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Transitioning from Interdisciplinarity to Transdisciplinarity in Applied Translation Studies: Towards Transdisciplinary Action Research in Translators' Workplaces

Abstract

Since the beginnings of translation studies, applied translation research has set out to address the practices, processes and products of translation in both work and education. The contexts in which these are realized are embedded in broader sociotechnical systems as well as in the specific settings where translation is performed. Although the situated nature of professional translation is uncontroversial and suggests that it should be investigated in situ, workplace-based, organization-oriented research in applied translation studies is a relatively recent and still under-developed phenomenon. The nascent interest in it is partly due to advances in research tools and practices, but mostly to an emerging but still largely implicit transdisciplinary research framework. This article argues that the actual and potential impact of transdisciplinarity should frame translation research more explicitly. It considers how the growing diversification of professional translation and its convergence with other communication professions calls for applied translation studies to adjust to new realities. It explores current developments in professional translation practice, presents a use case of workplace-based research, and concludes with a model of transdisciplinary action research that can serve as a structured framework for investigating and learning from rapidly evolving professional processes and practices in translators' sociotechnical workplaces.

Keywords

transdisciplinary action research, workplace research, interdisciplinarity, cognitive translatology, translation ergonomics

1. Introduction

Translators over the past seventy years or so have been described as mono-professionals, as opposed to the multi-professionals who had previously typified translation — those who combined their translation work with other professions and gainful activities (cf. Gambier and van Dorslaer 2016; Pym 1998). Nevertheless, the mono-professional epithet disguises the growing multiplicity of roles and competences required of the modern translator in increasingly diverse contexts of work. Precipitated in part by the encroachment of artificial intelligence, in the shape of neural machine translation (NMT), into markets hitherto reserved for human translation, and in part by the socio-ethical drive towards inclusive, accessible, barrier-free communication, the intraprofessional diversification of translation brings with it a widening range of new tasks, roles and demands. This is coupled with a progressive convergence around the fuzzy edges of the translation profession with adjacent professional communication profiles such as technical communication and corporate communications.

The movement towards intraprofessional diversity and interprofessional convergence observable in the translation profession has obvious implications for the research being done by applied translation studies. By virtue of its thematic, theoretical and methodological interfaces with other disciplines, translation studies, including its applied branches, has long been considered an interdiscipline.

In this article, I argue that transdisciplinarity is the next logical stage in the development of applied translation studies. In the sense and definition presented and explored here, transdisciplinarity goes beyond interdisciplinarity in offering a viable framework for (action) research in professional contexts and settings, transcending disciplinary and interdisciplinary approaches to generating knowledge by bringing together researchers, communities of practice and their organizations in active, collaborative problem-solving directed at real-world issues (cf. Hirsch Hadorn et al. 2008; Stokols 2006).

Since the beginnings of translation studies and its first systematic mapping by Holmes (1972/2004), the diverse activities and definitions of the applied branches of translation research share the condition of relevant practical applicability — to the practices, processes and products of translation per se, but also to the contexts and settings in which this complex,

situated activity occurs. The contexts embrace both work and education, embedded in broader sociotechnical systems and themselves encompassing the specific settings where translation is performed. In order to be properly described and understood, therefore, the situated nature of professional translation (cf. Risku 2010, 2014, 2017) strongly suggests that it needs to be investigated in situ.

However, it is only quite recently that workplace-based, organization-oriented translation research has gained impetus in applied translation studies, with approaches ranging from the cognitive and socio-cognitive (e.g. Risku, Rogl and Milošević 2019) to the sociological (e.g. Buzelin 2007; Olohan 2017) and ergonomic (e.g. Lavault-Olléon 2011a, 2011b, 2016). The growing momentum of workplace studies is partly due to advances in research tools and practices, but first and foremost to the broadening impact of an emerging but largely implicit transdisciplinary research framework.

The present contribution seeks to make the actual and potential impact of transdisciplinarity explicit. It outlines the growing diversification of professional translation and its convergence with other communication professions, and the concomitant need for applied translation studies to do more to adjust to these realities. After considering developments in professional translation practice and summarizing a use case from workplace-based research (e.g. Ehrensberger-Dow 2014; Ehrensberger-Dow and Massey 2019, 2020) at the author's home institution, the present article ends by proposing a model of transdisciplinary action research as an explicit, structured framework in which to investigate professional processes and practices in the situated sociotechnical contexts of translators' workplaces.

