

A translational framework for entrepreneurship research

Pablo Muñoz^{a,b,*}, Dimo Dimov^c

^a Durham University, Business School, Durham, UK

^b Universidad Del Desarrollo, Santiago, Chile

^c University of Bath, School of Management, Bath, UK

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ABSTRACT

In this paper, we put forward a new translational research framework for entrepreneurship, which leverages translational research from biomedical science and design science to lay the ground for a new research ecosystem of entrepreneurship. Instead of describing, explaining and predicting, our framework places emphasis on framing, experimenting and interacting. It comprises three modes of translational research, which allow for moving discoveries made in basic entrepreneurship research to entrepreneurial practice (T1), entrepreneurial communities (T2) and entrepreneurship policy (T3). These are alternative modes of research, marking different scientific domains, that can ensure the outcomes of our basic science are understood, adapted to and adopted by stakeholders in the best way possible. This new ecosystem can expand our scope of action as entrepreneurship researchers, open new pathways to materialize the elusive “scholarly impact” and advance the conversation and practice of engaged scholarship.

1. Introduction

The recent focus on the impact of research outside of academia defines it as “an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia” (UKRI, 2022). Achieving such an impact with our academic work poses the problem of bridging the distance between theory and practice (Sharma et al., 2020). Despite our desire to situate the knowledge fruits of entrepreneurship research within entrepreneurial practice/policy, we rarely focus on what the move from theory to practice entails, to ensure that the idealized accounts of the former are operable in and sensitive to the pressing problems of the latter. Although there is an increased emphasis on changing the lexicon and outlets we use to “reach out” the elusive audiences of external practitioners (Hoffman, 2021), the short and formulaic discussion of ‘practical implications’ is simply not enough (Bartunek and Rynes, 2010). Communicating insights through popular media can bring us closer, but it does not warrant that the application in practice is the best use of basic research knowledge.

With the ever more rapid dissemination of research findings, basic research becomes ever more visible, yet not readily translatable for tackling pressing problems (Watts, 2017; ChenSharmaMuñoz, 2022). The translational challenges arising from the attempt to connect theory and practice have been highlighted by several initiatives across management journals, including JBVI’s recent Entrepreneurship Rapid Response Research Initiative - ER3 (Muñoz, 2021). ER3 enabled the systematic exploration and alignment between the abstract language of theory and the operative language of practice to find research-practice combinations that can respond to solving a (n entrepreneurial) problem or improve a certain (entrepreneurial) outcome. In different ways, all ER3 papers (JBVI, 2022) translated descriptive propositional statements of facts and relationships that comprise theoretical knowledge into

* Corresponding author. Durham University, Business School, Durham, UK.

E-mail addresses: pablo.munoz-roman@durham.ac.uk (P. Muñoz), dpd24@bath.ac.uk (D. Dimov).

normative relationships between means and ends that provide actionable guides for practice. This is challenging because the contexts of practice have unique problems, norms, and language and thus require the adjustment of the knowledge expressed in the purified language of general theory (ChenSharmaMuñoz, 2022).

What do initiatives aimed at closing the gap between research and practice (ER3 included) mean for our current conceptions of entrepreneurship research and the scholarly roles we play? In this paper, we embrace a shift in perspective and propose a unifying translational research framework for entrepreneurship. It leverages translational research practices from biomedical sciences and design science to lay the ground for a broader research ecosystem of entrepreneurship. We hope this framework will help entrepreneurship researchers integrate their basic science with the purposeful activities of wider stakeholders, enabling new actionable knowledge to emerge through interaction, adaptation, and adoption.

2. A framework for translational research in entrepreneurship

2.1. The example of biomedical sciences

Biomedical research offers a prominent example of how different research efforts focus on the transition from the discoveries made by basic science to the frontline of patient care, all sharing the long-term goal of improving the health of the public (Fontanarosa and DeAngelis 2002). It comprises a range of distinct research activities where critical insights are passed between research modes so that e.g., lab discoveries in molecular biology can lead to drugs, trials, treatments, medical practice, and improvements in human health (Rubio et al., 2010). There are four broad modes of translational work. The first - to humans - is focused on moving basic discoveries to humans, generally through trials and studies in humans. It seeks to understand how basic science works in humans so that health problems can be treated. This mode of research derives clinical insights, knowledge about human physiology, the potential for intervention, and standards of care. The second mode - to patients - is focused on testing new interventions under controlled environments. It seeks to understand how treatments can be taken to a wider set of patients. This mode has implications for practice as it creates knowledge about the efficacy of the interventions in a controlled setting. It also lays the ground for clinical application and evidence-based guidelines. The third mode of translation - to practice - is focused on taking applications and guidelines to general practice, and understanding how this can be done effectively (best practices to improve patient outcomes). The fourth and overarching mode considers the implications for policy and general practice based on the knowledge of how interventions work in real-world settings.

