enough, we move on to something else... We can't even say whether it worked or didn't work. There was no objective. What's the point? We don't even know. [S9]

The Labeling team, who was not only under pressure to deliver quickly, but also facing an increasingly lengthy process that had attained—at that time—a median duration of 239 days from submission of a solution's application to Labeling decision, perceived the balloon campaign as disconnected from the sustainable mission:

> Actually, we had a huge argument with [team member] from Outreach Perspectives: that we want to work on resources to go to help us, in order to recruit solutions. But they did a huge campaign on the balloon anyway. [L6]

On the other hand, organization members with greater exposure to the foundation's external relations understood the important link between the founder and the foundation:

> It's part of that "love for the brand" part: people like to keep in touch with the Foundation also because they are inspired by Bertrand. Therefore, the fact to keep nurturing this admiration for Bertrand leads to admiration for the Foundation. So [the communication campaign on the anniversary of the balloon flight] also made sense in terms of communication around the Foundation. [S11]

***Catalytic event: Government partnership and pressure to streamline*.** A second trigger illuminating the implicit mission of the founder's prominence stems from a series of discussions between the founder and the Labeling team that took place throughout the first half of 2019. The founder—driven by what was, in his mind, a clear and simple goal to not only curate but also make good on his public promise to *deliver* 1000 sustainable technology solutions to decision-makers—had made repeated requests that the Labeling team simplify procedures in order to more rapidly screen and award the label to startups with promising solutions. His requests continued to be accompanied by ambitious deadlines. For example, at the beginning of March 2019, Bertrand signed a partnership with a European government that would grant funding to the SIF in exchange for a promise to label a substantial number of solutions (around 300) from that country by the end of the month. At that time, 300 new solutions represented three times the volume of their full existing solutions portfolio, which had been painstakingly curated over a span of more than six months. Bertrand's request for an exponential acceleration of the Labeling process triggered considerable questioning, even crises, within the Labeling team.

The Labeling team, who took their task of developing the Efficient Solution Label very seriously, were fully invested in developing this label to be the most appropriate tool for promoting clean technologies. In their view, the founder's tendency to push for streamlining and simplifications would impede the quality control of the label. The Labeling team was ignorant of the funding stipulation from the government partner but became cognizant of the importance placed on maintaining the founder's public image as driving, or largely contributing to, the pressure to deliver solutions quickly. A series of internal meetings debating the time vs. quality trade-offs of the labeling process erupted in frustration that was expressed by one of the team members:

> Let's stop calling it Efficient Solution Label, instead we're going to call it the 'Bertrand Piccard Label'! [L18]

***Multiple mission perceptions*.** Based on organization members' capacity to infer the complementarity of the founder's continued prominence and the foundation's sustainable mission, the organizational bandwidth allocated to promoting the founder's image triggered either the perception of a *dual reinforcing mission*, or, confusion and an initially *vague* understanding of the mission, which, after a period of questioning, resulted in the perception of *dual diverging missions.* Each individual progressed at their own pace down a path to inferring reinforcing or diverging latent hybridity, based on when they were hired and the trigger events they encountered during their tenure at the SIF. Though we interviewed team members separately and found that their perceptions were formed through their unique interpretations and expressions, we also observed strong patterns in the mission perceptions developed by individuals in a given team, when compared with other teams. Tables 3 and 4 are organized to emphasize the patterns in mission perception associated with employment tenure and team affiliation. Additional quotes reflecting variation in mission perceptions are provided in the Appendix.

A first category of interpretation comprises those who were able to *infer a dual reinforcing mission.* Every member of the Headquarters team, as well as those who had been employed for more than a year—a relatively long duration—in the Support team, acknowledged the reinforcing nature of the explicit sustainable mission accompanied by an implicit mission to promote Bertrand's public image. For these experienced members of the SIF, and mostly senior professionals, the importance of Bertrand's embodiment of the foundation's message and his ability to personally deliver this message to an audience was an essential asset of the organization.

> People need to understand that the Solar Impulse Foundation without the figure—without the icon Bertrand Piccard—would not exist. What [the foundation] is doing would not be possible, it would not have any chance of being financed, or of being heard, if it did not have the figure of Bertrand Piccard. [HQ1]

> For someone [like me] who works in communication, in terms of storytelling, having a hero in the narration is perfect for being able to tell a story and to motivate people. [S11]

> My motivation is in terms of Bertrand it's helping to inform perspectives and use him. I mean, not from a selfish sense, but ultimately he is a mouthpiece. He's a megaphone. ...because we are managing somebody's personality and ensuring that that person remains relevant, a lot of our work focuses on trying to find yes, strategically placing him on certain topics, on certain subjects, he needs to talk about. [S3]

In addition to understanding the critical way Bertrand's celebrity reinforced the SIF's sustainable mission, these employees also recognized how the foundation's mission—in particular, delivering on a GC mission—reinforced his public image. For certain members of the organization, it was clear that undertaking the GC of curating 1000 feasible and profitable clean technology solutions, and thereby contributing to human progress, was of great importance in Bertrand's quest to continue his personal and family legacy.

> Bertrand needs this new story. He needs the new success in order to continue to live his personal narrative of someone who takes on and achieves challenges regularly [emphasis in original]. That's very personal. [HQ4]

A second category of interpretation comprises those who possessed only a *vague understanding* of the mission, leading them down a path toward perceiving a *dual diverging mission.* Following the launch of the World Alliance for Efficient Solutions in 2017, the SIF created an Efficient Solution Label in 2018 as a means of engaging with inventors and startups, inviting them to apply for the label, and screening candidates in the process of building up the portfolio of 1000 efficient solutions. The members of the Labeling team were mostly fresh graduates, many of whom were hired as interns or external consultants. At the time the study was conducted, half of the members of the SIF had been working for the organization for less than one year. Interviews with each individual revealed that new recruits in the labeling team had only a vague understanding of the organization's mission, and the more longstanding members of the team held a perception of the SIF as having two diverging missions. In the words of one employee:

> I always saw Bertrand's vision as one line, and the vision of the Foundation as another line, and they have never been parallel. [L18]

Much of the confusion leading to vague understandings of the SIF mission was associated with mistaking means and ends—for example, seeing the label as an end in itself as opposed to a means for collecting and delivering a portfolio of solutions to decision-makers. A significant amount of confusion resulted from observations of organizational bandwidth allocated to promoting the legacy of the founder's past achievements, without any direct link to curating a portfolio of efficient solutions. Beyond the fact that these employees were not exposed to industrial partners who emphasized the importance of Bertrand Piccard in their decisions to fund the organization, these floundering employees did not receive explicit internal communications about the ways in which the founder's brand accelerates the Foundation's work. As a result, with their experience at the SIF accumulating over time, individuals with an initially vague understanding of the mission gradually moved toward a perception of two diverging missions.

> In the beginning I worked for the Foundation, this is how they sold it to me. It's only very recently that I realized that I actually work for him… Clearly the Foundation is there to give Bertrand visibility. [S7]

> The Foundation serves Bertrand. [L14]

This perception of an increasingly diverging dual mission was repeatedly exacerbated by a number of catalytic events in which maintaining the founder's prominence surfaced as a key driver of organizational decisions.

Table 3 visualizes how employees who have been longest employed at the foundation perceive the implicit and explicit missions as mutually reinforcing. In contrast, those who are newer to the organization either have only a vague understanding of the mission or see the implicit mission as diverging from the explicit sustainable mission. Table 4 visualizes how this perception of the mission is tied to team affiliation. The Headquarters team, which handles all of Bertrand's speaking events as well as oversees all activities of the foundation, has a unanimous perception of the dual reinforcing mission. In the Labeling team, whose exclusive responsibility is to gather 1000 solutions, over half the team perceives the implicit mission as a separate agenda that diverges from the foundation's core work. The Support team, which is composed of multiple sub-teams who serve a number of functions for both Headquarters and the Labeling team, have varying perceptions of mission complementarity.

Table 3: Employment tenure and mission perception.

Tenure (in years)	Mission Perception		
	Vague	*Dual Diverging*	*Dual Reinforcing*
10+			
10+			
10+			
10+			
2 - 5			
2 - 5			
2 - 5			
2 - 5			
2 - 5			
1 - 2			
1 - 2			
1 - 2			
1 - 2			
1 - 2			
1 - 2			
1 - 2			
0.5 - 1			
0.5 - 1			
0.5 - 1			
0.5 - 1			
0.5 - 1			
0.5 - 1			
0.5 - 1			
<0.5			
<0.5			
<0.5			
<0.5			
<0.5			
<0.5			
<0.5			
<0.5			
<0.5			
<0.5			

Individuals' tenure ranged from 0.1 to 15.00 years. To protect employees' anonymity, we indicate their tenure relative to meaningful thresholds.

Table 4: Team affiliation and mission perception.

Team Affiliation	Mission Perception		
	Vague	*Dual Diverging*	*Dual Reinforcing*
Founder			
Headquarters			
Headquarters			
Headquarters			
Headquarters			
Headquarters			
Headquarters			
Headquarters			
Support			
Support			
Support			
Support			
Support			
Support			
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Constructing rigid informal guardrails. Thus far in Stage I, we have seen catalytic events such as the balloon campaign reveal an implicit mission within the SIF to maintain founder Bertrand Piccard's public image. At the individual level, employees made sense of these events by either inferring the importance of the founder's brand for accelerating the sustainable mission (i.e., they perceive a *dual reinforcing mission*) or failing to infer the complementarity of these and instead viewing resources allocated to the founder's personal brand as detracting from sustainable mission activity (i.e., they perceive a *dual diverging mission*). We now turn to describe behavioral responses to these catalytic events that brought the implicit mission into the foreground and challenged employees' understanding of the organization's overall goal. SIF employees did not act individually, but rather displayed organic—that is, grassroots—bottom-up, emergent spontaneous collective behavior, in line with their perception of the mission, to either (a) defend the interests of the explicit mission to promote clean technologies, or (b) to defend the interests of promoting the founder's public brand as a means of garnering public attention for the SIF and thereby accelerating the promotion of clean technologies.

Rather than being formally established, as guardrails have been previously conceptualized (Smith & Besharov, 2019), the *informal* guardrails we observe at SIF in Stages I and II develop organically; in Stage I they emerge as *rigid* and in Stage II become more *relaxed*. In the following, we show how these Stage I rigid informal guardrails (summarized in Table 5) are constructed by teams protecting the interests of each mission throughout the back-and-forth negotiation

around simplification of the labeling process. In effect, the Balloon Event and Pressure to Streamline—which made the implicit mission of founder brand maintenance appear to threaten the explicit sustainable mission—provoked the Labeling team to concentrate organizational resources on the labeling process in a way that created a rigid guardrail, eventually eliciting a response from Headquarters in the form of their own rigid guardrail, which in turn prompted the Labeling team to construct yet another rigid guardrail. We describe the construction of this chain of rigid informal guardrails in detail.

Table 5: Informal guardrails that emerged organically in the context of latent hybridity.

RIGID INFORMAL GUARDRAILS			
Overcomplexity	Originally intended to provide credibility to the SIF Label, the labeling process soon became an over complicated process, made of lengthy and specific protocols and involving several actors (i.e., up to five external evaluators, an external auditing firm, and regular meetings with at least one representative per each team of the SIF, and the founder himself)		
developed by	The Labeling team, whose members perceived a vague or diverging mission, and aimed to protect the sustainable mission and to alleviate some of the perpetual calling into question of the label's strategy and tactics		
evidence	We have a very detailed procedure and I think that we remain rather… we are very rigid in our procedures. [L13]	It's an ultra ultra over complicated process [L11]	Here everything becomes immediately over complicated [L9]
	"We created" and that is what I find absolutely magnificent in this situation. We created this, you see. It's us that have created all of it. You see, no one told us like, "Ok, you have to do it this way, deal with it". [S9]	We have an evaluation mechanism that I find very good, but which is, for me, much too complex for what we want to do. And which uses an enormous amount of resources in its mechanics, if you like, and so it takes a lot of resources to implement all that. [L14]	You don't want to create a monster [PM1]
Implicit Shield	Given the personal engagement vis à vis the partners, the public institutions and the governments, the founder is aware of the threat to his public image—should he fail to deliver on a highly publicized goal. He pushes for streamlining the Labeling team's overly complex procedures in order to more quickly fulfill his promise and preserve his image in front of decision-makers and the public. For gaining legitimacy in his demands to simplify and accelerate the process, he regularly evokes a sense of external pressure, which is, to some extent perhaps exaggerated, and to some extent supported.		
developed by	The founder, who, in order to accelerate the Labeling process and deliver the 1000 solutions quickly, put pressure on the Labeling team by invoking the sense that external stakeholders (institutions, governments, and sponsoring partners) have strong expectations of the SIF		
evidence	We have a responsibility [vis à vis the institutions] [Founder]	We created expectations, we are obligated to fulfill them [Founder]	We live on credit [Founder]
	We are recognized for what we are going to do. This means that it is extremely important to do it, and to do it quickly [Founder]	The faster we are, the most efficient it is for us, the most useful it is for the others and also for the protection of the environment and climate change [Founder]	
Explicit Shield	When the SIF was initially developing their new Label, they asked EY (one of the Big Four accounting firms) to certificate their labeling process. Originally intended to provide credibility to their Label, the external authority		

of the auditing firm was instrumentalized as a means of shut down ideas or requests that were perceived as incurring a drift from the sustainable mission.

developed by The Labeling team, whose members perceived a vague or diverging mission, and aimed to protect the sustainable mission and to alleviate some of the perpetual calling into question of the label's strategy and tactics

evidence

[The Label] protects us [L11]	You want to protect yourself against my creativity! [Founder]
I need to protect myself! [L1]	Bertrand wants it that way [L14] — EY [the auditing firm] will never accept [L11]

RELAXED INFORMAL GUARDRAILS

Practices to Monitor Explicit Mission Progress In a later stage characterized by higher performance of the organization with regard to the explicit mission, members seek to understand and document the foundation's concrete impact in the startup ecosystem and sustainability sector.

developed by The Labeling team, whose members perceive a vague or diverging mission, yet whose behavior appears to be more tolerant and tempered towards the fulfilment of the implicit mission.

evidence

I see that, in connecting startups, etc. with the big [corporate] groups, we are succeeding in creating some impact, and that at the end of the day, I'm happy if I've seen that my small connection with the startup [Clean Vaccine] and then I connect them with [Big Pharma] and at the end of the day the guy says, "Dude, that's incredible, I would have never been able to get a connection like that with a big industrial"—and then I say to myself, ok maybe my work is going to be useful for something. [S17]	The [Labeling] team is now fundamentally THE team of the Foundation, because we hold events that were successful, because it brings results, because we're the only ones who stay on track with our KPIs. And we moved, the Experts were the problem, before, and now are the strong suit ... This rebalancing has demonstrated that after all a good work, and an accurate way of working, can bring results ... And this led [Bertrand] to trust a bit more and leave things be ... So he found himself with something that works better [L1]	I'd say that in the end you found a middle ground agreement, which is having a system that is quite heavy anyway, but leaner, and that gives us a polished credibility [S9] [Our arguments] are based on numbers. And we're starting to have a database that is big enough to say that the reality is based on [our analyses] [L8]

First, in light of the founder's pressure to drastically simplify and expediate the solution screening and labeling process, those who viewed this pressure as merely an attempt to save face for the founder dug in their heels, employing *overcomplexity as a rigid guardrail*. Specifically, the Labeling team's efforts to protect against drifting from the sustainable mission manifested in the creation of an increasingly complex labeling process, one that allowed them to alleviate some of the perpetual calling into question of the label's strategy and tactics through the creation of lengthy and specific protocols.

> "We created" and that is what I find absolutely magnificent in this situation. We created this, you see. It's us that have created all of it. You see, no one told us like, "Ok, you have to do it this way, deal with it". [S9]

While development of the labeling protocol served the purpose of anchoring and uniting employees who were struggling with the diversity of organizational activities and goals, it resulted in a process that entailed 239 days from receiving an application to issuing a decision—a median duration which peaked at 303 days, that is, around 10 months. In March 2019—i.e., throughout the 20th anniversary balloon campaign—the team was able to process applications at the rate

of issuing 11 labeling decisions per month, a procedure which had yielded a total of 115 solutions. This was a far cry from the 1000 solutions that had been promised by December 2018.

Even the label's biggest proponents admitted that this overcomplexity was becoming an obstacle.

> We have a very detailed procedure and I think that we remain rather… We are very rigid in our procedures. [L13]

> We have an evaluation mechanism that I find very good, but which is, for me, much too complex for what we want to do. And which uses an enormous amount of resources in its mechanics, if you like, and so it takes a lot of resources to implement all that. [L14]

> It's an ultra, ultra over complicated process. [L11]

Second, in response to this increasing complexity of the laborious labeling process radically challenging a plausible date for portfolio completion, Headquarters realized the threat to Bertrand's public image—should he fail to deliver on a highly publicized goal. This group, that viewed the complementarity of Bertrand's persona as a critical part of a dual reinforcing mission, constructed a rigid informal guardrail that we call a *shield for the implicit mission,* pushing for streamlining the Labeling team's overly complex procedures in order to more quickly fulfill Bertrand's promise and preserve his image in front of decision-makers and the public. The Headquarters team shielded themselves from criticism by evoking a sense of external pressure, which was, to some extent perhaps exaggerated, and to some extent supported. Bertrand himself could be heard saying,

> We have a responsibility [vis à vis the institutions] … We created expectations; we are obligated to fulfill them… We live on credit… We are recognized for what we are going to do. This means that it is extremely important to do it, and to do it quickly… The faster we are, the most efficient it is for us, the most useful it is for the others and also for the protection of the environment and climate change. [Founder]

In a meeting that included corporate partners, one representative, speaking about the label, said, "You don't want to create a monster" [PM1]. Certain members of Headquarters understood the distress such a push could inflict on the Labeling team; nevertheless, taking action was important if the foundation was to maintain the credibility conferred by their celebrity founder.

> They are young, they need rules, they need rules to reassure themselves… When I speak about it [changing and simplifying the Labeling procedure] internally, it scares them. [HQ1]

> Finally, the Labeling team responded with their own shield for the explicit mission, evoking, in turn, the external authority of the auditing firm that had certified their intricate labeling process. When it was relayed that "Bertrand wants it that way" [L14], a teammate responded, "EY [the auditing firm] will never accept" [L11].

Supporters of both sides of the latent hybridity repeatedly used the shields as informal, rigid guardrails as the organization sought to achieve a balance of implementing a rigorous solution screening process while delivering on public promises.

2.4.2 Stage II: Response to enduring latent hybridity—Recurrent surfacing of an implicit mission

Following a period of several months during which the informal guardrails were in place and during which the maintenance of the founder's brand faded into the background, a number of trigger events brought the implicit mission back into the foreground, reawakening members to the latent hybridity.

***Catalytic event: Meeting the Pope and EU leaders*.** Having sustained and grown his visibility as an influencer in the field of sustainability, Bertrand Piccard received multiple high-level invitations to meet with institutional leaders in February 2020. In a matter of ten days, he was received by the leader of Interinstitutional Relations and Foresight (IRF) at the European Commission, then Pope Francis at the Vatican. While these were anticipated by the SIF's Diplomatic Affairs

team as critical opportunities to cultivate relationships with powerful figures and gain publicity that would put the SIF in the good graces of important stakeholders, the energy put into these meetings again raised questions internally about the scope of the organization's mission.

> I don't want to be negative, but what is going to come out of that? I mean, yes—we published an article, maybe people will say, "Oh, so cool, he met the Pope". Okay great. I mean, are we going to install some [cleantech] solutions in the Vatican now? Is the Pope going to bring us solutions? Is the Pope going to— I don't know. I have doubts about that. In contrast, as you see, Bertrand gets really excited about that, meeting public figures like that. … The question is, to what extent are each of the podiums he is put on going to advance the foundation's cause? For example… with [the IRF leader], I say well great, that's three years that we've been talking about [him]. Each time we see him at each COP, what happens? Well, not much, you see. I mean it's a bit harsh but—I don't see—oh well. [L10]

> All this organization serves Bertrand, it doesn't serve the companies nor the ecological transition purely. It serves his public image. Otherwise, he would go to the European Commission with a team of negotiators, and would say "Okay guys, we've detected [that] for 10 solutions that there is an issue in the regulations, namely this, this, this and this. Mr. [EU Leader], what can you do? Can you make things change? Can you change the law?", No! He goes there, shakes hands, and just says "Eh, I'm about to get my 1000 solutions, it's great, we're going to look for new solutions that are good for the environment." And Mr. [EU Leader] answers "Sure! Bertrand, you're right! Goodbye." [L14]

Catalytic event: Achieving a new world record. Committed to helping the transition to responsible mobility, car manufacturer Hyundai asked Bertrand Piccard to lead the world record for the longest distance driven on a single tank in a hydrogen-powered car. In the spotlight of social media, Bertrand Piccard achieved this record in November 2019, driving 778 km across France (Hyundai, 2019). While many ministers and CEOs accompanied him throughout the record-setting journey and joined in the message he was delivering for promoting a clean transportation industry, this event received ambivalent reactions and even came as a surprise for some members of the SIF. In fact, those who held a perception of dual diverging missions regarded this event as part of Bertrand Piccard's personal activities, thus not legitimate as part of the organization's activity—a perception exacerbated by the fact that Hyundai holds a partnership with Bertrand Piccard himself, rather than with the SIF.

> It became a topic of discussion because everybody wondered 'But why should we do this? It's not our job, that's Bertrand's stuff.' … I wanted to consider and understand what the logic was. [S17]

However, despite the misunderstanding and tensions this initially created at the SIF, the event was designed to provide visibility to both the founder and the organization and succeeded in doing so.

> [The Hyundai event] has created a huge visibility around the record. And that, that benefits both Bertrand and the Foundation at the same time. [S17]

An enduring multiplicity of mission perceptions. As illustrated in these reactions from members of the Labeling team, more than a year after observing their first awakening to the implicit mission, individuals across the organization still hold various understandings of the organization's mission(s), accompanied by a range of opinions on whether there is a diverging or reinforcing mechanism at play. Two key factors contributed to maintaining this multiplicity of mission perceptions. First, there had been no internal communication on the importance of the founder's personal brand for accelerating the explicit sustainable mission, so those with only vague understandings of the mission are confused by catalytic events in which the founder brand surfaces as important; these confused individuals follow the same path (as in Stage I) to perceiving diverging aims among activities. Meanwhile, those who held a perception of dual diverging missions in Stage I have not been informed otherwise, leaving them in the same category. A member of the transversal Support team wonders,

> "Is the mission to accelerate the development of clean technologies, and renewable energies, or is the Foundation's mission to promote Bertrand Piccard? That's the question." [S9]

Second, the high turnover rate—on average, 1.5 new people per month (including interns and consultants) have been hired at the SIF—has contributed to an ever-present number of new hires coming in with only vague understandings of

the mission. We see this reflected in one new recruit's attempt to make sense of Bertrand Piccard's meeting with Pope Francis:

> "I don't think that the Pope is an environmental expert..." [L24]

In Stage II the ratio of those who view a dual diverging mission to those who view a dual reinforcing mission remains the same as in Stage I—about 50:50. Fewer perceive only a vague mission in Stage II than in Stage I; on average members are more settled into an opinion regarding the prominence of the founder's persona alongside the sustainable mission. In the eyes of those holding an understanding of the sustainable mission and founders' brand as reinforcing, the Pope and EU Leader events as well as the New World Record contribute to both missions of the organization and are ultimately necessary for progress on the explicit sustainable mission.

People here need to understand that the SIF, without the person, without the icon Bertrand Piccard, would not exist. What [the Foundation] does, wouldn't be possible, it wouldn't have any chance to raise funds, nor to be listened to, if the person Bertrand Piccard wasn't there. You can wonder whether meeting with the Pope, or the 20th anniversary of the round-the-world flight— "do these have anything to do with our job?" It has to do with communication, which is necessary to acquire the conditions for the Foundation to work. [HQ1]

> Everyone knows that, if we're here, it's only thanks to Bertrand. [S14]

> If the Foundation is not using me and promoting me, the momentum will stop. [Founder]

Among those that view the promotion of the founder's brand as diverging from the sustainable mission, we observe some members' skepticism about the way the two missions are tied together, citing concerns for too much interdependence:

> The two [missions] go hand in hand quite a bit. I guess, if you think of the team, the very kinds of team we have here, it is structured around what he does as well. I'm simply thinking the fact that we have an implementation team that is able to give him very specific briefs on what to say, how to speak. That's really to serve him and give him words when he's at big events. But at the same time, we kind of need them because it gives us still visibility. I think that they sort of serve each other. But that is, I guess, a good and a bad thing because, in a sense, the foundation has grown dependent on Bertrand. [S15]

***Relaxing informal guardrails*.** Despite that individuals' cognitive reactions to catalytic events did not change between Stages I and II, we observed an evolution in operational responses. We find this is due to *higher performance* of the organization with regard to the explicit mission, resulting in more tolerant and tempered behavior on the part of those with the perception of a diverging dual mission. No longer is there a domino effect of mission shields playing off one another. Instead, each side of the hybridity is protected by informal guardrails that are more relaxed than the rigid ones constructed in Stage I.

Those who infer and support the dual reinforcing nature of the implicit and explicit missions maintained the same narrative as before, with the founder continuing to emphasize that the foundation lived "on credit" and needed to quickly deliver the 1000 solutions that had been promised. With the number of sponsoring partners almost doubling (from the initial 9 in Stage I, to 15 at this Stage II, plus 3 in the process of signing), this allusion to responsibility to sponsors for the delivery of solutions was increasingly employed.

> Now, you see, I use the voice of partners to sometimes impose a few things, and I say: "Be careful, the partners asked me for this, so we must do it!" [S17]

However, with the Labeling team realizing that it was also in their own interest to prune the overly complex protocol they had established, the application process was accelerating, and Headquarters did not need to use the implicit mission shield as aggressively as before.

> I think that Bertrand accepted to let go of the reins a bit on this point. In a good sense, I mean. He accepted to trust, he saw the machine running, and I think that he also has more confidence [in it]. [S18]

Those who fail to infer the complementarity of the founder's brand and therefore defend the interests of primarily the sustainable mission as manifested in the Label have released their tight grip on overcomplexity as a guardrail, as it became recognized as a hindrance to themselves. In other words, the overcomplexity fulfilled its function of buying time to rigorously flush out a solution before awarding it with the Efficient Solution Label, but it also became heavy to navigate for the Labeling team members and was gradually voluntarily consolidated. The primary informal guardrail established to continually represent the interests of the sustainable mission was comprised of *practices to monitor explicit mission progress.* One of the core means of keeping the sustainable mission at the front of the organizational agenda was by rigorously tracking and regularly presenting data on the organization's progress toward achieving the goal of curating 1000 clean technology solutions. Rather than invoke a rigid guardrail meant to amass resources for the sole pursuit of the explicit mission, members seek to understand and document the foundation's concrete impact in the startup ecosystem and sustainability sector.

> I see that, in connecting startups, etc. with the big [corporate] groups, we are succeeding in creating some impact, and that at the end of the day, I'm happy if I've seen that my small connection with the startup [Clean Vaccine] and then I connect them with [Big Pharma] and at the end of the day the guy says, "Dude, that's incredible, I would have never been able to get a connection like that with a big industrial"—and then I say to myself, ok maybe my work is going to be useful for something. [S17]

While these guardrails protected interests of both sides of the hybridity—the explicit sustainable mission as well as the implicit mission to promote the founder's image, and the performance synergies resulting from the dual mission helped to alleviate some tensions, neither of these mechanisms were capable of alleviating all tensions.

2.4.3 Stage III: Response to latent hybridity made explicit

The third distinct stage of the organization's reconciliation with latent hybridity begins when persistent tensions at the operational level have accumulated over time, and continuous complaints from employees make it evident to Bertrand himself, and his top management in Headquarters, that many still do not understand how Bertrand Piccard's public image accelerates the SIF's sustainable mission.

> It was an ensemble, an accumulation … in fact, the last straw was when [team member] made a remark, and when you hear someone like him who gives himself heart and soul for the Foundation, and makes this type of remark, you say to yourself, "Wait, there is something not right here" … I even told [Bertrand], "Listen, now you have to tell them in a very clear manner." [HQ7]

> The mindset of the Labeling team is more that I'm using the Foundation for my own promotion, and they don't understand why they have to put the resources to promote me. And these people [who don't understand that], they clearly have absolutely no idea about communication [strategy]. [Founder]

This incomprehension was exacerbated by the fact that the SIF reached their goal of labeling 1000 clean technology solutions in April 2020 and labeling team members were unsure of what their work would comprise in the period following, and more generally what it would look like—practically speaking—for the Foundation to pursue a sustainable mission.

