

The big global issues: Applied linguists and transdisciplinarity beyond SLA

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Abstract

In an age of persistent existential crises, governments and wider society are demanding from academia tangible contributions towards tackling the ‘big’ contemporary issues, including climate change, demographic collapse, social instability, and the risks of escalating global conflict. Since all such problems involve a linguistic dimension, applied linguists are increasingly repurposing their research skills to achieve impact in such domains, far beyond the traditional scope of their core discipline. This paper discusses doing so within the distinctive framework of the Zurich approach to transdisciplinarity. Core features of the Zurich approach are sketched, and a case is made for applied linguists working alongside scientists, engineers, lawyers and others in transdisciplinary teams focused on wicked problems.

Introduction

The evocative label ‘crisis society’ identifies a persistent state of distress in the modern world – ranging from war, to pandemics, ecological collapse, and global burning – while also conceding that no longer do the major threats to humanity arise from external forces, but as the predictable outcome of the way society currently operates (Innerarity, 2022). In response, and reflecting an intensifying public appetite for change (e.g., Bell et al., 2021), researchers across the disciplinary spectrum are rallying to the call. On issues such as climate change, legal scholars are involved in suing corporations and governments, engineers are creating low-emission transportation, and biologists are developing stress-resistant crops. But what of applied linguists (ALs)?

As a field, applied linguistics (AL) has a spirited political consciousness, a heed to social justice, and a keen emphasis on crossing disciplinary boundaries to focus on real-world problems (e.g. Friedrich, 2019). Ecolinguistics, for instance, encompasses a thriving and diverse body of work, including critiques of how nature is represented in discourse and exposés of practices such as corporate greenwashing (Penz & Fill, 2022), while elsewhere seeking to transform the stories that shape human behaviour (Stibbe, 2021). The recently developed posthumanist approach to AL rejects the hubris of human exceptionalism, challenging the veneration of human cognition, knowledge and language, while advocating more nuanced views of topics such as communication and assumptions of mutual understanding (Pennycook, 2018). The fledgling areas of peace linguistics (Friedrich, 2019) and TESOL peace studies (Birch, 2022; Kruger, 2012; Nelson & Appleby, 2015) include a focus on how language contributes to inter-governmental harmony. Elsewhere, researchers have explored media discourses of homelessness (Gómez-Jiménez & Bartley, 2023), climate change (Gillings & Dayrell, 2023), and nuclear proliferation (MacDonald et al., 2015). Nevertheless, despite the many promising threads of this work, colleagues have confided a sense of despondency at what they perceive as the relative impotency of applied linguistics when it comes to achieving real-world impact. Despite the field

uncovering the communicative strategies of conspiracists, big oil, and ethno-nationalists, many ALs perceive their work as being *preliminary* to some unspecified further action – *real* action – to be led by industry, activists, or scholars in other fields.

There is less reticence elsewhere in the humanities, which according to one study, collectively secured more global public research funding for climate change research (18% of the total) from 1990-2020 than did the natural and physical sciences (16%), and trailed only the social sciences (27%) and engineering and technology (28%) (AbdulRafiu et al., 2022). Three-quarters of successful proposals were collaborations across disciplines. From the humanities, communication studies was particularly prominent, but so too were disciplines such as English and literature, philosophy, and dance and performing arts; language and linguistics evidently received too little to warrant reporting as a category.

Seemingly overlooked by many applied linguists are opportunities for a more outwardly-focused orientation, utilizing their skills to engage with global issues far beyond their traditional scope of practice. A crucial insight is recognizing the near impossibility of real-world impact when findings are solely or mainly communicated to other ALs. Research becomes transformative when it transcends our field to engage with other disciplines, professions, and stakeholders, including indigenous groups, minority communities, industry, and workers. With this in mind, the framework promoted in this paper is what has become known as the Zurich approach to *transdisciplinary research* (TDR) (Pohl & Hadorn, 2007). In the sections that follow, TDR is distinguished from interdisciplinarity and similar terms, then the case for the Zurich approach to TDR is briefly stated, before examples are presented of how applied linguists can contribute to the big issues.