2. The translation profession: Intraprofessional diversity, interprofessional convergence and the multiplicity of translation competences

More than two decades ago, Pym (1998) pointed out that, in many societies prior to the mid-20th century, translators could be considered multi-professional, by which he meant that they were professionally active not only in translation but also in other fields, such as journalism or teaching. The complementarity of some of those fields led to synergies on which they

could draw for their translational activities, most obviously when familiarity with the other professions provided a means of expanding skills and competencies, most obviously as a result of acquiring linguistic, cultural, domain-specific and instrumental knowledge of both a declarative and procedural nature.

Mono-professionalism in translation only seems to have emerged in the last 50 to 70 years (Gambier and van Dorslaer 2016), though the concept of mono-professionalism should not suggest that translation as a profession, as a competence and as a subject of study is mono-dimensional, mono-componential or mono-disciplinary. The plethora of job titles and professional subfields associated with translation and interpreting suggests the very opposite. Alongside the myriad domains, modes and media that have come to distinguish the profession until now, from the technical to the literary, the textual to the audiovisual, the analogue to the digital, a steady intraprofessional diversification has also been taking place. The diversity of activities, roles and responsibilities is reflected in two handbooks published this year, the *Bloomsbury Companion to Language Industry Studies* (Angelone, Ehrensberger-Dow and Massey 2020) and the *Routledge Handbook of Translation and Technology* (O'Hagan 2020). Localization, transcreation, multimodal and audiovisual translation, user-centred translation, accessible barrier-free communication, revision, pre-editing, post-editing, terminological services, linguistic intercultural mediation, public service translation, language and communication consultancy are just some of the areas in which the professional group (still) called "translators" work.

The multiple challenges presented by technological advances and digitalization, on the one hand, and by socio-ethical concerns surrounding migration, inclusion and accessibility, on the other, have been lending increased impetus to diversifying the roles and working contexts in which language professionals in general, and translators in particular, pursue their vocation. Among other sources, this is confirmed by a 2018 survey conducted by the internal TIGES 21 Working Group for the *Conférence internationale permanente d'instituts universitaires de traducteurs et interprètes* (CIUTI),[1] a global association of the world's leading translator and interpreter education institutions. The survey was conducted online in the spring of 2018 and hosted by the School of Applied Linguistics at the ZHAW Zurich University of Applied Sciences in Winterthur, Switzerland. It had been motivated by the perceived need for translator (and interpreter)

education to remain relevant to its stakeholders, by producing graduates who both fulfil real-world societal and economic requirements and receive appropriate rewards for doing so in a volatile work market where adaptive expertise appears to be playing an increasingly major role in longer-term graduate employability.

The general objective of the survey was to address key factors likely to affect graduate employment and working conditions in order to establish concrete strategic orientation points to help guide CIUTI members forward in developing curricula and the competences of their students and staff. The overall response rate to the survey was 56% (27 of the 48 institutions requested to participate), with the following regions being represented: Europe and West Asia with a 54% response rate (21 of 39 institutions), East Asia and Australia with a 57% response rate (four of seven institutions) and North America with 100% response rate from the two institutions that represent the continent in CIUTI.

Respondents were first asked to indicate on a four-point Likert scale the degree (high, medium, low, none) to which the following items posed a challenge to their graduates, both currently and in future: pricing and income pressures, competition from abroad, under-qualified competition, technological developments, diversity of work contexts, diversity of roles, range of competences, quality demands, productivity demands, availability demands and other items. Each response was coded[2] and then aggregated to generate quantitative results for each question and item.

The quantitative results for translation graduates showed that price and income, followed by productivity, ranked first and second respectively, in the case of both current and future challenges. But when the results for the perceived current and the perceived future challenges were compared and contrasted, the greatest increases were recorded for technological developments, range of competences, diversity of work context and diversity of roles.

Optional comments were also elicited from participants. Those offered on these particular points indicated that a wide range of challenges was anticipated. With respect to technology, the challenges were all clustered around NMT, post-editing and machine translation (MT) literacy, with relatively

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1   The questionnaire and full survey results can be accessed by CIUTI members at https://www.ciuti.org/education-training/questionnaire2018/ (accessed 1 March 2020).
2   High = 3; medium = 2; low = 1; none or no answer = 0.

frequent reference being made to the capacity to identify the limitations of MT and to know when, and when not, to deploy it. Commenting on the range of competences that are and will be required, the respondents foregrounded evaluative competence, adaptivity, creativity, consultancy skills and management competence. On the matter of work-context diversity, participants pointed to the growing market concentration around larger language service providers (LSPs) with broader portfolios demanding more competences of their employees and contractors, as well as the need to work in more diverse paraprofessional and interprofessional contexts. Finally, concrete manifestations of role diversity that were named included data scientist, computer linguist, MT evaluator, premium translator, intercultural mediator, interprofessional collaborator and language consultant or adviser.