***Catalytic event: Founder explains the implicit mission*.** On October 30th, 2020, during one of the monthly organization-wide meetings, Bertrand Piccard made a special announcement,

> The Foundation would not exist without me, and I would be without tools without the Foundation. So, I would like to emphasize, in terms of communication, the importance of my relations and my activities for the Foundation. There is not a wall, not at all, between what I'm doing, and what the Foundation is doing. I remember that sometimes people were saying "oh you go and make speeches for yourself to earn your life, and you could put more time at the foundation." Well, I would like to remind that, beside one or two partners that [members of the partners relationship team] have

> found by themselves—it's wonderful, every partner comes from speeches I've done in the corporate world. This is what brings the awareness, this is what brings the contact. I remember when somebody was surprised that the foundation was celebrating twenty years of the balloon flight around the world (…) this type of communication brings a lot of visibility to the foundation. It's a way to link what we are doing to big events that have an awareness, that have a credibility in the world. Same thing when we are working with [redacted partner name] on sustainable investments. It's a partner that came to me, a personal partner, and they are doing extremely good examples of sustainable investments that the foundation can use. So, we see that it is very important to leverage every opportunity we have in order to make something out of it. It's not my life and your life, it's our goal, it's our tools. It's a toolbox where we have the partners, where we have the media, where we have my speeches, where we have partnerships. All this helps us to bring pieces of the puzzle altogether. [Founder]

This announcement propels the organization into a new space where all the cards are now on the table—the formerly-implicit mission to promote and maintain Bertrand Piccard's public image is clearly presented as a necessary and mutually reinforcing counterpart to the Foundation's sustainable mission to promote clean technology solutions. For the first time since the inception of the organization, all employees have received a baseline communication about this dual mission and may support or contest the founder's now-explicit role in discussions of strategy and implementation.

***Unified mission perception*.** Most team members welcomed the explicit presentation of maintaining the founder's public image as a necessary second mission of the foundation that reinforces the clean technology mission in a sustainable way. One member of the historically skeptical Labeling team reacts,

> I was thinking, 'Oh sh** that's cool!', that's a turning point and that's going to permit us to integrate [the founder's image] into our objectives for each team and understand that it, it's also a mission of the foundation. [L28]

Others talked about how his announcement "put the church back in the middle of the village", an expression meaning that he recentered the debate, restoring order. Even those who felt diminished by the emphasis of the founder's role came around to recognize the necessity of the dual reinforcing mission by the end of the week. In a single interview, one member who had moved from the Label to the Support team between waves 2 and 3 reacted to the founder's announcement in a way that evidenced evolving sensemaking:

> This visibility stuff of his feels like it's getting out of hand ... it shouldn't obscure the primary mission … I haven't come to a conclusion, I'm just observing. [S17]

> I think this announcement is his way of trying to remotivate the troops and say that he is important and must have a place in the Foundation. But for us (the Partnership) team it's very demotivating. Feels like he's saying we're good for nothing, he does it all. [S17]

> Beginning of January I wasn't very reassured, but now we're starting to see what we can do and it's pretty interesting, so to have a new, so to say a new mission, I think that's good. [S17]

The sum of employees' reactions demonstrates a process of understanding and acceptance that the founder's public brand and the sustainable clean tech mission are mutually reinforcing, both in theory and in action.

***Formalizing guardrails and establishing formal holographic forces to integrate dual mission at the operational level*.** Following the announcement of the "new" mission—that is, the implicit mission now made explicit—several actions were taken to reinforce each of the missions individually, and key structures were also established to ensure their strategic complementarity was integrated operationally.

The guardrails that had previously emerged informally—or had been spontaneously and organically instrumentalized by teams to defend and direct resources according to their mission interpretation—were now being formalized in Stage III. On one hand, the "Office of the President of the Foundation" became an entity with a name and more of a presence from which directives would be issued. This established a physical and psychological place to house the mission of maintaining the founder's public image. On the other hand, the Labeling team continued to defend the importance of the

sustainable mission and demand resources to that end. The same team member who displayed an evolving appraisal of the new explicit mission makes sense of the Label as the ultimate source of "substance" for the Foundation.

> You see, that's why the Label was constructed… instead of doing a PR campaign we made this label to be able to justify things a bit more solidly… He also needs substance to be credible. [S17]

In addition to these formalized guardrails in the interest of each mission, we also saw a new form of structure emerge. Formal, central forces were established in the organization for the purpose of embodying the dual reinforcing mission complex and integrating day-to-day activity in a way that serves both missions. In other words, these centripetal forces, in the form of two new hires, were holographic in nature (Albert & Whetten, 1985), representing the interests of both missions within the mindset and decision-making structure of a single individual.

A first holographic hire was brought in just before the founder's announcement; he had already been briefed on the dual reinforcing mission mechanism—indeed, as an HQ team member relayed, "the first thing he said was 'You need to capitalize more on the persona of Bertrand'"—and proceeded to develop a vision and strategy note clearly integrating the two missions, to be presented to the full organization shortly after the founder's announcement. Interestingly, the founder and his top managers purposely selected a communication, marketing strategy and branding expert for this role. It was by re-charting the foundation's communications to the outside world that they communicated to the internal team and via this means began to implement new internal structures to embody the new external communication plan. This key new hire would also oversee the translation of the new strategy into the operational level.

A second holographic hire was a role explicitly designed for "linking" [HQ7] the two activity centers of the founder's presence and the Label.

> The idea is really that Bertrand comes back now, briefs one person … telling [them], "Look here is a potential [partnership] to be developed", and maybe it could simply be writing a letter … There has to be a person behind Bertrand to follow up ... his secretaries, play, in fact, an absolutely essential role ... [Where to place the new hire, in what team] was a subject of reflection … so there will be this role of linking [BVA's personal image and appearances with the foundation]. [HQ7]

Armed with a renewed, clear strategy to promote clean technology solutions and Bertrand Piccard as the porter of those as the SIF moves beyond the goal of merely *labeling* solutions, the challenge remains to translate this new strategy into implementable actions.

> … a strategy was put into place and now the question is rather how, technically, are we going to deploy this thing? [S17]

In addition to the new bridging practices to be performed by the new hires, the dual mission was reinforced in internal-facing communications (the new strategy) as well as external-facing communications, which included editing the SIF's website to emphasize the role of Bertrand Piccard as well as adding an "Engagement" page to Bertrand Piccard's personal website that emphasizes the history of his work and commitment to sustainability solutions—highlighting his 2004 manifesto.

> If you look at it, his vision was faith in technologies themselves to permit us to leave this "ecology, environment and pollution" equation, it's the beginning of his 2004 manifesto. [HQ7]

Therefore, the efforts to coherently integrate both missions into the SIF's activities are not only framed as starting now, going forward, but involve returning to past events in order to tease out, enhance and clarify the links between both elements—Bertrand's actions and presence, and sustainable impact—that have been there all along, though perhaps muted.

Stage III of reconciliation with latent hybridity ushers the organization into a place where there is no need for talk of hidden agendas because both agendas are spelled out; where guardrails have not only emerged organically to defend the interests of each side of the hybridity but have also now been formalized; where holographic linking structures have been formally established; and where the hybridity can now be attended to and managed moving forward.

2.5 Theoretical model: Reconciling latent hybridity

With few exceptions, studies on hybrid organizing have not differentiated elements of the hybridity that are explicit and formalized from those that are implicit and informal. These exceptions suggest that latent identities (Pratt & Foreman, 2000; Pratt & Rafaeli, 1997) and latent logics (Seibel, 2015) are at work in the background throughout the course of certain organizations' daily operations, both helping them (e.g., in realizing cross-sector partnerships) and possibly challenging them (e.g., when a latent identity emerges and gives rise to contestation). However, until now we have had little understanding of how latent elements of hybridity may emerge as visible to organization members; how individuals, groups, and the organization as a whole respond to this awakening; and how latent hybridity plays out over time. Our three-stage model of organizational reconciliation with latent hybridity shows how implicit and explicit missions persist together in an organization over time until they are reconciled explicitly. Integrating our findings with extant literature, we describe the model represented in Figure 2. It is interesting to note that our model of reconciling *latent* hybridity docks onto Smith and Besharov's (2019) model of sustained *(manifest)* hybridity. In other words, our Stage III ends where Smith and Besharov's model begins, thereby explaining how some organizations may arrive at the point of being able to sustain hybridity. Furthermore, our findings suggest that *dual mission synergies* are an important element enabling a latent hybrid organization to survive to the point where it may reconcile its hybridity, and without which it may very well never get to the point of being able to sustain explicit or manifest hybridity as represented in Smith and Besharov (2019).

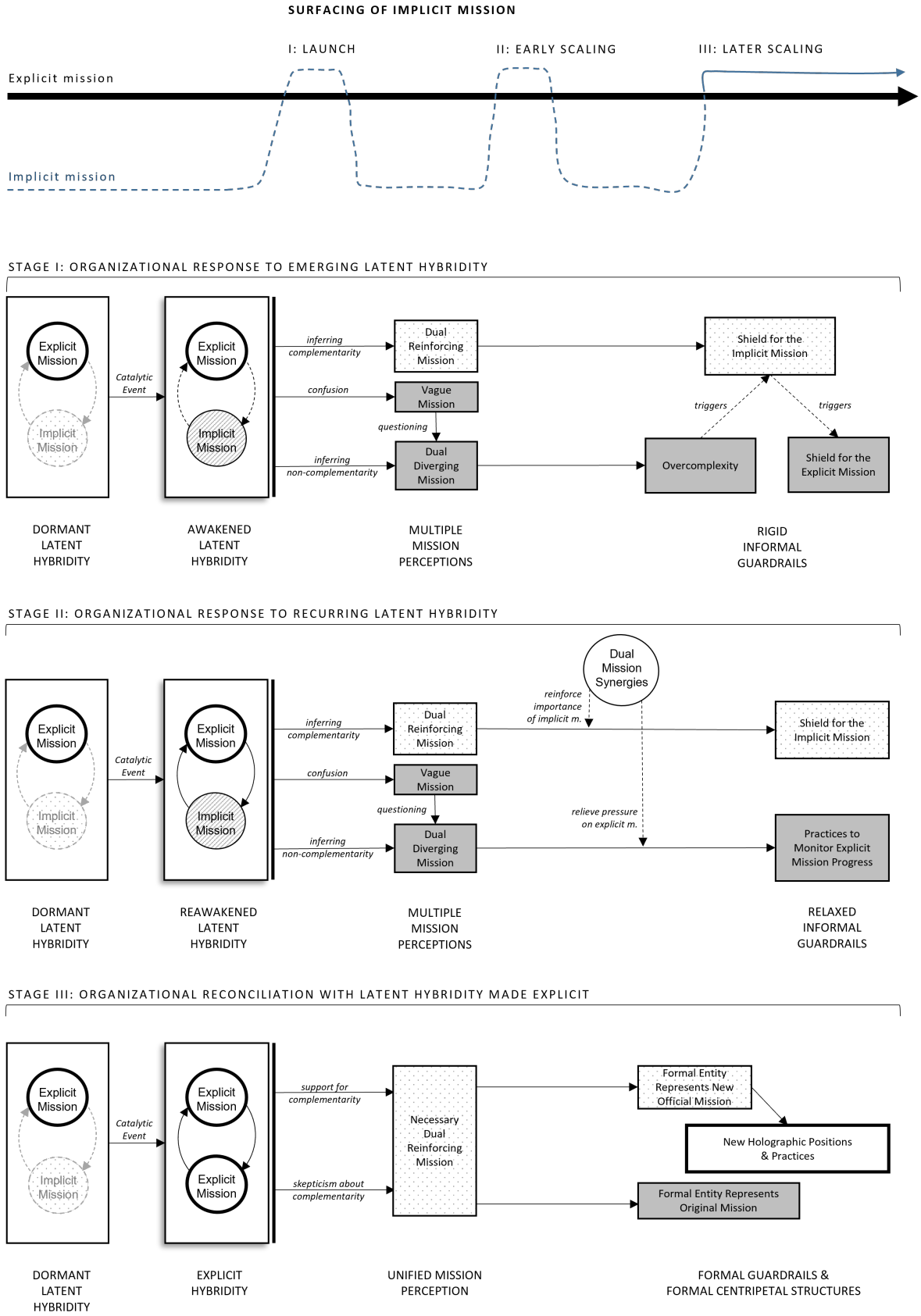

Figure 2: A model of organizational awakening and response to latent hybridity.

Beginning with a state of dormant latent hybridity, in which at least part of the organization (over half, in this case) is unaware of an implicit goal at play, we observe catalytic events bring the implicit goal to the attention of organizational members (Pratt & Foreman, 2000) through the concentration of resources outside the scope of the organization's explicit mission (Battilana et al., 2015). Organization members either infer the complementarity of the implicit and explicit missions, or the awakened latent hybridity generates confusion and a vague sense of the mission as individuals ponder the "perceived discontinuity" between their organization's actions and the image they had of the organization (Grimes, Williams, & Zhou, 2019). Without further input surrounding the complementarity of the implicit mission, continued questioning—of the organization's aims and their individual role in fulfilling those—leads employees to a perception of two diverging missions.

In this vein, scholars have found that division within hybrid organizations, based on organization members' preference or identification with one element of hybridity more than another, can ravage, paralyze, or disable the organization by creating contestation (Besharov, 2014; Pratt & Rafaeli, 1997), which has been seen to escalate into enduring conflict (Battilana & Dorado, 2010; Fiol, Pratt, & O'Connor, 2009). In order to avoid division, organizations can create spaces of negotiation where members can negotiate trade-offs between competing goals (Battilana et al., 2015), or cope by either marginalizing one element of the hybridity, blending them using a number of strategies (Jay, 2013; Kraatz & Block, 2008; Oliver, 1991; Pratt & Foreman, 2000; Zahra et al., 2009), or establishing formal guardrails that act "as guardians of each mission" (Smith & Besharov, 2019: 8).

The informal guardrails in Stages I and II of our model fulfill the same function as the formal guardrails discovered in organizations whose hybridity is manifest—that is, the function of preventing mission drift (Ebrahim et al., 2014) "by setting boundaries on how far meanings and practices shift" (Smith & Besharov, 2019: 28)—however, rather than being put in place by managers, *informal guardrails* are organically constructed by groups who perceive the dual mission as either reinforcing or diverging. In other words, we observe a grassroots initiative to protect each side of the hybridity. We add to the types of formal guardrails that Smith and Besharov observe managers erecting "in the form of metrics, goals, and roles dedicated to each mission" (2019: 27) with our observation of informal guardrails in the form of *processes* and *external demands* leveraged as either offensive (e.g., evoking time-bound promises to stakeholders to press for process simplification) or defensive (e.g., creating complex processes to ensure quality control) means of protecting what a group perceives as the legitimate mission(s).

In Stage III of our model guardrails become formalized, recognized as such and reinforced—through language and action—by leaders in the organization. Alongside these formal guardrails, we observe *formal centripetal structures*: roles that serve to sweep up, tie in and integrate both missions. These were put in place by leaders only after the implicit mission was announced as an official, explicit side of a now clearly dual mission.

Centripetal structures are distinct from guardrails. Guardrails are akin to bumpers in a bowling alley that push activity back into the overlap area where both missions are served—in other words, ideographic poles (Albert & Whetten, 1985) representing the interests of a single side of the hybridity. Centripetal structures are *holographic entities* (Albert & Whetten, 1985) that exert centripetal force, a proactive pulling of activity inward—very different from the reactive pushing of guardrails that push back against activity that strays. While guardrails are critical tools for hybridity characterized by paradox, framed in "understandings of dual elements as contradictory and interdependent" (Smith & Besharov, 2019: 26), centripetal structures also serve to integrate dual elements by emphasizing an understanding of them as mutually reinforcing.

Dual mission synergies (Pratt & Foreman, 2000; Siebold et al., 2019) play an important role in the ability of a *latent* hybrid organization to sustain its operations until the implicit elements become explicit and therefore addressable. Without formal guardrails that managers can learn to wield consciously (i.e., because the implicit mission is not consciously communicated), a latent hybrid organization is governed by organic informal guardrails that may give rise to inefficiencies and persistent conflict. Synergies from the two missions working alongside each other (even if not to their full potential) are likely important contributors to performance that keep the organization going until both sides of the

hybridity are made explicit, and they may consciously employ paradoxical frames or instill holographic entities to sustain their explicit hybridity.

In practice, the synergies generated by the dual missions working together alleviated pressure around the explicit mission over time, creating an atmosphere in which team members did not sense the need to reject initiatives beyond the scope of the explicit mission so aggressively, resulting in a model that entails rigid informal guardrails in an organization's early stages, followed by more relaxed guardrails in later stages. While dual mission synergies account for the difference in employees' emergent behavior between Stages I and II despite no change in sensemaking, it is the new information that comes with an implicit mission being rendered explicit that explains the difference between Stages II and III.

Taken together, our induced, empirically grounded three-stage model of organizational reconciliation with latent hybridity allows us to develop a nuanced understanding of this important concept and how it unfolds over time in an organization. Because prior research on hybrid organizing has mostly examined organizations whose dual goals, identities, or logics are explicit, intentional, and—though perhaps disputed or refuted—equally understood across an organization (cf. Albert & Whetten, 1985), and because the concept of latent hybridity as specified and investigated in our study challenges all three of these assumptions,[8] our findings allow us to offer several novel contributions to the literature on hybrid organizing as well as research on entrepreneurship and the GC literature.

2.6 Contribution

Hybridity is a key topic in the management and organizational literature, in no small part because many of the challenges that our society faces today require organizations to accomplish not only one but multiple fundamental goals or missions. It is thus not surprising that a quickly growing number of studies seek to improve our understanding of hybridity in both newly created and established organizations (Ashforth & Reingen, 2014; Battilana & Lee, 2014; Cappellaro et al., 2020; Doherty et al., 2014; Siebold et al., 2019). The present study sought to extend this important line of research by providing an in-depth examination of a new organization that is both challenged by and benefits from latent hybridity over the course of its creation and establishment. Our findings contribute several novel insights to the literature on hybrid organizing and entrepreneurship, as well as to emerging work on how organizations can address GCs.

2.6.1 Contributions to the literature on hybrid organizing

Our first main contribution is to the literature on hybrid organizing. As discussed, latent hybridity was initially invoked as a concept to emphasize the informal, implicit aspects of hybrid organizations—in contrast to the formal or explicit aspects that are evident in manifest hybridity (Seibel, 2015). To date, however, we still know very little about the character, the potential benefits, and the potential challenges to an organization when one element of its hybridity is latent. Against this backdrop of scant prior research, the present study describes and analyzes latent hybridity in an organization that has had only one explicit mission—and which, from the outside, might appear to be a traditional foundation. There may be many reasons (e.g., social, political) for which a second mission within an organization may be and possibly remain implicit, despite its legitimacy in supporting the organization's explicit mission(s).

This observation suggests the possibility that many more organizations, though not officially of a "hybrid" kind, may benefit from the complementarities of hybridity, or in turn, suffer from the vulnerabilities of hybrid organizations, without an internal awareness of the source of these reinforcing—or diverging and dividing—forces that we document in our study. In other words, once one is sensitive to the possibility of latent hybridity, one will be more likely to diagnose and be able to productively act on it. It is important to recognize that when the two goals, identities, or logics are mutually reinforcing, one may not necessarily perceive them—but rather they would only emerge as distinct elements if and when members of the organization realize that a trade-off exists between them (e.g., at times when they compete for limited organizational resources, or when organizational attention is diverted to activities that serve primarily the

[8] The founder himself intended to use his fame and prestige to reinforce the legitimacy of the organization, but this was not an intention that was formalized at the organizational level.

implicit element). Our results therefore not only reiterate but also advance what the hybrid organizing literature has called a "new perspective" on the potential for a mutually reinforcing nature of hybrid logics by emphasizing their latent nature and the dynamics that may arise due to catalytic events.

Along these lines, our findings suggest a number of theoretical mechanisms that are likely to come into play when an organization awakens to latent hybridity. In particular, responding to suggestions that latent elements lay dormant and may be awakened (Pratt & Foreman, 2000; Pratt & Rafaeli, 1997), our study not only shows various ways in which an implicit goal surfaces through an organization's daily operations, but also examines how the members of an organization will respond to and work with an awakened hybridity. The construction of a shield by one part of the organization to protect the explicit mission, and subsequent response by the other part of the organization to protect the implicit mission, demonstrate that even in the absence of *formal guardrails* put in place by management (Smith & Besharov, 2019), hybridity in an organization (be it latent or manifest) tends toward structures that protect both interests/goals/logics—even if they must arise via a type of grassroots movement as *informal* guardrails.

In cases where the hybrid elements are truly reinforcing, as in the case of the SIF, there is no tradeoff associated with hybridity on the strategic level. However, perceived tradeoffs on the operational level will nevertheless likely persist (even for long time spans) until the hybridity is made explicit, enabling a full understanding of the strategic elements to be translated and implemented at the operational level. It is the explicit treatment of the hybridity that allows for informal ideographic *guardrails* (supporting a single element of the hybridity) to be made *formal*, as well as for *formal holographic structures* to be established for the purpose of integrating activities at the operational level in a way that enhances the intended synergies of hybridity.

2.6.2 Contributions to research on entrepreneurship and the grand challenges literature

Our findings also provide interesting insights for research on entrepreneurship—which are, in no small part, driven by the fact that we benefited from rare access to a celebrity founder and to the organization he was in the process of establishing. Our findings can therefore contribute to an important conversation in the entrepreneurship literature about how individual founders can be instrumentalized in service of their organizations, such as via their prominence, their legitimacy, and their identities (Navis & Glynn, 2011). These intangible endowments enable these founders to overcome the liabilities of newness and smallness of their emerging organizations within a short time span, essentially converting their intangible assets into important tangible resources—such as funding, networks, human capital—as well as into intangible resources that are conferred to their emerging organization—such as its own reputation, visibility and brand recognition. While these important elements have been subject to prior examination (Hopkinson & Cronin, 2015), our study reveals that the maintenance of such founders' status carries its own demands that may create substantial challenges for the functioning of their organizations. As discussed in the previous section, we identify both the virtuous cycle of a founder's personal brand and a sustainable mission mutually reinforcing each other, as well as how internal (mis)perceptions of the mission can lead to an operational breakdown of this reinforcing mechanism inside the organization.

In addition, our results contribute to the literature on social and sustainable entrepreneurship (Miller, Grimes, McMullen & Vogus, 2012; Muñoz & Dimov, 2015) and the related emerging discussion on GCs, which has recently been identified as a potentially new paradigm in the management and organizational sciences (George et al., 2016; George, Merrill, and Schillebeeckx, 2020; Markman et al., 2019). The SIF is merely one example of an organization created by a prominent figure in response to GCs. Due to the systemic nature of problems that characterize GCs, there are high resource requirements associated with the aim for scalable, quick, high impact solutions, and public figures with a personal brand are uniquely positioned to draw attention and attract resources (Staskeviciute-Butiene et al., 2014). For instance, the emotional and celebrity appeal of charismatic leaders such as Elon Musk, Muhammad Yunus, and Ashton Kutcher have been leveraged to attract, on behalf of their organizations, a critical mass of decision-makers, audience buy-in, and willingness to change behavior. The term "heropreneur" has been suggested to describe such founders; its definition—despite the obvious potential of a celebrity founder to reinforce an organization's social mission—notably stresses the potential downsides of the founder's involvement, painting them as one "who overemphasizes their role

as founder, overshadowing teams, collective impact, and building upon the ideas of others" (Papi-Thorton, 2016: 3). Our analysis unearths more nuanced insights by showing how a public figure's brand and reputation can be a vital accelerating force for acquiring the resources and public attention needed to address a GC, but also comes with some liabilities (e.g., the possibility of being misunderstood; high visibility of promises to the public creating additional pressure to deliver on time) that require the (proactive) attention of these important agents of change in the face of GCs.

2.6.3 Generalizability and limitations

This study presents an in-depth analysis of a single organization, the SIF, created by famed pioneer Bertrand Piccard. The SIF pursues the goal of making the world a better place with its search for, screening, endorsement, and promotion of implementable clean technology solutions. Given the specificities of this organization, the question arises as to what extent the findings offered in the present study are generalizable. We discuss this question from the angle of latent hybrid, with a particular emphasis on GCs, as well as the perspective of the dynamics of performance metrics.

First, we suggest that the SIF is an exemplary case of a latent hybrid organization created to address GCs by a resource-rich individual, group of individuals, or entity. This is a relatively common type of organization in the modern era. Notable examples include the Bill and Melinda Gates Foundation, formed by its eponymous founders to address a wide array of GCs, and Thorn, founded by Ashton Kutcher to help defend children from sexual abuse. The social prominence and/or financial assets these well-endowed founders offer help these types of organizations to swiftly overcome the liabilities of newness and smallness, which in turn allows them to focus greater attention and efforts on addressing pressing GCs from their launch. We suspect that many of these organizations, given their similar latent hybrid setups, may face similar issues to those we have discussed in relation to the SIF.

We further suggest that many other types of businesses display aspects of latent hybridity insomuch as they may operate with latent goals, identities, and/or logics, and that our observations on the case study of the SIF may thus have some wider relevance. Notably, we suspect that many family businesses have a latent hybrid identity, insomuch as they often operate in accordance with the unspoken goal of maintaining their families' heritage. Similarly, officially for-profit organizations may unofficially simultaneously pursue other goals at the same time.

Second, any tensions that may arise from organizational hybridity must be managed and ideally resolved in ways that allow organizations to continue moving forward. The literature on organizational routines may contribute to new and better understandings of when and how the process of managing these increasing tensions leads to positive synergies, as opposed to a negative sense that an organization's varied goals are intractably divergent.

Table 6 compares the SIF's performance, organizational dynamics, and individual reflections on the state of the organization in 2019, its first full year of operations following the establishment of the Efficient Solutions Label, and 2020. The clear improvement in the SIF's performance over time led the Labeling team to view the organization as successfully pursuing its sustainable mission and it tended to accept the implicit mission alongside the explicit mission. Specifically, the Labeling team seemed to employ less rigid means of bringing the central focus of organizational attention and resources back to the explicit sustainable mission when trigger events emphasized the founder's prominence. In turn, with the overcomplexity tamed and somewhat streamlined, those who perceived the dual mission as a reinforcing mechanism no longer needed a shield to protect the implicit mission. Thus, while bandwidth allocated to events emphasizing the founders' prominence triggered a variety of mission perceptions, the organizational tension produced by each event—and the reactions provoked—lessened over time, especially as the organization's overall success relieved pressure around the sustainable mission.

Table 6: Organizational outcomes created by synergies of dual mission.

Measure	March 2019	March 2020
Total labelled solutions	60	369
Average solutions per month processed (labelled or rejected)	8	50
Median duration of labelling process (from application to decision)	250 days	100 days
Industrial partners funding the SIF	9	15 (+ 3 signing)
Institutional partners	0	3
Organizational dynamics in meetings	The current situation at the Foundation is comparable to "a chicken coop where the chickens have their heads cut off" [L9]	"[During the last meeting] Bertrand was—he's super happy, he's super satisfied, as you could hear" [S13]
	"I'm lost" [L11]	"The team is fully operational, I am happy, and we can now move forward quickly with this wonderful team that you represent" [Founder]
Individual reflections	"I was in favor of questioning even the Label, along with other people, like [manager]. We said 'hey guys, we're making big mistakes...', because it was too slow" [L14]	"now I'm starting to say to myself, okay—maybe my work is going to count for something" [L14]
	We have a very detailed procedure and I think that we remain rather... we are very rigid in our procedures. [L13]	"The problems are resolved, people are organized" [HQ1]
	"Everything immediately becomes an overcomplicated process" [L9]	"Today I wouldn't speak any more, if you like, about overcomplexity. It was a phase" [HQ1]
	"When in November-December [2018] I was on the edge of leaving [the foundation]... I started to get tired of always, always calling the label into question, not having a strategy, not having a vision, I mean being incapable of saying "Here's what we're going to do in January 2019--while we are in January 2019". I found that a bit worrying... it's something that could eventually make me leave. [L18]	"In the beginning, everything was centered around Bertrand. But then, as we advance, more and more it's the Foundation, because the Foundation has developped a well-known technical expertise and so now the Foundation "exists". When we were seven people originally, the foundation didn't "exist", it didn't carry any value, only Bertrand "existed". Whereas now we're at a point where there is Bertrand and the Foundation." [HQ4]
		"We are now truly achieving a certain harmony, with respect to our work, with respect to the relationship with Bertrand. Bertrand has also come a long way." [HQ1]

We suspect that organizations that do not experience the same type of performance increase may see increased tensions between their multiple goals rather than the decreased tensions the SIF experienced. This may lead to feelings of instability and confusion regarding a team's ability to advance its goals, rather than the feelings of stability and confidence that we observed increasing over time within the SIF's team dynamics. Previous research suggests that, in contexts defined by conflict, routines can be dynamic acts that create truces—implicit agreements to cease arguments (Nelson & Winter, 1982; Kaplan, 2015)—and ultimately resolve tensions between apparently conflicting goals (Salvato & Rerup, 2018).