Moving the translational schema from biomedical research to our domain requires a movement from the question of 'is it true?' that underpins the sciences of the natural to the questions of 'is it useful?' and 'does it work?' that underpin the sciences of the artificial (Romme, 2003). This is a two-way relationship. In engaging with real-world problems and aiming to create artifacts that serve human purposes, we use the existing understanding of how the world works as frames within which we aim to create our desired effects (Romme and Dimov, 2021). At the same time, the artifacts we create and the effects they produce can become the focus of basic scientific explanation, whereby we expand our basic knowledge, which can, in turn, be used for new frames and creations, etc. (March

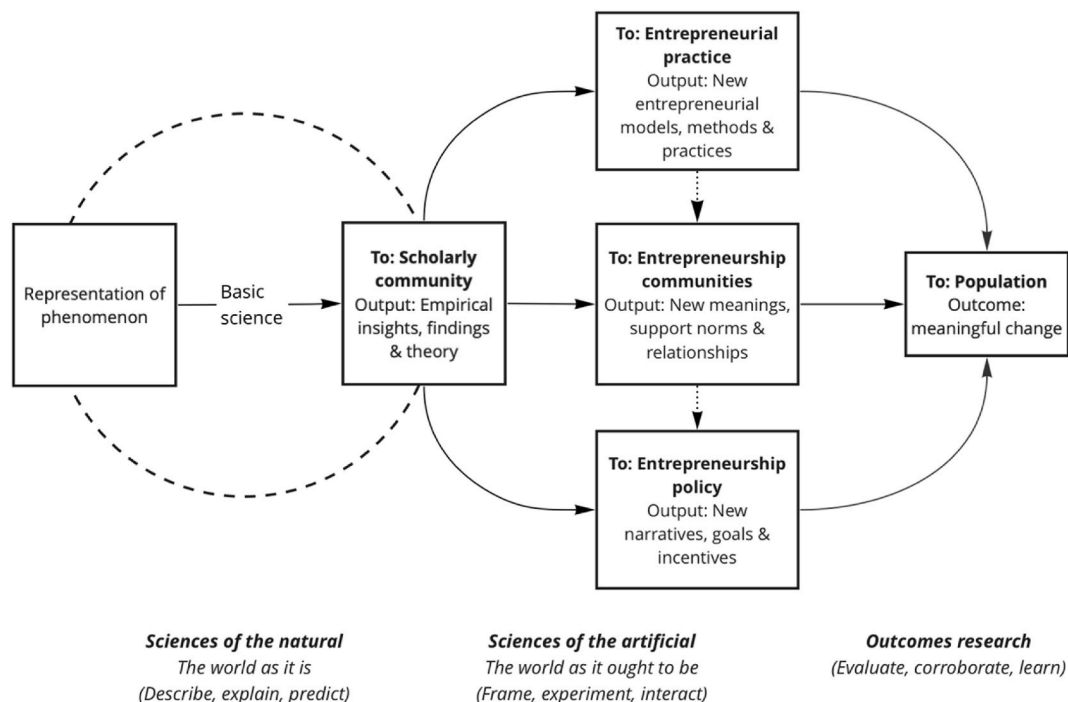


Fig. 1. Modes of entrepreneurship translational research.

and Smith, 1995).

2.2. Modes of translational research in entrepreneurship

A translational stance entails moving from understanding the world to changing it in certain ways. This is a shift from basic science as science of the natural (the world as it is) to impact-oriented or design science as science of the artificial (the world as it ought to be) (Simon, 1996). It entails moving from the language of description and explanation of theory OF the world to the language of framing, experimenting, and interacting of theory FOR the world (Romme and Dimov, 2021). Through its distinct stance of world-making or world-to-theory alignment, design science (DS) enables the move from being detached observers and analysts to playing a more proactive role in entrepreneurship policy and practice (Dimov et al., 2022).

