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How can funders promote the use of research? Three converging views on relational research

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Although funders are generally acknowledged as important actors in the evidence ecosystem, there has been insufficient analysis of the *how* and *why* behind funders' decisions. This article examines the decision-making of three funders in their support of relational approaches to improve the usefulness and use of research evidence. They compare their work across the disparate policy sectors of education and environmental sustainability in order to bridge the silos that have caused unnecessary duplication of work and obstructed advancements in research utilization. The authors (1) provide individual narratives of their funding experiences including why they prioritized relational approaches and how they supported them; (2) discuss their lessons learned for supporting and promoting relational approaches; and (3) offer recommendations to the broader funding community for strengthening and expanding these approaches. The authors hope the paper provides useful insights into ways funders and their partners can build a stronger and better coordinated evidence ecosystem in which research regularly contributes to improved societal outcomes.

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Introduction

Much has been written about strengthening the connections between researchers, policymakers, and practitioners to improve the usefulness and use of research evidence (e.g., Boaz et al., 2021; Bartunek and Rynes, 2014; Lemos et al., 2018), but less attention has focused on funders' roles in the evidence ecosystem. This oversight belies funders' influence on what research is conducted and whether policymakers and other stakeholders are engaged in the research (Arnott et al., 2020; Arnott, 2021; Flinders, 2020; Sharma and Bansal, 2020, Landrum et al., 2022).

This is not to say there isn't information on *what* funders support (e.g., fellowships, training, partnerships, etc.). That information is often publicly available and has been a focus of the academic and gray literature. However, very little analysis exists of *why* funders prioritize certain approaches to evidence use and *how* they go about supporting those approaches (Arnott et al., 2020). A second limitation of the funder literature is its dispersal across diverse policy sectors such as education (Tseng and Coburn, 2019), environmental sustainability (Arnott et al., 2020), healthcare (McLean et al., 2018), business (Hamann and Faccer, 2018), and international development (Neupane et al., 2016). Despite the transferability of lessons across policy areas, funders working in environmental policy, for example, have few opportunities to learn from and with their counterparts in education and human services, and vice versa (Arnott et al., 2020; Farley-Ripple et al., 2020; Oliver and Boaz, 2019). Yet, if such connections were commonplace, funders could more efficiently build on lessons learned in other sectors and even align their efforts to accelerate progress.

In this article, we contribute to filling these two gaps in the literature by pulling back the curtain on funders' work. While the gray literature includes some external analysis of how funders could improve their work (Flinders, 2020; Tazzyman et al., 2020; Nurse, 2015), we offer insights from our "insider" positions in funding programs and organizations. Specifically, we discuss *how* and *why* we forged our funding approaches, our analysis of the challenges we faced in our work in different policy sectors (environmental sustainability and education), and recommendations for how the broader funding community can build a stronger evidence ecosystem by leveraging connections between policy arenas.

Background

This article is based on the experiences of the three authors who, despite working for different funding programs and organizations in distinct policy areas, found remarkable similarities in our funding approaches to support research use. The first author works for the William T. Grant Foundation to support research to improve education and other youth-serving systems; the second for the Lenfest Ocean Program at the Pew Charitable Trusts to address the need for sustainable oceans; and the third for the Pacific Institute for Climate Solutions (PICS) to produce climate mitigation and adaptation solutions. In addition to different policy arenas, our work spans different geographic ranges from regional (PICS) to national (William T. Grant) to global (Lenfest). By drawing together our disparate experiences, we developed a cross-cutting analysis of how funders can work collectively to transform the evidence ecosystem.

Early on, we found commonality in our concern that research funders (including ourselves) had been stuck in thinking about research-based knowledge as a product that simply needed to be disseminated from researchers to decision-makers. Linear approaches fueled interest in one-way science communication in environmental policy and other fields, and investments in scaling up evidence-based programs in education policy (Lubchenco, 1998, Tseng and Coburn, 2019). We shared a dissatisfaction with these dissemination approaches that failed to appreciate decision-makers' needs and their goals and contexts for using research (Nutley et al., 2007; Sarewitz and Pielke, 2007).

The literature suggested that relational approaches represented a new generation of efforts to pave stronger paths between research knowledge and social action (Best and Holmes, 2010). Relational approaches consider research valuable when it meets the needs and contexts of its would-be users. Rather than seeing research as an antidote to information deficits on the part of decision-makers, relational approaches envision a two-way street, wherein policy informs research as much as research informs policy (Tseng, 2012; Bednarek et al., 2018; Hamann and Faccer, 2018). Relational approaches can build bridges between the separate worlds that researchers and decision-makers inhabit—each with its own priorities, languages, and goals (Caplan, 1979; Bogenschneider and Corbett, 2021). Scholarship on relational approaches shows its value for building trusting relationships and fostering iterative knowledge exchange (Cash et al., 2003; Nutley et al., 2007; Dilling and Lemos, 2011; Tseng, 2012). Collaboration can be forged at different points in the research production and use process from problem definition to interpretation of findings to application of research in decision-making (Lemos et al., 2018).

Our approach

Borrowing from Dennis Gioia and colleagues' concept of "knowledgeable agents," we have developed narratives of our funding programs and organizations in order to explain "what (we) are trying to do" as well as our "thoughts, intentions and actions" (Gioia, et al., 2013, p. 17, see also Chapman et al., 2004; Yeo and Dopson, 2018) in our grantmaking. Knowing that funder decision-making can appear opaque to those outside our programs and organizations, we sought to describe what happens "behind the scenes" (Zawadzki and Jensen, 2020).