Given the promising results of the present study, we encourage future research on latent hybridity to increase the scope of coverage to other organizations. Likewise, we encourage researchers to further examine the setup studied in the present research—a prominent founder rich in intangible resources giving his organization a head-start into addressing a GC—as this is seemingly one of only a few possibilities that exist for accelerating the identification and deployment of solutions to address pressing social and sustainability questions.

Chapter 3
Evaluating sustainable ventures: Toward a model of decision-making behavior in sustainability certifying organizations

Enrico Bergamini[9]

Abstract

Sustainability certifications have recently emerged in response to the increasing number of sustainable ventures—newly created firms that pursue entrepreneurial opportunities to create social and/or environmental impacts, as well as meet financial goals. However, scholars do not yet have much knowledge about the decision-making behavior of sustainability certifying organizations, or the factors that might influence it. This paper offers a novel, holistic framework for understanding decision-making in this context. To inform my theorizing, I use Brunswik's lens model to analyze a data set containing evaluations of 689 applications for a sustainability certification. I include several relevant factors in a multi-level modeling, which pertain to three dimensions of decision-making in this context—proposal characteristics, contextual factors, and evaluators' characteristics. My analysis offers novel insights into the direct and joint effects of these factors on evaluation outcomes. Most importantly from a theoretical perspective, my study demonstrates the influence of evaluators' social identities on their assessment of sustainable ventures. In particular, my findings show that evaluators who display higher levels of *other-orientation* (i.e., individual's tendency to be concerned with and helpful to other persons in contrast to more self-oriented evaluators who put the self at the core of their interests) are harsher in their assessments of sustainable ventures applications for a sustainability certification.

bound4blue, a Spanish startup, developed and commercialized a complementary wind-assisted propulsion system for maritime vessels. By utilizing available wind, this set of rigid wings, installed on top of vessels, allows them to reduce their fuel consumption by up to 30 percent (bound4blue, 2022). This attractive and innovative solution creates both a financial advantage for vessel-operating companies that invest in it (a return on investment via cost reductions is estimated in under five years) *and* environmental advantage for the wider world (via reduced greenhouse gas emissions). In July 2018, this solution received the Efficient Solution Label, a sustainability certification issued by the Solar Impulse Foundation (SIF). Since then, *bound4blue* has received support from SIF at several events, such as the 'hello tomorrow'

[9] Authorship notes: This study is E. Bergamini's own, original work. The author met, at key research milestones, with M. Gruber, his thesis advisor, to discuss iterations of the analyses and the manuscript. D. Bavato provided constructive suggestions and valuable support during the development of this research work; M. Hay provided editorial services.

startup competition, where the startup won in the mobility track, and the European Institute of Innovation and Technology (EIT) Awards, where the company earned a grant of €500,000.

Young ventures like *bound4blue* are not as rare as one may think. On Earth Day 2021, the SIF's founder and president Bertrand Piccard introduced a portfolio of 1000 solutions, like *bound4bue*, with what the SIF believes is real and substantial potential to "protect the environment in a profitable way" (SIF, 2017; SIF, 2021a; Wylie, 2021). Certifying organizations like the SIF represent a global movement working to identify and support the ventures like *bound4blue* that, by seizing entrepreneurial opportunities to respond to the ever-growing number of *grand challenges* (GCs) that confront humanity, attend to dual bottom lines—both financial and environmental and/or social goals. The Efficient Solution Label seemingly marked a turning point in *bound4blue*'s entrepreneurial trajectory, as it facilitated awareness and adoption of the firm's solution at different levels, and by several new stakeholders. Yet, obtaining certifications like this one can be a long process. As such, the decision-making behind certifying organizations' choices to grant them or not deserves serious scholarly consideration.

3.1 Introduction

Entrepreneurs and established firms alike have launched innovative technologies, market applications, and business models in order to address the ever-growing number of GCs that governments struggle to address (Cohen & Winn, 2007). In response to the rise of such sustainability-driven ventures, independent supranational organizations have developed—and regularly issue—sustainability certifications, labels that indicate a receiving venture or firm has reached a threshold of social and/or environmental responsibility in their operations, and/or external impact on the groups of issues they aim to address. Unsurprisingly, recent analyses show that obtaining a sustainability certification can have a significant effect on a venture or firm's future development (King et al., 2005; Terlaak and King, 2006).

Given the importance of sustainability certifications for firms' prospects across many sectors, one might assume that we have a deep understanding of the sustainability certification granting process and all the major factors that could influence its outcomes—i.e., whether the certifying actor themself grants the certification. However, in contrast to the wealth of insights the research stream on sustainability certifications has generated over the last years about how firms deal with these certifications, researchers' knowledge of the decision-making involved in granting sustainability certifications remains surprisingly limited. In addition, although decision-making in organizations has a venerable tradition in management literature, sustainability-driven ventures and certifications prioritize both financial and environmental considerations. As such, the existing literature's findings cannot be directly applied to the decision-making behaviors of these distinct actors, since they would overemphasize considerations that are germane to the financial dimension.

This paper develops and tests a theory that improves our understanding of the decision-making related to sustainability certifications. Specifically, by drawing on insights from the decision-making and venture capital (VC) investment decision-making literature, this study provides a more holistic picture of the factors that ultimately lead awarding bodies to accept (or reject) applications from ventures for the attainment of their sustainability certifications.

The theoretical anchor for this study is based on Brunswik's lens model (Brunswik, 1952; Hammond, 1972), a conceptual framework introduced by the psychologist Egon Brunswik as a universally applicable model for studying decision-making. I test my hypotheses on a data set composed of 689 sustainable ventures' applications for a sustainability certification, the issuing body's assessments of them, and information on the individuals who evaluated them. I obtained this unique, rich data set from the Solar Impulse Foundation, one of the few non-profit and supranational organizations that assess both a project's financial viability and environmental impact when deciding whether to award a grant its Efficient Solution Label certification.

This research empirically examines the decision-making involved in the issuing of a sustainability certification, and answers the recurring calls for additional research into this topic (Cao, Gehman, & Grimes, 2017; Stubbs, 2017; Marquis & Lee, 2015; Moroz, Branzei, Parker, & Gamble, 2018). It contributes to the stream of literature on sustainable entrepreneurship by exploring factors that can jointly shape certification decisions. Notably, I suggest a holistic framework for

decision-making that encompasses several factors that have a significant influence on the evaluation of sustainability ventures. It extends the literature on venture capital investment decision-making to the emerging phenomenon of sustainability-driven ventures. Most importantly from a theoretical perspective, this study also raises critical questions about the role of organizational context and evaluators' individual characteristics (e.g., their social identities) in the assessment of sustainable ventures. The findings of this study show that evaluators' *self-orientations* vs. *other-orientations*, related to a measure of their social identity, have implications on their evaluation regarding sustainable ventures in a non-obvious way.

This article proceeds as follows. First, I introduce GCs and how organizations—particularly sustainable ventures—respond to them. Second, I discuss the phenomenon of sustainability certifications and specifically review the Efficient Solution Label issued by the Solar Impulse Foundation. I then review the theoretical background on decision-making and venture capital decision-making, and offer an introduction to the perspective of social identity. Next, I develop hypotheses about both the direct and interaction effects of a number of factors that may influence the decision-making behavior of expert evaluators assessing ventures' applications to a sustainability certification. I conclude by reviewing and discussing the results of my analysis and providing the contributions of this article and conclusions.

3.2 Background

In the face of an increasing number and breadth of seemingly intractable GCs, such as climate change and health diseases, that threaten the well-being of vast numbers of individuals or even entire societies, researchers across many disciplines widely agree on the need for scalable and high-impact solutions (George et al., 2016). Management scholars specifically have taken over the last decade interest in the concept of GCs, and how organizations can contribute to tackling them (Eisenhardt et al., 2016). Notably, while GCs like water scarcity and wealth inequality may seem fundamentally disparate, Ferraro and colleagues (2015) identified characteristics common to all of them: GCs are *complex*. They often involve several interlinked problems and actors, and as such solutions to them often require interdisciplinary efforts—and may lead to unexpected side effects. GCs are *uncertain*. They involve many known, but also many unknown, facts and factors. GCs are *evaluative*. There are no easy solutions to them; different affected parties will evaluate the problems a GC poses and the consequences of a potential solution differently.

3.2.1 Sustainable entrepreneurship

From an entrepreneurial standpoint, addressing the systemic and pressing nature of GCs require new organizational narratives. Notably, increasing pressure to respond to GCs through responsible business practices from certain stakeholder groups has pushed existing firms to engage in sustainable projects (Menguc & Ozanne, 2005). GCs are also creating opportunities for new ventures and existing firms alike to introduce innovative technologies, market applications, and business models (Cohen & Winn, 2007). Entrepreneurship literature has developed the subfield of *sustainable entrepreneurship* to describe and assess ventures created in response to these opportunities that focus on achieving not only financial but also social and/or environmental impact goals (Muñoz & Cohen, 2018).

Their pursuit of multiple, distinct goals means that every sustainable venture is usually pursuing multiple missions at once (Battilana & Dorado, 2010), with some missions in seeming competition with each other (Glynn, 2000; Heimer, 1999; Zilber, 2002). They also combine aspects of diverse organizational forms (Battilana & Lee, 2014) "that would not normally be expected to go together" (Albert & Whetten, 1985: 270). The tensions and conflicts these juxtapositions can generate (Smith & Besharov, 2019) can pose profound challenges to a sustainable venture's chances of succeeding.

One of the critical questions facing organizational scholars must answer is how sustainable ventures can manage these tensions while still generating effective solutions to GCs. Researchers have drawn on paradox theory, which describes either/or challenges posed when contradictory yet interrelated elements come together (Lewis, 2000), and ways of moving past these dilemmas (Lüscher & Lewis, 2008), to explain how sustainable ventures' leaders navigate this challenge. As such, many writers recognize sustainable entrepreneurship as fertile ground for organizational innovation in the resolution of these tensions (Florin & Schmidt, 2011).

However, the uncertainty inherent in pursuing an innovative business model leads entrepreneurs to seek validation and legitimization both internally and externally (Battilana & Lee, 2014), often in the form of recognized benchmarks that show their activities are indeed achieving the financial, social, and/or environmental effects (Cornelissen & Clarke, 2010; McMullen & Dimov, 2013). This need has fueled the development of sustainability certifications, issued by independent and supranational certifying organizations.

3.2.2 Sustainability certifications

Sustainability certifying organizations attempt to assess how socially and/or environmentally responsible a firm's operations are, and/or their level of external social and/or environmental impacts. They follow formalized environmental management assessment practices to assist firms in their efforts to report and assess their sustainability performance.

Research shows that obtaining, or failing to obtain, a sustainability certificate from such an organization can have meaningful effects on a venture's future development. Perhaps most directly, obtaining a sustainability certificate project legitimacy onto a venture, internally and externally (Battilana & Lee, 2014; Paelman, Van Cauwenberge, & Vander Bauwhede, 2020), which can lead to new visibility, investments, and adoption. It can also act as a symbolic resource, signifying membership in a rarefied category or community (Conger, McMullen, & Bergman, 2018; Gehman & Grimes, 2017), which may help to shape the venture's core entrepreneurial orientation (Pollack, Garci, Michaelis, Hanson, Carr, & Sheats, 2020) and identity (Albert & Whetten, 1985). Certification also exposes ventures to newfound potential criticism, for greenwashing or hypocrisy (Carlos & Lewis, 2017; Lyon & Montgomery, 2015). However, there is still some debate on the nature and extent of these effects. Notably, one recent study found contrary to earlier findings, that sustainability certification can actually reduce the risk of greenwashing accusations (Dahlin, Ekman, Röndell, & Pesämaa, 2020).

Despite this lingering debate, the sheer number of sustainability certifying organizations and firms applying for sustainability certifications suggests the growing importance of both. However, just like sustainable ventures, sustainability certifications are complex and multifaceted. Following recurring calls for additional research into this topic (Cao et al., 2017; Marquis & Lee, 2015; Stubbs, 2017), the *Journal of Business Venturing* dedicated a special issue on sustainability certifications (Moroz et al., 2018) to develop greater understanding and frameworks for understanding them.

The Switzerland-based *Solar Impulse Foundation* (SIF) is one of the fastest-growing, highest-impact, and overall best known European sustainability certifying organizations.[10] The SIF started operating as a supranational sustainability certifying organization in 2017, by creating of "a world council for clean technologies" (Carrington, 2016) with the goal of gathering and promoting one thousand solutions "that can protect the environment in a profitable way" (SIF, 2017). Specifically, by vetting and certifying ventures' sustainability the SIF's founder hopes to accelerate the development and/or adoption of these solutions (Wylie, 2021). The SIF reached this "one thousand solutions" milestone in April 2021 and has been earning global recognition for clean technology advocacy (BBC, 2019, Fehrenbacher, 2020). At the time of writing, it has issued its Efficient Solution Label sustainability certifications to over 1,400 ventures, and about a hundred ventures are in the process of applying or undergoing assessments. The SIF has also partnered with major firms and institutions (ABB 2020; Adeo, 2022; Holcim, 2021; SIF, 2022) to create investment funds (BNP Paribas, 2021; Rothschild & Co, 2021; Van Hasselt, 2022), with up to EUR 350 million earmarked for new ventures that have received an Efficient Solution Label (SIF, 2021b).[11]

Research on other forms of certifying organizations shows that their survival ultimately depends on the approval of relevant audiences (Covaleski & Dirsmith, 1988; Oliver, 1991)—which means that they are themselves constantly

[10] It is roughly comparable to the U.S.-based organization that issues B Corporation certifications (B Lab, 2015).

[11] An evaluator for the SIF stated in an interview: "The new paradigm is convincing stakeholders that environmental protection is already profitable financially. This message has not yet reached all and I find inspiring to be part of the community to spread the message and enlighten those lagging behind!"

searching for legitimization. Specifically, they must build and maintain credibility by showing potential applicants that they meet thresholds of authority and quality in their assessment standards and processes.

In line with this imperative, the SIF follows a common approach for building evaluation legitimacy (Boudreau, Guinan, Lakhani, & Riedl, 2016) by maintaining a stable of external experts with deep knowledge of specific fields to whom it then consults to assess venture applications. The SIF's homepage adds that its "development of stringent selection criteria has resulted in the Solar Impulse Label being internationally recognized and endorsed by several institutions, states, and cities around the world" (SIF, 2018). The SIF also retained the auditing firm Ernst & Young to perform a compliance evaluation, in accordance with ISAE 3000, which concluded that the process was successfully implemented (Gazzo, 2019). The organization has implemented equivalence programs between the European Commission's EIC Accelerator Phase II selection process and its Efficient Solution Label as well, to improve its harmonization among European certifying bodies.

3.2.3 Decision-making in organizations

Management scholars have produced ample literature on decision-making related to investments, acquisitions and mergers, product-market choices, and the alignment of firm strategies with the environmental context (Rajagopalan, Rasheed, & Datta, 1993). One of the key recurring themes in organizational science research specifically is the frequent deviation of managerial decision-making in practice from purely rational models (Haley & Stumpf, 1989; Simon 1955). The extent of this deviation varies according to the decision-makers involved, the biases and heuristics they employ in their decisions (Schwenk, 1988)—especially in context of complexity or uncertainty (Kahneman, Slovic, & Tversky, 1982)—and their organizational contexts (Busenitz & Barney, 1997).

This literature stream has developed a wide array of models that help scholars understand diverse decision-making processes, across contexts. Although these models differ substantially, and sometimes conflict or overlap with each other (Hart, 1992), several that accommodate diverse factors that may influence decision-making ultimately rely on the Brunswik lens model (Brunswik, 1952; Hammond, 1972). This model, illustrated in Figure 3, includes several criteria (called 'cues') pertaining to the evaluation of the *task*. The model also includes the correlation between the *subjective judgment* and the criteria (on the right side of Figure 3) and it provides a measure of judgment (on misled judgment) in relation to the *environment* (on the left side of Figure 3).

Initially developed for the study of human perception (Wigton, 2008), Hammond (1955) adapted Brunswik's lens model for the study of human judgment. It has since been used to study diverse decision-making tasks across varied contexts—including in organizations (e.g., Mosier & Fischer, 2010). Organization-based applications of this model identify three *dimensions*, or sets of factors, that jointly shape decision-making: First, they acknowledge *environmental and contextual factors*, like the level of complexity or uncertainty key decision-makers operates within. Second, they establish that decisions are made with reference to specific, objective *criteria*. Third, they account for the *individual characteristics* of key decision-makers, like their social orientations and/or the implicit or explicit biases or heuristics they may employ.

The model has drawn attention in management literature specifically (for example, Duncan, 1972; Orquin, 2014) for its ability to explain decision-making in contexts where evaluators have limited access to information and so have to rely on *cues* drawn from within available (and quantifiable) information (Stewart, 1988). It explains how individuals weigh each cue with respect to their internal judgment, and with respect to the external environment, then integrate these weighted cues to conceptualize an image of the decision-making task before them as seen through these 'lenses.'

This model is especially applicable in scholarship on VC (for example, Zacharakis & Meyer, 2000), a field where decision-makers often evaluate proposals in the absence of "hard facts" and under serious time constraints (Kunze, 1990).

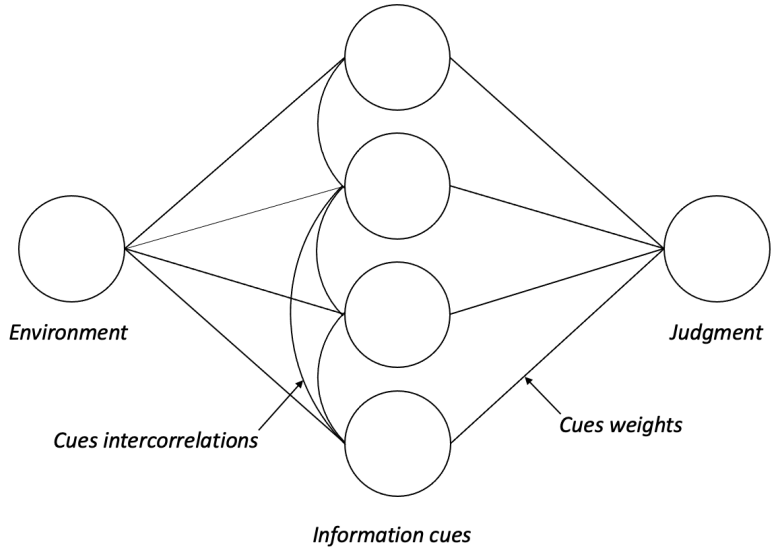

Figure 3: Brunswik's lens model (adapted from Wigton, 2006).

3.2.4 Decision-making in venture capitals

Though it is only one sub-sector of the financial services space, scholars give considerable attention to VCs (Petty & Gruber, 2011), frequently noting the importance of VC investment on new firms' potential performance and success (Gompers, Gornall, Kaplan, & Strebulaev, 2020). As critical decision-making on venture proposals is a key aspect of VC operations, this academic focus has gradually generated an ample literature sub-stream specifically on VC decision-making—which is especially relevant to the study of sustainability certifying organization decision-making, as both forms of decision-making involve novel players and highly uncertain contexts (Zacharakis & Meyer, 1998). VC decision-making literature may not be relevant to every aspect of sustainability certification decision-making (e.g., assessments of a venture's environmental and/or social impacts), but elements of this sub-stream may still be able to shed some light on future studies into the latter topic.

Most theoretical and empirical studies of VC decision-making examine the investment decision-making *process* (Fried & Hisrich, 1994; Hall, 1989; Petty & Gruber, 2011), as well as the *factors* that influence VC investment decisions. These factors include: The criteria that VCs claim they use when assessing new ventures (Franke, Gruber, Harhoff, & Henkel, 2006; MacMillan, Seigel, & Narasimha, 1985), such as the composition of a founding team or a product-market fit. Cognitive differences that can affect how VCs make decisions, such as their level of experience (Franke, Gruber, Harhoff, & Henkel, 2008; Shepherd, Zacharakis, & Baron, 2003) or the biases and heuristics key decision-makers employ implicitly or explicitly (Zacharakis & Shepherd, 2001). Linking VC-specific and broader decision-making literature, Petty (2009) has also noted that VC decision-making is constrained by organizational and environmental factors, such as the available fund capital, or the timing of the receipt of a venture proposal relative to the firm's maturity.

Researchers have attempted to develop integrated models of VC decision-making (Papadakis, Lioukas, & Chambers, 1998; Petty, 2009; Zacharakis & Meyer, 2000), in several cases by employing either explicitly or implicitly Brunswik's lens model. As illustrated in Figure 4, these models broadly sort all of the factors that may moderate VC investment decisions into three overarching categories: First, objective environmental and contextual factors (Figure 4, left side). Second, all the information related to a decision-making task available to an evaluator (Figure 4, center). Third, judgment variables, or VC-specific factors such as decision-makers' individual characteristics and cognitive biases (right side of Figure 4).

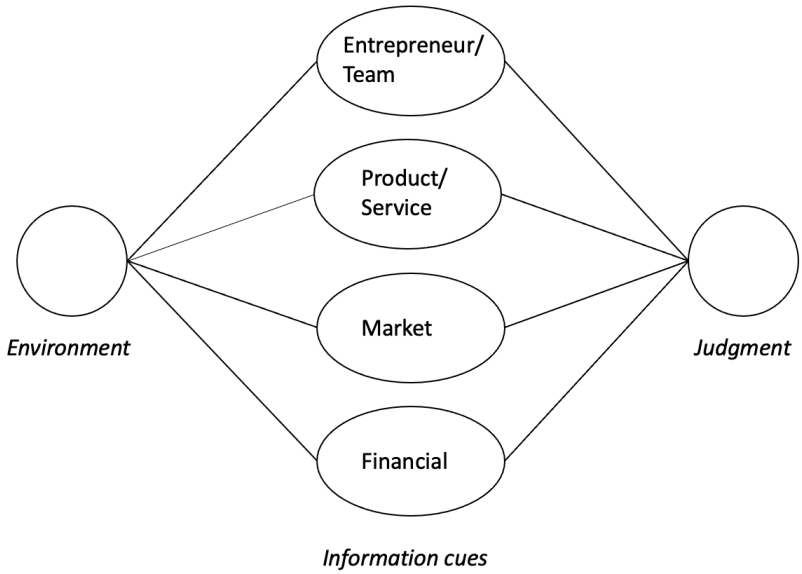

Figure 4: A Brunswik's lens-style model of VC investment decision-making (adapted from Zacharakis & Meyer, 2000).

3.2.5 Decision-making in sustainable ventures

Despite some informative points of conceptual overlap, VC investment decision-making primarily uses financial benchmarks (i.e., a commercial-dominant mindset), and literature on this topic has predominately focused on measures of success like financial returns on investments. This limits the applicability of lessons from or literature on VC decision-making to sustainable ventures, with their strong focus on social and/or environmental as well as financial outcomes. However, there is little other literature to turn to on decision-making with respect to these unique sustainable venture considerations—and no literature on how sustainability certification body experts assess sustainable ventures, or the factors that ultimately lead them to (not) issue sustainability certificates to ventures. Accordingly, rather than drawing directly on existing research streams for understanding, this study draws on VC-specific applications of Brunswik's lens model to develop a new application of said model tailored to the unique and specific context of sustainability certification decision-making. In the following sub-sections, I outline the three dimensions of a model tailored for this context.

Proposal characteristics. VC decision-making research clearly shows that assessing ventures is a difficult process, and risks serious adverse outcomes. MacMillan and colleagues (1985, 1987) identified and organized the evaluation factors VCs use in assessments, and analyzed the relationship of these factors to their ultimate investment decision. Their findings showed that VCs tended to prefer "ventures in which the entrepreneurs have a clear idea of what they are doing, who have already developed a functioning prototype, and which product has a demonstrated market acceptance." (MacMillan et al., 1985: 126). In a conjoint analysis of VC investment decisions, Riquelme and Rickards (1992) emphasized the existence of a functioning prototype as a critical criterion in deal screenings.

In assessing the level of uncertainty a proposal entails, VCs look at the maturity of a venture as a key factor (Dimov, Shepherd, & Sutcliffe, 2007). "Open-door rejections," in which VCs turn down a proposal but invite re-proposals for reconsideration at a later date, speak to the importance of this factor. In their analysis of a VC firm's internal records, Petty and Gruber (2011: 178) also found frequent comments like "interesting concept but too early stage."

Given the dearth of empirical work on means of assessing sustainable ventures (Emerson, Freundlich, Fruchterman, Berlin, & Stevenson, 2007; Lyons & Kickul, 2013), one can only expect a similar phenomenon in the context of sustainability certifications.

Contextual factors. Management scholars have identified several contextual factors that modulate VC decision-making, including available fund capital, the external investment climate, the timing of a proposal submission relative to the VC firm's maturity, and the VC firm's investment history (Petty, 2009; Petty, Gruber, & Harhoff, 2021). As a result, VC

decision-making appears to be influenced by key decision-makers awareness and interpretation of available information, including those on constraints (Bromiley, 1981), and by the availability of tools that may help them to make decisions.

Busenitz & Barney's (1997) work on differences in decision-making between entrepreneurs and managers of large organizations also speaks to the importance of organizational context. Notably, established firms tend to develop procedures to help their employees reduce uncertainty during decision-making, whereas younger organizations, such as start-ups, often lack these procedures and so have to lean more on implicit or explicit biases and heuristics to make decisions.

In light of these findings, I will focus my analysis on contextual factors within the boundaries of sustainability certifying organizations. (I define within here in line with Duncan's (1972) categorization of the internal versus external environment.)

Evaluators' characteristics. As ample research demonstrates, even experts, despite their greater knowledge of specific domains, may implicitly or explicitly turn to personal biases and heuristics in their decision-making (Shanteau, 1992). This reality led to the provocative assertion, "experts know a lot but predict poorly" (Camerer & Johnson, 1997: 196). In other words, "there is much evidence that experts are not immune to the cognitive illusions that affect other people" (Kahneman, 1991: 144). In the VC space specifically, research shows that evaluators' experiences and cognitive orientations have a significant impact on their proposal assessments and decision-making (Franke et al., 2008; Shepherd et al., 2003)—often in terms of evaluation distortions as a result of biases (Byrne, 1971; Franke et al., 2006).

This suggests that we ought to consider relevant individual evaluators' characteristics when assessing sustainability certification decision-making. Notably, I identify two novel aspects of individual evaluators that may affect their assessment of the non-financial impacts of projects: First, I consider an evaluator's experience with sustainable development goal (SDG)-related topics. Formulated in 2015 as part of the United Nations' "2030 Agenda for Sustainable Development," SDGs offer a framework for assessing the economic, social, and environmental dimensions of sustainable development policies (UNDP, 2020).

Second, I take an identity-focused perspective to consider an evaluator's mindset, in particular, their self-concept and social motives. Such factors are important because they result from an individual's past experiences (Miller, 1993) and social relationships (Tajfel & Turner, 1979) and, as scholarly work has demonstrated, allocate attention in decision-making tasks (Dutton & Duncan, 1987; Gupta & Govindarajan, 2002; Miron-Spektor, Ingram, Keller, Smith, & Lewis, 2018). Given the salience of the social component of sustainable ventures (Miller et al., 2012; Pan, Gruber & Binder, 2019), I focus on evaluators' social identities (Tajfel & Turner, 1979), which extant studies suggest can capture an individual's conception of their social self as well as their social motivations. Social identity theory is rooted in the literature on social cognition (Tajfel, 1972; Tajfel & Turner, 1979), but has become increasingly well-known in the entrepreneurship literature (Fauchart & Gruber, 2011; Gruber & MacMillan, 2017; Powell & Baker, 2017) as a tool for understanding the effects of founders' social self-conceptions and societal motivations on new firm creation processes and outcomes, and for understanding how entrepreneurs' actions as at least partial reflections of their social identities (Gruber & MacMillan, 2017). Tajfel's work in particular has shown that social identity operates based on three basic dimensions: interactions with others, levels of inclusiveness, and behavioral choices and human actions (Tajfel & Turner, 1979). Entrepreneurship scholars have taken the 'identity perspective' to account for entrepreneurial judgment and behavior, explaining that entrepreneurs may engage primarily in activities that are consistent with their *other-orientation*—individual's tendency to be concerned with and helpful to other persons—versus *self-orientation* (Fauchart & Gruber, 2011).