Leveraging this core insight and reflecting on the example from biomedical science, we highlight the translational pathways within the broad stance of design science and propose four modes of translational research in entrepreneurship (Fig. 1). They reflect how insights from basic science can move from the discourse of its scholarly community to the wider world of entrepreneurial practice, communities, and policy.

T0 is the domain of basic science. Most entrepreneurship research published in academic journals falls into this category, judged by aims, outputs, and audience. It combines systematic observation and theoretical interpretation to derive empirical insights and theories that describe and explain entrepreneurial phenomena (i.e. the world as it is). The primary audience is the entrepreneurship research community itself, which serves as the invaluable source of skepticism that rigorous research needs to be able to withstand. The four translational modes follow from T0 but are different in terms of aims, outputs, and audiences. They are defined around distinct “worlds” with which we aim to deal in the pursuit of entrepreneurial impact.

The first mode (T1) relates to the world of the acting **entrepreneur** as agent of innovation. T1 can be thought of as a solution-oriented research process through which discoveries or theories made in T0 can be moved into the art and skill of entrepreneurial practice in a way that entrepreneurs can make use of it, transform their practice, and participate in further advancing discoveries or theories.

As a distinct pathway of design science, we can label this domain **DS – Entrepreneur (DSE)**. DSE takes a ‘we’ voice (Dimov et al., 2020) and is a quest for improving the art and skill of new value creation. It seeks to improve the practice of (1) framing as defining the domain for value creation and giving it some form and (2) creating as putting together constituent venture elements via the necessary actions to be undertaken. In the former, researchers can work with entrepreneurs to develop new ways of understanding, conceptualizing, visualizing, and communicating value. In terms of the latter, researchers can work with entrepreneurs to develop, adapt and combine the core business practices necessary to create value. Similarly, they can work to develop, adapt and combine the core (innovation) management practices necessary for building and running new ventures (e.g., planning, communication, control, and development).

In this sense, DSE can be situated within the broader realms of reflective practice, with its practitioner as designer (Schon, 1983), which necessarily involves an interplay between transformation and experimentation (Berglund et al., 2020). To the extent that framing involves stepping into less familiar, discontinuous terrains, entrepreneurial efforts can be seen as transformative in nature (Dimov and Pistrui, 2020). Once frames are set, the creative activities that take place within familiar or already set frames, entrepreneurial efforts focus on experimentation, i.e., making things work. From the perspective of DSE, continuous improvement can be made in how we envision the advancement of our society and in the business and management practices we deploy to create the new value we envision. Therefore, DSE enables engagement in continuous dialogue with entrepreneurs and acts as a conduit between theory and practice (Dimov et al., 2020).

The second mode (T2) involves the translation of discoveries or theories produced in basic research (T0) and/or the outputs developed in T1 to **entrepreneurship communities**. These refer to those social groups that support or host entrepreneurial activities, including organizations aiming to foster innovation. It includes the groups of individuals that bring ecosystems to life or inhabit the spaces where T1 takes place: enterprise hubs, enterprise or mentoring networks, incubators, accelerators, competitions, SU meet-ups, and support programs. Translation to entrepreneurial communities deals with issues relating to perceptions, meanings, social norms, social practices, and relationships relating to entrepreneurship (Nair et al., 2022). It focuses not so much on how these are formed or maintained, but rather on how these can be changed by and within those communities so that it benefits entrepreneurial and community outcomes. It invites communities to reflect on questions such as: do we need entrepreneurship, is entrepreneurship valued as an activity or career choice, what does it mean to be an entrepreneur, are they stigmatized or admired, how much time are we willing to give them, how much support they need or deserve. It then brings T0 - T1 outputs into those reflections so that changes can materialize.

T2 translation is the domain of **Design Science – Community (DSC)**. DSC exists within the broad space of citizen science, which promotes active public involvement in scientific research (Bonney et al., 2016), in pursuit of three essential outcomes: advancement of scientific knowledge, expansion in public awareness regarding scientific methods and discoveries, and the co-production of solution-oriented science (Irwin, 2018). DSC is a contextualized form of citizen science as it brings scientists and communities together to solve local challenges. It can be understood as a field that “develops and researches community-centered models that enable communities to use evidence-based interventions more effectively and efficiently” (Wandersman, 2003: 27). DSC is multidisciplinary in nature in that it attempts to strengthen community functioning by investigating how to improve the quality of common approaches (prevention, treatment, education, health promotion) implemented in real-world settings. In an entrepreneurship setting, DSC should seek to enhance theoretical and practical understanding of entrepreneurial behavior in particular community contexts; promote the competence, resilience, and well-being of entrepreneurs and the communities they operate in; and prevent problem behaviors and other harmful outcomes at the individual and community level. DSC can allow entrepreneurship researchers to identify entrepreneurial problems relating to meanings, support norms, and social relationships; share and socialize knowledge created in T0 and T1;

