On, for, and with practitioners

A transdisciplinary approach to text production in real-life settings

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This article explains how research "on" practitioners can be turned into research "for and with" practitioners (Cameron, Frazer, Rampton, & Richardson, 1992, p. 22) by including these practitioners in the research teams. Methodologically, it draws on two decades of multimethod research and knowledge transformation at the interface of applied linguistics and transdisciplinary action research on professional communication (Perrin, 2013). Empirically, it is based on large corpora of data collected in multilingual and multicultural workplaces. First, the article outlines transdisciplinary action research as a theoretical framework that enables researchers and practitioners to collaboratively develop sustainable solutions to real-world problems in which language use in general and text production in particular play a substantial role (Section 1). Then, Progression Analysis is explained as a multimethod approach to investigate text production practices in natural environments such as workplaces (Section 2). Examples from four domains (education, finance, translation, and journalism) illustrate what value transdisciplinary collaboration between academic researchers and practitioners can add to knowledge generation in applied linguistics (Section 3). For the case of journalism in increasingly global contexts, in-depth analyses offer step-by-step understanding of the trajectory from a real-world problem to a sustainable solution (Section 4). The article concludes by suggesting empirically-based measures for research that contribute to the development of both theory and practice in applied linguistics (Section 5).

Keywords: transdisciplinarity, education, translation, journalism, finance

1. Applied linguistics and transdisciplinarity

In an increasingly globalized and interconnected world, communication entails the transgressing of boundaries between "discourse systems" (Scollon, Scollon,

& Jones, 2012) such as linguistic varieties, natural languages, and entire semiotic systems used by discursive cultures rooted in regions, professions, and societal groups. Applied linguists thus find themselves in growing demand not only inside but also outside the classroom. Society-at-large expects applied linguistics to identify and analyze socially relevant "practical problems of language and communication" (AILA mission statement, 2019)[1] and to contribute to sustainable solutions. Such solutions are considered sustainable when they add long-term value from the perspectives of researchers, practitioners, and society-at-large (Padmanabhan, 2018).

In developing sustainable solutions, applied linguistics can draw on methodological knowledge generated in transdisciplinary research in general (Perrin & Kramsch, this volume; Bernstein, 2015, for a short historical overview) and in the research framework of transdisciplinary action research (TDA) in particular (e.g., Stokols, 2006; Gustavsen, 2006; Pasmore, 2006; Reason & Bradbury, 2006; Burns, 2016 for an introduction to action research in applied linguistics). TDA aims at facilitating theoretically grounded and systematic collaboration between researchers and practitioners, such as applied linguists on the one hand and teacher educators, financial analysts, translators, journalists, and policy makers, on the other.

From the perspective of academic researchers, preparing for such collaboration includes "opening up to and learning to listen to a much wider domain or people who can not only act as 'linguistic informants' and 'research subjects' but who can also become part of knowledge building" (Pennycook, this volume). But listening to, and communicating with, people representing other domains and their languages requires communicative and epistemological efforts. Not surprisingly, the methodological principles and practices of TDA have included, from the very beginning of TDA, language awareness as the key success factor of a systematic collaboration between practitioners and researchers in research teams (e.g. Klein, 2008, p. 407).

If this collaboration succeeds, the TDA research framework enables researchers and practitioners to jointly develop sustainable solutions to complex practical problems of, in our case, language use in general and text production in particular. In the next section, I describe the methods we[2] have used within the TDA framework to analyze and finally solve problems of written communication in increasingly multilingual and globally connected settings (Section 2). Four examples, from the domains of education, finance, translation, and journalism, illustrate what it means to build knowledge in thorough collaboration of academic researchers and

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1. www.aila.info

2. The pronoun *we* refers to the research project groups as explained in Sections 3 and 4 of this article. These research groups were and/or have been coordinated by the author.

practitioners (Section 3). In-depth analyses from a large TDA project explain the trajectory from a socially relevant problem to a sustainable solution step-by-step (Section 4) and discuss the value that such research can add to the development of both theory and practice of language use (Section 5).

2.   The multi-method approach of Progression Analysis

In all of our research projects, we apply Progression Analysis, which is a multi-method approach that combines ethnographic observation and interviews (2.1), computer recording (2.2), and cue-based retrospective verbal protocols (2.3). Progression Analysis has proven valuable in understanding the text production processes of practitioners such as journalists, communication professionals, financial analysts, and translators. It allows data to be obtained on three levels in order to investigate collaborative text production as a situated activity in organizational and societal frameworks.