3.3 Hypothesis development

This study introduces a novel approach to understanding the decision-making on whether or not to issue ventures a sustainability certification. Most importantly from a theoretical perspective, it develops a holistic framework for understanding this decision-making that encompasses three key factors that can have a significant influence on a certifying

body's evaluation: (1) proposal characteristics, (2) contextual factors, and (3) evaluators' characteristics. The proposed relationship between these factors is depicted in Figure 5.

I motivate my hypotheses in two steps. In a first analysis, I examine the direct effects that proposal characteristics, contextual factors, and evaluators' characteristics have on evaluation outcomes. Second, I investigate the joint effect of these factors on the evaluation outcome.

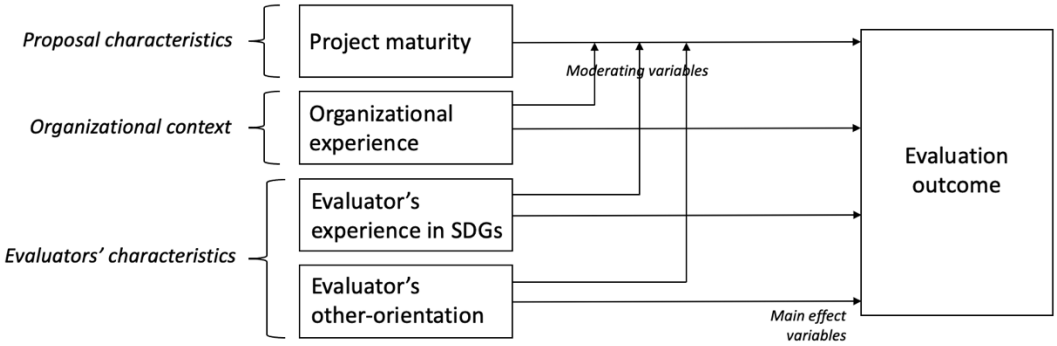

Figure 5: Conceptual model.

3.3.1 Proposal characteristics and evaluation outcomes

GCs often require solutions that depart from existing paradigms and/or are rooted in innovative technologies, applications, or approaches, and this novelty as well as the high levels of uncertainty that define GCs make these such projects difficult to evaluate. These challenges may lead evaluators to systematically negatively distort ideas outside the established paradigms and those that advance novel solutions, and thus fail to evaluate the true quality of a venture (Boudreau et al., 2016). These distortions may be the result of a scarcity of information for less mature ventures, and/or of the ambiguity aversion bias, driven by the feeling of incompetence with regard to less mature projects—as demonstrated by studies in decision-making under uncertainty literature (Fox & Tversky, 1995).

Research on VC investment decision-making shows similar trends: Numerous studies' findings show that these entities prefer "ventures in which the entrepreneurs have a clear idea of what they are doing, who have already developed a functioning prototype, and which product has a demonstrated market acceptance." (MacMillan et al., 1985: 126). They also show that the maturity of a project is one of the key factors that VCs use to cope with uncertainty and thus to make investment decisions (Dimov et al., 2007).

In line with these observations, I expect that more mature projects will yield higher-quality applications for sustainability certification, and thus have a higher likelihood of achieving positive evaluations. This leads me to formulate the following hypothesis:

> *Hypothesis 1: The greater the maturity of the project is, the greater the likelihood that it obtains a positive evaluation will be.*

3.3.2 Contextual factors and evaluation outcomes

As the organizational science and VC-specific literature both show, decision-making always occurs within and with reference to the constraints of organizational contexts (Duncan, 1972; Petty et al., 2021)—such as available fund capital in the VC context (Petty, 2009; Petty et al., 2021), or managers' reliance on the organizational procedures made available to them in the context of an established firm (Busenitz & Barney, 1997; Bromiley, 1981). Since sustainability certifications are relatively new labels, I posit that more mature certifying firms will have substantially more information and aids and tools available to them than their less mature counterparts (consistent with Busenitz & Barney, 1997). (However, I also acknowledge that certifying organizations like the SIF have endeavored to mature at a rapid pace). Maturity also allows individual evaluators who work within or independently but in coordination with an organization to accrue

greater levels of experience, both through direct practice and constructive feedback from the organization after they make their decisions. A greater level of experience at both the organizational and individual level will likely reduce the level of uncertainty evaluators experience when making decisions, and thus may lead to better final judgments.

In line with observations that certifying organizations writ large tend to avoid issuing certifications to projects whose outcomes they view as uncertain (Dimov et al., 2007), and with observations that greater levels of certifying body and evaluator experience can decrease perceptions of uncertainty in venture applications, I expect sustainability certification issuing organizations to deny applications at a higher rate earlier in their existence than later. This leads me to formulate the following hypothesis:

> *Hypothesis 2: The greater the experience of the certifying organization is, the greater the likelihood that ventures applying for certification obtain a positive evaluation will be.*

3.3.3 Evaluators' characteristics and evaluation outcomes

As ample decision-making research shows, individuals' emotional and cognitive processes can shape their evaluations, especially in contexts of perceived uncertainty (Sandberg, Schweiger, & Hofer, 1988) and socially-oriented decision-making (Rynes, Bartunek, Dutton, & Margolis, 2012; Shepherd, 2015; Shepherd, Williams, & Patzelt, 2015). Therefore, I endeavor to control for such individual characteristics in my model. However, the context of sustainability certification decision-making obliges me to consider factors that are discussed in management literature, and are potentially highly relevant to socially-oriented decision-making, but have not played into decision-making models present in the extant literature on other contexts.

First, I consider evaluators' ability to assess firms' SDG-related performances of firms. While there are measurements that indicate how well organizations perform with respect to SDGs, swift qualitative assessments of firm-level SDG-related performance remain unexplored in the scholarly literature to date. In light of the lack of research on this type of evaluation work, I expect that evaluators' status as a sustainability certifying body-identified expert on a given topic will usually correspond to a high level of experience working on that and similar topics, and thus will positively correlate to their capability as evaluators of expertise-relevant sustainable ventures. Intriguingly, however, the lack of prior research on this variable means that we do not know whether increased evaluator capability will lead to more or fewer issued sustainability certifications. One might suspect greater expertise to lead to a tendency to assist ventures who commit to shared values—i.e., more positive evaluation outcomes. However, one might conversely suspect that greater expertise will create an increasing severity bias, thus leading to harsher decision-making on relevant ventures—i.e., more negative evaluation outcomes. (This possibility aligns with the literature on intellectual distance, and on expert evaluators in other decision-making contexts "more readily 'seeing' and 'sampling' more informational cues than do less expert evaluators—with experts observing a disproportionately greater number of demerits, problems, and limitations") (Boudreau et al., 2016: 2767). These two potential expectations lead to competing hypotheses. However, the state of the literature leads us to suspect that the latter option is more likely—or that this effect would have a stronger level of influence on outcomes than the alternative. This leads me to formulate the following hypothesis:

> *Hypothesis 3a: The greater the evaluator's expertise in relation to SDGs is, the weaker the likelihood that they issue a positive evaluation will be.*

Second, I consider the perspective of evaluators' social identity, as research shows that this factor can be useful in predicting entrepreneurial behaviors that do not strictly or exclusively align with an entrepreneur's economic self-interest (Gruber & MacMillan, 2017). Entrepreneurship scholars have applied social identity lenses to show, for example, how other-oriented tendencies, like a desire to serve a community one identifies with, can determine when and why entrepreneurs launch new ventures in addition to or instead of their economic self-interest. Fauchart and Gruber (2011) also defined three archetypes of venture founders in line with broad categories of social identity: The Darwinian, who pursues pure, traditional business logic and/or economic self-interest. They represent a low level of self-categorization in the social space and may ultimately be defined as predominately self-oriented. Quite the opposite, the

Communitarian and the Missionary tend to pursue a community-driven logic and a mission-driven logic respectively. They show the highest concern for others and adopt the highest level of self-categorization in the social space and may be considered as predominately other-oriented (Gruber & MacMillan, 2017). I expect that an evaluator's social identity may significantly influence their sustainability certification decision-making. In this vein, one rare study conducted by Miller and Wesley II (2010) investigates and provides insights into the preferences of social investors in their evaluation of sustainable ventures. As a result of their social and commercial identity plurality, social venture capitalists may view individuals with great experience in for-profit firms as incompatible with the values and skills needed to manage a sustainable venture.

However, the likely relationship between a specific social identity and potential evaluation outcome is likewise non-obvious. One might suspect that a greater level of *other-orientation* could lead an evaluator to implicitly or explicitly try to help ventures that share their values, thus leading to more positive certification evaluations. However, one might conversely expect that, as with expertise, *other-orientation* could create a severity bias, thus leading to harsher decision-making on relevant ventures—i.e., more negative evaluation outcomes. These two potential expectations lead to competing hypotheses. However, the state of the literature leads us to suspect that the latter option is more likely—or that this effect would have a stronger level of influence on outcomes than the alternative. This leads me to formulate the following hypothesis:

> *Hypothesis 3b: The greater the evaluator's* other-orientation *is, the weaker the likelihood that they issue a positive evaluation will be.*

3.3.4 Proposal characteristics, contextual factors, and evaluation outcomes

With Hypothesis 1 I examine the direct relationship between the maturity of a project and evaluation outcomes, and with Hypothesis 2 I examine the direct relationship between certifying organization experience levels and evaluation outcomes, but I am also interested in the ways in which the latter variable might modulate the effects of the former on decision-making. Specifically, I expect that when a sustainability certifying organization has less experience, project maturity will be an especially salient factor in an evaluator's sustainability certification decision-making, but over time, as the organization and its evaluators gain experience, information, and tools, the salience of this one heuristic factor will decrease until eventually it has little-to-no effect on evaluation outcomes. This leads me to formulate the following hypothesis:

> *Hypothesis 4a: The lower the experience of the certifying organization is, the stronger the positive effect of project maturity on the likelihood of obtaining a positive evaluation will be.*

3.3.5 Proposal characteristics, evaluators' characteristics, and evaluation outcomes

In Hypothesis 3a, I examine the direct effects of evaluators' expertise in relation to SDGs on the evaluation outcome, but I am also interested in the ways this evaluator characteristic could modulate the effects of project maturity on evaluation outcomes, which I examine in Hypothesis 4b. Specifically, based on the literature on expertise (Kahneman et al. 1982, Johnson, Hassebrock, Duran, & Moller, 1982), I expect that a greater level of expertise in relation to specific SDGs will enable certifying evaluators to observe and act on a greater number of potential cues when assessing relevant venture applications for sustainability certification than evaluators with less expertise. This would suggest that, as evaluators gain expertise in relation to specific SDGs, they may view project maturity as a progressively less salient factor in their sustainability certification decision-making. Specifically, based on the literature on decision-making in contexts of uncertainty, I expect that expertise will allow evaluators to feel more competent and knowledgeable when assessing less mature ventures, reducing their perception of uncertainty within these projects, thus lowering their degree of ambiguity aversion bias (Heath & Tversky, 1991; Fox & Tversky, 1995), and ultimately leading them to issue more sustainability certifications to less mature ventures than their less experienced peers. This leads me to formulate the following hypothesis:

Hypothesis 4b: The higher the evaluators' expertise in relation to SDGs is, the weaker the positive effect of project maturity on the likelihood of obtaining a positive evaluation will be.

I also expect that higher levels of *other-orientation* will instill a sense of competence and knowledge in relation to specific SDGs in evaluators, regardless of their actual level of expertise, and thus have a similar effect to expertise in relation to SDGs on their perception of uncertainty within these projects. This would suggest that evaluators with greater *other-orientation* may view project maturity as a progressively less salient factor in their decision-making. This leads me to formulate the following hypothesis:

Hypothesis 4c: The higher the evaluators' other-orientation *is, the weaker the positive effect of project maturity on the likelihood of obtaining a positive evaluation will be.*

3.4 Data and methods

3.4.1 Study setting

I examine my hypotheses using a unique project-level data set gathered from the Solar Impulse Foundation (SIF), among the few supranational European organizations that assess both projects' environmental impact and financial viability when deciding whether to grant them the SIF's sustainability certification, the Efficient Solution Label. Any company, from a start-up to an established firm, to a non-profit organization, can obtain this certification, provided they meet the following requirements: They must submit an application related to a product, technology, industrial process, or service that is either already commercialized or aimed for commercialization. This project must have reached the technical maturity of a prototype at scale 1:1 in a test environment—i.e., the technology readiness level (TRL) must be equal to or greater than 6. It must also contribute to the achievement of at least one of the sustainable development goals (SDGs).

3.4.2 Data sources

To test my hypotheses, I combine three data sources into a final data set that contains 689 project assessments made by 78 independent evaluators between June 2020 and February 2022.

The first data source is the venture-level data set gathered from the SIF, including venture characteristics (such as founding year and number of employees) of all applicants for the Efficient Solution Label between June 2020 and February 2022 (839 proposals). This data set includes both ultimately accepted (757) and rejected (82) proposals. Before June 2020 and after February 2022, the SIF employed different versions of its labeling process. In order to ensure consistency across my results, I decided to consider only this time frame of consistent internal SIF labeling processes. From its inception in 2017 to June 2020, the SIF only issued its sustainability certification to 378 applicants, and as of writing it has granted the certification to just over 1,400, and is reviewing applications from about 100 ventures. This means that, although this data source covers a relatively narrow portion of the SIF's certification awarding history, it still captures a significant number of the organization's decisions made, and allows me to make meaningful observations about changes in the organization and its decision-making over time.

My second data source is the SIF's archival records about its evaluators' characteristics (such as their age, gender, and years of experience in relation to specific SDGs), and their work with the SIF (such as the number of assessments each evaluator completed and their final decision on each). To guarantee neutrality and bolster the legitimacy of its certification process, the SIF recruits external experts to assist in application evaluations. They rigorously vet potential experts, who must demonstrate at least five years of experience relevant to one or more SDGs. Every application is independently evaluated by three individuals who do not have access to each other's assessments before completing their own and are not compensated for their work.

My third data source is a collection of an additional set of evaluators' characteristics not included in the SIF's records, which I gathered through a paper survey (such as evaluators' levels of *other-orientation*). I distributed these surveys and collected them at three "Expert Challenges"—a form of hackathon the SIF organizes to foster its evaluators' sense of motivation and improve their evaluator performance through day-long, in-person events—hosted in June 2019, November 2019, and January 2020 in three major Central European cities. Of the 297 SIF evaluators active in this time period (i.e., those who had completed at least one evaluation before an Expert Challenge), 115 took part in at least one of the three above-mentioned Expert Challenge, and 93 of those individuals responded to our surveys—a response rate of 81 percent. Although I followed data management practices to ensure the security and confidentiality of the data collected, I asked evaluators to include their names in survey responses, so that I could match this new data with data relevant to them specifically from my other two data sources.

Together, these data sources form one rich data set, composed of 689 applications and 78 evaluators, which offers a multilevel perspective and avoids issues related to common-method biases.

3.4.3 Measures—Dependent variable

The purpose of my analysis is to predict evaluators' decision-making regarding whether or not to award ventures sustainability certifications. As such, I use evaluation outcome as my dependent variable—a dichotomous variable that indicates whether the evaluator approved or rejected a venture's application for sustainability certification (1=approved; 0=rejected).

Each proposal was assessed by three evaluators, who operated independently of each other—i.e., without knowing each other's assessments during the evaluation period. They express each of their evaluations on five evaluation criteria (concept credibility, scalability, environmental benefits, client's economic incentives, and seller's profitability) with a binary score (1=Yes; 0=No). I define an evaluation outcome as the product of these five scores from one evaluator. (E.g., a negative evaluation on one criterion but a positive evaluation on the other four by one evaluator would lead to a negative evaluation outcome).

I could have defined the evaluation outcome in different ways, implementing a different scheme to aggregate the evaluation criteria. For instance, I could have defined an evaluation outcome in terms of evaluators' choices on one specific criterion, or as a combination of all three evaluators' assessments of one application. However, I decided to focus my analysis on individual evaluator-level factors, consistent with the goal of the paper and the choice of Brunswik's lens model as a theoretical anchor.

3.4.4 Measures—Independent variables

I consider a set of variables for each of the three dimensions: (1) proposal characteristics, (2) contextual factors, and (3) evaluators' characteristics.

Proposal characteristics. I assess proposal characteristics in terms of project maturity. I compute this as an ordinal variable, defined (in terms of the SIF's categorization of project maturation stages) as follows: 1=Prototype testing 1:1 in laboratory, 2=Prototype testing in the real world, 3=Initial market commercialization, 4=Small-scale commercialization, 5=Medium-and large-scale commercialization.

Contextual factors. I assess contextual factors in terms of the date when a venture submitted its application for the Efficient Solution Label (within the assessment period of June 2020 to February 2022), as this acts as a proxy for the level of experience of the SIF in evaluating these applications, with later application dates implying an organizational context of greater experience gained. I compute this as an ordinal variable corresponding to a venture's "submission ID," starting from 1 and increasing over time at each new proposal submitted.

Evaluators' characteristics. I assess two novel factors in terms of evaluators' characteristics: an evaluator's level of expertise in relation to SDGs, and an evaluator's level of *other-orientation*.

With respect to the former factor, I acknowledge that defining levels of expertise is difficult; even when seemingly objective criteria are available for evaluating expertise on a specific subject matter, they are often subject to interpretation and debate (Shanteau, 1992). The complex and multifaceted nature of sustainability topics especially makes establishing expertise relative to any individual SDG particularly difficult. However, I still attempt to compute this variable as the sum of an individual's years of experience relevant to the five SDGs the SIF's application evaluation criteria focuses on, as enumerated in the SIF's archival records of each evaluator's characteristics.

I assess evaluators' levels of *other-orientation* using a scale Sieger and colleagues developed to capture entrepreneurial social identity (Sieger, Gruber, Fauchart, & Zellweger, 2016). This scale draws on the typology introduced by Fauchart and Gruber (2011), which identifies three firm founder archetypes, (the Darwinian, Communitarian, and Missionary), as well as hybrids of these archetypes, each with a distinct social identity profile. I define those at the two ends of Sieger and colleagues' spectrum scale as self-oriented and other-oriented individuals, respectively. Darwinian founders fall into the former category, as they center the self in their interests and adopt a lower level of self-categorization in the social space, while both Communitarian and Missionary founders fall into the latter, as they show high levels of concern for others and adopt the higher levels of self-categorization in the social space (Gruber & MacMillan, 2017).

Previous empirical work has adapted this scale, originally created to assess and categorize firm founders, by refocusing it away from founders' motivations for creating new ventures onto the motivations of individuals for their careers and professional activities, such as their evaluation of socially-oriented ventures (Pan, Gruber, & Shepherd, 2019). In a similar fashion, I modified this response prompted from the original questionnaire, "As a firm founder, it will be very important to me to have thoroughly analyzed the financial prospects of my business," as follows: "As a person, it is very important to me to have thoroughly analyzed the financial prospects of my activities." My final assessment instrument was a 15-item questionnaire, with responses made using a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree) (Sieger et al., 2016; see Appendix A). Five of these items related to a Darwinian identity, five to a Communitarian identity, and five to a Missionary identity. I added each individual's answers to each set of five questions to get three sums, which quantified their level of alignment with each archetype (DAR=Darwinian, COM=Communitarians, or MIS=Missionaries) (Sieger et al., 2016). Given that higher DAR scores corresponded to higher levels of self-orientation, while higher COM and MIS scores corresponded to higher levels of *other-orientation*, I calculated each individual's level of *other-orientation* using the equation COM+MIS-2*DAR. The final scores generated through these calculations fall from −60, the highest level of self-orientation, to +60, the highest level of *other-orientation*.

3.4.5 Measures—Control variables

I control for two sets of variables that previous research suggests can potentially explain decision-making regarding venture proposals: First, venture characteristics, which I define as the type of organization (a categorical variable that can take the following values: 'start-up or self-employed,' 'established firm,' 'non-profit project,' 'association,' 'governmental institution') and its number of employees. Second, evaluator characteristics that can influence decision-making, which I define as education (a dummy variable based on whether the evaluator holds a PhD) and professional experience (dummy variables corresponding to at least three years of prior experience as (1) a scientist or an engineer, (2) an entrepreneur, (3) a manager, (4) an academic, and (5) a consultant) (see, for example, Dencker & Gruber, 2015). Following best practices in the literature, I also control for the evaluator's age (Kalleberg & Leicht, 1991) and gender (1=female; 0=male) (Lévesque & Minniti, 2006).

3.4.6 Multilevel modeling

My data set represents 689 assessments of venture applications for the SIF's Efficient Solution Label sustainability certification made by 78 evaluators, made between June 2020 and February 2022. Over this period, the SIF used one consistent set of the certification standards, allowing for consistency in my analyses. As my data set includes 689 assessments (level-1 units) nested in K = 78 evaluators (level-2 units), which corresponds to an average of n = 8.8 assessments

per evaluator, I computed multi-level modeling (MLM). This is consistent with best practices in the literature.[12] As the dependent variable in this model is dichotomous, I used logistic regression. Specifically, I used the *xtmelogit* command in Stata 17.0 to estimate the two-level logit model using maximum likelihood estimation. I grand-mean centered level-1 predictors, as I was interested in estimating the general between-observation effect (instead of the pooled within-cluster effect, which would have justified a cluster-mean centering) (Enders & Tofighi, 2007; Myers, Brincks, & Beauchamp, 2010).

3.5 Results

Here I present my main results, which estimate the relationship between project maturity, organizational experience, evaluators' levels of expertise in relation to SDGs, evaluators' levels of *other-orientation*, and the evaluation outcome.

3.5.1 Descriptive statistics

Table 7 presents the means, standard deviations, and correlation coefficients for all of my variables.

Table 7: Descriptive statistics and correlations.

Variable	Mean	SD	Min	Max	1	2	3	4	5	7	8	9	10	11	12	13	14	15
1. Certification outcome	0.79	0.41	0	1	1.00													
2. Project maturity	3.38	1.30	1	5	0.15	1.00												
3. Organizational experience	345	199	1	689	0.06	0.12	1.00											
4. Evaluator's experience in relation to SDGs	23.25	10.50	5	53	-0.12	0.03	0.02	1.00										
5. Evaluator's other-orientation	0	10	-18	26	-0.06	0.06	0.04	-0.16	1.00									
7. Number of employees (x1000)	4.38	22.90	1e-3	150	0.05	0.13	0.11	0.07	-0.05	1.00								
8. Age	50	12	30	81	0.06	0.00	0.08	0.13	0.12	0.00	1.00							
9. Sex	0.21	0.41	0	1	0.10	0.05	-0.08	-0.24	0.22	0.00	-0.10	1.00						
10. PhD	0.35	0.48	0	1	0.10	-0.04	-0.03	-0.05	-0.10	-0.03	0.07	0.01	1.00					
11. Experience as a scientist or as an engineer	0.75	0.43	0	1	-0.03	-0.06	0.01	0.01	-0.12	-0.02	0.14	-0.34	0.35	1.00				
12. Experience as an entrepreneur	0.25	0.50	0	1	-0.07	0.01	0.02	0.31	-0.05	-0.02	-0.01	-0.18	-0.17	0.16	1.00			
13. Experience as a manager	0.53	0.50	0	1	-0.05	-0.03	0.05	0.34	-0.12	-0.03	0.01	-0.31	-0.07	0.15	0.38	1.00		
14. Experience as an academic	0.27	0.45	0	1	-0.04	-0.05	-0.01	-0.07	-0.20	-0.03	0.12	-0.18	0.48	0.25	0.14	-0.16	1.00	
15. Experience as a consultant	0.31	0.46	0	1	0.13	0.05	-0.05	-0.02	0.20	0.03	0.22	0.16	0.10	-0.20	0.02	-0.16	0.21	1.00

N = 689 assessments.

[12] The *Intraclass Correlation Coefficient* (ICC) of the empty model, which quantifies the degree of resemblance of the observations belonging to the same cluster (Hox, 2017; Snijders & Bosker, 2011), was .33, meaning that 33 percent of the variance in the outcome variable was explained by between-evaluator differences. This represents a large level of within-cluster homogeneity (Kreft & De Leeuw, 1998). Therefore, I cannot ignore the hierarchical structure of my data (Hayes, 2006). I also calculate the *Design EFFect* (Kish, 1965; Muthén & Satorra, 1995), $DEFF = 1 + (n - 1) * ICC$, in order to quantify the degree to which a multilevel sample differs from a simple random sample. In my data set, *DEFF* = 3.56. This result confirms that I cannot ignore the hierarchical structure of my data (Peugh, 2010), and that multilevel modeling is warranted.

3.5.2 Analysis of evaluation outcomes

I present the results of my MLM analysis relating to evaluation outcomes in Table 8. In a sequential fashion, Model 1 provides results with control variables, Model 2 adds proposal characteristics, Model 3 adds contextual factors, Model 4 adds evaluators' characteristics, Model 5-7 add interactions between factors, and Model 8 represents my final model.

Consistent with Hypothesis 1, model 2 indicates that project maturity is positively associated with the likelihood of obtaining a positive evaluation (p<.05). Consistent with Hypothesis 2, model 3 indicates that certifying organization experience is positively associated with the likelihood of an application obtaining a positive evaluation (p<.10). And consistent with Hypotheses 3a and 3b, model 4 indicates that the evaluators' expertise relevant to specific SDGs and levels of *other-orientation* are both negatively associated with an application's likelihood to obtaining a positive evaluation (p<.01). Model 8, which shows interactions between factors (as discussed in Hypotheses 4a, 4b, 4c) working alongside direct effects, displays a better fit—especially for the direct effect of project maturity (p<.001). The only significant interaction occurred between project maturity and organizational experience (p<.01), which is consistent with Hypothesis 4a. A slope analysis (i.e., conducted by removing and adding one standard deviation to each variable, respectively) revealed that the pooled within-evaluator effect of project maturity is positive for low levels of organizational experience, B = .50, 95% CI [.22, .78], whereas the effect is null for later assessments, B = .023, 95% CI [–.28, .33].

My findings highlight the effects that 1) proposal characteristics, 2) contextual factors, and 3) evaluators' characteristics can have on the likelihood of applications for sustainability certifications succeeding. In particular, I find that: Ventures that have reached a level of technical and marketing maturity (i.e., those that have already developed functioning prototypes, and whose products have demonstrated market acceptance) are more likely than others to obtain positive evaluations (consistent with findings of MacMillan and colleagues [1985]). Evaluators with greater expertise related to relevant SDG topics and higher levels of *other-orientation* exhibit more severity in their assessments of applications. Organizational experience also appears to moderate the relationship between project maturity and evaluation outcomes.

Table 8: Multi-level models (MLM) predicting evaluation outcomes.

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**	**Model 7**	**Model 8**
Project maturity		.29*	.29*	.31**	.69***	.29**	.32**	.67***
		(.12)	(.12)	(.11)	(.19)	(.11)	(.11)	(.19)
Organizational experience			9.85e–4†	8.86e–4†	7.49e–4†	9.62e–4†	9.98e–4†	7.51e–4
			(5.88e–4)	(5.79e–4)	(6.01e–4)	(5.77e–4)	(5.80e–4)	(6.00e–4)
Evaluator's expertise in relation to SDGs				–.052**	–.052**	–.051**	–.053**	–.051**
				(0.19)	(0.20)	(0.19)	(0.019)	(.019)
Evaluator's *other-orientation*				–.050**	–.051**	–.49**	–.050**	–.050**
				(.019)	(.020)	(.019)	(.019)	(.019)
Project maturity X Organizational experience					–.0012**			–.0012**
					(4.63e–4)			(4.61e–4)
Project maturity X Evaluator's experience in SDGs						.010		.011
						(.010)		(.010)
Project maturity X Evaluator's *other-orientation*							–.0040	–.0016
							(.010)	(.010)
Type of entity	.36	.25	.23	.22	.25	.23	.22	.25
	(.23)	(.23)	(.23)	(.23)	(.23)	(.23)	(.23)	(.23)
Number of employees / 1000	.0060	.0056	.0049	.0045	.0050	.0044	.0044	.0050
	(.0059)	(.0060)	(.0061)	(.0061)	(.0061)	(.0061)	(.0061)	(.0061)
Age	.0088	.0058	.028	.017	.017	.018	.017	.017
	(.017)	(.018)	(.018)	(.017)	(.017)	(.016)	(.017)	(.017)
Gender	.50	.49	.53	.48	.51	.51	.48	.55
	(.50)	(.50)	(.51)	(.47)	(.48)	(.47)	(.47)	(.48)

PhD	1.02*	.95†	.93†	1.02*	1.04*	1.03*	1.01*	1.03*
	(.49)	(.50)	(.50)	(.46)	(.47)	(.45)	(.46)	(.46)
Experience as a scientist or as an engineer	–.28	–.17	–.14	–.17	–.20	–.18	–.15	–.20
	(.46)	(.55)	(.50)	(.44)	(.45)	(.44)	(.44)	(.44)
Experience as an entrepreneur	–.17	–.39	–.16	.22	.22	.17	.22	.17
	(.52)	(.53)	(.57)	(.52)	(.53)	(.52)	(.52)	(.53)
Experience as a manager	–.031	–.0059	–.0027	.098	.080	.11	.010	.093
	(42)	(.44)	(.45)	(.41)	(.42)	(.41)	(.41)	(.42)
Experience as an academic	–.82	–.60	–.55	–1.00†	–1.04†	–.99†	–.98†	–1.02†
	(.54)	(.56)	(.57)	(.54)	(.55)	(.54)	(.54)	(.55)
Experience as a consultant	.74†	.75†	.77†	.98*	.99*	.97*	.98*	.97*
	(.44)	(.45)	(.46)	(.43)	(.44)	(.42)	(.43)	(.43)
Constant	.59	.65	.46	–.27	–.15	–.33	–.028	–.21
	(.93)	(.97)	(1.00)	(.91)	(.94)	(.90)	(.91)	(.93)
Observations	689	689	689	689	689	689	689	689
Log likelihood	–319.50	–316.64	–315.22	–309.25	–305.77	–308.70	–309.18	–305.13
McFadden's R-squared[13]	0.038	0.047	0.051	0.069	0.079	0.070	0.069	0.081

Standard errors in parentheses.