Disciplines and multi- inter-, cross-, and transdisciplinarity

Surging interest in transdisciplinarity has led to a plurality of approaches which require clear differentiation. All too often, however, definitions are vague, ambiguous or absent, or the terminology is used in loose or conflicting ways (Hesjedal & Åm, 2023). In this section, transdisciplinarity is located firstly within a broader context of academic disciplines and then distinguished from other forms of cross-disciplinarity.

Though often taken for granted, the modern notion of academic disciplines – distinct from the training required for professions such as medicine and law – is a relatively recent development of the university system (Repko et al., 2017). Disciplines are recognized as having distinctive objects of inquiry, and as being underpinned by differing theoretical bases and methodological approaches. Each typically references a canon of key work and its practitioners possess a shared set of understandings about matters such as research quality, dissemination, authority and ethics. Disciplines vary according to the cognitive processes they most emphasize (e.g. conceptual, analytical, mathematical) and these in turn shape a particular disciplinary perspective (Donald, 2009). A notable trend is that the immense complexity of our world leads researchers to focus ever more narrowly and to deploy increasingly specialized skillsets. One outcome has been the proliferation of new subdisciplines and specializations, with the standard bibliometric system now including 174 mutually exclusive subfields¹ (<https://www.science-metrix.com>).

While this progressive narrowing of disciplinary scope has led to extraordinary successes, it also leads to a fragmentation of knowledge and potentially myopic views of how to tackle complex problems (Klein, 1995). This may be exasperated in times of trouble and uncertainty by a tendency to

¹ Extraordinarily, Nicolescu has cited data suggesting there are over 8000 disciplines (Volckmann, 2007).

retreat even further into discipline boundaries and to adopt ever stricter gatekeeping roles that limit external perspectives. To counter these concerns, various approaches have emerged to facilitate work between disciplines, generating a proliferation of prefixes, including cross-, pluri-, de-, in-, anti-, meta-, post- and trans-disciplinarity (Prior et al., 2018).

At least among TDR researchers, the term *crossdisciplinarity* is used as an umbrella label for any work that crosses disciplinary boundaries, under which a useful tri-partite classification has emerged between multi-, inter- and transdisciplinarity (Mobjörk, 2010). Investigations are *multidisciplinary* when they involve the coordinated use of two or more disciplinary approaches that are juxtaposed rather than integrated (Klein, 2021). Nicolescu (2008) offers the example of studying the work of Giotto, a painter from the Late Middle Ages, where the topic sits firmly within art history but can be enriched by geometry, religion, and European political history. Such work will aim to make a scholarly contribution to the field of art history but merely borrow from geometry and religion.

In contrast, *interdisciplinarity* involves integrating disciplinary tools and concepts, for example by blending and linking rather than mere juxtaposing (Klein, 2010). An example is using the methods and findings of conversation analysis (developed initially within the ethnomethodological tradition of sociology) to address questions of second language teaching and learning (e.g. Wong & Waring, 2021). In the case of an interdisciplinary collaboration, the research team develops a common framework and a joint understanding of the problem, with members' disciplinary knowledge intended to mutually shape each other's perspectives. Most often, interdisciplinary collaborations involve an overlapping area of disciplinary interest, such as when linguists work with psychologists or computer scientists on problems of language.

Transdisciplinarity is altogether different. In a rather abstract yet widely quoted definition, Nicolescu (2008, p. 2) states the following:

“As the prefix ‘trans’ indicates, transdisciplinarity concerns that which is at once between the disciplines, across the different disciplines, and beyond all disciplines. Its goal is the understanding of the present world, of which one of the imperatives is the unity of knowledge.”

Most transparent in this definition is that TDR is conceived as a radical reaction to the fracturing and hyper-specialization of the disciplines. It aims for multiple, fully-integrated perspectives and does not limit itself to knowledge produced by or held within academia. It does not seek to deny the legitimacy of disciplinary knowledge but insists that even a full suite of disciplines can only ever provide patchy and inconsistent coverage of the full spectrum of current and potential knowledge. It therefore seeks to transgress disciplinary boundaries to identify connections, illuminate blind spots and transcend narrow perspectives on reality. A transdisciplinary approach is usefully adopted when pressing real-world problems have proven stubbornly resistant to disciplinary approaches, including multidisciplinary approaches to collaboration.