The 2018 CIUTI survey therefore seems to suggest that the era of translators' mono-professionalism is either at an end or coming to one — if, indeed, it ever properly existed. This is a legitimate question to ask, as there are some distinctly fuzzy edges to the description attached to job title "translator", and consequently to the roles and competences expected of those calling themselves by that name, that have existed for some time. It was towards the end of the last century that multi-componential models of translation or translator competence began to emerge, often related to the cognitive research into the way translators make decisions and solve problems as they work, that was initiated by Krings's (1986) ground-breaking study of what goes on in the minds of translators. Leading research-oriented models that resulted were those of the PACTE group (Hurtado Albir 2017; PACTE 2003) and Göpferich (2008, 2009), to which can be added a number of heuristic profiles based on the professional experience and intuitions of scholars, educators and practitioners (e.g. EMT Expert Group 2009; EN 15038:2006; Kelly 2007). Interestingly, it was Pym (2003) himself who argued for a re-definition of translation competence to stem the proliferation of competences and sub-competences appearing in translation studies literature. His celebrated minimalist definition of two-fold functional competence:

- The ability to generate a series of more than one viable target text (TT1, TT2 … TTn) for a pertinent source text (ST);
- The ability to select only one viable TT from this series, quickly and with justified confidence. (Pym 2003: 489)

sits rather well with a mono-professional conceptualization of translation centred solely on a semantic prototype translation (cf. Halverson 1999) comprising a chain of text-based interlingual or intralingual decision-making and problem-solving acts. But it disregards the broad and broadening fuzzy edges around the profession. It does not account for the multiplicity of tasks and activities translators have been and are increasingly asked to undertake as part of the services they provide.

These have been recognized in more recent frameworks and profiles for translation competence (e.g. EMT Board 2017; ISO 17100:2015), into which they have been progressively integrated and in which they have gained growing weight and centrality. Thus, of the 35 competence descriptors in the latest competence framework of the prestigious European Master's in Translation (EMT) network (EMT Board 2017), 15 are given over to personal, interpersonal and service provision competence and six to technological competence, while there are fourteen for translation per se. The competence framework has also absorbed some of the added value services listed separately in the informative annexes F and E of International Standard ISO 17100 (2015: 18), *Translation services — Requirements for translation services*, and its predecessor, the European Standard EN 15038 (2006: 17), *Translation services — Service requirements*, respectively. Examples are post-editing and skills related to audiovisual and multimedia translation.

This spread of intraprofessional diversity is also reflected in the emergence and solidification of closely related but autonomous profiles with their own models and quality standards. Listed as a separate added-value service in EN 15038 (2006: 17) and ISO 17100 (2015: 18), translation-related terminology work or management is an obvious longer-standing example (cf. Bowker 2020). It is subsumed under thematic, information-mining and technological competence in the first EMT competence profile (EMT Expert Group 2009), but more recently receives only a single mention (under translation competence) in the 2017 EMT competence framework. Terminology work or management has its own quality standards for translation-oriented terminography (ISO 12616:2002), terminology products and services (ISO 22128:2008) and the principles and methods of terminology work (ISO 704:2009), among many others (the ISO technical committee on language and terminology, TC37, refers to 66 published ISO standards related to scope

of professional activities covered by it and its sub-committees[3]). On this very solid basis, organizations like the European Parliament have sketched out their own competence profiles for terminologists (e.g. Maslias 2017).