explore and build consensus around the kind of knowledge that can improve community support in context; co-create solutions with the community around and facilitate knowledge-based interventions. It can happen as a result of entrepreneurship researchers pushing and communities pulling knowledge, so that it can be operationalized in context, adapted and refined, tested, communicated, and adopted.

The third mode (T3) relates to entrepreneurship policymakers and the policy artifacts designed to enable and promote entrepreneurial activity. Policy is a theoretical or technical instrument that is formulated to solve specific problems affecting entrepreneurs and their communities, directly or indirectly. The instruments can be thought of as policy interventions aimed at creating the right conditions for people to start and scale-up productive ventures. These normally offer direct support to help entrepreneurs and start-ups overcome specific barriers (e.g., funding, entrepreneurial skills) and/or allocate resources for the development of a support infrastructure (e.g., venture capital market, incubation). Since entrepreneurship can also create wider social benefits, some policy interventions seek to offer alternative pathways to employment to disadvantaged people and incentivize forms of entrepreneurship that can potentially solve social or environmental problems (OECD, 2020).

T3 translation is the domain of **Design Science – Policy (DSP)**. DSP can be situated within the broad space of policy sciences (McGann et al., 2018), which is concerned with the formulation and implementation of policy and studies decision processes and evaluations of policy interventions in the context of particular problems. DSP is equally context-specific but emphasizes public service innovation (McGann et al., 2018), adding envisioning activities and generative processes to policy development. It is a new area of inquiry that takes the methods and traditions of design into the world of social, economic, and environmental policy (Johnson and Cook, 2013). Unlike traditional policy science, which focuses mostly on the past and present, DSP involves mapping decision processes, creating a vision and blueprints for the future (Nogueira and Schmidt, 2021), and taking action to make it into a reality (Blomkamp, 2021). In this sense, DSP is a generative form of policy science as it brings researchers and policy agents together, to imagine new social, economic, and environmental structures and design pathways to make the world as it ought to be. It focuses on co-design, where researchers can participate in design processes through iteration, learning, and continual testing (McGann et al., 2018), and thus play a role beyond the traditional “inform and advise”. In entrepreneurship, T3 DSP should seek to enhance theoretical and practical understanding of policy interventions and design futures for entrepreneurship. It can allow entrepreneurship researchers and policymakers to identify needs or requirements, envision new pathways for entrepreneurship (policy narratives), co-create policy alternatives (goals and agendas), i.e., alternative options for how government action can be brought to bear on some entrepreneurial problems, and co-design, experiment and refine implementation instruments (support programs and incentives). Policy knowledge, both purely conceptual and actionable, is produced as a result. Table 1 offers a summarized view of approaches, scope, and impact for the three translational modes.

2.3. T4 how to evaluate the impact of translational research

An important implication of promoting translational research relates to its solution-oriented nature, which inevitably invites questions about whether solutions actually work. In other words, while T1, T2, and T3 research can be deemed to produce knowledge outputs – specific solutions to be implemented – there is the question of the outcomes in the world once these solutions are

Table 1
Translational research ecosystem.