Approaches to transdisciplinarity

Many applied linguists will be familiar with transdisciplinarity primarily through a seminal paper by The Douglas Fir Group (DFG) (2016) and the numerous works inspired by it. Bibliometric analysis confirms the DFG paper as one of the most highly cited applied linguistics works of the past decade (Zhang, 2019). A collaboration between 15 eminent applied linguists, it advocates for a rich, holistic, and socially-oriented view of second language learning and teaching to take seriously the complexity and diversity of linguistic contexts and experiences. The DFG approach to transdisciplinarity is consistent with the view outlined above, and finds numerous parallels in other fields, but follows a

different trajectory from the Zurich approach outlined below. The difference can be encapsulated in two questions: which boundaries are being transcended and what is the nature of the project's aim?

In relation to the first, a distinction can be drawn between approaches to TDR which, like the DFG framework, aim "to transcend the concept of discipline *within* academia" and those like the Zurich approach which aim to transcend "academia in general as the exclusive source of legitimate knowledge" (Perrin & Kramsch, 2018, p. 2). Specifically, the DFG adopt an explicit disciplinary-academic framing, in which they aim to integrate at all levels the "social, sociocultural, sociocognitive, sociomaterial, ecosocial, ideological, and emotional dimensions" of language learning and use (The Douglas Fir Group, 2016, p. 24). Conversely, an example of transcending academia is described by Wybrant et al. (2023, July 7) in their project to support the participation of resettled refugees in second language education. The project engaged researchers, refugees, teachers, volunteers, policymakers, and interpreters in developing and using a co-design toolkit, which was used to explore ways of improving the refugee experience.

In relation to the second distinction, the DFG collaboration primarily involves SLA researchers developing a framework to improve the quality of SLA research and theory. The team's diverse theoretical allegiances (e.g. sociocultural theory, usage-based approaches) and the themes that emerge from their resulting framework provide a starting point for "a new, rethought SLA" (2016, p. 39). Theirs is a reformist approach to accommodating diverging traditions within applied linguistics. It is, then, focused on "dealing with wicked problems *within our field*" (Hiver et al., 2022, emphasis added); in contrast, and as illustrated in later sections, the transdisciplinarity advocated in this paper involves ALs applying their tools to wicked problems *beyond our field*.

Outside applied linguistics, there are two main approaches to transdisciplinarity (McGregor, 2015). The first is based on the work of the Romanian quantum physicist Basarab Nicolescu, who recognized an inherent problem in the foundational scientific principle of "a total separation between the knowing subject and reality", whereby reality "was assumed to be completely independent from the subject who observed it" (Nicolescu, 2007b, p. 37). While this separation was initially emancipatory in freeing science from the restrictions of "theology, philosophy and culture", he argued that it also created conditions that now threaten the "self-destruction of our species" (2007b, p. 37). Nicolescu's (e.g. 2007b; 2014) programme involves a methodology for overcoming the separation between subject and reality through a set of axioms for generating new knowledge. These are:

- i. *The ontological axiom*, recognizing different levels of coexisting reality.
- ii. *The logical axiom*, recognizing an Included Middle between these levels of reality, where apparent contradictions can be reconciled.
- iii. *The epistemological axiom*, recognizing levels of reality as complex and interdependent.

As these axioms suggest, Nicolescu's mission is ambitious and far-reaching. It is concerned, in the first instance, with reforming the philosophical foundations of research and knowledge generation. Nicolescu (2007a) characterizes it as a *theoretical transdisciplinarity* as opposed to the data-oriented *phenomenological transdisciplinary* discussed below. Notable for present purposes is that it is primarily a *methodology* for generating new knowledge (i.e. a high-level set of theoretical underpinnings for research) rather than the *methods* (i.e. steps in data collection, analysis, and implementation) for conducting applied research (McGregor, 2015, 2018).