Post-editing, one of the added-value services listed by EN 15038 (2006) and ISO 17100 (2015), seems to be following the same course of intraprofessional diversification, with a recent dedicated international standard laying down requirements for post-editing machine translation output (ISO 18587:2017). Among other things, this sets out the tasks, competences, qualifications and requirements of post editors (ISO 18587:2017). Nitzke, Hansen-Schirra and Canfora (2019) have gone one step further to develop a competence model for post-editors. This is derived partly from principles of risk management, explored in prior work by Canfora and Ottmann (2015, 2019) on the relationship between translation and risk based on ISO 31000:2009, *Risk management — Principles and guidelines.* In fact, risk management itself may well be a prospective candidate for further role and context diversification within the translation professional as it becomes increasingly identified as a key aspect of human added value in the translation industry (e.g. Massey and Ehrensberger-Dow 2017). The same can be assumed of transcreation, another added-value service under ISO 17100 (2015) that has been establishing an independent identity and profile as a practice within the translation industry (e.g. Pedersen 2019; Rike 2013; TAUS 2019). Indeed, transcreation markets itself within the industry as just that, a service that adds value by being "more than translation" and "transferring brands and messages from one culture to another" (Pedersen 2014: 62; see also Pedersen 2016: 72-90), with its own distinct set of agent roles, processes and skill sets (Pedersen 2016: 147-206).

Post-editing and transcreation have until now been positioned generally within the scope of translation work. Other fields into which translators have been moving can be found at the interprofessional interfaces of translation and other communication professions with which it is not universally associated as a co-profession. The connections between technical communication or writing and translation have been a focus of scholarly and professional interest in the German- and French-speaking worlds for a number of years (e.g. Göpferich 2002; Gouadec 2005; Risku 2010, 2016; Schubert 2012),

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3   See https://www.iso.org/committee/48104.html (accessed 1 March 2020).

though less conspicuously elsewhere. This interest is reflected in institutional and organizational contexts, where translation and technical communication are taught and researched side-by-side in educational institutions such as Hildesheim in Germany, Rennes II in France or the present author's own institution, and where a continuous and expanding exchange of models, methods and best practices exists between professional associations for technical communication, like the German *tekom*[4] or the Swiss *tecom*[5], and their counterparts from the translation field (e.g. the German Federal Association of Translators and Interpreters, BDÜ[6], and the Swiss Association of Translators, Terminologists and Interpreters, ASTTI[7]).

More recently, Massey and Wieder (2019, 2021) have been exploring the interdisciplinary interfaces between translation, organizational communication and international corporate communications, a hugely under-researched area. The strategic and operational work in this professional field holds promising prospects for those possessing the linguistic, cultural and inter-cultural competences standardly associated with language mediators, as the results from Massey and Wieder's study of Swiss translators, translation project managers, communication specialists and senior communication managers demonstrate. Data gathered during an ongoing series of interviews conducted with senior communication managers in international companies in Switzerland between July 2019 and September 2019 reveal concerns about overly complex coordination and controlling processes between headquarters and local units in international communication management, due to lack of simultaneous knowledge of two cultures and languages among most communications staff. However, these are the typical core competences of professional translators, who thus have the distinct potential to play a much more integral part in co-developing and assuring the quality of output. The interviewees also agree that international communication specialists should possess a near-native command of English in addition to their mother tongue, ideally complemented by fluency in another (Asian) language, depending on the company's international scope. They should also be able to oversee communication quality in the organization's key languages, have a sound

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4 See https://www.tekom.de/ (accessed 1 March 2020).
5 See http://www.tecom.ch/ (accessed 1 March 2020).
6 See https://bdue.de/ (accessed 1 March 2020).
7 See http://new.astti.ch/ (accessed 1 March 2020).

knowledge of one or more foreign cultures and possess intercultural sensitivity. Alongside a thorough understanding of basic business principles, organizational knowledge and work experience, project management skills — standardly taught on translation degree programmes — are also listed. Here, too, translators seem by default well suited to assume roles in international communication management. The actual and potential overlap with the newly established sub-profession of transcreation and the rediscovery of linguistic (inter-)cultural mediation (e.g. Katan 2016; Liddicoat 2016) are inescapable.

The growing diversity of intraprofessional and interprofessional roles and competences examined here strongly suggests that those who are investigating translation must necessarily also embrace a similar multiplicity in their research approaches, methods and questions if they are going to enrich their and our knowledge of translation, translators and the work they do. This has partly been demonstrated by the interdisciplinary studies touched on above. The next section considers the interdisciplinarity of applied translation research in greater depth, as a stepping-stone towards it realizing its transdisciplinary potential. It traces its incipient trajectory from an interdiscipline towards transdisciplinarity, understood here not as a loose synonym for interdisciplinarity, nor as a synergetic transitional mode of establishing new hybrid disciplines like psycholinguistics (Gambier and Van Doorslaer 2016), but as active, collaborative and transformative problem-solving directed at real-world issues by researchers interacting with communities of practice within a transdisciplinary action research framework.