2.1   Ethnographic observation and interviews

The first level of Progression Analysis considers the text producers (TPs) and the situation of text production, including the TPs' professional socialization and economic, institutional, and technological influences on the work situation as well as the specific task that the TPs must accomplish. Data on the TPs' self-perceptions are obtained in semi-standardized interviews that focus on their professional experience and their workplaces. Ethnographic data are collected through unstructured participatory observations of organizational practices as well as interviews about them. Findings on this level include, for example, TPs' general language awareness in the area of coherence problems.

2.2   Computer recording

The second level of Progression Analysis records every keystroke and writing movement in the emerging text with programs that run in the background behind the text editing software that the TPs usually use, for instance behind the user interfaces of their company's editing systems. The recording can follow the writing process over several workstations and does not influence the performance of the editing system or the TP. The computer recordings provide information about what TPs actually do during the text production process, with every movement and revision step representing intermediate text versions in the production process. Findings on this level can reveal, for example, the activities that result in a specific text coherence problem.

2.3   Cue-based retrospective verbal protocol

The third level of Progression Analysis, the socio-cognitive conceptualization or reconstruction, draws on verbal data to infer the mental structures that might have guided the activities observed on the second level. After finishing a text production process, TPs view a playback of their process and watch as their text emerges. While doing so, they are prompted to continuously comment on what they did while writing. An audio recording is made of this verbalization and transcribed in a cue-based retrospective verbal protocol (RVP). The RVP is then encoded with respect to aspects of language awareness, writing strategies, and conscious practices. Findings on this level can provide insights into, for example, a TP's conscious decisions that resulted in a coherence problem in his or her text.

In sum, Progression Analysis enables researchers to consider all of the revisions to the text as well as all of the electronic resources accessed during the production process; to trace the development of the emerging text; and finally, to reconstruct the TPs' considerations from different perspectives. The multiple levels of Progression Analysis allow the strategies and practices that TPs articulate in their cue-based retrospective verbalizations to be placed in relation to the situational analysis and the data from the computer recordings. Product features such as coherence problems in final texts become understandable as resulting from situated activity, i.e. as the results of complex text production activities in dynamic contexts.

3.   Examples from four domains of writing

In this section, I outline how transdisciplinary research teams have used Progression Analysis to understand and improve text production in various domains and workplaces. In order to provide comparable examples across research projects and domains, I focus on one narrow subtopic of analysis: the coherence problems in evolving texts. By *coherence*, I understand the syntactic and semantic, as well as the explicit and implicit pragmatic connectivity within and across text elements of all sizes, ranging from single words to entire paragraphs, texts, and intertextual chains in discourse (e.g., Campbell, 1995; Crossley & McNamara, 2016).

Aspects of this phenomenon are illustrated[3] in the next four subsections with data from four projects: the MYMOMENT project that tracked children's

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3. In all the four projects, data was collected and analyzed according to principles of Grounded Theory and theoretical sampling, allowing for generalizations to the level of mid-range theories (Perrin, 2013, pp. 181–188). Within their samples, the selected case studies represent relevant

essay writing in order to improve teacher education (3.1); the NATIONALBANK project, where the production of financial analysts' recommendations for investors was analyzed to improve stakeholder communication (3.2); the CAPTURING TRANSLATION PROCESSES project with its focus on the use of information sources and decision-making (3.3); and the IDÉE SUISSE project, in which journalists' collaborative news production was investigated to foster the Swiss public service broadcaster's contribution to public discourse and understanding (3.4).

3.1   MYMOMENT: Tracking writing behavior to improve teacher education

Children perform a variety of tasks using computers, with word, picture, and sound processing programs quickly becoming their natural text production environment. The development of keystroke logging programs has enabled researchers to track the process of text production without changing the environment for the TPs concerned. In a research project called MYMOMENT and its follow-up projects (e.g., Gnach, Wiesner, Bertschi-Kaufmann, & Perrin, 2007), hundreds of children in primary school grades one to five were provided with a web-based interactive environment for reading and writing stories and for making comments in class and at home. Text production processes were recorded automatically with Progression Analysis.