This contrasts with the second main approach to transdisciplinarity, the Zurich approach, which is fundamentally committed to problem-solving and offers a sequence of practical steps and suggested methods for conducting TDR. For present purposes three characteristics illustrate the distinctive nature of the Zurich approach. Firstly, it focuses on and takes as its starting point real-world problems rather than knowledge and theoretical issues. It thus addresses concerns of a "mismatch between knowledge production in academia and knowledge requests for solving societal problems"

(Hoffmann-Riem et al., 2008, p. 3). Secondly, and relatedly, it commits to prioritizing transformative impact not in the academic world but in the physical and social world. The measure of success is much less about contributions to theory, and much more about practical outcomes. Thirdly, it demands collaborating *across* the disciplines and *beyond* the disciplines, including working with stakeholder groups entirely outside the academy. Inherent to this is a commitment to the democratization of knowledge. This recognizes that knowledge is distributed across human and nonhuman populations, yet social capital largely determines which perspectives are represented in decision-making. While it is right for academia to be stringent in determining what counts as evidence and justifiable belief, TDR practitioners advocate bringing all insights to bear and honoring credible data wherever it arises. Just as importantly, the Zurich approach recognizes that the outcomes of applied research are compromised when there is “weak participation from the end users” (Neuhauser, 2018, p. 28). Too often, rather than “intense participation”, end users are relegated to participating in focus groups and post hoc feedback, inducing disconnection and alienation from the project (Neuhauser, 2018, p. 28).

As already signaled, it is the Zurich approach to transdisciplinarity that the present paper advocates as an alternative option for applied linguists. In doing so, no objection to the DFG framework is implied. Rather, the intention is to raise awareness of a transdisciplinarity that is only tangentially concerned with SLA and other areas of focus in AL, aligning instead with much of what is happening in the sustainability movement (e.g. Cockburn, 2022). It is worth remarking that although connections have been drawn between the Zurich and DFG approaches (e.g. Hiver et al., 2022), for the most part they are readily distinguishable by objective, approach, and guiding literature. Before discussing the procedures of the Zurich approach, the following section identifies the ‘when’ and ‘why’.

Tackling wicked problems

The Zurich approach to transdisciplinarity has emerged as a major approach to tackling what have become known as *wicked problems*, highly complex social and environmental problems that defy the sequential procedures of conventional problem-solving (Brown et al., 2010). First conceived by Rittel and Webber (1973), wicked problems contrast with the *tame problems* that classical science and engineering have proved so adept at addressing. While tame problems can be modelled in comprehensive detail, the complexity of wicked problems thwarts adequate description, such that even the parameters of the issue are difficult to identify and obvious starting points remain elusive. Consequently, the well-established procedures of project planning often become both ineffectual and a source of unintended consequences. More generally, wicked problems can rarely be addressed by teams working in disciplinary silos. They require a more expansive, creative research approach which harnesses the strengths of the disciplines alongside an openness to other sources of knowledge, a wider scope of imagination, new ways of collaboration, and a focus on achieving positive impact rather than conclusive solutions (Brown et al., 2010).

A timely illustration of the tame and wicked distinction is in the recent experience of Covid-19. The development of mRNA vaccines – an enormously complicated endeavour involving contributions from hundreds of scientists over several decades (Dolgin, 2021) – nevertheless represented a tame problem. Tame does not imply ‘easy’ but rather that the overall solution can be charted over a sequence of discrete steps. A genuine wicked problem was how to react in terms of wider public policy through 2020-2021, given the vast array of considerations ranging from matters of health, psychological wellbeing, politics, economics, supply chains, child development, personal liberties, and education. Any suite of policy decisions and any course of (in)action would inevitably have had

ripple effects largely immeasurable and impossible to control or reverse. Such is the nature of wicked problems.

In 2020, Covid-19 was a chaotic, rapidly unfolding catastrophe requiring decisive actions, largely overseen by government. When chaos creates tragedy, it may be necessary to establish order by imposing (overly) simplistic rules (van der Walt, 2019, August). However, when crises unfold more gradually, such as demographic collapse and biodiversity loss, there are opportunities for wider, more innovative and considered approaches. An initial question is whose input should be valued? For demographic collapse, health professionals, economists and engineers will play crucial roles, as epidemiologists and biochemical engineers did during the pandemic. Like all scholars, however, they will have been trained in a particular scope of practice that necessarily omits other considerations and perspectives. Among academics and their professional peers, experience may be required in sociology, psychology, law, politics, IT, education, counselling, accounting, finance, public relations, supply chain management, and others. Voices from outside academic and professional spheres will also be required, such as those of indigenous groups, migrant communities, small businesses, urban and rural groups, trade unions, and primary industries. Proxies may be required to represent future generations and non-human interests. Since addressing any wicked problem ultimately requires broad cooperation and harnessing the will of disparate interest groups, effective TDR is deeply entwined with language and communication, including the need to enlist societal support through building consensus about problems and ideas, transforming discourses, and coordinating complex actions. For these reasons, there is always a potential role for applied linguists. The Zurich approach provides a framework for bringing together diverse expertise and interests (e.g. Klein et al., 2001).