3. From interdisciplinarity to transdisciplinarity in applied translation studies: Transdisciplinary action research

Gambier and Van Doorslaer (2016: 1-4) have convincingly argued how translation studies in general can be considered at once a polydiscipline, "pollinated by different existing disciplines", and an interdiscipline comprising four shared basic elements on which other disciplines can help shed light: language, participants, situation and culture. The recognition that translation studies is fundamentally interdisciplinary in nature is a long-standing and uncontroversial one (e.g. Snell-Hornby, Pöchhacker and

Kaindl 1994; Chesterman 2002); for instance, quoting McCarty, Munday (2016: 25) refers to translation studies as the Phoenician trader among the "settled nations" of longer-established disciplines, with primary relationships with disciplines such as linguistics (especially semantics, pragmatics, applied, contrastive and cognitive linguistics), language studies, comparative literature, cultural studies and philosophy.

A relevant current example is provided by the sub-discipline of cognitive translatology (cf. Muñoz Martín 2010a, 2010b, 2016), where researchers borrow theories, approaches, models and methods from linguistics and psycholinguistics, neuroscience, cognitive science, writing and reading research and language-technology research and development (O'Brien 2015). Cognitive translatology has adopted from second-generation cognitive science and complexity theory the concept of translation as a complex situated activity (e.g. Risku 2010, 2014, 2017). Considering whether embodiment and situatedness make a difference to translation and technical communication, Risku (2010: 103; see also Risku 2002: 529) concludes that "translation is done not solely by the mind, but by complex systems. These systems include people, their specific social and physical environments and all their cultural artefacts". Technology has extended and externalized memory (Pym 2011), to the extent that translation has long been a form of human-computer interaction (O'Brien 2012). Translators reconfigure their cognitive space by shifting parts of the cognitive process to bodily movements, interaction with artefacts and the spatial organization of the workplace (Risku 2014). Clark and Chalmers (1998) were among the first to postulate explicitly that human cognition extends to individuals' physical and social situations, and that cognitive processing comprises the brain's linkage to external environmental elements. It is the basis on which Hutchins (2010) formulates his cognitive ecology theory, which models cognition as embodied, embedded, extended and enacted (4E cognition) and moves the attention of cognitive science towards cognitive ecosystems as the assembly of brains, bodies and environmental elements that interact to enable viable action, to which Wheeler (2005) adds affect (4EA cognition). This, Muñoz Martín (2016) states, is the inspiration behind cognitive translatology.

Against this background, it would seem reasonable that the essentially interdisciplinary research into translation that is being done should itself be conducted at least partly in situ. The gradual emergence of a situated 4EA framework over the last 20 years has witnessed cognitive translatology and

other applied branches of translation studies slowly going out into "the field" (Risku, Rogl and Milošević 2019) to explore workplace-based translation processes and practices, though the phenomenon is not yet as widespread as it might and should be. In addition to the socio-cognitive approach adopted within the above-mentioned theoretical frameworks, Risku, Rogl and Milošević (2020) add sociological and ergonomic layers to their taxonomy of approaches and theoretical frameworks in which translation-oriented workplace research is taking place. The sociological layer includes the few studies published in the sociology of work and industry or organizational studies fields (e.g. Kuznik 2016; Kuznik and Verd 2010), more common explorations of actor-network theory (e.g. Buzelin 2005, 2007; Abdallah 2014) and recent work by Olohan (2017) applying practice theory to the setting of an in-house translation department. Approaches with an ergonomics orientation, pioneered in theoretical terms by Lavault-Olléon (2011a), have explored the physical, cognitive and organizational dimensions of ergonomics in the translator's workplace (e.g. Ehrensberger-Dow and Hunziker Heeb 2016; Ehrensberger-Dow and Massey 2019; Ehrensberger-Dow et al. 2016).