Our process has borrowed from approaches that aim to turn personal experience (Cunliffe, 2018) and narrative exposition (Jarzabkowski et al., 2014) into a self-conscious, analytical, and strategic interpretation of relevance to a broader community—in this case, funders. In most ethnographic representations, examinations of particular communities, cultures, or settings are done by relative "outsiders" able to claim a critical distance from the objects of study. However, we were inspired by autoethnographic and collaborative autoethnographic approaches that provide a means of combining insider and outsider perspectives into opportunities for individual and joint reflection (Zawadzki and Jensen, 2020; Vesa and Vaara, 2014).

We first crafted separate texts narrating each of our program or organization's journeys of improving research use, not knowing how much, if any of the information would make it into the final version (Nordbäck et al., 2021). We agreed on a set of guiding questions that would allow for comparison between our respective texts. Without setting out any other parameters (e.g., on length), we agreed that the following points should be addressed in each narrative: (i) What did the landscape look like when each funding initiative began? (ii) How did funding change over time? (iii) Where did each of us appear in these stories? and (iv) What changes did we observe in how research was produced and used, and to what did we attribute those changes?

As the first and second authors have worked in their organizations for almost two decades, their narratives were written as thick descriptions of personal and programmatic histories (Jarzabkowski et al., 2014). The third author's experience was a bit different, having joined her organization more recently. Although she had been involved in shaping and informing renewed programmatic practices at PICS, her narrative required more attention to archival materials and information-checking with other organizational members.

The narratives were developed as part of an iterative process, in which we read each other's texts and raised issues, dilemmas, and questions regarding each other's funding strategies and practices. This process enabled us to bring some outsider perspective to each other's work and to identify and then refine potential themes. In our shared sense-making, key themes were discussed and particular elements were probed, such as how we defined our role as funders (funding others to do the work versus hiring staff internally) and how we approached field-building. We used this recursive process of reflection to determine how best to move beyond the personal and joint reflections in order to offer a more meaningful analysis of how funders can improve research use and impact. We present our individual narratives below, followed by the themes we identified and their implications for the broader funding community.

Our journeys

William T. Grant Foundation. The William T. Grant Foundation is a private, national foundation that supports research to improve the lives of young people in the United States. I (first author) came to the foundation in 2004, with the goal of improving the connections between research, policy, and practice in order to achieve social change. Trained as a community psychologist, with a background in ethnic studies, I was frustrated that research and social change too often occurred on different planes, and I was seeking ways to bring them together.

The Foundation's interest in research-practice partnerships (RPPs) grew out of our initiative on studying the use of research evidence in policy and practice (Tseng, 2012). Early in the effort, partnerships between researchers, practitioners, and policymakers emerged as "opportunities to learn about the mechanisms and conditions that facilitate the successful use of research" (Tseng, 2010). Research across diverse sectors had uniformly found that relationships were critical for fostering research uptake. Education practitioners prized studies conducted in their local contexts, with their students and schools. Thus, when researchers and practitioners collaborated to develop research agendas, the research was more useful to practitioners and more likely to be used. We believed that studying partnerships would provide broader lessons for the field about what it takes to improve the usefulness and use of research evidence.

While the premise underlying partnerships seems like common sense today, the ideas were fairly radical compared to the then-dominant dissemination approach of "moving research *to* practice." In U.S. education, the first decade of the twenty-first century was dominated by a "What Works" agenda that focused on testing and then scaling up effective programs across communities. Those goals led some funders to privilege randomized-controlled trials as "gold standard" research and to equate rigor with experiments. Moreover, the What Works agenda was largely top down, supported by the federal government and philanthropies who used their dollars to incentivize communities to adopt evidence-based programs.

As this linear approach ascended in federal policy, a bottom-up movement was brewing at the local level. Researchers and school districts across the U.S. were forming long-term partnerships to improve education (Tseng and Coburn, 2019). Unlike What Works initiatives, these local efforts embraced a relational approach. Research and practice partners believed that sustained relationships would enable them to tackle more complex and challenging problems over time. In developing enduring collaborations, they would avoid the trend of one-off projects that came and went with grant funding and failed to make significant change.

When the Foundation became interested in partnerships, we encountered a diffuse group of organizations and projects that had not yet cohered into the field of *research-practice partnerships* (RPPs) as we know it today. These relational approaches seemed promising but challenging to pull off well. Thus, we took a two-prong strategy to increase our learning and that of the field. First, we commissioned a paper (Coburn et al., 2013) that reviewed the landscape of RPPs and provided a conceptual framework and common language to understand and talk about partnership work. Second, we invited nine partnerships to form a 3-year learning community. The network's goals were to explore ways to build and sustain strong RPPs, produce research that is useful to school districts, and support districts in using research to improve education. The foundation hoped that the learning community would help individual partnerships strengthen their work, build relationships and collaborations with one another, and yield lessons for us, other funders, and the broader field about how to improve the usefulness and use of research.

An initial concern was whether the different types of partnerships would see themselves as part of a community. Others had convened partnerships in the past, and we heard mixed reports about the success of those interactions. There was tension, and sometimes competition, between partnerships that came from different intellectual traditions and employed contrasting research approaches (see Tseng and Coburn, 2019). The term *research-practice partnerships* was rarely heard, and instead groups identified themselves as *design research partnerships*, *networked improvement communities*, or partnerships based on the Chicago Consortium on School Research (later called *Research Alliances* by Coburn et al., 2013). New partnerships were also emerging via the Regional Education Labs funded by the U.S. Institute of Education Sciences, and some questioned whether they were authentic partnerships committed to long-term work.