The Zurich approach as a procedural framework

Unlike the Nicolescuian tradition, the Zurich approach is not tied to any specific research methodologies. Rather, it offers a procedural framework for research involving three main recursive stages, as represented in Figure one. Aspects of this are only briefly summarized below as thorough guidelines are readily accessible, presented in essence in an Open Access e-book (Pohl & Hadorn, 2007) and in greater depth alongside illustrative case studies in a companion handbook (Hadorn et al., 2008).

[Figure one goes near here]

The first stage is labelled 'problem identification and structuring' and represents an initial grappling with the issue. Thinking tools are used to develop a preliminary understanding of the problem and to sketch an initial map of relevant actors and disciplines. This involves a recursive process of examining, contextualizing, framing and structuring the issue (Hadorn et al., 2010). The essential objective is to simplify the problem and simplify the goal (Pohl & Hadorn, 2007). For instance, if the starting point is 'rising sea-levels threaten the community', there is a need for this to be recast in a way that presents a feasible objective, such as 'how can we mitigate the threats to this community posed by a progressive sea level rise of 0.6m by 2100?' This overarching question will be refined as a series of sub-questions. Once reframed in this way, clearer decision-making is possible about the expertise required on the team and other forms of stakeholder input.

As the project evolves, the guiding question is iteratively re-examined as new information arises. For instance, perhaps relevant data becomes available about plate tectonics, with uplift or subsidence mitigating or exasperating the situation as originally described. Information may be generated about costs, schedules, further risks, other scenarios and alternative strategies. The guiding question is also re-examined through the process of establishing bridges between the worlds of academia and the

'life-world' of stakeholders and their contexts. Crucial information could be uncovered about community values, needs and capacities. There may come a point where, for instance, the team agrees that a strategy of mitigation is unsustainable, at which point the guiding question may be better reframed, such as 'how can our community plan a successful managed retreat?'

In the second phase, 'problem analysis', research is undertaken. Within the overarching problem, sub-problems are identified, and it is often the case that these are tackled mainly by subgroups who move to a disciplinary or multidisciplinary footing. This occurs, for instance, when a legal team focuses on the regulatory framework while engineers and designers collaborate on the technological intervention. They do so, however, with a view to returning to an integrated view and further stages of transdisciplinary collaboration. Pohl and Hadorn (2007) discuss various models of collaboration and modes of integration. It is worth re-emphasizing that in the Zurich approach, hard science is always involved but so too are qualitative and values-based data collection and analysis, including a social, human dimension that will often be relevant to applied linguistics expertise.

In the third phase, 'bringing results to fruition', impact on the wicked problem is made tangible through means such as use, implementation, or dissemination (Pohl & Hadorn, 2007, p. 60). Given the nature of wicked problems, this is neither the one-off delivery of an innovation nor a final stage of the project. Rather, like action research, it is a recursive process of developing research-informed interventions and understandings and then observing their efficacy, reception, side effects and ramifications. These observations become the data to inform further project development. Importantly, the nature of wicked problems entails the impossibility of a final solution since any course of action generates other problems. Accordingly, the appropriate goal is not a once-and-for-all solution but "the best that can be done at the time" (Brown et al., 2010, p. 4).

Contributing as an applied linguist

What exactly might applied linguists bring to transdisciplinary teams? TDR seeks to synthesize contributions of the hard sciences and technology with expert understandings of humanity and sociality. Within the latter, the distinctive contribution of AL is to offer a research-informed perspective on the role of language and communication in human affairs.