The principal data-elicitation and collection methods adopted in workplace research, which are frequently triangulated with one another, can be broadly categorized into ethnographic observational methods (field notes, audio recordings, video recordings, etc.), self-report (surveys, interviews, focus groups, activity logs, etc.) and translation process research (TPR) techniques, themselves derived in large part from psychological and writing research, deployed in mixed-method studies (keylogging, screen capture, eye-tracking, think-aloud protocols, retrospective verbal protocols, etc.) (Ehrensberger-Dow 2014; Ehrensberger-Dow and Massey 2019, 2020). For instance, Risku (2016) and Koskinen (2008) are pioneering examples of how what Koskinen (2020) calls "translatorial linguistic ethnography" can be used to study workplace processes and practices in a commercial translation agency (in Vienna) and an institutional translation unit (at the European Commission), respectively. Pedersen (2016, 2019) has used similar ethnographic observation methods to explore transcreational processes, spaces and interactions at a marketing implementation agency (in London), while Ehrensberger-Dow and Hunziker Heeb (2016) and Ehrensberger-Dow et al. (2016) have relied on combinations of ethnographic observational methods, self-report and TPR techniques in their investigations of the physical, cognitive and organizational ergonomics of professional translation

(in Switzerland and at the European Parliament, complemented by an international survey with responses from participants spanning almost 50 countries worldwide[8]).

Each methodology comes with its own caveats. Ethnographic observation can be affected by the observer or "white coat" paradox, whereby the phenomena being observed are inadvertently but inevitably influenced by the very presence of an observer or investigator (Ehrensberger-Dow and Massey 2020), while self-report methods suffer from the distortions inherent in decontextualization (Kuznik and Verd 2010). Decontextualization in the form of unfamiliar tools used for workplace data collection is also a danger in deploying certain TPR techniques in technological settings, while TPR workplace data can also be affected by interoperability issues and by the "noise" created by ambient factors and infrastructural aspects of the workplace. In all cases, there are very real issues of confidentiality, data and network security, anonymity, consent and organizational reputation, of participant self-selection, the unpredictability of access and of the tasks under investigation, as well as the problem of finding an industry partner without a particular agenda to follow (Ehrensberger-Dow and Massey 2020).

However, these challenges are outweighed by the benefits of ecological validity, by the very real opportunities afforded by the feedback loops with the practice partners and stakeholders, and by the transformational relevance of performing research and obtaining results that can be applied directly to industrial practice and education. It is precisely here that interdisciplinarity has the obvious and highly promising prospect of transitioning to transdisciplinarity.

In the sense adopted in the present article, transdisciplinarity is neither a synonym for interdisciplinarity nor a word describing a stage of development immediately preceding the establishment of hybrid disciplines. Instead, the term is used to designate research that bridges the gap between scientific knowledge production and societal knowledge demand as "an integral component of innovation and problem-solving strategies in the life-world" (Hoffmann-Riem et al. 2008: 3). It is in this sense that Stokols

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8   The survey report can be downloaded at https://www.zhaw.ch/storage/linguistik/forschung/uebersetzungswissenschaft/ergotrans-survey-report-en.pdf (accessed 1 March 2020). See also Ehrensberger-Dow et al. (2016).

puts transdisciplinarity at the heart of his model of community research and action, which

> assigns high priority to the study of collaborative interactions and outcomes among scholars, community practitioners, multiple organizations and as they occur within local, regional, national, and international contexts. (2006: 65)

These are goals inscribed in the practice-oriented, problem-based and participative nature of action research, which sets out to engage researchers directly with the beneficiaries of their research in order to generate new knowledge and solutions to practical life-world problems (cf. Reason and Bradbury 2006).

The conceptual framework that Stokols (2006) offers is therefore for *transdisciplinary action research* involving collaboration among researchers, professional and social communities, and the organizations embedded in them (Perrin 2012). Hirsch Hadorn et al. (2008) succinctly summarize its essence: it focuses on real life-world problems, it transcends and integrates disciplinary paradigms, seeking unity of knowledge beyond disciplines, and it is participatory, involving the active engagement of researchers, the practitioners under investigation and the organizations that both work for.

The knowledge generation and learning effects achieved by such research not only benefit the researchers and their institutions, but also the development of the individuals, groups and organizations that constitute the "communities of practice" (Lave and Wenger 1991), with and for which the researchers work. Transdisciplinary action research is therefore the logical way forward for translation workplace-based research, capable of fostering individual, community and organizational development in the dynamic, complex systems that the cognitive, sociological and ergonomic approaches described by Risku, Rogl and Milošević (2020) seek to explore. As Ehrensberger-Dow and Massey observe, taking such a path is

> wholly congruent with the nascent emergentist paradigm evolving in linguistics and language learning in general […] and in situated, embodied approaches to cognitive translatology […] and translation pedagogy […] in particular. (2020: 364)

4. The next step: Exemplifying and modelling transdisciplinary action research

In keeping with Lewin's (1951: 169) famous dictum that "there is nothing so practical as a good theory", I shall briefly describe the application of transdisciplinary action research to an interdisciplinary use case — the *Cognitive and Physical Ergonomics of Translation* (ErgoTrans) project[9] conducted at my home institute in conjunction with practice partners (translation departments of Swiss and European institutions, Swiss commercial language-service providers and individual freelance translators). I will then propose an integrated model of action research within an applied transdisciplinary frame encompassing translation research and development, translator education and the community of translation practice and its organizations.