The RPP paper and learning community created mechanisms for partnerships to explore their shared goal of transforming research-practice relationships. They all eschewed drive-by research wherein researchers dropped into schools to collect data, but failed to leave behind valuable contributions for educators or communities. As partnerships learned more about each other, a common RPP identity emerged and the lines between partnership types blurred as they adopted each other's practices.

As the foundation's commitment to the network drew to an end, the group expressed a desire to share their lessons learned with others. This demand from the field led to our creation of an RPP resource website (rpp.wtgrantfdn.org), which shares guiding tips, work samples, and other resources from the learning community and well beyond it. The RPPs also raised the need for an ongoing network. We thus supported Ruth Lopez-Turley, the founder of a Houston RPP, to establish what would become the National Network of Education Research-Practice Partnerships (NNERPP). In addition to providing general operating support for NNERPP's establishment, I co-facilitated the initial meeting, and we recruited other funders to support the network. In 2022, NNERPP has 59 members, provides a community for partnerships, and offers training and resources to support the field's expansion and success.

Our funder role has largely been to help forge a united RPP field and build its capacity to transform the relationships between research and practice. As a mid-size foundation, this role suited us because we could invest modest dollars for convenings, publications (academic- and practitioner-focused), and resources that complemented the much larger government and philanthropic dollars that supported the start-up and ongoing operational costs for RPPs across the country.

Faithful to our interest in studying research use, we also supported research on RPPs. We funded theory-driven, empirically rigorous research on RPPs on topics such as role and identity negotiations within partnerships, how partnership research influences policy, and the organizational capacity needed to use partnership research (Allen et al., 2018; Farrell et al., 2019a; Farrell et al., 2019b). As the field matured and faced greater demands for evidence of effectiveness, we also funded the development of a conceptual framework for what constitutes RPP "success" (Henrick et al., 2017) and the development of measurement tools to assess effectiveness.

In addition, Foundation staff committed considerable time to raising RPP visibility. I estimate giving over 80 presentations and publishing 15 papers and blog posts on RPPs between 2011 and 2021. In one paper co-authored with funder colleagues (Tseng et al., 2017), we outlined five necessary elements of successful RPPs:

- partnership structures, including a governance system, agreed upon roles and responsibilities, and staffing;
- shared commitments, including both a long-term research agenda and discrete projects;
- activities for producing and using research, including the ground rules for how research will be carried out and plans for iterative communication as the work proceeded;
- capacity building efforts to shore up the ability of researchers and practitioners to collaborate, as well as to strengthen the partnership itself (i.e., collaboration tools, relationship-building activities, etc.); and
- funding, both for projects and the partnership infrastructure.

We argued that when those elements came together, a partnership identity emerged wherein the research and practice partners shared a common narrative about what the partnership is and what it does. Key to success was the ability to weather constant change, particularly frequent turnover in district leadership and the need to build bridges with new leaders.

Over time, our attention turned to sustainable funding models because funders were more apt to support projects than operating costs. Infrastructure and staffing costs were crucial for building relationships, maintaining robust data systems, supporting research use when policy windows opened serendipitously, communicating findings to diverse stakeholders, and scoping new projects (Tseng et al., 2017). We argued that a sustainable funding model would require a mix of government and philanthropic support, and advised a growing group of funders interested in RPPs, encouraged investments in the National Network of Education Research-Practice Partnerships, and convened education funders in a learning community affectionately called the Nerd Herd.

Lenfest Ocean Program at The Pew Charitable Trusts. The Lenfest Ocean Program's (LOP) focus on relational research began with developing a model for meeting its mission: to support policy-relevant research about critical issues in ocean conservation. This narrative reflects my (second author) experiences in leading the science-policy engagement efforts of the program. I joined the program after working in academia to generate policy-relevant science and in government trying to access policy-relevant research. Seeing gaps in the connections between research and policy, I was eager to join a program that could focus explicitly on making research more useful and used.

When I joined the program early in its development, we relied mostly on science communication techniques that dominated the conservation field at the time (Smith et al., 2013). The idea was that decision-makers did not have sufficient access or understanding of science so research needed to be packaged and disseminated more effectively. Even in its early stages, however, we expanded on a linear approach. Our model was not guided by a particular body of scholarship on research use (we didn't know about that scholarship yet), but rather a desire to more efficiently address policy information needs. We identified policy-relevant projects by scanning fisheries management decision-making to pinpoint issues that research could address. Early projects focused on synthesizing research to inform policy issues and meet decision-making timelines. We then developed communication materials to facilitate access to the findings for fisheries managers and to amplify the results for other stakeholders, for example by partnering with local advocacy groups to relay research to resource managers via factsheets and briefings and through the media (Bednarek et al., 2016).

Over time, we began to support more extensive and bidirectional engagement between decision-makers and researchers, and hired a growing team of boundary-spanning staff to undergird it (Bednarek et al., 2016). This evolution grew out of several key turning points. First, as the number and variety of projects that we funded increased, we found it more efficient to ask decision-makers directly about their knowledge gaps and research needs. Second, as projects focused on more complex policy issues, we saw a need for researchers and decision-makers to engage directly in order to develop projects that could sufficiently address complex policy needs while building trust in the findings. Third, even after we began to support more active engagement early in the project, we realized the need to remain heavily involved in facilitating the engagement process in order to ensure the project remained relevant for policy. Funded scientists didn't have the time or background to do this work themselves (Bednarek et al., 2016).