Language-based issues are often underappreciated or inexpertly handled by academics from other fields. Researchers from the physical sciences, technology, engineering and mathematics (STEM) often bring to their work the "naive perception that 'language just happens'" (Friedrich, 2019, p. 123), while consciously attending to language only at the dissemination phase (Pelikan, 2019). There is little appreciation of how discourse constitutes social action nor how it shapes perception via presupposition, implication and metaphor, nor how interactional practices and discourses instantiate and reinforce domination, ideologies and worldviews. For this reason, while specific disciplinary representation cannot be predefined (Wiesmann et al., 2008), exemplary TDR demands contributions from the humanities or social sciences, and in some cases there is a clear argument for including AL expertise. This section illustrates a few examples, beginning with the most generalizable skills of the wider arts and social sciences and progressing to more specialized AL skillsets.

Among the most generically applicable skills and knowledge from the wider humanities and social sciences may be those suited to stakeholder engagement. TDR practitioners have been critical of cynical, technocratic appeals to 'participation' that seek to quash dissent; they instead advocate for a vigorous and intensive participation (Elzinger, 2008). While this takes many forms, it typically involves an early phase of open listening and the collation of views among core stakeholders, before views from a wider stakeholder body are canvassed in interviews, meetings and surveys. While

commonplace in the social sciences, interviews may be conducted ineptly and interpreted superficially by STEM experts and other collaborators. Skilled interviewers plan and conduct interviews with cognizance of power imbalances, the impact of framing devices, leading questions, backchannelling behaviour, body language, seating arrangements, audio vs video recording, and environmental factors (e.g. Kvale, 1996), and they are keenly aware of the layer of interpretation created during transcription (e.g. Jenks, 2011), and of the complexities and variable requirements for analyzing interview data (Miles et al., 2014). Among applied linguists who have developed these skills, some will have honed more specific expertise which may, for example, be relevant to engaging linguistically diverse migrant communities, such as where translation, intercultural communication, and second language use are involved.

Also found across the wider humanities and social sciences is the notion of *discourses*. Following Stibbe (2021), discourses are standardized messages about the world that are embedded in metaphors, images, vocabulary and grammar. To a considerable extent, wicked problems are often exasperated by destructive discourses. Notably, for instance, despite virtual unanimity among climate scientists, efforts to address global warming are hamstrung by the discourse of ‘an unsettled scientific consensus’. This was largely manufactured by conservative think tanks (Dunlap & Jacques, 2013; Oreskes & Conway, 2010) and underwrites the current politics of inaction. While such discourses may be usefully explored from various disciplinary perspectives, ALs and other language specialists may bring a distinctive lens to their analyses of how messages are constructed and communicated.

For instance, linguists have investigated the techniques of persuasion adopted by the think tanks, highlighting their greater assertiveness compared to the caution expressed by scientific sources (Medimorec & Pennycook, 2015). ALs might also contribute to reshaping discourses as they are instantiated in oral interaction. For instance, elsewhere, in a study of mixed-nationality ESL classrooms, Yaghi and Ryan (2022) explored how Islamophobic discourses manifested not only in the content of what was said, but in certain interactional practices, including interaction avoidance, broaching private and taboo topics, questioning the credibility of responses, provocations cloaked in the plausible deniability of ‘just joking’, and patterns of persistent questioning that constituted prying and interrogation. In identifying such practices, counter strategies can be developed for addressing the destructive discourses within stakeholder groups circulating via ordinary conversation.

For another approach to public discourse, consider the scenario of a TDR team developing a community’s pandemic preparedness. Response to the COVID-19 pandemic was severely compromised by the spread of misinformation and disinformation (Ferreira Caceres et al., 2022), which impacted uptake of vaccination opportunities, compliance with public health measures, and fueling public disorder events. Countering misinformation will thus become a key consideration in future preparedness and is likely to require an understanding of the appeal and communication strategies of anti-science and anti-government messaging. This could be usefully informed by any of several approaches to Critical Discourse Analysis (CDA), including the frameworks of Fairclough (2010), van Dijk (2015), van Leeuwen (2008), and Wodak (2001). For instance, Wodak’s (2001) Discourse-Historical Approach contextualizes the microanalysis of texts within macro- and meso-levels of social analysis, and has already been used to reveal the strategies employed by the American Alt-Right to politicize the COVID-19 pandemic (Koca-Helvaci, 2022). These and other CDA-informed perspectives could contribute to a team’s external communication plan by revealing the underlying beliefs and messages circulating within stakeholder groups that create impediments to collaboration and action.