	Scientific (sub)domain	Deals with issues relating to	Allows researchers to understand	Allows researchers and stakeholders to
T1	DSE: A quest for improving the art and skill of new value creation, situated within the broader realm of reflective practice.	The art and skill of entrepreneurial practice of new value creation.	- How stakeholders interpret research outputs.	- Identify what changes in practice/norms/incentives - support mechanisms are needed.
T2	DSC: A contextualized form of citizen science that brings scientists and communities together to solve local challenges ... community-centered models that enable communities to better use evidence-based interventions.	Perceptions, meanings, social norms, social practices, and relationships relating to entrepreneurship.	- Whether this information is actually relevant in their particular contexts (to solve specific problems)	- Identify what new challenges emerge within them
T3	DSP: A new area of inquiry within policy science that takes the methods and traditions of design into the world of social, economic, and environmental policy.	Barriers and enablers of entrepreneurial activity and the narratives, agendas, goals, and incentives that reduce the former and improve the latter.	- Whether the new practice/norms/policies are the best application of a particular research output.	- Identify what is actually going to make a change
T4	Outcomes research: Assessment of whether the solutions co-developed work. It evaluates, corroborates, and learns from the outcomes of T1, T2, and T3.	- Concrete cause-effect relationships between a particular intervention and an outcome. - Whether new practices, support mechanisms, and policy interventions have led to improved entrepreneurial outcomes at a broader scale.	- How outputs can make an impact.	- Set boundaries around possible outcomes as a result of moving outputs to practice/communities/policy interventions through translational work.
			- Whether a change has occurred as a result of an intervention in entrepreneurship practice, communities, or policy.	
			- The mechanisms that enable change through translation.	
			- The conditions under which the knowledge that has been translated create positive or negative change.	

implemented. In other words, does the world change in meaningful ways? This is the space of T4, translation to population, which falls in the realm of **Outcomes Research**.

In biomedical sciences, this is the study of the end results of health services (Clancy and Eisenberg, 1998), the structure and processes of the healthcare system, and systematic research efforts that allow for its continued development, on population health.

In adapting the experience of the translational sciences to our domain, we decided to leave this form of translation outside the three main modes proposed above, since it pursues different research aims, relies on an alternative set of principles, different from those underlying the sciences of the artificial and can be situated across the three translational modes delineated above. Instead of framing, experimenting and interacting, outcomes research seeks to evaluate, corroborate and learn. In other words, it does not seek to co-create, rather it asks whether specific interventions have worked as intended. In entrepreneurship, outcomes research should seek to understand whether a change has occurred as a result of an intervention in entrepreneurship practice, communities, or policy; the mechanisms that enable change through translation; and the conditions under which the knowledge translated create positive or negative change.

We propose two levels of assessment that can inform if entrepreneurial outcomes have been improved as a result of an intervention. These cut across the three previous translational modes and can be distinguished by the type of outcome being evaluated and the magnitude of the change in condition. For example, performance differentials between incubators subject to different types of translational interventions can be captured by either looking at the investment raised by one cohort after one intervention (small population) or the aggregate effect of multiple interventions across an entire ecosystem of incubators that include a broader range of entrepreneurial outcomes (large population), e.g., investment, income, well-being, social cohesion. For the former, a researcher needs to focus on assessing concrete cause-effect relationships between a particular intervention and an outcome. Randomized controlled trials and cross-sectional studies are well-suited for that purpose. Whereas for the latter, a researcher needs to use a different lens to assess whether new practices, support mechanisms, and policy interventions have led to improved entrepreneurial outcomes at a broader scale, for which methods such as cohort studies, meta-analysis, and evidence reviews are better suited.

3. Discussion

In this paper, we articulated how the core, theoretically rigorous knowledge produced by basic research needs to be translated if it is to make an impact on the wider world. Our exposition mapped an entire research ecosystem that serves to connect theoretical insights and practical impact. It directs focus to entrepreneurial practice, to the wider communities in which entrepreneurship takes place and the wider policy environment within which societies, and entrepreneurs more specifically, operate. Each of these represents a distinct translational interface focusing on distinct problems and employing distinct research approaches. Unlike the epistemic utilities of truth and information that drive basic science, it is the practical utilities of simplicity and manageability that guide these interfaces in pursuit of instrumental value for human activity (Niiniluoto 1983). In this sense, these translation interfaces comprise a domain of design science, driven not by the pursuit of theoretical refinement or extension but by solving specific problems. While the importance of these interfaces is not in question, the questions that loom large are how to make them work and how to evaluate their impact.

3.1. Implications and moving forward

The implications of this paper for academic practice relate to the recognition of a wider ecology of research that helps connect or translate the problems of practice with the solutions of theory. As things stand, practical problems can be too idiosyncratic to be theoretically interesting, and theoretical solutions can be too generic to be practically meaningful. We need to connect one with the other, while recognizing the complexity of the social world, which we encounter as a move from the theoretician's "high ground" of well-defined problems that lend themselves to technical solutions to the practitioner's "swampy lowland" of confusing problems that defy technical solutions (Schon, 1983, 1987). The "high ground" matters – we need not abandon the theoretical rigor of basic research; we just need to orient it and connect it to the future.