As the program evolved, we faced challenges in refining and scaling the work. As science-policy outreach lead, I found tracking outcomes difficult, especially over the time periods when detectable shifts in decision-making and policy were likely to occur. In addition, direct policy changes (e.g., in regulations or legislation) were uncommon, and we began to observe a much wider array of outcomes, including changing the way policymakers or practitioners viewed the feasibility of various management options, opening new policy windows for research, and increasing decision-maker interest in long-term relationships with researchers to address other policy questions (Bednarek et al., 2018). It was equally challenging to disentangle how the science interventions, versus other forces (e.g., advocacy by environmental NGOs), contributed to those changes.

In my quest to find practical ways to help us track the impacts in our engagement work, I began to seek models or peer organizations to guide us and scholarship and practical guidance that could provide a framework for our work. I found scholarship on relational research approaches, primarily coproduction and boundary spanning. These approaches matched our intent to transform the science-policy interface by beginning with relevant research to solve problems with and for decision-makers and making knowledge production and exchange more dynamic, and thus evidence use more likely (Bednarek et al., 2018). The theoretical framework of coproduction also provided us with principles to guide our work: maximizing the credibility, saliency, and legitimacy of research in policy (Cash et al., 2003). Part of our role as funders was to be boundary spanners, who were actively involved in facilitating engagement. Boundary spanning is a concept that originally emerged from the business and organizational management literature (see Carlile, 2002; 2004) as an expertize needed to manage the boundaries between those involved in relational approaches, translate and exchange knowledge efficiently, find and negotiate common understandings, and identify paths forward.

Using these frameworks, we were able to unpack specific steps to follow in funding relational research (Bednarek et al., 2016; Landrum et al., 2022), including:

- Supporting research projects in which researchers work closely with users to identify relevant or salient research questions;
- Seeding and facilitating relationships with key decision-making partners by supporting engagement early and often;
- Supporting and encouraging sustained engagement throughout the research process to maximize legitimacy and buy-in;
- Tailoring communication and dissemination for user needs throughout the project process to maintain relevancy and saliency (factsheets to describe the potential project, intermediate findings, and final ones; engagement workshops; policy briefings);
- Requiring peer-reviewed publications as one product of the research process to maximize credibility for multiple stakeholders (scientists, policy-makers, etc.). While research relevance was critical for policy stakeholders, scientific credibility was also important. We found decision-makers in the fisheries sector were more likely to consider research findings if they had been published in the peer-reviewed literature. However, we also included a deliverable (with sufficient time) in each grant that required the grantee to engage with LOP staff in outreach and engagement;
- Using boundary spanners employed by the Program to support the entire process, from scoping the research and policy contexts to identifying potential projects and partnerships, matching researchers and decision-makers who could work together, ensuring and facilitating active knowledge exchange, and translating knowledge throughout the process for all actors involved.

Within this framework, grants supported researcher time, research costs, and when needed, meetings between the research team, with policymakers, and with other stakeholders.

Despite becoming more granular about our process, we still hadn't solved our practical needs—how best to expand and scale this work, and measure progress and outcomes. We began to seek like-minded organizations (in the beginning, mostly environmental or conservation ones) with whom to share insights. With our theoretical grounding in mind, I also began to write and present widely about the Program's work, to help us explain our approach and the practical challenges we faced to external audiences (Bednarek et al., 2016; Bednarek et al., 2018). Similar to WTG's efforts to build a learning community around RPPs, I began to convene these organizations and thought leaders to find lessons to guide the Program's work and to tackle critical issues, such as impact tracking (Bednarek et al., 2016; Bednarek et al., 2018).

We also used our dive into the scholarship about coproduction and our learning from peer organizations to create a measurement system for the program that tracked multiple kinds of uses of our funded research, rather than just policy change. Developing this framework required expanding our peer network to other sectors, including education, public health, and international development. I began to convene a larger array of sectors in order to identify practical ways to implement these frameworks, including specific indicators of research use (Tseng and Bednarek, 2019). I also developed collaborative relationships with research use scholars who could help guide and implement our forays into measurement and assessment (see Louder et al., 2020; Cvitanovic et al., 2022).

Through our work to improve our funding practices and define success for the Program, we found many promising outcomes and growing interest in relational research (Bednarek et al., 2018). We also found persistent challenges. With little capacity for researchers or dedicated experts at the grantees' institutions to help with the engagement and boundary spanning, our work was often limited by our own staff time and resources. Finally, while our measurement framework captures a wider variety of kinds of research use, we still struggled with practical ways to measure and track impacts in real time during a funded project and over the longer time periods required for policy changes.

The Pacific Institute for Climate Solutions (PICS). The Canada-based Pacific Institute for Climate Solutions (PICS) was established in 2009 through an endowment of the British Columbia (BC) provincial government. PICS is a unique entity in the region—an independent funding and research consortium delivered in partnership between four research-intensive universities, the University of Victoria, University of British Columbia, University of Northern British Columbia and Simon Fraser University. The organization was created to support climate research and to develop cutting-edge solutions to mitigate global warming and adapt to its unavoidable consequences (Government of BC, 2008).

In its early years, PICS built the organization's foundation and a network to deliver on its mandate, funding new academic research projects on a range of topics and providing opportunities for students. In the second half of its first decade, PICS turned its thematic and investment focus to the "Big Five" sources of greenhouse gasses and potential for decarbonization in the region. Like the LOP, the research approaches employed were consistent with convention at the time and focused on providing academic insight into policy options, assessment needs, and technical knowledge on particular topics and connecting with those that could benefit from this information. The organization also hosted regular public events and lectures on topics relating to climate change, which helped PICS and its network earn recognition for its climate expertize and a reputation for relevant and necessary thought-leadership. By the end of the first decade, PICS had supported 24 post-doctoral fellows, over 140 graduate researchers and the production of more than 120 journal articles and 100 policy briefs, white papers and specialist reports. Internally, communications staff synthesized knowledge, made it publicly available via websites and newsletters, and translated it into key outputs solicited by policymakers in the PICS network.