As argued elsewhere (Pelikan, 2019; Perrin & Kleinberger, 2017; Zinsstag et al., 2022), the skills of applied linguists have also proved valuable in facilitating collaboration within transdisciplinary teams.

Inevitably, researchers are deeply immersed in the discourses of their own discipline, where they draw on networks of shared concepts, perspectives, terminology, and genre conventions. For the outsider, such aspects of disciplinary literacy may seem impenetrable; for the insider, they may be difficult to transcend or to translate. Similarly, in working with communities, language choices may prove to be culturally or politically loaded, thereby creating unexpected barriers to stakeholder engagement (e.g. for US Republicans ‘global warming’ compared to the near synonym ‘climate change’; see Schuldt et al., 2011). It is thus not uncommon within collaborations for a mistrust to develop regarding the worldviews, approaches and methods from other disciplines, leading to power struggles and disputes over expertise (Thompson, 2009), while themes such as environmentalism and sustainability tend “to reveal unresolved rifts between stakeholder groups” (Huutoniemi, 2014, p. 2). Internal communication is therefore pivotal to the success of any collaboration, and as Thompson (2009) suggests, it may therefore be necessary to develop an agreed technical vocabulary specific to the project. While this often occurs on an ad hoc basis (e.g. Pelikan, 2019), it may also represent an important preliminary step in the TDR process and may perhaps warrant formal AL research. Large teams may also require a well-developed strategy for internal communications, with Pelikan (2019) describing the introduction to one TDR project of a team newsletter and online platform alongside optimization strategies for email.

A facilitative role for applied linguists is particularly notable in multilingual TDR projects, especially where complexities arise from translation, translanguaging, and the use of a lingua franca. An example is the work of One Health, a major transdisciplinary health initiative reported by Zinsstag et al. (2022), where anthropologists and linguists were integral to the “profound dialogue between Maya indigenous healers and Western-trained doctors and veterinarians” which sought to overcome longstanding social barriers to mutual understanding of “how knowledge is gained in both medical systems” (p. 8). Applied linguistic contributions are apparent in how the team accounted for power imbalances, communication styles, and differences in knowledge systems. In translation and interpreting, it was recognized that meaning resides not only in words, but more holistically in the communicative event; this reflected recent understandings that multimodality is “not a secondary feature of language but central to its usage”, including gesture, objects and images, facial expression other non-verbal acoustic elements (e.g. volume, hesitation, laughter) (Finnegan, 2015, pp. 23-24). The use of English (and other languages) as a lingua franca was further recognized as involving ethical dimensions, where “non-native speakers are disadvantaged in their knowledge acquisition, which can lead to epistemicide, a reduction of acquisition and production of new knowledge and transferred knowledge within the project” (Zinsstag et al., 2022, p. 9). Also accounted for in using English was the potential for problems arising from the “illusion of a common language” (p. 8), which future projects might address through identifying recurrent discourse trouble-spots (Ryan, 2023) and protocols for mitigating the impact of misunderstandings (Mustajoki, 2017; Padilla Cruz, 2017). In such ways, the One Health project was structured around a sophisticated understanding of the multilingual nature of the project, and the considerable implications of this for the success and fairness of its outcomes.

Alongside specialists in communication studies, applied linguists may also find a valuable role in presenting outcomes to stakeholders. Issues involving multilingualism and translation have already been cited, but more general and perennial challenges arise in communication between academia and wider society. These have become even more urgent in an era of ‘alternative facts’ and distrust in scientists (Böhnert & Reszke, 2022). One issue is what Pinker (2014) describes as *the curse of knowledge*, whereby those with the most expertise in a particular topic often struggle to communicate ideas clearly to non-specialist audiences. However, scholars have also drawn attention to how communication about global issues can be fundamentally misaligned with the intended audience. Strikingly, for instance, Winslow (2020) illustrates how for many millions of Americans, discourses of climate catastrophe inspire not demands for carbon-neutrality but *anti-*

environmentalism and a yearning for calamity. These are neither climate change deniers nor nihilists. Rather, they welcome catastrophe as an imagined trigger for state (and divine) interventions that will “affirm existing hierarchies” and “defend the resources of the rich and powerful” (p. 154). In working with this audience, the implication is that messages about wicked problems will be counterproductive if they take consequences and outcomes as their starting point or if they adopt an alarmist rhetoric. Messaging should instead work with the core values of the audience. For TDR, such work highlights the crucial role of including research-informed perspectives into dominant discourses within stakeholder groups, how those discourses are instantiated, and the consequent need to consider developing bespoke communication strategies for reporting project outcomes.