Scholarly impact can be less elusive if we ingrain the core question it poses into our scholarly discourse: how can our work change or benefit the economy, society, culture, public policy or services, health, the environment, or quality of life? This question prompts us to pick out meaningful problems that can inform questions of basic research as well as make us future-oriented. We can dissolve the current boundaries between research and outreach and use their respective motivations and research capabilities for bridge-building research. Our translational framework can contribute to moving this forward.

To move translational research forward, we can start by engaging with three ongoing processes: the contextualization agenda, the surge of future-oriented research, and the expansion of institutional boundaries. First, unlike biomedical sciences we do not have a unifying set of basic components of social life - i.e., the social equivalent of genes, proteins, molecules, and cells in biomedical sciences - nor a common language to talk about them across sub-disciplines and research practices. Social processes and human behavior not only manifest differently across contexts but they can (and likely will) look differently depending on the perspective of the observer, who approaches social phenomena carrying heavy disciplinary and theoretical baggage. Social sciences have been used in translational medicine, to situate and adapt drugs and treatments, but the object of translation is still biomedical knowledge (Burgio, 2010). A focus on the translation of social science knowledge requires adding contextualization and perspectivism to the translational mix (Tebes, 2005), which is already gaining momentum in entrepreneurship research (Welter and Baker, 2020; Welter et al., 2017, 2019). Our framework reinforces this agenda through the integration of the design science perspective.

Second, unlike basic research that investigates the past to describe and explain, translational work requires anchoring our research in the future, centering our attention on phenomena that do not yet exist and the production of knowledge that will be a constitutive

part of that future under emergence. This is also gaining momentum in entrepreneurship research (Dimov et al., 2022; Romme and Dimov, 2021; Berglund et al., 2020). The challenge for us here is that this requires a different understanding of what entrepreneurship research outputs and outcomes are under this broader conception of social science translational research. If we no longer merely describe or explain, what do we then produce, and with what (intended) effects? This challenges not only our conception of knowledge products in entrepreneurship research but also our mode of knowledge production. It calls for (1) actionable outputs focused on intervening and changing practices and norms, (2) an assessment of meaningful change resulting from the intervention, and (3) reflective practice, deep engagement, solution orientation, problem-framing, co-creation, prototyping, intervention, testing, and learning. As entrepreneurship scholars, we do many of these things as part of our teaching and external engagement activities. The key is to articulate and communicate insights to enable wider synthesis and accumulation, as new forms of research outputs.

Finally, we can leverage institutional changes taking place to support scholarly impact. They provide some tailwinds in the form of impact agendas (Smith et al., 2020). This includes (1) new funding requirements to align projects with external stakeholders' needs (e.g., impact statements for NSF and ESRC); (2) calls to move toward a more meaningful (Tourish, 2020; Alvesson et al., 2017) and solution-oriented (Watts, 2017) social science; (3) increase the weight given to practical impact when assessing scholarly contributions (Haley et al., 2017); (4) commitment to responsible research and responsible management education (e.g., AACSB, PRME, RRBM); and, in our domain more specifically; (5) calls for solutions to support entrepreneurs (Pollack et al., 2020; Williamson et al., 2021). We can leverage these by considering the training we provide in our doctoral programs and their long-lasting imprinting effect on career progressions. If we are to expand the scope of opportunities and actions for entrepreneurship researchers, there is a need to revisit the basic questions, motivations, and responsibilities that come with being a researcher (Elangovan and Hoffman, 2019) and take a step back to reconsider how we educate early career researchers (ECR).

3.2. Final thoughts

The idea of translation suggests a larger, organic whole, a complex system with many interacting parts. Systematic study prompts us to draw boundaries, to isolate, to distill essences from situational, personal, and cultural particulars. So extracted from the background whole, the objects of theory are stripped of their significance and relevance for human purposes, having severed the connections that make them intelligible to entrepreneurs in their everyday situations (Dreyfus, 1991). Just as transplanted organs require meticulous rebuilding of nervous and circulatory connections to become an accepted, integral part of the host organism, so theoretical knowledge needs to be reintegrated. The translational interfaces we outlined represent the various connections we must foster and maintain.

Statement

The authors contributed equally in the development of this paper.

Declaration of competing interest

The authors declare no conflict of interest.

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