While improvements were continually being made, particularly in science communications, this period ended with a sense that the goals of promoting interdisciplinarity and impact beyond academia had not been fully realized. While funding supported rigorous climate research for academic ends and helped drive general awareness on climate themes, knowledge exchange with potential users remained limited, and PICS projects continued to be underpinned by a dominant logic of information-deficit rather than solution-orientation.

In late-2015 PICS welcomed a new leader who assembled a diverse taskforce to co-develop a new strategic plan for PICS' next 5 years. Involving members of government, academia, indigenous communities, and civil society, the plan development process pointed to ways that PICS could achieve greater influence and impact. It also highlighted the challenges of serving these different groups, including differences in values and interests. For instance, when one of the scientific reviewers cautioned that a stronger emphasis on knowledge mobilization could position PICS too closely to policy advocacy, another argued that the disproportionate emphasis on knowledge production and academic publications—to the detriment of investments in mobilization and translation—was holding PICS back. This second reviewer, an academic who works closely with practitioners, reinforced this argument by saying that the name of the organization is the Pacific Institute for Climate *Solutions*, not the Pacific Institute for Climate *Research*.

Instead of handing off research results to others with the implicit expectation that the knowledge produced would be mobilized for impact, the review proposed that PICS play a more hands-on role in future research projects (PICS, 2016). The organization adjusted its work to align more closely with the emerging global consensus around actionable research on climate solutions (Lemos et al., 2018; Meadow et al., 2015) and centered its activities around engagement with key climate solutions stakeholders beyond academia. The review also highlighted ways PICS could build internal capacity to deliver on these goals, including by redirecting and adding team capacity in boundary spanning and in-house climate solutions expertize. Partnerships were also seen as a key tool for improving dialog with potential knowledge users and understanding the context in which evidence could make a difference (Pidgeon and Fischoff, 2011; Wolf and Moser, 2011).

PICS leadership and staff explored a new Theory of Change and the PICS' Research Engagement model or "PICS way" emerged as a means of embedding collaboration and coproduction into all its work (PICS, 2017). By 2018, PICS had initiated new programs and began recruiting experts interested in working at the interface of research and practice. I (third author) joined as the first in this new group and was immediately involved in an effort to adapt the Pew Lenfest Ocean Program's impact framework for PICS and collaborative discussions with both Pew and the W.T. Grant Foundation. I came to PICS after working for another organization facilitating and funding academic-practitioner partnerships as a means of enhancing knowledge, cross-community learning and exchange, and ultimately, co-created sustainability outcomes.

All funded research is now conducted in hands-on partnerships between PICS as boundary spanner; researchers as lead knowledge agents, and practitioners or policymakers as users or what PICS calls "solution seekers." In-depth collaboration throughout the research process—from the delineation of the problem from research and practical perspectives to the mapping of stakeholders and pathways to impact—helps create a better "fit" between knowledge generation and intended use, while mobilizing partners (PICS, 2017). Collaboration also creates the conditions for a greater and ongoing focus on the two-way process of knowledge exchange and the ultimate goal of a new form of translated or transformed knowledge co-produced by the different partners (Hamann and Faccer, 2018; Carlile, 2004).

In these partnerships, at least half of the funding is devoted to the time of emerging researchers and students, with the remaining funds available for any additional costs to meet the objectives of the projects, including meetings, research activities, communications costs, or research materials. PICS provides boundary-spanning support to all funded projects through the regular involvement of one member of the PICS expert staff (including myself) as well as occasional support of PICS-employed communications and administrative professionals. For large flagship projects, a full-time staff member is hired to oversee the coproduction process and lead major aspects of boundary spanning.

In addition to the boundary-spanning models built into each research project, PICS develops longer-term relationships with agents of change, such as the ministry responsible for climate in the province, the private sector, or university administrations. In funded projects and strategic relationship development, PICS devotes staff time and maintains smaller budgets available for convenings and shorter-term developmental opportunities (e.g., pilots, needs assessments, or internships). PICS' Theme Partnership Program allows collaborators more time (4–5 years) and resources ($1 million) to address more complex research problems and with more diverse stakeholder communities. This allows research projects to plan and account, not only for shorter-term outcomes such as early-stage climate technologies, but also the enabling environment, for instance the investment industry, which enables these technologies to reach the market.

The "PICS way" or theoretical framework includes:

- External scholar and practitioner reviewers for project funding applications to ensure that theoretical and practical aims are both sufficiently well-defined and considered at the concept stage;
- Dedicated support for researchers and solution seekers in addressing review-identified needs and opportunities for the most promising projects;
- An embedded member of the PICS team into both smaller (2–3 year, small group) and larger (4–5 year, large group) research projects;
- An outline of non-scholarly and scholarly impacts, and pathways to achieving them at the project outset, as well as revisiting these intentions throughout the project;
- Encouraging all types of knowledge (academic, indigenous, practitioner, etc.) to be brought to bear on the project as it unfolds;
- Providing implementation support, including ensuring regular engagement such as monthly meetings with all partners;
- Facilitating project-led convenings aimed at facilitating extended awareness, engagement, and knowledge mobilization among potential decision-makers beyond the project team;
- Seeding and stewarding relationships with key decision-making partners (e.g., government departments, priority sectors) at an institutional (PICS) level;
- Working with academic and other funding institutions to improve researcher capacity and opportunities for impact;
- Ongoing support by PICS staff for project communications and outputs to inform stakeholders beyond project teams;
- Tracking and considering all types of impact throughout the project—from relational to scholarly.