TDR and applied linguists

Not only can applied linguists contribute within this type of TDR, but increasingly they are already doing so. Much of this work has limited visibility within our field due to its dissemination within interdisciplinary journals or outside academe altogether, including in online records and resources, events, or as multimodal works and artefacts (Cowal & Leung, 2020, p. 312). While disincentivized within metrics-based managerialism and cultures of careerism, such work is very much aligned with proposals for a new social contract for academia (Castree, 2019).

Elsewhere, in one exemplary small-scale project, Deane et al. (2023) report an explicitly transdisciplinary project seeking to reduce the environmental impact of surplus nutrients as a byproduct of dairy farming. While the technical innovation was led by a science educator (Deane) and a physicist (Roodt), an applied linguist (Kearney) contributed her specialist expertise relating to identity and narrative, alongside more general skills and perspectives from the wider humanities, including interviewing techniques, qualitative analysis, communication, and academic writing. As already discussed, a much larger scale TDR project has been the development of One Health, an integrated approach to the health of humans, animals, plants and the environment (Zinsstag et al., 2022). Involving an array of disciplines and indigenous and professional knowledge, the contributions of an applied linguist (Pelikan) became integral to the success of the project through implementing strategies for critical and mindful multilingual communication. Pelikan contributed similarly to a major 3-year project investigating access to several critical medicines in Africa and South Asia (Pelikan, 2015, 2019). Another large-scale and multi-year project involved applied linguists and literacy experts collaborating with science educators to tackle the issue of educational disparity in low-socioeconomic schools in Australia (Unsworth et al., 2022). The team drew on systemic functional linguistics to support teachers in developing students’ multimodal disciplinary literacy. My own current TDR includes a support role in a project led by indigenous scholars addressing the impact of climate change on the wellbeing of Tongan youth. There I contribute discourse analytic methods within an overarching indigenous *talanoa* methodology and TDR approach.

Among other explicitly TDR projects, applied linguists have collaborated with an environmental scientist to address water quality (Haeffner & Cowal, 2019), a clinical psychologist on educational pathways for troubled youth (Pocock & Fester, 2021), and a corporate finance expert to assist migrant L2 women as small business owners (Fester & Thrikawala, in press). Also notable is the *transdisciplinary action research* approach of Perrin (2018), who collaborated with journalism practitioners, and Whitehouse (2023), who for nearly a decade collaborated with professionals and stakeholders in the Swiss financial sector in a project aimed at improving the communication of recommendations in investment documents. TDR frameworks informed by the Zurich approach have also been adopted for more familiar applied linguistics topics, such as the development of a curriculum to support migrant integration (Konstantinidou & Stadler, 2021) and minority language revitalization (Filipović, 2015), among others.

Conclusion

In an era marked by profound existential threats, many scholars and researchers have felt the urge to act, joining movements such as Extinction Rebellion and anti-war efforts. In many cases, what they contribute to such movements is largely a physical presence at demonstrations or via email campaigns, albeit one that is embroidered with the gravitas of their academic status and respectable professional role. Others, including many ALs, channel their energies into researching topics relevant to the major global issues. However, when such work occurs in disciplinary silos, it seldom generates substantial real-world impact. For instance, when the work of ALs is mostly created for an audience of other ALs, to outsiders it can appear just as arcane as scholarly work in chemistry or calculus appears to this author. For more tangible impact, what is required are coordinated strategies from multiple actors who collectively possess technical and professional skills and knowledge, who understand the values and lived experiences of communities, and who have influence in those communities. The Zurich approach to TDR (Pohl & Hadorn, 2007) offers an appropriate and effective framework for doing so. From this base, the present article advocates for a deeper, more transformative level of engagement by ALs with the existential issues of our times. Since coordinated activity is primarily achieved through language, AL skills are relevant to any social crisis, even when those skills were honed in ostensibly apolitical arenas such as SLA or task-based learning.

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