N = 689 assessments (level-1 units) nested in K = 78 evaluators (level-2 units).

† significance at p<.10; * significance at p<.05; ** significance at p<.01; *** significance at p<.001

Figure 6 provides the predicted odds ratios for obtaining a positive evaluation as a function of project maturity, and at different levels of organizational experience. It shows that, for lower organizational experience levels, the pooled within-evaluator effect of project maturity on the likelihood of an application obtaining obtain a positive evaluation outcome is stronger (whereas the effect is null for higher levels of organizational experience).

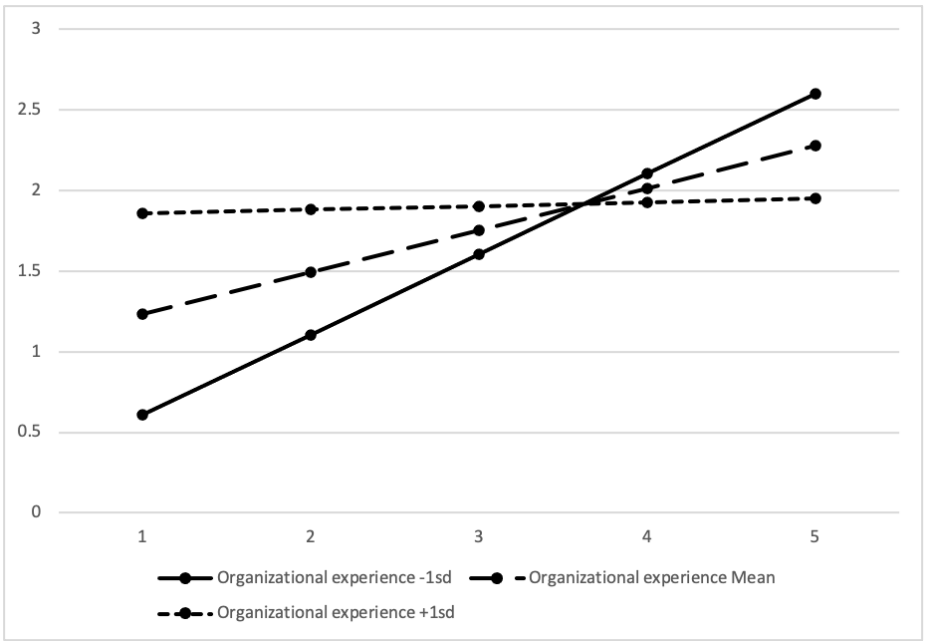

Figure 6: The predicted odds ratios for obtaining a positive evaluation as a function of project maturity (1-5), and at different levels of organizational experience (–1SD, mean, +SD).

[13] Logistic regressions models are fitted using a maximum likelihood (ML) estimator. Following recommendation for calculating the model fit for logistic regression, we employ McFadden's R squared measure (Hox, 2017; McFadden, 1974), defined as $R^2_{McFadden} = 1 - \frac{\log(L_c)}{\log(L_{null})}$, where L_c denotes the (maximized) likelihood value from the current model and L_{null} denotes the corresponding value for the null model, i.e., the model with only an intercept and no covariates.

A few control variables also appear to have significant effects on the evaluation outcomes. In particular, an evaluator holding a PhD (p<.05) or having experience as a consultant (p<.05) are both positively associated with the likelihood of an application obtaining a positive evaluation, while an evaluator having experience as an academic (beyond a PhD candidate or recent recipient) is negatively associated with an application obtaining a positive evaluation.

3.5.3 Analytic extensions

My analysis highlights the effects evaluators' social identities can have on their assessment of sustainable ventures' applications for a sustainability certification. I demonstrate that, as a result of severity biases, an evaluator's level of *other-orientation* is negatively associated with their likelihood of positively evaluating an application. However, one might wonder whether my findings hold when considering the effect that evaluators' social identity may have in assessing only one as opposed to multiple criteria—e.g., only an application's potential for environmental, or financial, impact. When we look at predictions for evaluators' assessments of the financial dimensions of applications alone, they do appear similar to those presented above. In particular, project maturity is positively associated (p<.05) with the likelihood of an evaluator issuing a positive evaluation on this dimension, while evaluators' expertise related to relevant SDGs and levels of *other-orientation* are both negatively associated with their likelihood of issuing positive evaluations (p<.05 for both predictors). Yet when we look at predictions for evaluators' assessments of the environmental dimensions of applications alone, while higher levels of *other-orientation* are still negatively associated with the likelihood of issuing positive evaluations (p<.05), project maturity and evaluator expertise related to relevant SDGs have no significant effects.

3.5.4 Robustness tests

I considered alternative measures for my explanatory variables and found that they yielded very similar effects to those reported in this article. For example, I computed evaluators' expertise relative to specific SDGs as the *average* (instead of the *sum*) of their years of experience in positions related to each of the five SDGs that the SIF focuses on when evaluating applications for tis Efficient Solution Label and found that results were similar to those reported above.

3.6 Discussion and conclusion

This paper reported the results of multi-level modeling (MLM) based on the analysis of a rich data set, composed of evaluations of 689 applications for the SIF's Efficient Solution Label sustainability certification, and details about the 78 evaluators who conducted those evaluations. Applicants for this certification ranged from young ventures to established firms. Their applications covered a variety of novel products, technologies, industrial processes, or services that were, per the SIF's requirements for continuation, (1) already commercialized or aimed for commercialization, (2) at the technical maturity level of at least a prototype at scale 1:1 in a test environment, with a *technology readiness level* (TRL) equal to or greater than 6, and (3) capable of contributing to the achievement of at least one of five sustainable development goals of focus.

My analysis extends prior research on sustainability certifications, and specifically on decision-making related to granting such certifications to sustainability ventures. In particular, my analysis showed that evaluators were less likely to grant certification (1) to projects that were less mature from a technical and/or a marketing perspective, 2) when they held higher levels of expertise related to specific SDGs, and 3) when they displayed social identities characterized by higher levels of *other-orientation*. It also shows that, when the certifying body's level of organizational experience was lower, evaluators' severity toward less mature projects was stronger. However, my analyses did not show evidence of any effects on the relationship between project maturity and evaluation outcomes due to variations in evaluators' levels of expertise relative to SGDs or levels of *other-orientation*.

My findings offer a number of insights for the management literature: First, my study demonstrates the relevance of several factors within distinct dimensions of decision-making. By relying on Brunswik's lens model (Brunswik, 1952; Hammond, 1972) as a theoretical anchor, I provide a holistic framework for assessing the relevant criteria that directly

and jointly influence evaluation outcomes in the context I examined. Such criteria pertain to three dimensions of decision-making in this context—proposal characteristics, contextual factors, and evaluators' characteristics.

Second, my study offers insights into the role sustainability certification application evaluators' *social identities* (Tajfel & Turner, 1979) can play in their decision-making. Building on previous entrepreneurship research that has shown how social identity can improve understandings of entrepreneurial behavior (Fauchart & Gruber, 2011; Gruber & MacMillan, 2017) and hybrid venturing (Miller et al., 2012; Battilana & Lee, 2014), I included a measure of evaluators' social identities in my analysis (Sieger et al., 2016). By doing so, I refined and extended research in this field, as I linked evaluators' social identities with their attitudes during assessments of sustainable ventures' applications for sustainability certifications. In particular, I demonstrate a significant—and non-obvious—relationship between evaluators' social identities and their evaluations, as evaluators who displayed higher levels of *other-orientation* were harsher in their assessments of sustainable ventures' applications for a sustainability certificate.

Finally, this study contributes to the literature on venture capital investment decision-making by extending knowledge on the VC decision-making context to address the emerging phenomenon of sustainability-driven ventures. Not only do my findings show if and when evaluators' *social identities* matters during evaluations of ventures on multiple levels for the potential awarding of a sustainability certification, but they also show that this effect holds when we consider these evaluators' solely financial evaluations of ventures—i.e., the traditional focus of VC investment decision-making. By doing so, this study may shed light on the role that venture capitalists' social identities may play in their own decision-making. From a practical perspective, it also raises important questions regarding the hiring and training of these professionals.

3.6.1 Limitations and avenues for future research

Sustainability certifying organizations are relatively new entities, which have emerged in response to the growth of a similarly emergent category of ventures focused on identifying entrepreneurial opportunities that lead to social and/or environmental impacts while also achieving financial goals (Muñoz & Cohen, 2018). Despite my privileged access to a rich data set gathered from one of the key European organizations in this field, my findings might lack generalizability or future applicability, as we do not know, how the sustainability certification field will evolve.

Despite the insights I generated on the relevance of evaluators' *social identity* for decision-making in terms of I analytic context, I also cannot predict whether an analogous relationship exists in terms of the *quality* or *veracity* of that assessment—i.e., its capacity to predict the eventual success of an evaluated firm. Accordingly, I highly encourage future research on the trajectory of ventures subsequent to their applications for sustainability certifications, with attention to the relevance to the decision-making factors discussed in this study to their future development and/or successes.

Chapter 4
Born to die: The role of prosocial motivation in entrepreneurial project termination

Enrico Bergamini[14]

Abstract

Do project terminations necessarily result from failure and lead to negative emotional reactions from its participants? Although most extant research and common sense both operate on or appear to reinforce these assumptions, this study of entrepreneurial projects that aimed to address *grand societal challenges* (GCs) but ultimately terminated opens fresh, and in some cases likely unexpected, perspectives on this. Using a multiple-case, inductive approach to analyze an organization set up to respond to healthcare personnel's emergency needs, which arose during and due to the initial wave of the Covid-19 pandemic, this paper uncovers three pathways that can lead to project terminations, each of which appears to lead to distinct emotional reactions from project team members. This approach notably facilitates observations on projects that terminated after they became "obsolete," due to the resolution of the GC-related issues they sought to address due to either the natural evolution of the crisis or the interventions of a third party. Participants in this category of project, despite failing to achieve their goals, accepted and even at times celebrated their terminations, for likely reasons this study unpacks in detail. This study provides several contributions to the literature, including counter-intuitive insights about the definition of project success, as gleaned through its focus on the GC venturing context, and about project members' emotional reactions to project terminations. These findings may inform new lines of inquiry about whether and/or in what contexts project terminations have negative impacts on organizations' overall social values. They also suggest the pivotal role that perceived prosocial impact plays as a trigger for learning and sensemaking following the termination of a project.

4.1 Introduction

Scholars, practitioners, and educators frequently describe—and debate—the different stages of growth that entrepreneurial projects or ventures go through as journeys, in terms of conception, gestation, infancy, and adolescence phases (Reynolds & Miller, 1992). Others take an evolutionary approach (Aldrich & Martinez, 2001), including reference to Darwinian theories (Ferraro et al., 2015) of the "survival of the fittest" (Gimeno et al., 1997: 750). However, these individuals rarely discuss the end of these metaphorical trajectories, and what the termination of a project or venture means

[14] Authorship notes: This study is E. Bergamini's own, original work. The author met, at key research milestones, with M. Gruber, his thesis advisor, to discuss iterations of the analyses and the manuscript. D. Bavato provided constructive suggestions and valuable support during the development of this research work; M. Hay provided editorial services.

for those involved in it. This gap in the literature is striking when one considers that project termination is relatively common, especially for entrepreneurial (Cope, 2011; Shepherd & Cardon, 2009; Ucbasaran, Shepherd, Lockett, & Lyon 2013) and R&D (Brockhoff, 1994; Shepherd, Patzelt, Williams, & Warnecke, 2014) projects in complex (Gassmann & Reepmeyer, 2005) and uncertain (Balachandra et al., 1996; DiMasi et al., 2003; Sarasvathy, 2001) environments.

Management scholars have noted that the decision to terminate an entrepreneurial project can cause conflicts (Cooper, Edgett, & Kleinschmidt, 1997), with consequences at both the individual (Shepherd & Cardon, 2009; Shepherd, Covin, & Kuratko, 2009; Shepherd et al., 2014; Crosina & Pratt, 2019) and the organizational (Brockhoff, 1994) level. This literature has predominately described cases in which individuals' first, and often only, emotional reactions to a termination were disappointment (Shepherd & Cardon, 2009), demoralization (Balachandra et al., 1996), sadness, and grief (Cardon, Stevens, & Potter, 2011; Cope, 2011). This has led scholars to focus on assessing individuals manage their grief (Shepherd, 2003, 2009; Shepherd et al., 2009), rely on self-compassion (Shepherd & Cardon, 2009), and eventually learn from failure (Shepherd et al., 2014) and adapt to changing environmental conditions (Sitkin, 1992) following a project's termination.

This literature overlooks cases of project termination that those involved may *not* consider a failure or react to with negative emotions, but may instead view as a welcomed outcome—such as ventures that set out to address (GCs) and envision clear endpoints for their work "like … developing a Zika vaccine" (Eisenhardt et al., 2016: 1113). Once such a venture accomplishes its core mission, or successfully meets the need it sets out to address, it should, and usually will, terminate itself.

To address this gap in the literature, in this paper I empirically examine cases of venture termination that those involved did not consider a failure or react negatively to, via an inductive study of a GC venture. I selected an organization created specifically to help overburdened healthcare personnel during the first months of the Covid-19 pandemic. This examination seeks to answer the following questions: *How do members of a GC-focused organization react to the termination of their project, especially when a third party resolves the GC they seek to address?* Using multi-case theory building based on interviews and observations, I uncover three termination pathways, each of which corresponds to a reason for project termination: (1) successful delivery, (2) failure to delivery, and (3) obsolescence.

This study puts forward a novel framework for entrepreneurial project termination for consideration in the GC venturing, project termination, and prosocial motivation literature. In particular, its findings show that when a GC project terminates because it became "obsolete" (i.e., the GC-related issue it aimed to address was resolved), rather than view this as a failure or react negatively as the extant literature may lead one to expect they would, those involved may instead view this as a success. Project members may feel that the resolution of the issue they set out to address means that they achieved their goal of helping others (i.e., that they achieved what the motivation literature refers to as a *perceived prosocial impact*, Grant & Sonnentag, 2010). This can lead to positive emotional reactions from individuals involved in the project.

This study also responds to a call for further research on when, how, and why sustainable entrepreneurs—here and in much recent literature defined as individuals and organizations that attempt to address GCs by pursuing both social and financial objectives—develop solutions to problems when doing so may lead to unforeseen complications (Etzion, Gehman, Ferraro & Avidan, 2017). Along these lines, "for researchers, addressing grand challenges presents extensive theoretical opportunities to reveal new concepts, relationships, and logics of organizing" (Eisenhardt et al., 2016: 1113).

This study also extends the growing literature on GC venturing by describing a project that did not operate with the ultimate goal, common to many ventures in other contexts, of firm survival (Josefy, Harrison, Sirmon, & Carnes, 2017; McGrath, 1999; Suárez & Utterback, 1995), but instead achieved its goal of social impact, became "obsolete," terminated itself, and remained meaningful for both the community it affected and the individuals it involved. By doing so, it sheds light on a possible new metric by which we can assess success. It may also inform new lines of inquiry about if and when venture termination may be good for a venture's ultimate social impact.

This study further contributes to research on prosocial motivation by showing the role of *perceived prosocial impact* in individuals' assessments of a project's termination. It extends recent research on individuals' emotional reactions to project termination (Shepherd & Cardon, 2009; Shepherd et al., 2009; Shepherd et al., 2014) by challenging the dominant view that this can only result in negative emotional reactions (Cardon et al., 2011). Additionally, it extends the literature on the conditions that help members of an organization learn from termination events (Cope, 2011; Shepherd, 2003). This study specifically suggests that individuals involved in projects that terminated because they became "obsolete" showed the highest degree of learning and sensemaking compared to their peers who experienced successful or failed projects.

4.2 Background

In this section, I outline the nascent literature on GC venturing. Then, I present the results of research on project termination and its implication for project members. Finally, I combine these two bodies of literature, and describe my attempt to gain a better understanding of this phenomenon.

4.2.1 Grand challenge venturing

Researchers across many disciplines unanimously consider GCs such as climate change, wealth inequality, and the Covid-19 pandemic—which often involve systemic and seemingly intractable issues—the most complex and pressing concerns facing societies today. Accordingly, management scholars have increasingly encouraged research on new organizational forms with the potential to help resolve GCs (Ferraro et al., 2015; George et al., 2016; Mithani, 2020). In recognition of the failure of the market, states, and other traditional institutions to address these crises, the literature has over the last decade increasingly turned its attention to the growing phenomenon of GC-driven ventures**,** endeavors that make addressing GCs part of their mission alongside financial goals (Tobias, Mair, & Barbosa-Leiker, 2013, Muñoz & Dimov, 2015).

Scholars recognize entrepreneurship's potential, by identifying new opportunities and rapidly scaling them, and by embedding with local communities (Dentoni, Pascucci, Poldner, & Gartner, 2018; Williams & Shepherd, 2021), to act as sources of significant social and economic change (Cohen & Winn, 2007; Dean & McMullen, 2007; Muñoz & Dimov, 2015; Pacheco, Dean, & Payne, 2010; Venkataraman, 2004; York & Venkataraman, 2010).

This recognition has translated into thorough definitions and descriptions of sustainable entrepreneurship as a phenomenon within the literature (Binder & Belz, 2015; Hall, Daneke, & Lenox, 2010; Muñoz & Cohen, 2018). However, the literature so rarely addresses the termination of sustainable ventures that it does not offer even a basic understanding of how members of ventures related to GCs react to the termination of their projects.

4.2.2 Project termination

Whether as a result of the uncertainty (Venkataraman, 1997) and concomitant risk of failure (Miller & Reuer, 1996) that all young ventures contend with, or as a result of established firms' need to constantly update, revise, and potentially end new products and R&D projects (Cooper et al., 1997) as part of their ongoing corporate venturing and portfolio management activities (Leten & Van Dyck, 2012), a broad spectrum of organizations frequently have to terminate projects. The implications of these terminations for the future of both firms and the individuals involved in ended projects have accordingly drawn ample scholarly interest.

Scholars have focused their attention on the decision-making process (Cooper et al., 1997) and ultimate reasons (Green, Welsh, & Dehler, 2003) that lead firms to terminate some projects but not others within one R&D portfolio. They described reasoning that primarily considers a project's economic performance (McGrath, 1999), as mediated by management advocacy (Balachandra et al., 1996; Brockhoff, 1994; Green et al., 2003) and/or the attainment of critical performance thresholds (Gimeno, Folta, Cooper, & Woo, 1997; Green et al., 2003). Extent literature considers the decision to terminate one project over the other within an R&D portfolio as a potential source of conflict among employees (Cooper

et al., 1997). It also describes grief as overwhelmingly the most common initial, and often the only, individual reaction to the termination of a project one was involved with. This has led scholars to focus on exploring how individuals manage grief (Shepherd, 2003, 2009; Shepherd et al., 2009), rely on self-compassion (Shepherd & Cardon, 2009), and eventually learn from failure (Shepherd et al., 2014) following the termination of a project they worked on.

Though research on organizational survival or death (Suárez & Utterback, 1995; Josefy et al., 2017) focuses on the demise of the entire firm, a unique and more extreme case of termination than a project termination, it can also provide insights into the consequences of the latter. Scholars in this field have explored why organizations die, and the process of organizational death (Harris & Sutton, 1986; Sutton, 1987). Notably, Sutton (1987) identified and analyzed the stages a firm goes through after deciding to terminate an operation. They have also documented employees' predominately negative reactions to organizational demise, including cases in which individuals compared this with the "loss of a friend or relative" (Harris & Sutton, 1986: 18), "a divorce or death of a spouse" (Sutton, 1987: 546), the "loss of a loved one" (Shepherd, 2009: 88), "a sense of loss, like losing somebody" (Crosina & Pratt, 2019: 78), or a "funeral" (Crosina & Pratt, 2019: 75). As Josefy and colleagues observe, "many [researchers] consider survival the quintessential indicator of firm performance" (2017: 770).

Although the extant literature on project termination and organizational death includes many valuable insights, it thus largely either reinforces or operates on the assumption that 1) any firm or project's ultimate goal is survival and 2) termination will result in negative emotional reactions, chief among them grief. These predominate views have been counter-productive to the further development of the nascent stream of research in GC venturing. I believe that analysis of the termination of a GC venturing project can challenge these assumptions and predominate views, and thus substantially advance research.

4.2.3 Entrepreneurial project termination in the context of grand challenges

Entrepreneurship scholars define entrepreneurial failure as "the termination of an initiative that has fallen short of its goals" (McGrath, 1999: 14). However, GC-related projects complicate this definition, as they often aim to solve precise social and/or environmental issues related to GCs, and once they *succeed* in solving those issues they should, for lack of any further purpose, terminate. In other words, for some GC ventures, termination of the initiative may be a sign of entrepreneurial success—that an initiative has achieve its goals. The same logic applies to entire organizations that exclusively attempt to address specific GCs. The extant literature does not address this distinct dynamic.[15]

4.2.4 Prosocial motivation

Organizational scholars define prosocial motivation as the willingness to engage in actions intended to benefit others (for reviews, see Penner, Dovidio, Schroeder, & Piliavin, 2005; Bolino & Grant, 2016). Due to the socially dominant (as opposed to commercially dominant) mindset of individuals involved in GC ventures (Miller et al., 2012; Shepherd, 2015), I anticipate that prosocial motivation might play a key role in their emotional reaction to the termination of GC-driven projects. Therefore, literature on prosocial motivation could inform efforts to understand individuals' emotional reactions to project terminations.

Batson's (1987) thorough analysis of prosocial motivation attempts to explain *why* individuals act prosocially (i.e., why they help others). Building on the works of Auguste Compte (1851), who coined the term "altruism" (MacIntyre, 1967), Batson recognizes that prosocial motivation encompasses both *egoistic* and *altruistic* dimensions. He explains that "*prosocial motivation is egoistic when the ultimate goal is to increase one's own welfare; it is altruistic when the ultimate goal is to increase another's welfare*" (1987: 67, emphasis in original). Subsequent work has drawn on this egoistic and

[15] Recent entrepreneurship research enumerates several other contexts in which entrepreneurs might terminate a project and consider that a success or otherwise a positive outcome, such as a venture launched with the intent to quickly terminate it via a sale or acquisition (Dobrev & Gotsopoulos, 2010; Wennberg & DeTienne, 2014). However, as Josefy and colleagues (2017) point out, this intent to dismiss does not necessarily reflect the firm's broader set of stakeholders.

altruistic dimensional distinction by observing individuals' *self-concern* and *other-concern* (or *other-orientation*) (e.g., De Dreu & Nauta, 2009; Bobocel, 2013).

Extant research focuses on the role of prosocial motivation in an individual's decision to join a project or a venture (Batson, 1998; Miller et al., 2012; Shepherd, 2015; Tiwari, Bhat & Tikoria, 2022), ability to accomplish tasks (Grant, 2008a; Grant, 2008b; Grant & Sonnentag, 2010), and job satisfaction (Meglino & Korsgaard, 2007). The organizational literature is largely silent about the role of prosocial motivation in shaping individuals' emotional reactions to project terminations. However, research does show that prosocial motives lead to prosocial behaviors, which in turn strengthen perceptions of prosocial impact (Bolino & Grant, 2016). Thus extant research does suggest that prosocial motivation may guide individuals' perceptions and the overall consequences of project terminations.

4.3 Methods

The research stream on GC venturing is still developing (Eisenhardt et al., 2016; Ferraro et al., 2015). As such, I adopted an inductive approach, which is recommended for investigating complex and hard-to-measure phenomena (Edmondson & McManus, 2007) and those that are not yet fully understood (Eisenhardt, 1989; Strauss & Corbin, 1998; Yin, 2009), in order to develop strong and insightful theory (Bansal & Corley, 2012).

I started with a general research question: *What does success look like in a GC venture?* However, in line with this approach as my research progressed and I took advantage of serendipitous findings (Eisenhardt, 1989; Mintzberg, 1979) and novel ideas related to the functioning of GC venturing, I refined this question (Gioia et al., 2013). Specifically, as I began to gather data, I was surprised and intrigued by the diverse reactions that team members voiced in response to the termination of projects, and especially by the way respondents described the termination of their projects in terms of both success and failure. For example, one team member stated, "To be honest, I had no expectations. So I always said that we are there as long as we are needed, but also no longer because it doesn't make sense to stay just to be there." [CT3]. I began to notice patterns in individual reactions within and across different projects. Gradually, I realized that my research project should interrogate common assumptions and understandings of the meaning and effects of project terminations through the context of GC ventures. Specifically, my research question evolved to: *How do members of a GC-focused organization react to the termination of their project, especially when a third party resolves the GC they seek to address?*

An organization created specifically to address a GC, *helpfulETH*, granted me access to conduct research. The organization operated from March 2020 to June 2020, involved up to 200 active members working simultaneously, and launched and supported at least 25 projects. All of these projects aimed to address specific needs of healthcare providers resounding to the Covid-19 pandemic. The organization's top management, its so-called *steering board*, took responsibility for the recruitment, organization, communications, and provision of legal counsel for the different projects.

helpfulETH was a useful setting for theorizing in at least five ways. First, the organization aimed to address the most pressing GC of the time period considered, the initial outbreaks of the Covid-19 pandemic, and therefore gave me the opportunity to gain valuable insights into an unexplored (and unprecedented) phenomenon (Brown & Eisenhardt, 1997; Eisenhardt et al., 2016).

Second, *helpfulETH* represents an extreme GC venture case for the study project termination. It launched with the aim of helping overburdened hospital personnel during the first months of the Covid-19 pandemic, but explicitly retained the potential to create spin-offs and enter the market, after the resolution of the crisis it set out to address. The organization officially terminated itself three months later, when the acute phase of the crisis in the Swiss context was over. Most of *helpfulETH*'s projects ended at that same time, with two exceptions, which eventually spun off into independent entrepreneurial ventures. This sort of extreme case is particularly suited for inductive studies, as it makes it easier to generate theory (i.e., the insights embedded within it are more "visible") and it has greater potential for raising awareness of a focal challenge (Eisenhardt, 1989; Eisenhardt et al., 2016). Especially in the case of GC ventures, extreme cases facilitate the discovery of novel insights through the analysis of unique counterfactuals.

Third, *helpfulETH*'s agile organizational structure—25 independent projects managed by a top-level management team (the *steering board*)—offered me the chance to carry out a multiple-case study. For the purpose of analysis, each case (i.e., each *helpfulETH* project) constitutes as a stand-alone subject, which I can assess to identify and explain variances in their outcomes, with reference to my underlying theoretical logic. The large number of projects under the *helpfulETH* umbrella allows me to make a consistent comparison across several cases and to build a reliable variance model (Eisenhardt & Graebner, 2007; Yin, 2009).

Fourth, almost all of *helpfulETH*'s projects terminated, either because they succeeded in delivering on their intended goals or because they became "obsolete." (Two projects spun off, and were in the process of commercialization at the time of my inquiry.) This context is ideal for my efforts to understand how project members react to terminations, and the practices and processes enacted by the leaders (especially those with the strongest influence) of the organization, over the perceptions of members of an organization in the process of terminating (Sutton, 1987).