The ErgoTrans project was conceived and carried out by a research team at the ZHAW Zurich University of Applied Sciences between January 2013 and June 2015. The project was wholly interdisciplinary from the start, involving experts and perspectives from translation studies, occupational health, usability testing and language technology.

The study comprised five phases: The first phase was an in-depth analysis of an existing corpus from the precursor study in order to develop hypotheses and refine the instruments for the second phase. The second phase, completed by mid-2014, consisted of data collection and involved video recordings, computer screen recordings, ergonomic assessments and interviews at translators' workplaces. The third phase centred on testing hypotheses generated from the workplace data in a usability lab. The fourth phase was given over to the aforementioned international survey, run in the second half of 2014. The fifth and final phase of the project involved in-depth interviews with representatives of the different groups of translators studied in the previous phases, the results of which were combined with the findings from the other phases of the study to answer the research questions related to three typical profiles of professional translation: commercial, institutional

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9 Details about the project, including a project report and other publications generated from it, can be found at: https://www.zhaw.ch/en/linguistics/institutes-centres/iued/research/cognitive-and-physical-ergonomics-of-translation-ergotrans/ (accessed 1 March 2020).

and freelance translators. In the course of the project, interactions between researchers and participants led to refined or new research questions and methods being introduced.

The key research questions that emerged were: What are the indications of disturbances to the translation process at the workplace? Which cognitive and physical ergonomic factors are related to those disturbances? How do professional translators cope with disturbances, and which practices seem to be most successful? Which disturbances seem most difficult to compensate, which cannot be compensated at all, and which might actually have a positive impact on translation performance? Which health complaints might be related to the ergonomics of the translation workplace?

The findings and insights from the project are documented, as one would expect, in various academic publications (e.g. Ehrensberger-Dow 2015, 2017; Ehrensberger-Dow and Hunziker Heeb 2016; Ehrensberger-Dow and O'Brien 2015; Ehrensberger-Dow et al. 2016; Meidert et al. 2016). But they have also formed the basis for numerous knowledge-transfer publications (e.g. Ehrensberger-Dow and Massey 2018; O'Brien and Ehrensberger-Dow 2017; Striebel, Ehrensberger-Dow and Massey 2017) for professional translators and their associations. Moreover, they have been the driving force behind a range of continuing education and MA-level workshops aimed at commercial, institutional and freelance professionals as well as students of translation. During the execution of project itself, the transdisciplinary knowledge generated was already being transferred to players and stakeholders and having an observable, direct impact on individual participants and institutions from the community of practice. In the second phase of the project, for instance, the occupational health researchers conducted ergonomic assessments at the workplaces of institutional translators working for the European Parliament in Luxembourg and the Swiss Federal Chancellery in Bern. In addition, one tangible outcome of a focus group session conducted at the European Parliament in Luxembourg during the fifth phase of the project, involving participants from both the European Parliament's Directorate-General for Translation (DG TRAD) and the European Commission's Directorate-General for Translation (DGT), was closer cooperation between the DG TRAD and the then ergonomics agent of the DGT. The ErgoTrans project has also led to the Parliament adopting its own initiatives with respect to the ergonomics of its translators' workplaces and practices, and to the DGT's ergonomics agent presenting

at a conference on translation ergonomics, held in 2015 at the University Stendhal Grenoble 3, France (Peters-Geiben 2016), as part of the project's overall dissemination objectives.

The knowledge generated and disseminated by the project therefore fulfilled a transformative role — on its researchers, on its participants and partner organizations, on continuing education and MA courses for translators and on the broader community of translation practice. The real-life ergonomic issues it addressed and the awareness it fostered have fed back into organizational development and education initiatives in a sustainable flow of knowledge transfer. The iterative feedback and interactional loops built into the project extended transdisciplinary cooperation, opened up other research questions and avenues, identified more issues and stimulated further solution-finding. Researchers, participants and their organizations learned, developed, adapted and changed through the various levels of interaction (individual assessments, interviews and exchanges between researchers and participants, focus-group discussions, etc.) in which they were engaged as the research project progressed.