In the following example, the 4th-grader Doris (pseudonym) writes a German text entitled "Der Regenbogen" (English: The Rainbow) as a piece of free composition; she was able to determine both the form and the content herself. Extracts 1 to 3 show the production of the first 5 (of 30) sentences of Doris' text. The notation system used in the extract is called S-notation (Severinson-Eklundh & Kollberg, 1996), which marks insertions and deletions and indicates their sequence in the writing process. Wherever the writing is interrupted to delete or add something, S-notation inserts the break-character $|_n$ in the text. Deleted passages are in ^{n}[square brackets]^n and insertions in ^{n}{curly braces}^{n}, with the subscript and superscript numbers n indicating the order of these steps.

Doris writes the first two sentences fluently, immediately correcting typos (deletions 1 and 4) and making a conceptual change (deletion 2).

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insights into the practices under research. Since the purpose of this article is not to discuss these mid-range theories but to explain what the TDA framework can add to AL-informed writing research, the generalization and generalizability of the findings from the selected case studies is not discussed in further.

Extract 1.   First two sentences of a 4th-grader's composition.

> Als es an einem Sonntag ^{1}[ndie$|_1$]^1 die ganze Zeit regnete und dann wieder die Sonne schien beschloss ich in den Wald zu gehen. ^{2}[Ich$|_2$]^2 Die frische Luft tat mir sehr g4[uet|4]4ut.
> *As it rained ^{1}[nthe$|_1$]^1 the whole time one Sunday and then the sun shone again I decided to go for a walk in the wood. ^{2}[I$|_2$]^2 The fresh air did me a lot of g^4[oed$|_4$]^{4}ood.*

She begins the third sentence by saying that she saw a lot of animals. Then she deletes the beginning of the sentence and writes the converse (i.e. she did not see as many animals as last week; deletions 5 and 6, insertion 7 in Extract 2).

Extract 2.   Third sentence of the 4th-grader's composition.

> Ich sah ^{5}[viele Tie$|_5$]^5 nicht so viele Tiere wie let^6[s]$^2|_6$^{7}[z]^{7}te Woche
> *I ^{5}[saw many ani$|_5$]^5 didn't see as many animals as la^6[z]$^6|_6$^{7}[s]^{7}t week*

Once she writes the third sentence, Doris moves back through the text, correcting the spelling of a word (i.e. *letste* to *letzte*). She then continues to write about her experience in the woods (Extract 3). Doris then immediately deletes the last part of the previous sentence and makes what will become a significant turning point in her story (deletion 8).

Extract 3.   Fourth and fifth sentence of the 4th-grader's composition.

> Aber plötzlich stand ich wie angewurzelt stehen. Ich sah einen ^{8}[toten Igel vor m$|_8$]^8 halb toten Igel vor mir
> *But suddenly I stood rooted. I saw a ^{8}[dead hedgehog in front of m$|_8$]^{8}half dead hedgehog in front of me*

The rest of the story is written in the same linear way. The reader learns that the narrator wanted to take the hedgehog home but then decided to leave it because she was afraid of her mother's reaction. While going home under a rainbow, she felt sad and guilty. But when she came back the next day she saw the hedgehog alive, fully recovered – which was, in her understanding, what the rainbow had promised.

   This story only works because Doris changed the description of the hedgehog from dead to half-dead. As it turns out, this local change ensures the dramaturgical coherence of the narration. The girl's decisive conceptual change in revision 8 illustrates epistemic writing: typing is used as a means to understand what she wants (and does not want) to say in her text to make it a coherent story. But in contrast to many adult experienced TPs' behavior, global coherence seems to be established on the fly, while typing, not by planning key elements in advance. The 4th-grader Doris tells her story in a linear way, correcting typos and altering

far-reaching dramaturgical decisions by deleting all the characters on her way back to the stretch she wants to change.

All in all, the myMoment project suggests that analyses of text production processes can provide teacher education with detailed empirical information about how children at specific stages of development think, write, and, in this particular case, ensure narrative coherence – and how they are, by doing so, influenced by their writing environment, peers' feedback, and teachers' instructions. The approach fosters both an age-specific understanding of essay writing and the design of writing education in central questions such as how to establish narrative coherence in a text. However, such data recordings and analyses require thorough – transdisciplinary – collaboration by children, parents, teachers, and researchers throughout the research projects.