Fifth, *helpfulETH*'s members participated on a fully volunteer basis, and their level of commitment despite not receiving any remuneration struck me. Most active members spent a substantial amount of time, often on night and weekend shifts while they fulfilled as dictated by their non-*helpfulETH* schedule commitments, working hard to solve the many technical and legal hurdles of developing a product from scratch and in a short period of time. (E.g., "everyone was working hard" [PL20]; "you just work like crazy" [PL12]; "it was also like five or six weeks only, and very stressful. I worked like crazy, it was a really hard time. I knew that I had half a year to recover." [PL71]; "People were really putting in a lot of hours and late nights. Some despite their other jobs that they had."; [PT72], "it was working like all day, or seven days a week, and all day, all night. It was crazy." [PL71]; "it was on a special period, very time consuming, even at the weekends" [CT217]). From a research standpoint, one might expect their commitment to exacerbate their emotional reactions to "trigger events," such as a project's termination.

4.3.1 Research context

As soon as public health bodies confirmed the first cases of Covid-19 in Europe (WHO, 2020), hospitals and other healthcare providers reported the need for a wide array of support and technical solutions. In response, researchers from the Swiss scientific community (specifically the ETH Domain[16]) offered their resources, engineering expertise, and networks to help them identify and/or obtain solutions. On March 16th, 2020, a few scientists from ETH Zurich founded *helpfulETH* as an emergency initiative. They quickly expanded their reach to other Swiss institutes, gaining up to 85 active members in one week. The launch and deployment of their first projects drew public awareness towards *helpfulETH*. By the end of March, the organization had joined the *ETH Task Force* (helpfulETH, 2020b), and by the beginning of April, the Swiss government made the organization part of the Swiss National Covid-19 Science Task Force (ETHZ, 2020). Within one month of its launch, *helpfulETH* had 209 active, fully volunteer members, including engineers, scientists, legal advisors, medical doctors, and a broad network of specialists in specific technical and legal domains. After two months (in May 2020), the initiative was overseeing 25 projects. It terminated itself in June 2020, when the Swiss Federal Council, in line with other European countries, lifted most of the nation's pandemic restrictions to align with changes in the epidemiological context (FOPH, 2020).

helpfulETH's core goal was to "support hospitals with short-term engineering solutions" (Mesot, 2020). Its mission statement was: "Our common aim is to remove hurdles faced by medical practitioners in connection with Covid-19 as quickly as possible, by connecting them to capable engineering teams" (helpfulETH, 2020a).

Its projects drew on its members' engineering expertise to rapidly develop and deploy solutions that addressed specific healthcare provider needs, from mechanical or software solutions to support risk analysis, communication, and training (helpfulETH, 2020c). *Project Teams* (PTs), newly-formed units of two to twelve volunteers with backgrounds and experiences in academia, healthcare, and industry spaces, ran each project. Six cross-functional *Core Teams* (CTs) supported

[16] ETH comes from *Eidgenössische Technische Hochschule*; in English, the Swiss Federal Institute of Technology.

the PTs by recruiting organization members to assist in specific projects that matched their skills, conducting medical need assessments, defining projects, and offering legal supervision and support in solutions manufacturing and distribution. A *steering board*, composed of every CT leader and several more organization members in key strategic and leadership roles, managed *helpfulETH* as a whole. Individuals who acted as *links*, coordinated and organized communications between every PT, CT, and the *steering board*. Figure 7 shows the organization at *helpfulETH*, including the *steering board*, 6 CTs, and PTs, and the interplay among them.

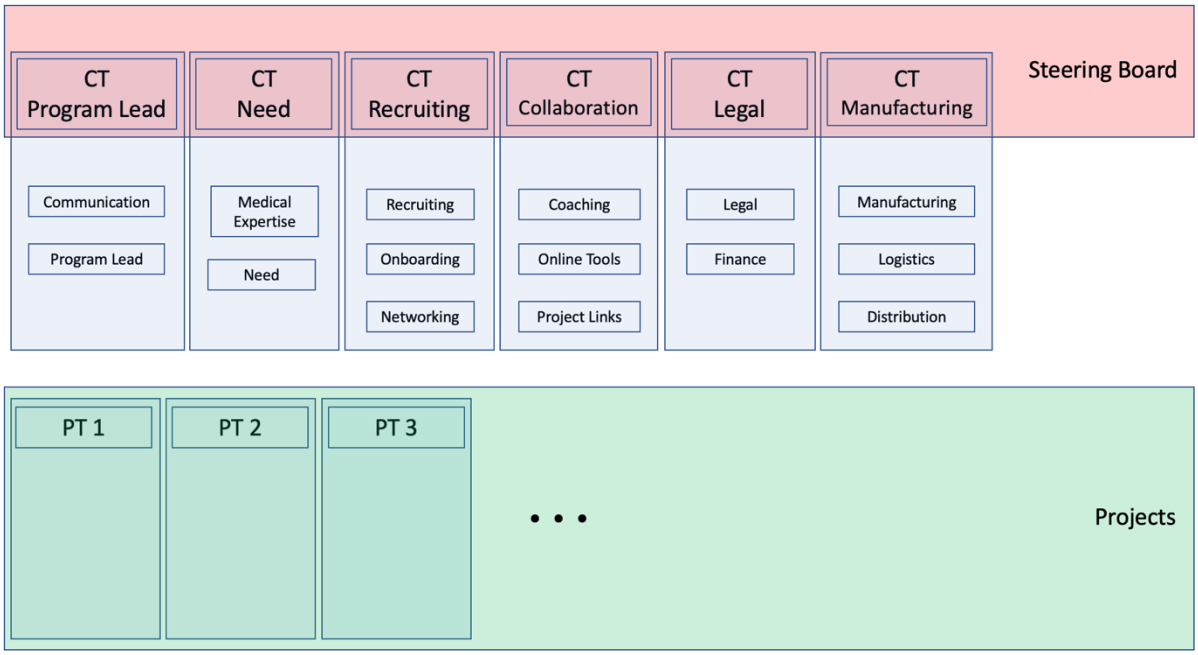

Figure 7: Organization of Core Teams (CTs) in blue, the steering board in red, and Project Teams (PTs) in green (adapted from helpfulETH, 2020c).

Figure 8 shows the timeline of each project (as represented by horizontal orange lines), from its creation to its termination, within the timeframe of the organization's creation and termination (as represented by vertical black lines). *helpfulETH* members created the majority of their projects at the launch of the organization or within a week of that date; most of these projects terminated between April and May 2020. However, two *long-term* projects remained namely ongoing at the time of my inquiry. They are marked by dotted lines at the right-hand side of the chart.

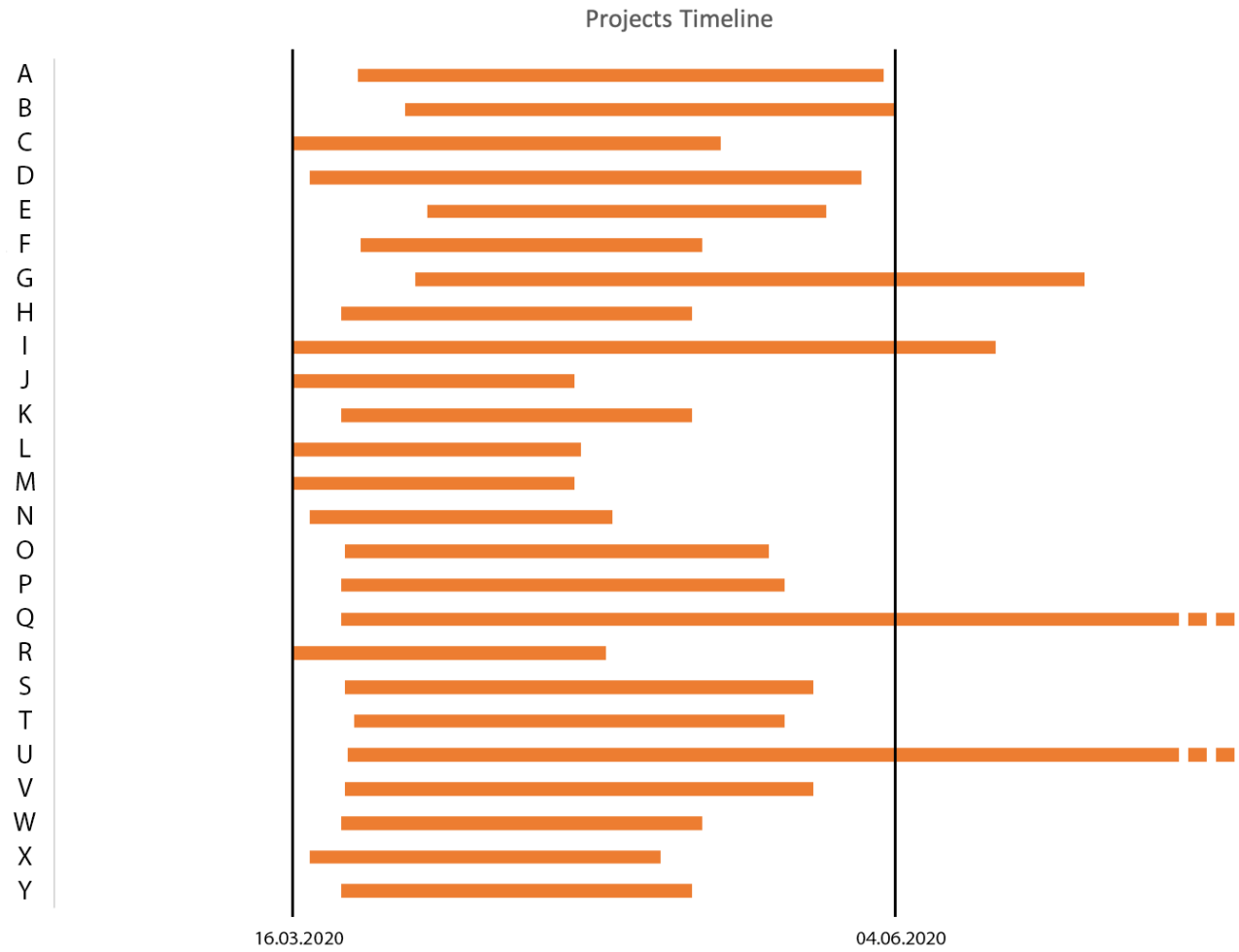

Figure 8: Timeline of the 25 projects.

4.3.2 Data collection

This study relies on multiple empirical sources—primarily semi-structured interviews with *helpfulETH* members, but also (consistent with common inductive research practices) data such as participant observations, internal communication platform records, and other rich archival data, collected during a *deep dive* into the organization.

Interviews. Between July 2020 and November 2021, I conducted 89 semi-structured interviews with *helpfulETH* members, all in English. I conducted a first set of interviews between July and October 2020 (n = 29), following the termination of the organization and 21 of its 25 projects. I prioritized key informants—i.e., project leaders and members of the *steering board*—as I determined they were more likely than other individuals to have stronger networks within the organization and better understandings of its dynamics and organizational culture. I conducted a second set of interviews between June and November 2021 (n = 60) with a broader sample of individuals who worked at various levels of engagement (including individuals who only worked with *helpfulETH* for a few hours on one specific project). The time gap between my two interview periods allowed me to iterate between the cases I initially observed and emerging theory, and to relate with relevant literature. Additionally, I conducted member checks during this set of interviews, with some key informants from my first set of interviews, to validate the categories and variance model I was developing.

In line with common approaches to inductive research, the duration of my interviews and the nature of my questions evolved over time—especially between my first and the second sets of interviews. My first interviews were primarily exploratory, addressing topics ranging from operational aspects of an informant's daily practice (e.g. their role in the organization) to more cognitive aspects of their work with *helpfulETH* (e.g. their motivation for working with the organization, personal goals and expectations for it, and relevant elements of their worldviews and/or significant life-

experiences). While I used prepared questions to guide my interviews I adjusted my questions in the moment as themes emerged in the data, which allowed me to pursue unexpected but interesting topics (Corley & Gioia, 2004).

I conducted my first set of interviews online, via Zoom video calls (Zoom Video Communications) (save for one in-person interview), recorded and transcribed each, then checked the transcripts for accuracy. Each interview in this set lasted between 30 and 60 minutes, and were conducted in English.

My prepared questions changed from my first tranche to my second to align with my emerging theorizing, in line with an inductive approach. Specifically, I added questions about informants' perceptions of project outcomes, impacts, and the role and practices of the different groups of people within the organization as emotional support for coping with project termination. I also asked for their main takeaways and their personal perception of the project's and organization's ultimate success. These questions allowed me to gather more data about members' perspectives, as well as organizational practices, around project terminations.

Interviews in this second set were generally shorter (10 to 30 minutes long). I performed all of them online, via Zoom video calls (save for one in-person interview), and recorded and transcribed all but 14 of them. For those 14, I took extensive notes during, or immediately after, the interview. I conducted five of these interviews in Italian, two in French, and the rest in English, in order to use each interviewee's first language whenever possible. (I am fluent in all three of these languages.)

To preserve the confidentiality of the projects and interviewees, I randomly ordered both, using the following labeling conventions:

- I randomly assigned a letter, from A to Y, to every project from;
- I identified every *Project Team* member with PT#, and every *Project Team* leader with PL#, with the # values randomly assigned;
- I identified members of the *Core Teams* and of the *steering board* with CT#, with the # values randomly assigned.

Participant observations. I joined *helpfulETH* for one month (from May 4th to June 4th, 2020) as an active PT member for project B. This active insider role gave me a unique vantage on my subject matter, both in terms of a more comprehensive understanding of the dynamics within a PT and between the PT and the CTs and *steering board*, and in terms of insights into the organization's culture and the challenges it faced. I also attended five sequential *town hall meetings*, organization-wide virtual meetings held every Thursday morning, which all members were invited to attend, in order to share and hear updates on *helpfulETH*'s activities and achievements.

Internal communication platforms data. Given the generalized lockdowns instituted in Switzerland and many other nations in order to control the spread of Covid-19, *helpfulETH* relied on online communications platforms to coordinate its activities. The organization primarily used the Slack messaging app (Slack Technologies, Inc.) for basic communications, as well as Notion (Notion Labs) for project management and Zoom (Zoom Video Communications, Inc.) for all meetings. As a member, I gained access to all channels on these platforms related to project B, as well as general channels for internal exchanges with the *steering board*. This allowed me to gain an insider view into how communication, both within one project, among projects, and between projects and organization leaders, functioned.

Archival data. The *steering board* granted me access to several other communications channels, and to Google Drive (Alphabet) folders containing important information about projects and CT activities, to facilitate my research. E.g., I reviewed their "lesson learned" database, which contained details on what members learned following project terminations. I also gathered information from press releases, the public organization's website and social media accounts (i.e., Twitter and Linkedin), and the ETH Zurich website.

4.3.3 Data analysis

As I started collecting interview data, I paid particular attention to organization members' interpretations of events (Gioia et al., 2013). Notably, several respondents made frequent references to legal issues that arose during their work on projects, and that eventually forced them to terminate said projects. In their explanations of these issues, and explications of their feelings, some individuals used terms like "disappointment," "frustration," and "sadness." However, other people used terms to describe their experiences working on projects such as "enthusiasm," "satisfaction," and "working with purpose." Using an inductive coding approach and relying on the qualitative data analysis software MAXQDA to visualize and analyze my data, I coded these emerging themes, which I deemed relevant to my first research question, as first-order codes (Yin, 2009).

As my data collection and analysis progressed, I noticed that individuals held varied views of what constituted success and whether *helpfulETH* had achieved this (i.e., they considered *helpfulETH* either successful or a failure overall), and displayed different emotional responses when prompted about their feelings (i.e., enthusiasm vs. frustration). I reorganized my data to understand the level at which these differences became explicit and found differences between individuals working on different projects, but coherences between individuals within projects. I found that every team member involved with a given project tended to display the same emotional reaction to the final outcome of their project. This initial discovery at the first-order code level led me to make systematic contrasts between projects. In fact, my multiple-case approach allowed a cross-case comparison in order to identify such variance across projects (Eisenhardt, 1989; Miles & Huberman, 1994), and to understand what likely generated it. As a result, key constructs relevant to my analysis and their interrelationships began to emerge.

One main driver of changes in coding occurred when I realized that interviewees' interpretations and feelings did not necessarily reflect whether their project reached delivery or was terminated. I was particularly surprised by the fact that several team members expressed positive emotional reactions to their projects' termination—when that termination stemmed from a lack of further need (i.e., a continuing GC-driven rationale) for the project.

In line with standard practices for inductive studies, I approached coding (and recoding) as an iterative process (Eisenhardt et al., 2016). As patterns emerged, I iterated back and forth between data and different bodies of literature in order to better understand the reasons for discrepancies in organization members' interpretations of events. I began a more systematic analysis comparing small units of data from primary data sources: interviews, initernal communication platforms, and archival data. Accordingly, I started a classification of my data through the introduction of second-order codes, moving from interviewees' direct quotes towards more theoretical language characterizing them, with the goal of developing an understanding of theoretical constructs drawn from my empirical data and the relationships between them. The names used for these codes were inspired by direct quotes from organization members and gradually contributed to the construction of categories describing what I was observing.

After few iterations, I had a relatively stable codebook, shown in Figure 9, which helped me recognize that three pathways to project termination appeared to each lead to different project team members' reactions to and interpretations of that termination. In order to further increase the trustworthiness of my emergent findings, I discussed my theoretical framework in the form of "member checks" with several key informants (i.e., members of the *steering board*, project leaders, and strategic consultants who collaborated with project leaders for *helpfulETH*'s entire lifespan). These individuals confirmed that my analysis and theory were plausible.

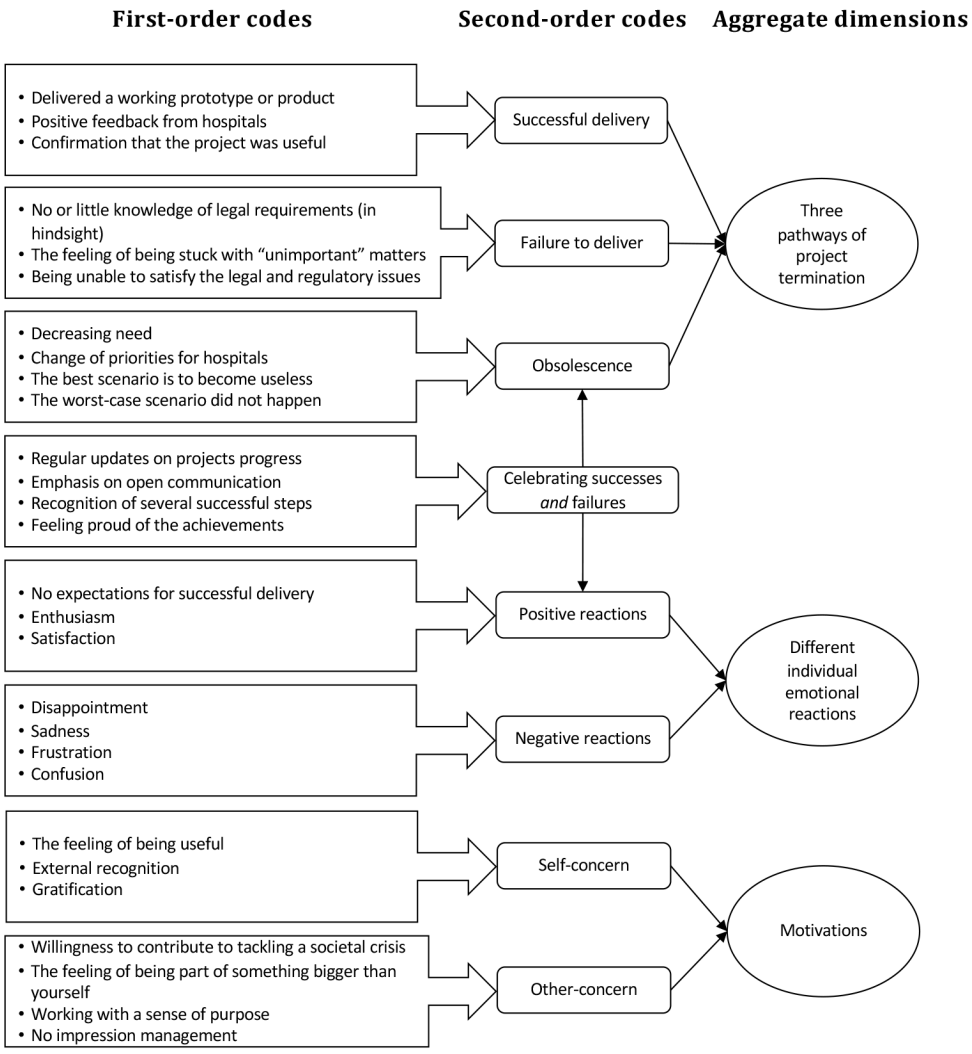

Figure 9: Data structure.

4.4 Findings

4.4.1 Three pathways to project termination

I asked team members to explain the reason for the termination of the projects they worked on, to reflect on their emotional reactions to these terminations, and to share their perceptions of whether their projects were successes or failures. Team members involved with projects C, E, F, G, I, N, W, and Y expressed the highest levels of positive emotional reactions, while those involved with projects A, D, K, P, T, and V had the lowest. For example, one project F team member said, "we were all super happy that we were able to do that really quickly—get it out of the door in a compliant way and serve the need of the hospital in the first instance, but also oblige on the legal front. So I think we were all really happy, and we were super happy that everybody stepped up and put in extra time and worked through the night and just got things done until it was done" [CT54]. Conversely, one project V team member reflected, "we couldn't deliver the [product from project V] … so the people who were on that project had to abandon it. This was one of the very few moments that, also in a project, there was quite a crisis—the people who were running it, and did that with a lot of motivation, were finally stopped like this" [CT9]. Project K's leader went so far as to state, "In the end, we were not allowed to [access] the [University Hospital of Zurich], although we prepared everything. All in all, this *helpfulETH* thing was quite a failure" [PL88].

It is easy to assume that positive emotional reactions corresponded to projects that terminated after "succeeding" in their goals, and negative reactions to projects that "failed". However, my inductive approach led me to a serendipitous discovery (Eisenhardt, 1989; Mintzberg, 1979)—a distinct pathway towards project termination that did not fit well with, and helped me to theorize beyond, the often-assumed success-failure dichotomy. Specifically, I realized that team members involved in a small subset of projects that failed to deliver on their intended goals and then terminated still expressed positive emotional reactions to these terminations. For example, a consultant working with project C recalled thinking, "'okay, shall we stop the project?' … In such a situation, let's celebrate the failure. Let's go out for a beer in a bar and just chat about it, and then we'll move on" [CT84].

This discovery led me to uncover three termination pathways, each of which corresponds to a reason for project termination: (1) successful delivery, (2) failure to deliver, and (3) obsolescence (i.e., the GC-related issue it aimed to address was resolved).

Below, I describe these pathways, compare team members' emotional reactions across categories, and provide empirical evidence for my observations. Through these comparisons, I identify a clear correlation between termination pathways and team members' emotional reactions. I then further explore the effects of different project termination pathways on team members, both in terms of their perceptions of project outcomes (i.e., whether they were failures vs. successes) and in terms of their emotional reactions.

4.4.2 Termination following successful delivery

In response to severe shortages of masks and personal protection equipment (PPE) in Swiss hospitals, *helpfulETH* launched a project in March 2020 called "Face shields for Switzerland," with the goal of designing, manufacturing, and distributing 6,000 3D-printed face shields. The PT included eight individuals: an engineer who acted as the team leader, two doctoral students, one professor, two students, and two legal advisors. After two weeks, the team launched an initial iteration of their shield, using university manufacturing facilities and inputs from doctors. They were able to produce just over 200 shields daily. However, unpredictable developments in the pandemic prompted the PT to consider means of expanding its production capacities. By redesigning its manufacturing process (i.e., replacing 3D printing and laser cutting with plastic injection moulding) and partnering with two major industrial partners, they were able to increase production to 10,000 units within just a few days. These face shields helped several Swiss hospitals experiencing shortages, and 2,000 went to the Swiss Red Cross for use in foreign markets.

Several other *helpfulETH* projects were similarly successful in swiftly delivering a product that proved useful for healthcare providers; both product recipients and ETH Domain representatives praised these projects, often through direct feedback on *helpfulETH* social media channels. The president of ETH Zurich, Joël Mesot, notably tweeted, "Pooling competencies where help is most urgently needed: #helpfulETH is an initiative of both @ETH and @EPFL to support hospitals with short-term engineering solutions" (2020). Also, a medical doctor from Männedorf hospital[17] tweeted, "A big thanks to the helpfulETH project from @ETH. Today we received 50 face shields for working in the operating room, the intensive care unit, and the emergency station in the Männedorf hospital. This is solidarity in action!"

Table 9 summarizes evidence from interviews illustrating team members' positive emotional reactions following terminations that in turn followed successful project deliveries.

Table 9: Team members' reactions to termination of successful projects.

Project / Representative quotations
Project D
"we had a prototype that was working, and the people that were using it were super happy and we got good feedback." [PT49]

[17] Officially known as *Männedorf Spital*, the main hospital in the district of Meilen in the canton of Zurich, Switzerland.

Project D "You know, the hospitals were using [our product from project D], this was the best confirmation that this is something useful." [PL47]
Project C "We did ship [our product from project C] to some doctors who used it. We did get the emails where people thanked us for sending it to them. […] Same when we met and somebody said, 'Hey, I have an order of 2,000 on the Red Cross.' Thumbs up! That's the type of celebration we had." [PT85]
Project E "In the end, [project E] worked out. So I was really proud and happy about all of this, and I think we had little presentation as well in one of the helpfulETH calls. So this was really... I again got something back and the project partner was really happy." [PL17]

From an operational standpoint, delivering a product or a service to healthcare providers required not only technical design and development, but also compliance with legal and regulatory requirements including 1) medical regulations (i.e., the provision of safety, risk assessment, and technical documentation, in compliance with recommendations issued by from the Swiss Federal Office of Public Health[18]) and 2) market regulations (i.e., the provision of liability and market distortion, in compliance with the Swiss law). A dedicated CT (the so-called 'CT Legal') provided support to PTs on these legal and regulatory issues, and a network of external advisors provided expertise—including CEOs of Swiss medical firms and representatives of *Swissmedic*, the Swiss medical devices monitoring authority.

4.4.3 Termination following a failure to deliver

Other projects—including some that had matured to the point of developing prototypes ready for delivery to hospitals—were not able to satisfy the legal. (E.g., "the technical part was well delivered—let's say it like that. The problem was then, afterward, the legal at the ETH level" [CT84]). *HelpfulETH* internally labeled these projects as "stopped by legal issues."

By asking interviewees about legal requirements and their impacts on projects, I identified two main complications that they created: (1) Legal requirements were "unknown unknowns" for many PTs for most of their lifespans. (E.g., "You['re] just sort of floating and asking yourself, 'what should I do? Am I doing the right thing? Am I allowed to do this thing?' Like even if you've given stuff to hospitals, it's like, 'should I be giving [this] stuff to hospitals? Like, is that allowed?'" [PL20]). As a consequence, individuals involved in technical development did not always give much import to requests for legal and regulatory requirements from the CT Legal. (E.g., "Many projects had struggles with the legal aspect, but I had struggles to reach them and we don't know why. So we tried everything. We tried to have a small presentation at a *town hall*. We wrote to the project leader channel on Slack. We wrote emails. We did even a workshop with regulatory experts. I mean, it's just a big and broad topic, since we had many different projects" [CT6]; "I remember being upset that, despite all of our prompts for projects to engage with us early on and to understand the regulatory ramifications, but they just didn't" [CT54].) (2) As Shepherd and colleagues observed in a study on project termination, "what is important to team members is not so much the project itself but the *engineering challenge—the specific technical aspect of a project or job that the team member performs and that often relates to a team member's fascination with the science behind potential products*" (2014: 530, emphasis in original). Accordingly, when legal requirements functionally denied members the opportunity to work on a purely technical challenge as they desired, this seemingly fostered frustration and other negative emotional reactions. For example, while members of several PTs apparently gladly worked night shifts to solve technical aspects, like designing products, when they were forced to spend time addressing newly-surfaced legal issues these same team members perceived switched to describing their work in terms of being "stuck" addressing unimportant matters.

[18] *Bundesamt für Gesundheit* (BAG).

Table 10 reports evidence of reactions to legal challenges.

Table 10: Team members' negative reactions to legal issues.