The iterative pattern observed in the ErgoTrans research is strongly reminiscent of the action research cycle first elaborated by Lewin (1946: 38), a "spiral of steps each of which is composed of a circle of planning, action, and fact-finding about the result of the action". Action research has had various proponents in translation studies and pedagogy (e.g. Cravo and Neves 2007; Hubscher-Davidson 2008; Massey, Jud and Ehrensberger-Dow 2015), who emphasize the added value of its participatory nature as it engages those involved in an event or interaction in single or multiple cyclical iterations of planning, acting, observing and reflecting.

These are the cycles that form the core of transdisciplinary action research. The transdisciplinary dimensions implied by Stokols (2006), Hirsch Hadorn et al. (2008) and Perrin (2012) can be modelled and visualized as a triangular interactional frame with bidirectional vectors running between the three vertices research and development (R&D), education and, at the apex, communities of practice and their organizations. In the context of applied translation studies, this can be rendered visually in the form of the integrated model of transdisciplinary action research presented in Figure 1. It embodies the next logical and necessary step in applied translation research, which must transition from interdisciplinarity to transdisciplinarity

if it is to fully grasp, meet and serve the life-world workplace realities of today's translation profession.
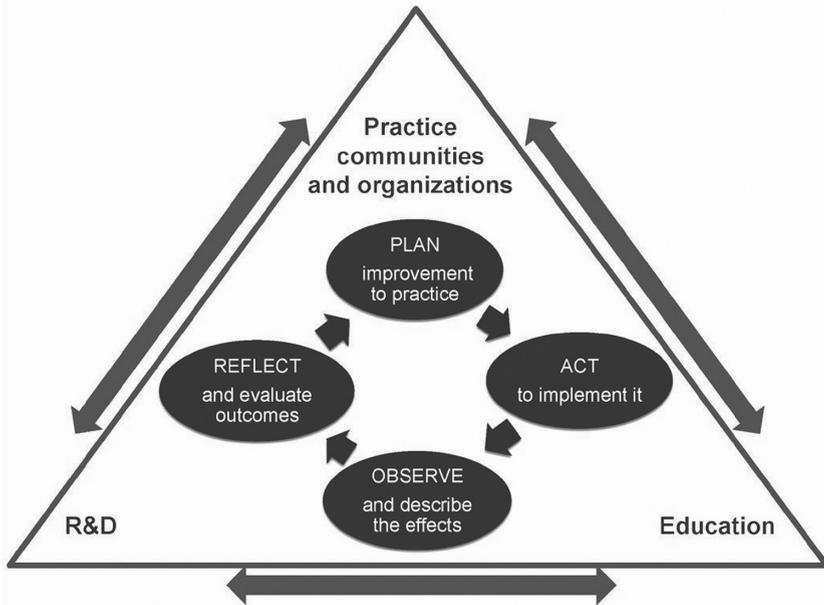

Fig. 1: An integrated visual model of transdisciplinary action research applied to translation

5. Conclusion

The interdisciplinarity that has come to characterize key endeavours in applied, professionally oriented translation studies is wholly consistent with a translation profession and working environment that is increasingly typified by intraprofessional diversification, interprofessional convergence and a growing multiplicity of competences and socio-cognitive settings. For some time, it has been commonly acknowledged that interdisciplinary research is necessary to understand such complex developments. But if the knowledge gained is to be productively transferred back into the profession, and if the profession is to seek answers and solutions to the constantly

evolving contexts, questions and issues with which it is confronted, then a new approach is needed. In short, it is time to transition from interdisciplinarity to the type of transdisciplinarity defined and described above.

I have argued that, under such dynamic circumstances of change, the implicit model underlying transdisciplinary action research represents a wholly viable means of guiding that transition. The model effectively integrates a core participatory action research cycle within a triangular transdisciplinary frame interconnecting three interactional vertices: translation research and development, translator education, and the communities of practice and organizations in which professional translation takes place. As such, it presents an explicit structure and framework in which to investigate, and apply insights gained from, professional processes and practices in the situated sociotechnical contexts of translators' workplaces. Guided by this model, transdisciplinary action research can meet the ever-growing imperative to properly understand those processes and practices for the tangible benefit of all those with a stake in this rapidly evolving profession.

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