Converging paths and the implications for field-building

Despite traveling along different paths to improve the usefulness and use of research evidence, we observed a set of common barriers that funders could address to improve and expand relational approaches. First, we discovered that relational approaches require a specialized skill set and expertise that don't easily fit traditional research or practice roles. While we each identified ways to fill those needs in our funding portfolios, we see a need to address these staffing and infrastructure issues on a wider scale. Second, while informed by research on research use, we need stronger theory and more robust empirical methods to yield credible and critical insight on how well relational approaches are faring and how to improve them. Third, relational

Table 1 Recommendations for Funders.

Recommendations	Benefits	Exemplars	References
Boundary spanning • Allocate resources for specific boundary-spanning functions and roles in grants and funded projects. • Build a workforce of boundary spanners by supporting training and a professional home • Provide capacity supports and tools for researchers to work more effectively with boundary spanners and partners • Recognize, reward, and encourage continued career development for boundary spanners	• Ensures essential boundary-spanning functions are supported • Increases availability of boundary spanners that are equipped with the necessary skills • Builds demand for boundary spanners • Improves the processes and effectiveness of relational research	Grant criteria developed by the Lenfest Ocean Program https://www.frontiersin.org/articles/10.3389/fmars.2021.809953/full Research-practice partnership resources from William T. Grant Foundation https://rpp.wtgrantfoundation.org/ Civic Science Fellows https://civicsciencefellows.org/ Transforming Evidence Network (TEN) https://www.pewtrusts.org/en/research-and-analysis/articles/2021/08/17/how-pew-is-using-stakeholder-networks-to-transform-evidence-use How Training Can Equip Research Teams to Increase Impact https://www.pewtrusts.org/en/research-and-analysis/articles/2022/02/07/how-training-can-equip-research-teams-to-increase-impact RPP Brokers Handbook: A Guide to Brokering in Education Research-Practice Partnerships https://nnerpp.rice.edu/rpp-brokers-handbook/	Pandya 2014; Hering 2015; Bernstein et al., 2017; Bednarek et al., 2018; Landrum et al., 2022; Penuel et al., 2015
Research on Research Use (RORU) • Support studies examining when, how, and under what conditions collaborative research is effective • Support rigorous methods to assess effectiveness, including independent evaluations, reliable and valid assessments, and longitudinal studies tracking trajectories of research use • Fund measurement studies of research use, including measurement development and validation work, adaptation of measures developed in one context for use in another, and large-scale reliability and validity analyses • Fund training institutes for researchers interested in studying collaborative research	• Enables funders to identify ways to improve the effectiveness of their work • Allows assessments of whether and how evidence was used in policy or practice • Advances the credibility of relational research • Trains researchers in the methods for conducting this type of research	Use of Research Evidence open-source repository of methods https://uremethods.org/ Turning Research into Action https://researchimpact.ca/ Studying the Use of Research Evidence: A Review of Methods http://wtgrantfoundation.org/studying-the-use-of-research-evidence-a-review-of-methods	Cvitanovic et al., 2017; Tseng, 2017; Lemos et al., 2018; Posner and Cvitanovic, 2019; Louder et al., 2020; Henrick et al., 2017
Reshaping Academic Incentives • Support faculty to engage in relational research through course releases, training, project assistance • Fund community-engaged projects, including the production of non-academic outputs and engagement • Support student fellowships and stipends that provide on-the-job training in partnered research • Experiment with alternative faculty tracks designed for partnership-engaged faculty, such as research-practice professorships that would receive the same rights and benefits as tenure-track faculty • Establish centers that bring faculty across campus together with partners for collaborative research	• Minimizes faculty risk in tenure and promotion decisions • Allows students to learn skills and gain experience in partnered research and to prepare for careers beyond the academy • Retains faculty who want to do research with social impact • Increases university's impact on communities • Makes it easier for policy, practice, and community partners to find researchers	William T. Grant Foundation Institutional Challenge Grant http://wtgrantfoundation.org/grants/institutional-challenge-grant University of British Columbia's Public Scholars Initiative https://www.grad.ubc.ca/psi#:~:text=UBC's%20Public%20Scholars%20Initiative%20(PSI,forms%20of%20scholarship%20in%20their Institute for Integrated Energy Systems https://www.uvic.ca/research/centres/iesvic/index.php University of Maine Mitchell Center for Sustainability Solutions https://umaine.edu/mitchellcenter/ Carnegie Corporation's Bridging the Gap https://bridgingthegapproject.org/	Bogenschneider and Corbett, 2021; Hamann and Faccer, 2018; Hart and Silka, 2020; Gamoran, 2018; Tseng and Gamoran, 2017

research is not generally fostered in universities, and we saw an important opportunity for funders to engage academia in reshaping its norms and incentive systems to support relational research.

We discuss each of these needs below and offer recommendations for our funder colleagues (see Table 1). Some recommendations can be addressed by individual funders, but others will require funders to come together to share learning, align funding, and collaborate. Thus our fourth recommendation is funder coordination across policy sectors and countries.