Project / Representative quotes
Steering Board
"For engineers, if it's a technical problem, if it's a process problem, that's not a big deal. You always find a solution for that. You might not find a very good one, but you always find a solution. If it comes to legal stuff, here we are in a completely different area. And here, all of a sudden, some feeling of helplessness comes up—and not in the very beginning, because in the very beginning, there were various ideas how to get along and we might find certain loop[hole]s. But it turned out, no, there is no way to fool around—to fool us out of this situation. And then, if you are depending so much on something that you have no control over, that now naturally leads to frustration." [CT9]
Project D
"I mean, we did everything possible on the product development to have a product that could work and be released as quick as possible—to face this public health problem—with the idea that the sooner you release it, the more useful it can be to solve a real problem. But then it gets stopped by these legal or administrative hurdles. Let's say, we thought that the bottleneck could have been the production, or the development itself. But it turned out to be quite something else." [PT50]
Project C
"And it's understandable. It's so radically different activities, the designing and developing in the creative process in early engineering, early on in the process, and the other side of dealing with the regulatory requirements. It's just two completely different activities, involving different parts of the brain, and it's not for everybody to do both." [CT54]

In many cases, legal issues took more bandwidth than most team members had anticipated, and this (understandably and expectably) caused high levels of frustration (E.g., "This was really, for a lot of people, extremely frustrating" [CT2])—despite CT Legal's efforts to mitigate these issues. Some projects decided to terminate themselves as a result of legal challenges and the frustrations they generated (e.g., "it was a big part interfered and it took even much longer. So we decided it doesn't make sense to continue anymore" [PL12]). The *steering board* terminated others for similar reasons.

Some personal tensions also developed, especially between team leaders and individuals in charge of handling legal and regulatory issues, like those on CT Legal, thanks to the emergence of such requirements. (E.g., "I got a huge backlash personally from [the team leader of project V]. Very aggressive and sad emails" [CT84]; "With [project D], I always got the feeling there that the team was frustrated to have to deal with us, and they couldn't care less. We were just a pain to them, and that's the feeling I got there" [CT54]). However, others claimed that their frustrations were unrelated to interpersonal tensions. (E.g., "There's no bad feeling towards these people [the lawyers of ETH], because what their job is, [is] to protect ETH. That's what they're doing" [CT9]). However, regardless of where it was directed, project terminations that followed legal complications generated negative emotional reactions, with interviewees repeatedly expressing frustration specifically, as reported in Table 11.

Table 11: Team members' expressions of frustration with projects terminated due to failure following the emergence of legal issues.

Project / Representative quotes
Project K
"In the end, we were not allowed to [access] the Universitätsspital [the University Hospital of Zurich], although we prepared everything. All in all this helpfulETH thing was quite a failure." [PL88]
Steering Board
"In the *steering* [*board*], we were quite sensitive, and we did a lot in terms of communication to keep up the motivation, but at the end, it was really more than frustrating. You want to fight against the virus and at the end you are stuck with nonsense legal topics […] All the projects now are stopped, based on regulatory aspects. I think this is the biggest

challenge—how to align in the medical field a little bit [with] the motivation with the things you can really do also from a legal perspective." [CT1]
Project V "Finally, because of this legal stuff, we couldn't deliver the [product], because there was 'ETH' written on it. And so the people who were on that project had to abandon it. This was one of the very few moments that also, in a project, there was quite a crisis—the people who were running it and did that with a lot of motivation were finally stopped like this." [CT9]
Project T "It's quite sad that the law prevented *helpfulETH* from really making a big impact. At some point, we found out that it's not allowed [for us] to ship personal protective gear, because we could disrupt the market. But, I mean, at this point, it was like, 'I'm sorry, but if the providers, which normally are the players in the market, are out of stock, and nobody is doing anything, how can we disrupt a market which is non-existent?'" [PL16]

4.4.4 Terminations following obsolescence

"Face Shields for Switzerland" was not *helpfulETH*'s only attempt to address this specific shortage. Another project aimed to convert existing Decathlon snorkeling masks, easily available in large quantities, into effective PPE masks. This PT, composed of engineers with backgrounds in air filtration and process engineering, designed and began manufacturing 3D-printed filter adapters for these masks. However, by the time *helpfulETH* could deliver its first 500 prototypes of this product and start to mass-produce these adapters, the global supply chain for medical equipment had begun to recover, and the need for this sort of improvised PPE solution receded rapidly. This meant that this project no longer served a purpose (although several months later, it did release a white paper demonstrating the proof of concept behind its process, preparing for a relaunch should a need arise again).

According to traditional definitions of failure in the entrepreneurship literature—i.e., as "the termination of an initiative that has fallen short of its goals" (e.g. McGrath 1999: 14)—this project, and several others under the *helpfulETH* umbrella that faced similar circumstances due to hospitals' adjustments to the Covid-19 context and the recovery of medical supply chains, failed. These circumstances actually led *helpfulETH* to wind down most of its projects, and to terminate itself, as of June 2020.

I labeled this type of project termination as "obsolescence," based on the following quote from a Project H team member: "If the solution becomes obsolete because people are healthier or the pandemic is slowing down, then it's even better. And so it was absolutely okay, also because I had the feeling that I did something meaningful in case the situation got worse [and] it was okay because a situation got better" [PT57].

Table 12 reports the evidence *helpfulETH* members' reactions to the termination of their projects due to obsolescence.

Table 12: Team members' reactions to project termination due to obsolescence.

Project / Representative quotes
Steering Board "To be honest, I had no expectations. So I always said that we are there as long as we are needed, but also no longer because it doesn't make sense to stay just to be there. So initially I thought maybe six weeks and in the end it were three months." [CT3]
Steering Board "We see the country. We see the needs. We see the feedback from the doctors. There is no need to keep this alive just because we like it." [CT29]
Project C "We had like these 500 masks that, actually, I have no idea what they did with [them]. If they're still at ETH stored somewhere… we have all these masks all ready. But it's more like we just delivered the outcome that, okay, if someone needs

it also in the future, that it can still come at a later point. The data is available for everyone just to download. And it works. So just for the future. I was happy just to contribute, like in the future [if] it works and someone wants to use it." [PT109]
Project C "Well, you know, we need masks. We don't really know when the masks are coming, but there could be a delivery tomorrow. It could be a delivery on one week; it could be a delivery in one month. So we sort of have to do something and get past, even though at the end of the day, the best case scenario is that the masks arrive tomorrow." [PL20]

4.4.5 Celebrating failure

In contrast to scholarly and common sense assumptions that the termination of an important project that failed to achieve its goals will necessarily generate negative emotional reactions among those involved in it, interviewees involved in the above-mentioned category of *helpfulETH* projects not only overwhelmingly accepted the termination of their projects but even celebrated them as if they had succeeded in achieving their goals. For example, a consultant working with project C said, "okay, shall we stop the project? … In such a situation, let's celebrate the failure, let's go out for a beer in a bar and just chat about it, and then we'll move on" [CT84]. These responses both suggest the existence of a supportive work environment (Edmondson, 1996) that did not stigmatize failure (Cannon & Edmondson, 2001), and open new avenues for understanding how organization members respond to project terminations.

Extant literature on project terminations acknowledges that individuals can eventually learn from the failure of projects or ventures they were involved in (McGrath, 1999; Shepherd, Patzelt, & Wolfe, 2011). Typically, after managing their grief and sadness (Shepherd, 2003, 2009; Shepherd et al., 2009), they reflect on and cognitively process their experiences, generating lessons through that process (Shepherd et al., 2011). This study's findings suggest, however, that in certain contexts and as a result of select factors, individuals may not experience any period of negative emotional reaction, instead experiencing satisfaction, reflection, and learning right away after a project's termination.

My serendipitous finding of these positive emotional reactions to project terminations led me to further explore how individuals within *helpfulETH,* the organization as a whole, and GC ventures in general define *success* and *failure.* Many of my respondents' conceptualizations of these states notably seemed decoupled at times from traditional definitions focused on successfully bringing a product or service to market, and on the survival of a project or firm (Suárez & Utterback, 1995), especially in cases when their failure to deliver and survive were tied to the obsolescence of their efforts. As my analysis progressed, I recognized that these findings suggest that, when efforts to address an aspect of a GC are embedded into the core of a project or organization's mission, once relevant issues have been addressed, whether by an organization project or an outside force, the project or organization will self-terminate will as a matter of course terminate itself, often with little to no negative reactions from members.

4.4.6 Individuals' motivations for joining grand challenge ventures

This study identified three main pathways leading to project termination, each of which leads to either positive (for projects terminated after succeeding in their goals *and* projects terminated due to obsolescence) or negative (for projects that failed to achieve their goals) emotional reactions from individuals involved in them. My empirical data also suggest that the reasons behind a project's termination had the greatest effects on 1) how individuals involved in a project assessed a termination and 2) whether they eventually drew lessons out of it.

While successes in achieving its core GC-related goals, or failures to deliver intended service or product, lead to what appear from a commonsense and scholarly literature standpoint alike more obvious outcomes to terminations, my data suggest obsolescence as a proximate cause can help to trigger arguably less expected more positive reactions. Specifically, while a failure to deliver on an intended service or product usually leads to frustration following terminations, when that failure stems from the obsolescence of the need for the project overall individuals tended to respond with a greater degree of acceptance and positivity. In order to explain this unexpected phenomenon, I investigated individuals' motives for joining and working with *helpfulETH* further.

Members of GC ventures like *helpfulETH* usually display a great "desire to expend effort based on a concern for helping or contributing to other people" (Grant & Berry, 2011: 77). So, despite the predominate focus in the psychology of rational self-interest maximization (Landy & Becker, 1990), it is impossible to examine individuals' participation in GC ventures without accounting for their clear *other-orientation*—individual's tendency to be concerned with and helpful to other persons, also referred to in the literature as 'benevolence,' 'altruism,' or 'unselfish motives' (Batson, 1987). Several theories have postulated that both types of motives coexist in everyone, and thus attempt to address the relationship between them within individuals (Meglino & Korsgaard, 2004). Other studies have explored how differing mixtures of these two motivations affect the process of various forms of information (Meglino & Korsgaard, 2004). Scholars have also linked individuals' motivation profiles to their entrepreneurial behaviors (Gruber & MacMillan, 2017), as well as their general attitudes and behaviors within organizations (Simon, 1990, 1993).

4.4.7 Prosocial motivation and emotional reactions to terminations

Given GC venture members' socially dominant mindsets (Miller et al., 2012; Shepherd, 2015), upon reviewing my data I suspected that prosocial motivation might play a key role in their emotional reaction to the termination of GC-driven projects. As such, I assess individuals' motivations to make sense of the different affective consequences of my above-described three pathways leading to project terminations. Specifically, I distinguish between egoistic and altruistic motives to analyze the motives individuals gave to explain their desire to join and work with *helpfulETH*.

First, I observe a common *other-concern* among *helpfulETH* members, in line with its GC-focused mission. Scholars have noted that a sense of purpose can take precedence over profit in communitarian organizing akin to *helpfulETH* (Ashforth & Reingen, 2014; Branzei, Parker, Moroz, & Gamble, 2018). Second, I note prior findings that organization members often care about projects because they help to satisfy these individuals' basic needs for autonomy and belonging (Ryan & Deci, 2000; Shepherd & Cardon, 2009). I further observe that, independent of remuneration, *self-concern* (i.e., egoistic motives), such as the quest for recognition of competency, visibility, gratification, and/or a feeling of helpfulness, may drive organization members' work.

Table 13 reports evidence showing individuals' expressions of both of these forms of motivation.

Table 13: Evidence of helpfulETH members' expressions of other-concern and self-concern.

Other-concern	**Self-concern**
"there was a lot of enthusiasm, and a lot of people felt they were part of something bigger." [CT11]	"that's one of the things that kept me motivated—that's, you have the feeling to be useful. So I was constantly being asked by certain people to help out and do something, and I found that actually very useful. That was very nice for me to have the feeling that I would do something that could be a useful for anyone." [PT32]
"it was building up and being part of something bigger than yourself." [CT9]	"I had the feeling that at least I could do something, instead of nothing, which gives you better feelings." [CT4]
"it was also being part of what the world is doing at the moment, because if you remember at the lockdown, if there was a single conversation between two human beings in this planet, it was about [the novel] corona[virus]. So you were not just helping on this, but you were helping with the topic that the world is talking right now." [PL28]	"I guess the main thing, in the moment, it was a very good thing for me to be able to feel useful and have something to do in a period when everything else felt or was falling apart. Just for very egoistical [reasons]… for me personally, it was a very good thing to do." [PT49]
"if you are a person that likes to work with purpose, and then what other purpose could there be to immediately save lives? So, because I think that was really a big motivation for everyone—do something really important and help people. And this is, like, it needs to be done yesterday, ideally. So that was—you always felt for, what else can I take time off that? And then people were really	"I was happy that we reached quite some publications, and my name got spread. This was very nice, and *helpfulETH* helped there. We had some presence on the ETH website—from the department as well as the official ETH website. Then afterwards, also, some Chinese magazines came to us and made some interviews. So we managed the Chinese news. It was good. So I was actually happy to take the public present,

putting in a lot of hours and late nights. Some despite their other jobs that they had." [CT72]	for me as an engineer. That I can show for the coming interviews: 'See, I have engaged here, in this and this project, as the main engineer, and I've reached so far in China and so on.'" [PL77]
	"Nobody was comfortable, in retrospective, for them to putting [in] so much work and not getting anything out in return. Because [for] many people, I guess, that's the main reason why they do such a charity thing—so that they feel needed." [CT33]
	"Some people, I think, they were feeling so bad and they wanted to do something. They didn't want to feel helpless." [PL17]

Drawing on this motivational perspective, I categorize the three pathways that lead to project terminations according to on whether their characteristics fulfilled organization members' *other-concern* (i.e., their GC-focused drive) and/or *self-concern* (e.g., personal recognition attainment drive) motivations.

Table 14 illustrates my categorizations, and clarifies the projects that fall in each category.

Table 14: The three pathways to project terminations, categorized by their fulfillment of individuals' other-concern and/or self-concern motivations.

	Other-concern	Self-concern	Projects in this category
Success	✓	✓	C, D, E, J, O, Q, R
Failure	X	X	A, B, K, L, M, P, S, T, V
Obsolescence	✓	X	F, G, H, I, N, W

This categorization shows that projects that terminated after succeeding in their goals (e.g. "Face shields for Switzerland") fulfilled both individuals' *self-concern* and *other-concern* motivations, insomuch as they solved others (i.e., healthcare providers') needs while at the same time generating positive feedback for PT members, both from project beneficiaries and through coverage in and comments on media coverage and social media posts. Projects that terminated after failing to achieve their goals, either due to insurmountable technical or legal barriers, thus failing to fulfill individuals *self-concern* or *other-concern*, insomuch as they failed to assist others or otherwise meaningfully address a GC issue of focus, or to generate positive feedback or a sense of accomplishment or satisfaction. Projects that terminated due to their obsolescence failed to fulfill individuals' self-concern motivations, insomuch as they failed to award the recognition and satisfaction that often comes with meeting a goal. However, they did fulfill individuals' *other-concern* motivations, albeit indirectly, as individuals were still satisfied knowing that the GC-related issues they set out to address had been addressed somehow. This fulfillment of *other-concern* motivations likely counteracted the negative emotional reactions that may have otherwise accompanied their failure to deliver on their goals and their projects' terminations.

This suggests that, at least in the context observed in this study, the fulfillment of self-oriented motivation does not trigger positive or negative emotional reactions to project terminations, but the fulfillment of other-oriented motivation—or *perceived prosocial impact* (Grant & Sonnentag, 2010)—does. As Grant and colleagues' (Grant, Campbell, Chen, Cottone, Lapedis, & Lee, 2007; Grant, 2008; Grant & Sonnentag, 2010) research suggests, "perceived prosocial impact shifts employees' attention outward to focus on others, rather than inward to focus on the task and the self" (Grant & Sonnentag, 2010: 14). It also offers a justification for stressful experiences (Grant & Campbell, 2007), and can more generally generate positive emotions, such as emphatic joy (Batson, 1990) and happiness (Dunn, Aknin, & Norton, 2008).

4.4.8 Reflecting on the terminations

A "concrete experience" is a starting point for reflection and learning (Kolb, 1984), as it acts as a baseline for testing expectations or assumptions. Lattacher and Wdowiak (2020) also detail the importance of "violated expectations" as prerequisites for learning from failure, giving the example of "being stuck with a problem, something unusual or strange" and forced to contend with it (Lattacher & Wdowiak, 2020: 1096). Additional research shows that failure can trigger deeper reflections and sensemaking through the activation of key learning mechanisms (Ucbasaran et al., 2013). However, it is not clear how individual perceptions of failure and subsequent emotional reactions to it might influence this sensemaking process.

This study found that the obsolescence of a project can, in certain circumstances at least, stimulate personal reflection on the ultimate purpose of their project, beyond an individual's self-oriented and egotistic motivations to participate in a product to earn recognition and positive feedback after fulfilling their goals. Notably, while team members who worked on either successful or failed projects quit *helpfulETH* soon after their projects terminated, those who worked on projects that eventually became obsolete dedicated time and effort to reflect on the termination and stayed with the organization. In particular, project obsolescence as a cause of termination appeared to stimulate sensemaking efforts, during which individuals articulated what they learned from their experiences on a project. My interviewees involved in projects that terminated due to their obsolescence clearly stated that they gained a clearer picture of potential beneficiaries' healthcare needs and *helpfulETH*'s core mission through these experiences. For example, the project leader of Project I explained of his project's intended product, "With all this pandemic stuff, the best case scenario was that it would never be used" [PL20]. Similarly, the leader of Project G said, "A learning experience in this direction would be that it is important from the beginning to not only focus on the product but also to take into account that it might not be necessary, in a sense that maybe the need decreases… You have to deal with some sort of failure in a sense that failure doesn't really need to mean that you don't get a product, but it also can mean that the surrounding changes so fast that you can't keep up." [PT12].

This study also found that individuals working on projects terminated due to obsolescence repeatedly expressed a high sense of *purpose*—that they were "working for something bigger" [CT22]—when reflecting on their individual and group contributions to efforts to address a GC of focus.

Table 15 reports evidence linking project terminations due to obsolescence and sensemaking.

Table 15: Evidence of individual reflections and sensemaking following project terminations.

Project / Representative quotes
"Think about it in this way: You are thinking about a medical solution for an emergency and in the end if the catastrophe doesn't happen then of course you are happy about it, because you have a solution in case that the hospitals run out of capacity, but in the end, if this doesn't happen, it's better. And you are already better prepared for the next time. So our solution wasn't the building of the [product of project W]. Our project was about the concept in itself—providing with the name of the suppliers and everything, to coordinate everything—and this is something that we documented and we delivered. And I of course see it as a success. And for the next time, when it should happen, we would be ready. [PL28]
"We didn't found this [organization] for happy projects. We founded this to make an impact, and help in urgent need. And if the need is not urgent anymore, and you want to continue the project, we are so happy to provide you with anything that you need to continue that. But we need to focus on exactly what we were founded to do. And this was relieving urgent needs." [CT29]
"Even in the very end, when everybody noticed, okay, it doesn't make sense to continue, there was a clear, clear reason why this initiative existed." [CT9]
"If the solution becomes obsolete because people are healthier or the pandemic is slowing down, then it's even better. And so it was absolutely okay, also because I had the feeling that I did something meaningful in case the situation got worse [and] it was okay because a situation got better." [PT57]

"It's about personality and experience with projects. So if this was one of your first big projects and in the end, it's just like 'hey, it's obsolete', then yeah you may feel a bit sad. But I think for more experienced people, when the need is gone for [a] positive reason, it's totally fine." [PT57]
"Sometimes the best outcome is to recognize when to stop something, when it's not working, and when the outcome that you were trying to get by starting an initiative is not happening. And you just have to be pragmatic and just say, 'Yes, we tried. We got something out of it, but we [*inaudible*] when we realized that we couldn't get the result that we needed.' That's my take." [PT92]

4.4.9 Falling forward following terminations

Project termination is an important source of feedback for the organization, as it helps them understand what projects to redirect resources to in the future (McGrath, 1999), and to implement what Cope (2011) refers to as "double-loop learning," which involves an increased understanding of organizational processes and strategies. In this case specifically, at the end of May (i.e., one week before *helpfulETH* terminated itself as an organization), the *steering board* established a "lesson learned" database, with the goal of readying individuals who consulted it to respond more effectively to future waves of Covid-19, if necessary. They asked all PT leaders for a "lesson-learned document." Organizational scholars have recognized this document as a tool for reflecting on, articulating, and codifying the insights drawn out of the experience with the organization (Zollo & Winter, 2002).

This feedback following project terminations provides additional empirical evidence on the different trajectories of sensemaking in response to distinct project termination pathways. Specifically, four of the six "obsolete" project team leaders filled in the document that offer insights into the learning involved in their experiences (a response rate of 67%). Meanwhile, only one PT leader out of the nine "failure" projects shared their lesson learned (11%). None of the "successful" ones filled out these forms (0%). This latter fact comes as no surprise, as success often signals that all is well, a complacency that does not often engender reflection and learning (Sitkin, 1992). Failures and "obsolete" projects, however, deserve additional reflection that may prompt learning. Several studies on project terminations have found that organization members learn more from failures than successes (McGrath, 1999; Shepherd et al., 2011). However, an opportunity to learn from a termination following a project failure does not always translate into actionable knowledge learned that may benefit an individual and the organization they are part of alike. This gap between learning potential and actual learning may stem, at least in some cases and in part, from negative emotional responses to a project's failure and termination, which can not only interfere with individuals' willingness to learn but also with their willingness to express loyalty, share insights learned, give energy to an organization again (O'Reilly & Chatman, 1986).

My findings thus suggest that there is a pathway toward project termination beyond the traditionally described and/or assumed success-failure pathway dichotomy. This pathway involves project termination due to the obsolescence of a project before it could deliver goods or services to its intended beneficiaries. Although this pathway does not fulfill team members' *self-concern* motivations—their search for recognition and gratification—it does involve the resolution of a project's ultimate goal, even if not due to the project members' work directly, and thus the fulfillment of their *other-concern* motivation. This pathway, and its comparison to others described in this study, may explain why some individuals respond with positive emotions while others respond with negative emotions, and some are quicker and more willing while others are slower or less willing to learn from and adapt to projects that do not meet their goals and then terminate.

4.5 Discussion

This study contributes what may appear to be, in light of existing studies' foci and findings, counterintuitive insights to the literature—regarding definitions of project and/or organizational success in the context of projects that attempt to address GCs and are eventually terminated, as well as involved individuals' reactions to these terminations.

4.5.1 Grand challenge-related project termination

Organizations that aim to address issues related to GCs differ from their solely profit-driven peers in several respects—including the nature of their inceptions and terminations. Their terminations in particular often follow unique, but to date under-studied, trajectories. This study responds to calls for further research on "what happens [to this type of organization] after the goal has been reached" (Kaufmann & Danner-Schröder, 2022: 182) by exploring these pathways.

Specifically, this study explored how GC issue-focused organizations and those involved in them may consider some forms of project termination desirable outcomes—granted they follow the project or some other entity's achievement of their core goal, "like … developing a Zika vaccine" (Eisenhardt et al., 2016: 1113). By so doing, this study answered the following research question: *How do members of a GC-focused organization react to the termination of their project, especially when a third party resolves the GC they seek to address?*

Through a comparative analysis of 25 projects managed by one GC-focused organization, I identified and described three possible pathways leading to the termination of a project: (1) successful delivery, (2) failure to deliver, and (3) obsolescence (i.e., the GC-related issue it aimed to address was resolved). These pathways move beyond common conventions in the literature and commonsense discourse that create a dichotomy between project success and failure, each of which reliably leads to opposing individual reactions, through its exploration of terminations following project obsolescence and individuals' positive reactions to this outcome despite these projects' apparent failure to deliver on their goals.

4.5.2 Individual emotional reactions to project terminations

This study extended extant research's coverage of individuals' emotional reactions to the termination of projects with which they were involved (Shepherd & Cardon, 2009; Shepherd et al., 2009; Shepherd et al., 2014) by challenging widespread scholarly and commonsense findings and assumptions that project terminations necessarily, and often exclusively, lead to negative emotional reactions (Cardon et al., 2011; Cope, 2011). It also moved beyond extant research's focus on understanding how individuals manage the grief experience following the termination of a project (Shepherd, 2003, 2009; Shepherd et al., 2009), by showing how individuals may not only accept but even celebrate (with positive emotional reactions) the termination of a project with which they were involved—specifically when their project terminates following its obsolescence, due to the resolution of the GC-related issue it sought to address before it could deliver on its goals—thanks to the counteraction of their *perceived prosocial impact* (Grant & Sonnentag, 2010) on any potential negative emotional reactions to this termination.

4.5.3 Learning from failure

This study explored the conditions that can lead members of GC ventures to learn quickly and efficiently from experiences of project terminations, and translate their learning into displays of ongoing commitment to their organizations. Its findings on this topic expand on extant literature on the role of active and deep cognitive processing of a termination event in the facilitation of learning (Sitkin, 1992), as well as other factors, such as the timing of a project's termination (Shepherd et al., 2014) or an involved individual's capacity for self-compassion (Shepherd & Cardon, 2009), that can affect the process and/or nature of an individual's learning. Specifically, this study showed—and explored the fact—that individuals involved in projects that terminated due to obsolescence, in the context analyzed, demonstrated quicker and more efficient sensemaking about and learning from their projects' terminations than individuals whose projects terminated following other pathways.

4.5.4 Limitations

This study examined a GC-focused venture—*helpfulETH*, an organization created to respond to the Covid-19 pandemic, a unique GC emergency, and affiliated with the Swiss National Covid-19 Science Task Force (ETHZ, 2020). Selecting an extreme case is a common practice in inductive research, because doing so can facilitate theory building (Eisenhardt, 1989; Eisenhardt et al., 2016). However, it entails certain limitations:

This initiative launched with the aim of tackling issues related to one GC—specifically the effects of the initial wave of Covid-19 on the Swiss healthcare system and personnel within it. This context does offer important opportunities for advancing scholarly knowledge of organizational functions—knowledge that may be salient if and as the frequency and/or intensity of GCs akin to the Covid-19 pandemic increase (Mithani, 2020) and as sustainable venturing grows more common (Doherty et al., 2014; Short et al., 2009).

helpfulETH's members all participated on a volunteer basis (i.e., without any remuneration), during full or partial lockdowns instituted in Switzerland to control the spread of the Covid-19 pandemic. Although this study details high levels of involved individual commitment to, motivation in, and feelings of ownership over projects (Pierce, Kostova, & Dirks, 2001), it is possible that these observations may have been influenced, to some degree at least, by the effects of the lockdown context, and interruptions to many individuals' abilities to direct their energies towards their jobs, or other salient endeavors. Remuneration may also have had an effect on individuals' reactions to the termination of projects they worked on—especially if successful delivery on project goals translated into increased remuneration (e.g., in the form of bonuses).

4.6 Conclusion

This study opens new avenues for understanding how members of an organization can and/or do react to the termination of a project in which they were involved. Notably, it shows how project termination due to obsolescence, at least in the context of organizations focused on addressing GC-related issues, can lead involved individuals to respond with greater acceptance or positive emotional reactions, and engage in faster and more efficient learning, than individuals whose projects terminated following other pathways. This finding especially contributes to ideas expressed in the literature about "intelligent fail culture" (Sitkin, 1992), which focuses on how individuals and organizations can reinforce their commitments to addressing problems while coping with inevitable project terminations and/or failures (Campbell, 1969). Experiencing the termination of a GC-driven project may constitute an effective way for organization members to prepare for future uncertain situations and to adapt in the face of the *new normal*—"a situation that is not only likely to persist but may become more pervasive over time" (Mithani, 2020: 508). This could be interpreted to suggest that managers may want to consider emphasizing how individuals' actions, at least within the context of GC-related organizations, benefit others (Grant, 2008a), as part of their wider efforts to help individuals manage their emotional reactions to project terminations. However, this study also speaks to the need for, and opens pathways that could lead to, further research on the individual and organizational consequences of project termination, especially following project obsolescence. I specifically encourage researchers to engage in further studies on the role of individuals' perceptions and knowledge of their *prosocial impacts* in their views on project terminations, and the ultimate effect of these factors on the fostering of beneficial organizational cultures.

Chapter 5 Conclusion

Through my doctoral research I've endeavored to generate insights that can advance both scholars' and practitioners' knowledge of and approaches to the nascent field of grand societal challenge-related (GC) venturing. This aligns with extant priorities in research related to GCs of translating "research into actionable insights to frame and tackle some of the biggest challenges that we face in our global community" (George et al., 2016: 1880). Accordingly, each of the three studies that make up the body of this work offer a distinct and multi-faceted perspective on GC venturing: They identify and analyze three distinct forms of GC venture organization—celebrity entrepreneur-led, community-led, and emergency response-oriented. They address three key aspects of GCs—their complexity, evaluativity, and uncertainty (George et al., 2016). They expand theories articulated in the management literature on regarding hybridity, social identity, and prosocial motivation. They also generate distinct contributions to extant and promising avenues for future research, as well as implications for managerial practices.