Boundary spanner capacity. We found that relational approaches require specialized expertise and practical collaboration experience. Facilitating relational approaches benefits from knowledge of multiple research disciplines and policy issues in order to bring partners together around a common goal and to manage diverse needs and interests, as well as skills in facilitation, negotiation, and conflict resolution (see Cairney, 2016; Bernstein et al., 2017; Wentworth et al., 2021). Relational approaches also require the ability to identify and navigate a complex web of interests, perspectives, needs, and values (Penuel et al., 2015; Hamann and Faccer, 2018). This intensive and time-consuming work has led to the rise of boundary spanners, sometimes called expert intermediaries, who have the skills and time to "enabl[e] exchange between the production and use of knowledge to support evidence-informed decision-making in a specific context" (Bednarek et al., 2018; Cash et al., 2003; Guston, 2001).

Each of our funding programs has recognized the value of boundary spanners. Indeed, we have found that relational research is constrained by lack of funding and capacity. Thus, we have each sought to build the capacity and resources to support these specialized roles. For Lenfest and PICS, building capacity has meant hiring staff that possess the skills and expertise to understand the research and policy landscape and to support relationships between research grantees, their policy and practice partners, and other stakeholders. As a grantmaking foundation, William T. Grant supports boundary-spanning within partnership grants.

Despite their value, boundary spanners are not broadly supported yet. There are various barriers to overcome. First, their work tends to be behind-the-scenes bridging activities that are "invisible" to the researchers, decision-makers and others with whom they work (Meagher and Lyall, 2013; Farrell et al., 2019). Second, boundary spanners are not yet common roles, nor are there consistent job titles, institutional homes, or training programs for them, making it challenging to hire staff for these roles even when there is a recognized need (Neal et al., 2020). Third, knowledge about effective boundary-spanning practice is scattered across sectors, and there are key knowledge gaps, such as defining ethical practice and dealing with power relations between funders and non-funders (York et al., 2020). These challenges will require funders and others to support boundary spanners more explicitly, within funded projects and funding organizations as well as through training and professionalization (see Table 1).

Research on relational models. Our journeys also reveal the need for rigorous studies of whether, how, and under what conditions relational approaches are successful (Bednarek et al., 2016; Tseng, 2017). As research funders it made sense to turn a rigorous empirical gaze on our own work: both to evaluate our initiatives and to inform our future work. The Lenfest Ocean Program faced a dearth of relevant scholarship that could guide their attempts to evolve and scale their work, so they supported research to synthesize available frameworks and produce case study analyses (Cvitanovic et al., 2022; Latchford and Fox, 2013; Louder et al., 2020). The William T. Grant Foundation, in contrast, began with an interest in building stronger theory and empirical evidence about ways to improve the use and usefulness of research, and then homed in on partnerships as promising initiatives to study (Tseng, 2012; Tseng, 2017). The foundation's more academic orientation led us to value theory as a way to codify conjectures about what it takes to improve research use, which could then be empirically supported or refuted, thereby enhancing theory and empirical knowledge on improving research use.

Despite different initial goals for our research investments, we recognized the need to clarify what "effectiveness" looks like in boundary spanning and RPPs (see Table 1). Two popular frameworks—one for assessing boundary spanning in environmental science (Posner and Cvitanovic, 2019) and another for RPPs in education research (Henrick et al., 2017)—suggest that effectiveness can be judged by whether these collaborations achieve: (1) trusting relationships and iterative knowledge exchange between researchers and decision-makers, (2) the use of research in decision-making, (3) strengthened capacity of decision-makers to use research, and (4) strengthened capacity of researchers to collaborate with decision-makers. Henrick et al. (2017) also propose a fifth dimension that is implicit in Posner and Cvitanovic's (2019) framework: whether partnerships produce more useful research.

We also agreed that conceptual frameworks for *what* to measure must be matched with robust methods for *how* to measure them. Rigorous methods are important because prior assessments of research impact on policy have often relied on easy-to-collect data such as the number of website hits, downloads, or citations—data that yield little insight into whether the research was used in decision-making or whether it even changed anyone's thinking. More rigorous methods for studying relational approaches require more time and resources for data collection and analysis, but they offer stronger evidence of whether and how research actually reached decision-makers and, if so, how the research was used (Gitomer and Crouse, 2019; Posner and Cvitanovic, 2019). For example, funders might consider social network analysis to assess how research flows between individuals and organizations to reach policy actors (Cvitanovic et al., 2015; Finnigan et al., 2013). Interviews and surveys provide unique insight into decision-makers' perceptions of their collaborations and the usefulness of the research produced. Observation, discourse, and document analyses of data sources such as policy documents, meeting proceedings, or recordings of legislative sessions can provide evidence of how research was framed and used in policy deliberations in situ.

Transforming academia. Our journeys also converged on a shared need to expand academic incentives and norms. An evidence ecosystem in which academics can routinely and successfully partner with policymakers and communities will require significant change in universities (Gamoran, 2018). In our current system, academic culture and incentives too often insulate faculty within ivory towers (Bogenschneider and Corbett, 2021; Lam, 2010; Hart and Silka, 2020). Faculty are rewarded for their influence on academia by university tenure and promotion systems that privilege academic publications and citations by other academics, not for the research's influence on policymakers, communities, or the broader public (Tseng and Gamoran, 2017). Academic culture also holds policy-relevant research with less esteem, often casting it as less intellectually rigorous or as a community service (rather than scholarly) contribution. Moreover, graduate students and faculty generally receive little mentoring, guidance, and skill-building opportunities for conducting partnership-oriented research (Bednarek et al., 2018).

Funders can raise the visibility of these issues, provide incentives for university change, and support faculty and university leaders who are working to transform their institutions (see Table 1). For example, the Carnegie Corporation and the William T. Grant Foundation's staff have written essays arguing that "the future of higher education is social impact" and calling on universities to recognize the policy impact of research in tenure and promotion decisions (Del Rosso 2015; Gamoran, 2018, Tseng and Gamoran, 2017). From our relatively protected position as funders, we are in a safe position to argue that universities must change or be left behind as antiquated, socially irrelevant institutions.

Funders can also use their grantmaking to incentivize academic transformation. For example, the Carnegie Corporation of New York's *Rigor and Relevance Initiative* gives special funding consideration to universities that "count" policy-relevant activities in promotion and tenure reviews and that stop tenure clocks for "periods of immersion in policy work." The *Institutional Challenge Grant* (supported by the William T. Grant, Doris Duke and Spencer Foundations, and American Institutes for Research) program encourages universities to reward faculty's partnerships with policymakers and practitioners. In one early success, the University of California, Berkeley's leadership issued new guidelines that raised the visibility of community-engaged research in the faculty evaluation process and provided "specific guidance to deans, department chairs, and faculty about how to credit non-peer-reviewed products of community-engaged scholarship as *scholarship* rather than as service" (Ozer, 2021). Notably, the grant review process advanced this cause when reviewers asked for "evidence that Berkeley is genuinely committed to make changes in faculty evaluation." That request emboldened Ozer and her colleagues, the university's Associate Vice Chancellor for Research, Deans from three colleges, and the Chairs of the Academic Senate and the Budget Committee to detail their commitments to institutional change. Within 1 week, the powerful Budget Committee Chair wrote a memo that would become the adopted guidelines.

Coordinating funders. Our experiences also suggest that funders can harness their collective resources, expertise, and influence to address these and other challenges to research production and use (Oliver and Boaz, 2019; Arnott et al., 2020). Without collective action, we and our research, policy, and community partners will continually work against the grain of dominant orthodoxy. We can have greater collective influence and set our sights on strengthening the evidence ecosystem so that it becomes normative for researchers to collaborate with governments and communities to solve pressing social problems and universities have incentive and support systems to bolster those efforts.

With these ideas in mind, Pew and William T. Grant have joined forces with other funders to establish the Transforming Evidence Funders Network (TEFN) (Bednarek and Tseng, 2022). The network unites public and private funders across the world, including PICS, to *learn* from each other, *align* our efforts, and *grow* a field focused on improving our evidence ecosystem. Just as the three of us have learned from each other, the network provides a forum for funders to transparently share their funding practices and identify ways to improve them. Our interactions break down the silos that have walled us off from learning from and with each other across policy areas, disciplines, and countries (Oliver and Boaz, 2019). Already, TEFN participants have begun identifying promising grantmaking practices to support collaborative research, including shared expectations about what constitutes strong partnership proposals.

We also hope our investments can complement or supplement each other's efforts to meet the needs we detail in this paper, while avoiding duplicative work and wheel reinventions. One promising step is the launch of our sister network, the Transforming Evidence Network. While TEFN brings together funders, this broader community of researchers, policymakers, intermediaries, funders, and other stakeholders across countries and policy sectors will enable all of us to learn from each other, build upon each other's work, and expand the field's capacity to produce and use research evidence to meet societal needs.

In the longer term, we hope that funders can jointly fund larger scale projects than any of us could support alone. These might include establishing an international network of research on research use centers, support for institutional transformations across a university system, development of fair and robust systems for assessing the social impact of research, or a workforce development initiative to scale and professionalize the practice of boundary spanning.

Conclusion

Despite working in vastly disparate sectors, we have found remarkable similarity in our journeys. In our individual funding efforts, we adopted relational models because they provided better ways for our research investments to inform policy and practice. Dissatisfied with linear models, we invested in field-building activities for research-practice partnerships in education (William T. Grant) and created the infrastructure within our funding programs to enable research grantees to undertake relational research (Lenfest and PICS). Moreover, as we have engaged with a larger group of funders, we have observed an even broader convergence. Funders across sectors (healthcare, international development, education, environment, sustainability, foreign policy), funding strategies (operating vs. grantmaking foundations, project vs. operating grants), and geography (US, UK, Canada, Germany, South Africa) are moving past dissemination to support relational approaches to research production and use.

As funders, we now face a critical opportunity: to further expand our learning together, to align our efforts, and to grow the field in order to achieve the impact we all seek. To meet our ambitious goals, we'll need to increase our transparency about our funding strategies, be willing to invest in rigorous research about whether our efforts are successful, and consider our own roles in the evidence ecosystem. We must be willing to broaden our understanding of research impact (Wickert et al., 2021), embrace a new dynamic between science and society (Gamoran, 2018; Sarewitz, 2009; Howard-Grenville, 2021), and recognize the nuances and challenges facing those who do this work (Boaz et al., 2021).

Having found fellow travelers on our journey, we are optimistic that our growing group of funders can tackle the challenges detailed in this paper. We welcome additional funder colleagues to join us. We also welcome researchers and other stakeholders to help us critically reflect on our work, so that we can confront our own assumptions and follies, follow the evidence, and zero in on the critical levers for progress. If we seize the opportunity before us, funders can be better partners to researchers, policymakers, and communities in catalyzing a stronger evidence ecosystem where research is routinely useful to and used in policy and practice to improve society.

Data availability

All data analyzed are included in the paper.

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Competing interests

The authors declare no competing interests

Ethical approval

This paper does not involve human participants.

Informed consent

This paper does not involve human participants.

Additional information

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