5.1 Insights generated on three forms of grand challenge venture organizing

Over 50 years after Friedman (1970) argued "the business of business is business," an increasing number of organizations have moved away from purely profit-maximization goals to attend to socially and/or environmentally-responsible practices and/or goals independent of (but in conjunction with) their financial goals. Conversely, an increasing number of nonprofits have adapted models that prioritize financial goals alongside their more prominent social and/or environmental goals. As such, traditional lines between business and charitable operations and organizations are gradually blurring (Dees, 1998; Nilsson & Robinson, 2018).

Recent research also suggests that most existing organizational forms are not suitable to address unique challenges associated with GCs (Ferraro et al., 2015; Luo, Zhang & Marquis, 2016; Mithani, 2020). Not only novel organizational forms, but also collaborations and partnerships among different forms of organizations, may be necessary to solve particularly complex and multi-faceted issues associated with GCs (Ferraro et al., 2015; Kaufmann et al., 2022; Pradilla, da Silva & Reinecke, 2022). Similarly, scholars have also suggested that generating theory relevant to GCs and the challenges they pose may require data collection across multiple forms of organizations and at multiple distinct levels (Jarzabkovski, Bednarek, Chalkias & Cacciatori, 2019). Following these insights, this thesis empirically examined three different forms of entrepreneurial initiatives.

5.1.1 Celebrity entrepreneur-led organizations

Study I details the results of an inductive analysis of a foundation created to address GCs, and led by a celebrity founder. It discusses extant research on how this type of founder may act as "heropreneurs" (Stinchcombe, 1965; Knoke & Burt, 1983; Staskeviciute-Butiene et al., 2014), using their personal brands and platforms to draw attention to and marshal resources for the rapid development of their organizations (Bergamini, 2022). However, research also suggests that these individuals often risk placing the advancement of their personal brands ahead of other organizational goals (Zahra et al., 2009), "overemphasiz[ing] their role as founder, overshadowing teams, collective impact, and building upon the ideas of others" (Papi-Thorton, 2016: 3). Specifically, this study analyzes the Solar Impulse Foundation (SIF) as a salient example of this phenomenon. Its findings contribute to the literature on *hybrid organizations*, as well as that on the instrumentalization of prominent founders.

5.1.2 Community-led organizations

Study II draws on an empirical analysis of the *community of interest and practice* (Bacq, Hertel & Lumpkin, 2022) of evaluators who assess applications for the SIF's Efficient Solution Label sustainability certification. These individuals share interest and experience in the assessment of clean technology solutions that may help policymakers achieve their sustainability objectives. This study specifically analyzes these individuals' decision-making during the assessment process, in order to address the lack of knowledge within the extensive decision-making research stream of management literature on decision-making about sustainability certification assessments that consider both the social and/or environmental *and* financial dimensions of sustainable ventures. Its findings facilitate the development of a framework for understanding this type of decision-making in terms of three key factors that go beyond purely individual or organizational boundaries usually considered in decision-making research: proposal characteristics, contextual factors, and evaluators' individual characteristics.

5.1.3 Emergency response-oriented organizations

Study III details the results of an inductive analysis of an organization, *helpfulETH*, created to respond to the challenges the early stages of the Covid-19 pandemic posed for hospitals and their personnel in Switzerland. This organization was temporary, insomuch as it was created from scratch to respond rapidly to novel challenges posed by an emergent GC and was not conceptualized as a permanent endeavor. This organization used a top-level management team to organize and operate 25 independent projects. The existence of these distinct projects under one organizational umbrella allowed for a multi-case analysis, which generated several contributions to the literature. Importantly, this study identified three pathways that could lead to a project's termination within this research context, each of which was associated with a distinct set of emotional reactions and learning outcomes from involved individuals. Its findings may inform new lines of research into if, when, and how project terminations may lead to positive outcomes for individuals, organizations, and/or the GC-related challenges they aim to address. It also demonstrates the potential role of *perceived prosocial impact* (i.e., the perception of helping others, Grant & Sonnentag, 2010) in determining how individuals make sense of, and how rapidly and efficiently they learn from, project terminations.

5.2 Insights generated on three facets of grand challenges

These studies each provide unique insights into the "three analytical facets" of GCs defined and detailed by Ferraro and colleagues (2015): *complexity*, *evaluativity, and uncertainty*. Complexity refers to the multi-faceted and often indirect dynamics that contribute to GCs. Evaluativity refers to the diverse meanings and viewpoints that relevant actors must consider and address to address the challenges posed by GCs overall. Uncertainty refers to the challenges inherent in predicting and preparing for the many potential unforeseen consequences that can flow from GCs.

5.2.1 Complexity

Study I addresses complexity by assessing the interplay between a celebrity founder and his organization, with the founder using his statute to marshal attention and resources for the organization and the organization service to reinforce the founder's personal brand. The former was an explicit, and the latter an implicit, mission within the organization. This study's findings show that organization members' attempted to keep their focus on the former mission, by setting up complex protocols as *guardrails*—"formal structures, leadership expertise, and external stakeholder relationships" (Smith & Besharov, 2019: 27)—against drifting towards the latter implicit mission (Ebrahim et al., 2014). Over time, this complexity generated complications and obstacles for the organization—until organization members determined that they'd been successful in safeguarding their intended focus and subsequently eased their vigilance, which allowed the resolution of tensions and streamlining of efforts to balance both missions.

5.2.2 Evaluativity

Study II addresses evaluativity by drawing on Brunswik's lens model (Brunswik, 1952; Hammond, 1972) to analyze several distinct factors that influence evaluators' decision-making when assessing sustainable ventures' applications for a

sustainability certification. This model allowed the study to emphasize the absence of straightforward yes/no evaluation criteria in this type of assessment task. Superficially, this study identifies three key factors that can affect evaluators' decision-making: proposal characteristics, contextual factors, and evaluators' characteristics. Its findings show how the relationships between these factors can have both significant and unexpected effects on this type of decision-making.

5.2.3 Uncertainty

Study III examines an organization formed in response to the Covid-19 pandemic, a GC defined by especially high levels of uncertainty. It expands on prior explorations of project terminations in the face of uncertainty surrounding GC-related issues (DiMasi et al., 2003; Sarasvathy, 2001), and the added uncertainty that such terminations can create for the individuals involved in a given project and/or the organization behind it (Balachandra et al., 1996). Its analysis of *helpfulETH*, an organization created to respond to challenges the Covid-19 pandemic created for Swiss hospitals and hospital personnel, and the 25 distinct projects it operated, specifically shed light on how involved individuals can and do respond to project terminations. Notably, this study showed that, when projects terminate due to obsolescence—the resolution, by natural means or at the hands of a third party, of the GC-related issues they tried to address before they can deliver their intended products or services—involved individuals unexpectedly expressed not only acceptance of these terminations but also positive emotional reactions to them. This finding especially suggests new lines of inquiry about if, when, and how project terminations can be beneficial for involved individuals and/or organizations.

5.3 Three theoretical expansions generated

The studies in this work all draw from and contribute to important theory contributions to the management research literature on *hybridity*, *social identity*, and *prosocial motivation*.

5.3.1 Hybridity

Hybrid organizations pursue multiple goals, identities, and/or logics (Battilana & Lee, 2014). Hybridity is thus a relevant factor to consider when assessing sustainable ventures, which pursue social and/or environmental and financial goals simultaneously (Skelcher & Smith, 2015; Ebrahim et al., 2014). However, extant research on hybridity in sustainable ventures often assumes that these organizations will pursue all of the missions they focus on in an explicit and open manner (Seibel, 2015). Study I explores the concept of *latent hybridity*, which describes organizations that explicitly pursue one or more, but only implicitly pursue one or more other, of their multiple goals. Specifically, it examines an organization that explicitly used its celebrity founder's status to marshal attention and resources to help it address GC-related issues, while implicitly working to reinforce said founder's personal brand. Ideally, these two missions could reinforce each other, but in practice as organization members became aware of their latent mission and tried to draw focus back toward their explicit mission, tensions emerged. Through an examination of how organization members resolved these tensions and ultimately allowed both missions to coexist, this study develops a three-stage model for the *organizational reconciliation with latent hybridity*.

5.3.2 Social identity

Study II considers how aspects of individual identity, like self-concept and social motivations, can affect decision-making in an organization dedicated to addressing GC-related issues. It builds on existing research that shows that individual identity can influence entrepreneurial activities (Cardon, Wincent, Singh, & Drnovsek, 2009) and decision-making (Henderson & Nutt, 1980)—and that social identity in particular can help to explain individuals in sustainable ventures' approaches to creating social and/or environmental value (Tajfel & Turner, 1979; Fauchart & Gruber, 2011; Gruber & MacMillan, 2017). Specifically, this study analyzes the role of social identity in evaluators' analyses of ventures' applications for one organization's sustainability certifications. Using multi-level modeling, it shows how several relevant individual factors can affect decision-making involved in these evaluations—at times in unexpected ways. Notably, it shows that evaluators who display higher levels of *other-orientation* (i.e., individual's tendency to be concerned with and

helpful to other persons, as opposed to higher levels of *self-orientation*, which centers self-interest) are harsher in their evaluations.

5.3.3 Prosocial motivation

Study III assesses how individuals respond to the termination of projects they were involved with that attempted to address GC-related issues. In light of the commonality of socially-dominant, rather than commercially-dominant, mindsets among members of GC ventures (Shepherd, 2015; Bacq & Alt, 2018; Siqueira, Guenster, Vanacker & Crucke, 2018), this study explored my expectation that *prosocial motivation*—willingness to engage in actions intended to benefit others (for reviews, see Penner et al., 2005; Bolino & Grant, 2016)—might explain some differences in individuals' emotional reactions to such project terminations. However, extant literature only addresses the role of prosocial motivation in individuals' decisions to join a GC-focused organization, or work on a specific GC-focused project (Batson, 1998; Miller et al., 2012; Shepherd, 2015; Tiwari et al., 2022), pursuit relevant tasks (Grant, 2008a; Grant, 2008b; Grant & Sonnentag, 2010), and perception of job satisfaction (Meglino & Korsgaard, 2007). To address this research gap, and to challenge dominant scholarly and commonsense findings and assumptions that project terminations always initially, and often only, lead individuals to respond with negative emotions (Cardon et al., 2011; Cope, 2011), this study explores cases in which individuals responded to the termination of projects they worked on with acceptance, or even positive emotional reactions—especially when a project terminated due to its obsolescence (as a result of the GC-related issue it sought to address resolving naturally or being resolved by an outside entity). This study shows that individuals' perceptions of their prosocial impacts can play a major role in counteracting potential negative feelings in favor of a focus on positive emotional reactions in this context.

5.4 Implications for managerial practices

Prior research shows that knowledge generated within the management literature can translate into actionable insights, once organizations become aware of this knowledge. Below, I detail several potential practical managerial implications of the findings presented in this work:

This work expands understandings of how GC-focused entrepreneurial efforts can "do well by doing good." Notably, it details how, why, and to what extent sustainable practices can act as strategic organizational assets—which entrepreneurs and managers can potentially draw upon to guide their decisions about if, when, and/or why to deliberately engage in new sustainability-focused business practices or models.

It also explains the likely continuation of the growth of hybrid organizations—especially in the form of latent hybridity—and organizational complexity into the near future (Battilana et al., 2014; see also McMullen & Warnick, 2016). When organizations become aware of their (sometimes latent) hybrid nature, they may translate this awareness into strategies for navigating any tensions created as a result of their hybridity. Managers and other key organizational decision-makers could potentially draw upon these insights to assess their own levels of hybridity, and/or to detect any latent hybridity within their organizations.

This work explores the complex and evaluative nature, means of measuring the efficacy, of attempts to address GC-related issues via entrepreneurial actions, and how both of these aspects of a venture may vary according to how an entity defines the GC(s) it aims to address. Improved knowledge of the ways that sustainability certifying bodies and their individual evaluators assess GC-focused organizations' and/or projects' performance could increase a given entity's chances of obtaining such a certification—a development that can have major effects on the development of organizations that attempt to address GC-related issues (Moroz et al., 2018).

Additionally, it examines how individuals' social identities can shape evaluators' decision-making when assessing sustainable ventures' applications for sustainability certifications. It also explores how the social identity facet of high levels of prosocial motivation and senses of purpose can shape the way individuals respond to certain types of protect terminations. These examinations contribute to wider scholarly discourse on the effects of *personal values* on behaviors

(Hemingway, 2005) at various levels of organizational operations (Fineman & Clarke, 1996). Practically, however, managers may be able to leverage these insights to foster the development of a sense of purpose, and of a common culture, within an organization (Hollensbe, Wookey, Loughlin, George, & Nichols, 2014).

This work's findings, by advancing management research into means of addressing GCs, may also help to inspire and inform reconceptualizations of the role of businesses within societies, and to inform "responsible education" (Gümüsay, Marti, Trittin-Ulbrich, & Wickert, 2022; Gatzweiler, Frey-Heger, & Ronzani, 2022) within business schools, shaping the views of tomorrow's business leaders, who may in turn play major roles in future efforts to address GCs (Friedland & Jain, 2020).

5.5 Suggested directions for future research

This work suggests several avenues for future explorations within humanity's longstanding efforts to find means of addressing GCs (Markman et al., 2019).

5.5.1 Heropreneurship

Extant research shows that, when "celebrity entrepreneurs," also known as "heropreneurs" in diverse contexts, embrace their celebrity status (Stinchcombe, 1965; Knoke & Burt, 1983) and efficiently leverage their personal brands (Staskeviciute-Butiene et al., 2014), they can efficiently marshal attention and resources, unite stakeholders, and broker connections between networks to advance their ventures' efforts to address challenges related to GCs. However, it also shows that heropreneurs can at times ultimately place the development of their own brand above the pursuit of sustainable goals (Zahra et al., 2009; Papi-Thorton, 2016). This work's analysis of the Solar Impulse Foundation shows an example of a heropreneur leveraging his status to advance his venture's GC-focused goals, and how he and his organization perpetuated this positive example of heropreneurship. However, further research is needed into instances of heropreneurship leading to mission drift away from a focus on addressing GCs and towards fostering a heropreneur's personal brand above all else—i.e., into how, when, and why such negative examples of heropreneurship emerge and develop.

Extant scholarship also focuses on the role of ordinary people who, in response to GCs and the challenges they pose, "step up to do extraordinary things through entrepreneurial action" (Shepherd, 2020: 1751). This work explores examples of both heropreneurs and ordinary people attempting to address GCs through entrepreneurial activities. Additional research should explore why heropreneurs emerge and/or take charge within some organizations but not others.

5.5.2 Assessing sustainability impacts

Although this work develops insights into the role that social identities can play in evaluators' decision-making when evaluating ventures' applications for a sustainability certification, its findings could determine the existence of a relationship between the quality of these assessments and their veracity—i.e., evaluators' abilities to accurately predict ventures' eventual actual levels of success on their considered criteria. As such, future research that tracks the trajectory and successes or failures of ventures after they receive (or fail to receive) sustainability certifications, the possible role of certification or a lack thereof in these trajectories, and how these decisions and outcomes relate to factors assessed in this work that affect stability certification application evaluations may be warranted. This research is especially relevant in light of recent findings by other researchers, showing that some ventures experience a slowdown in financial growth following the receipt of such a certification, but failing to determine the reasons for this observed phenomenon (Parker, Gamble, Moroz & Branzei, 2019).

5.5.3 Prosocial motivation

This work explores the ways that prosocial motivation can influence individuals' reactions to the termination of projects they were involved in that attempted to address GCs. However, neither this work's research nor other explorations related to prosocial motivation have examined the potential effects of different organizational (Johns, 2006; Grant,

2012; Siqueira et al., 2018; Pollack et al., 2020) and/or sociocultural (Foy & Gruber, 2022) contexts on its effects on individuals and/or organizations focused on addressing GCs. As Johns has noted, "being an individualistic in an individualistic culture might engender different attitudes and behavior than being an individualistic in a collectivist culture" (2006: 388). Future research into diverse understandings of prosocial motivation and contexts in which it can operate may also, accordingly, be worth pursuing.

Ultimately, this work contributes to scholarly examinations of how individuals, organizations, and societies make sense of, navigate, and respond to challenges posed by GCs. Such an exploration may lead to what is, from some vantages, "uncomfortable knowledge" (Rayner, 2012), "disagreeable to individuals or organizations because it may challenge their value base, self-perception, organizing principles, or sources of legitimacy" (Gatzweiler et al., 2022: 222)—such as the disclosure of climate-related information, ignored or dismissed by so-called climate change 'deniers.' However, dealing with uncomfortable knowledge, while a fraught endeavor, may improve organizations' and societies' attunements to and abilities to face the challenges that GCs pose for the world, ultimately generating impactful, and even potentially transformative, outcomes. As such, further research into and honest conversations about GCs, the challenges they impose on the world, and entrepreneurial efforts to address them ought to be pursued, in order to facilitate the creation of a more resilient, inclusive, and generally less GC-riven future.

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Appendices

5.6 Appendix to Study I: Additional evidence for variation in mission perceptions at the Solar Impulse Foundation

Table 16: Additional evidence for variation in mission perceptions at the Solar Impulse Foundation

Vague	Divergent	Reinforcing
To be frankly, to be totally honest with you, I was not proud to be in the foundation in the first two months, I guess. This is because I didn't really have a good sens of what everybody is doing. And what everybody's thinking that foundation is going ... there is so many people thinking differently. And I don't see a coherent force to bring the foundation forward [L6]	I sense that [the support team] has not always been extremely aligned with Bertrand and I think that he is someone who trusts easily. And at present it's complicated because we [the Foundation] is calling into question quite a lot of things, because they haven't been working. I mean, because they don't work. [S5]	The only one who can go look for millions [of Swiss francs] is Piccard. It's not me. In any case, the entire planet wants Bertrand and doesn't want to speak to someone else, he is the emblem. It's him, and there you have it. [HQ2]
In my opinion, the idea of gathering all these solutions by means of this Foundation, then I mean, for me it's too vague. I mean, then how can city halls in France use them, or towns in Switzerland, or countries, cantons, the other contries... for me this is still so vague [HQ3]	Somehow there was mismatch between what Bertrand wanted and what was created. I wasn't there. But I think if we could start all over, then we should make this procedure a lot less complex and even remove the expert step or just hire five internal in-house experts who do the common sense [screening] themselves [L2]	Using the visibility of the Foundation has the power to drive public opinion and the opinion of influential people, so aiming for the top. Because the Solar Impulse Foundation has the-- above all Bertrand, in the person of Bertrand, [the SIF] has contacts and visibility and credibility. So to use this credibility to go to the height in these decisions [L13]
[Bertrand Piccard] is not clear... he's definitely not clear! [L11]	Bertrand works for himself, not for the planet. He works for his own visibility, not for the visibility of the Solutions [L9]	For someone [like me] who works in communication, in terms of storytelling, having a hero in the narration is perfect for being able to tell a story and to motivate people. [S11]
I had a bit more of... maybe naively-- naively this idea that I would arrive at the Foundation, and that there would be a very clear idea of what we were going to do. ... It's the unknown, we don't know what we are doing. But that is also the magic of the project--we don't know what we are doing. And when I say "evolution of the strategy", it's not always necessarily the strategy, it's tactical evolution as well. ... I think there is a true need to improve on the level of, of concreteness. We are missing concrete [things]. I think that Bertrand's vision is very... visionary, let's say, [but] because it's a vision, there is nothing concrete. [L10]	I found the meeting of the other day very interesting, because you see that we clearly don't have the same objective. Having said that, even if the idea is to serve a final objective, I'm very happy to think about that with [a colleague] for example. [That colleague] deals with issues that concern the quality of the label, the process, etc., but this doesn't serve the purpose of the project which is, I think, more important. Today I'm a bit frustrated to see that we move at a slow pace. And we move at a slow pace because, I believe, that not all the forces are converging towards the success of the mission [L14]	Without him we can't do anything, so he works for the Foundation. He raises money for the foundation, he raises… all this is for the Foundation. At the same time, the foundation feeds his message. Because we do concrete things and I think it's also important to continue that [L11]
I really struggled to grasp the purpose of what we do. And this is why I like to have a clear purpose [S9]	Let's stop calling it Efficient Solution Label, instead we're going to call it the Bertrand Piccard Label! [L18]	If I have the choice between two events I try to take the one that can potentially also be useful for us. *- When you say "us", are you referring to the Foundation or to Bertrand?* Both, it's precisely that I try to think of both. Because in the end the one feeds the other. For me it's the fact that he is at the head of this foundation that also renders him desirable, and so for me they

		are, at heart, closely related. Bertrand is our flagship! It's even a bit of a problem that we have frrom time to time-- that many of the members or collectives that work with us are interested in the Foundation, but at the core they want Bertrand. We should really have 10 Bertrand Piccards to send to all the events! Since, for [partners], to have the Solar Impulse Foundation right now means "slash to have Bertrand", meaning that to send someone else in his place... yes, it's ok, but it's better if it was him. So he remains extremely closely tied to the heart of Solar Impulse. [HQ6]
	Bertrand has never taken the time to ask himself what the governments want [L18]	My motivation is in terms of Bertrand it's helping to inform perspectives and use him. I mean, not from a selfish sense, but ultimately he is a mouthpiece. He's a megaphone [S3]
	There is a dichotomy between Bertrand and his interests, and the interests of the Foundation [S7]	Without him we can't do anything, so he works for the Foundation. He raises money for the Foundation, he raises… all this is for the Foundation. At the same time, the Foundation feeds his message. Because we do concrete things and I think it's also important to continue that [L11]
	I think there there is a sort of rift between Bertrand and his HQ and the rest of the enterprise [S13]	the use of Bertrand to advertise the mission and collaborate with other like-minded organizations has been really good [L3]
	He needs to stay relevant, for me that right there is the bottom line of the story. He needs to stay relevant [...] Whatever it takes [...] The problem is that the objective was: Bertrand needs stay relevant [S9]	We struggled with people outside the Communication team, who said indeed: "why are we putting all this accent on Bertrand?" - *Indeed, why don't they get it?* First of all, because they have different and needs, more concrete, that are not needs of communication or branding, but rather needs like, "I want more Experts, I want more Solutions". Therefore, they say, "will this article on Bertrand help me collect more Solutions?", so they start from an approach which is not a communication approach. - *They look at their tomorrow's benefits, or even today's!* Correct! While we look at the image of the Foundation, which makes that when a person is approached by someone from the Outreach, the person says, "ah sure, I know the Foundation is doing things for the ecology", so... we provide global information. Sometimes it sounds like, some people say, "okay, how many Experts did you article bring, or your social media post?". It doesn't work in that way. Nobody spends two hours per week of his time because he read a post. You need more. The post provides information, it allows you to stay involved, but

		if you do that there's another reason, because either you met someone in person, or it helps you in your career, or in your status as engineer, or maybe in your job you can't achieve that impact that motivated you to become an engineer at the beginning, and now it allows you to get it, but all this doesn't come from the post. The post is part of a process, it raises awareness, but if you need action, it has to be part of a global thing, and here we wanted to explain to the team that communicating on Bertrand creates this. [S11]

5.7 Appendix to Study II: Social identity evaluation scale

Table 17 shows the 15-item scale that I used to calculate evaluators' levels of *self-* and *other-orientation*. While this scale was originally created to assess the motivations and social identities of firms' founders, (Sieger et al., 2016), I adapted it to apply in any business context.

Table 17: Social identity evaluation scale (adapted from Sieger et al., 2016).

It is very important to me to…
…advance my career in the business world.
…operate on the basis of solid management practices.
…have thoroughly analyzed the financial prospects of my activities.
…have a strong focus on what can be achieved vis-à-vis the competition.
…establish a strong competitive advantage and significantly outperform others.
…solve a specific problem for a group of people that I strongly identify with (e.g., friends, colleagues, club, community).
…play a proactive role in shaping the activities of a group of people that I strongly identify with.
…contribute to a group of people that I strongly identify with (e.g., friends, colleagues, club, community).
…have a strong focus on a group of people that I strongly identify with (e.g., friends, colleagues, club, community).
…support and advance a group of people that I strongly identify with.
…play a proactive role in changing how the world operates.
…be a highly responsible citizen of our world.
…make the world a "better place" (e.g., by pursuing social justice, protecting the environment).
…have a strong focus on what I can achieve for society-at-large.
…convince others that private firms are indeed able to address grand societal challenges (e.g., social justice, environmental protection).

Curriculum vitae

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September 2018 – November 2022 — ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE — *Lausanne (Switzerland)*

DOCTEUR ÈS SCIENCES (PHD) IN ENTREPRENEURSHIP

In-depth research on how organizations make sense of, navigate, and respond to *grand societal challenges*, such as environmental degradation and global pandemics. Thesis advisor: Prof. Dr. Marc Gruber. Title: "Entrepreneurial opportunities and threats in the era of grand societal challenges".

WORKING PAPERS:

- "Reconciling with latent hybridity after awakening to an implicit mission: The three-stage multi-level response of grand challenge venture Solar Impulse Foundation"
- "Evaluating sustainable ventures: Toward a model of decision-making behavior in sustainability certifying organizations"
- "Born to die: The role of prosocial motivation in entrepreneurial project termination"

April 2014 – August 2018 — INSTITUT AÉROTECHNIQUE — *Paris (France)*

MANAGING DIRECTOR OF FULL-SCALE AERODYNAMIC WIND TUNNELS

Engineering and research expertise for aeronautics and automotive industry.

- Continuous innovation in wind tunnel test facilities
- Lead and coordinate multidisciplinary teams of engineers and technicians
- Promote innovation activities with universities, research institutes, and industrial partners
- Financial management, strengthen collaboration with businesses, and expanding the client portfolio

June 2015 – February 2018 — WELTER RACING — *Paris (France)*

AERODYNAMICS TEAM LEADER

Advanced aerodynamic design of biomethane-powered race car for technologically innovative projects category (Garage 56) of 24 Hours of Le Mans.

January 2013 – December 2013 — DALLARA ENGINEERING — *Parma (Italy)*

WIND TUNNEL ENGINEER

Engineering and innovation for automotive industry.

November 2011 – April 2012 — ÉCOLE CENTRALE DE LYON — *Lyon (France)*

AERODYNAMICS RESEARCH INTERN

Research and analysis of pollution dispersion in cities.

Lecturing and public speaking

May 2022 – to date — BUSINESS SCHOOL LAUSANNE — *Lausanne (Switzerland)*

ASSISTANT PROFESSOR

Lecturing: "Entrepreneurial Management" (Bachelor)

June 2022 — TEDxMIRANDOLA — *Mirandola (Italy)*
TEDX SPEAKER
Title: "Heropreneurs: Can business solve global crises?" (https://youtu.be/XYRS_vcABaU)

September 2018 – November 2022 — ECOLE POLYTECHNIQUE FEDERALE DE LAUSANNE — *Lausanne (Switzerland)*
TEACHING ASSISTANT – GUEST LECTURER
- "Entrepreneurship" (Bachelor)
- "Introduction to entrepreneurship" (Bachelor)
- "Social entrepreneurship" (Bachelor)
- "Sustainable entrepreneurship" (Bachelor)
- "Entrepreneurship and new venture strategy" (Master)
- "Essential of for profit & hybrid entrepreneurship" (Master)
- "Applied corporate & industry analysis" (Master)
- "Entrepreneurial Opportunity Identification and Exploitation" (Doctoral)

September 2021 – December 2021 — SCHAFFHAUSEN INSTITUTE OF TECHNOLOGY — *Schaffhausen (Switzerland)*
TEACHING ASSISTANT – GUEST LECTURER
"Product vision, product strategy, innovation and marketing" (Master)

November 2020 — TECHNION - ISRAEL INSTITUTE OF TECHNOLOGY — *Haifa (Israel)*
LECTURER
"EIT Urban Mobility" (Doctoral)

June 2020 — BABSON COLLEGE ENTREPRENEURIAL RESEARCH CONFERENCE — *Knoxville (USA)*
CONFERENCE PRESENTATION
"From vision to action: How employees struggle to enact the promises of a visionary heropreneur"

Education

2018 – 2022 — ÉCOLE POLYTECHNIQUE FÉDÉRALE DE LAUSANNE — *Lausanne (Switzerland)*
UNIVERSITY OF LAUSANNE — *Lausanne (Switzerland)*
TECHNICAL UNIVERSITY OF MUNICH — *Munich (Germany)*
DOCTORAL STUDIES IN MANAGEMENT

2014 – 2018 — CONSERVATOIRE NATIONAL DES ARTS ET MÉTIERS — *Paris (France)*
BSC DEGREE IN WORK AND ORGANIZATIONAL PSYCHOLOGY

2009 – 2012 — POLITECNICO OF MILAN — *Milan (Italy)*
MSC DEGREE IN AERONAUTICAL ENGINEERING

2006 – 2009 — POLITECNICO OF MILAN — *Milan (Italy)*
BSC DEGREE IN AEROSPACE ENGINEERING

Languages

ITALIAIN — Native language
FRENCH — Bilingual proficiency
ENGLISH — Fluent