3.2   Nationalbank: Analyzing financial analysts' recommendations for investors

Another strand of transdisciplinary projects investigates text production in the domain of finance (e.g., Whitehouse & Perrin, 2015). Because they are constantly writing recommendations for investors, financial analysts can be considered professional TPs without a professional TP's background – their professional education mostly focuses on technical knowledge about banking and finance and neglects language awareness and writing skills. In the Nationalbank project and its follow-up projects, analysts' text products, writing processes, and workflows in financial institutions such as banks have been investigated in order to raise individual and organizational language awareness and an orientation towards addressee's communicative needs.

In this article, I briefly highlight one particular outcome of this transdisciplinary research: the insight that coherence breaks in text products tend to emerge between phase shifts in writing processes (e.g., Perrin & Wildi, 2012). Put simply, when TPs switch from linear progression to jumping back and forth in the emerging text, they risk losing control over their text and its coherence. The correlation between phase shifts and coherence problems is so strong that the latter can be predicted from the former in the case of short writing processes such as the ones discussed here. In the following two examples, financial analysts had to write one-page reports for the annual report of their bank, which took them around one hour each.

In Figure 1, the two graphs illustrate writing processes with and without such phase shifts. In both graphs, the x-axis shows the order of deletions and insertions over time, from the beginning to the end of the writing process. The y-axis, in contrast, shows in which order these deletions and insertions appear in the

final text, from the top to the bottom of the text product. The graph visualizes the progress of a TP working through an emerging text – how she or he moves back and forth in the text produced so far while writing. We have therefore termed this type of visualization a progression graph (Perrin, 2003).

In the left graph of Figure 1, a straight line from the upper left to the lower right indicates a completely linear writing process. This means that the writer never went back in the text to change something further up. Instead, the "point of inscription" (Matsuhashi, 1987) always stayed at the end of the text written so far. It does not mean that there were no corrections; the author actually made 342 changes while writing. However, theses changes were all made immediately after writing, as a result of visual and cognitive feedback from looking at the material screen or its mental representation while externalizing the text by typing it.

In the right graph, in contrast, shifts between more linear and more fragmentary phases (Fürer, 2018) are visible. The second half of the text, from revision 783 to the very last revision, 1095, is written in a more or less linear way, with minor jumps back and forth for changes within the same sentence or paragraph. Before, however, the author constantly jumps back and forth across the entire text so far to make fundamental changes. This is where text coherence problems tend to occur in short writing processes, which can be explained by the fact that after many fundamental changes within a short time authors tend to lose track of what they wanted to write and what they actually wrote.
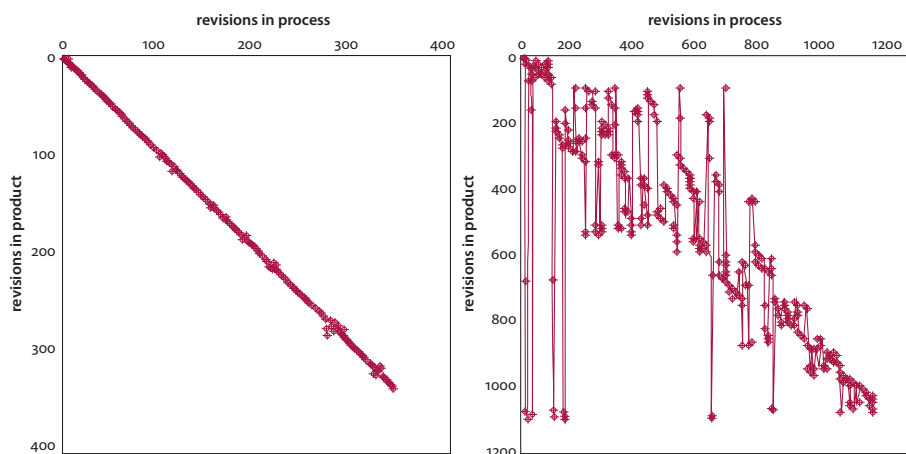

Figure 1. Linear progression (left) and multi-phase progression with phase shifts (right)

Such knowledge can help transdisciplinary research teams design measures for professional writing education for domain experts in institutions such as banks. The goal of the measures in the NATIONALBANK project was to enhance the comprehensibility and comprehensiveness of analysts' recommendations, among other

ways by improving text coherence, in order to provide investors with a better basis for their decisions. Given the low average financial literacy of investors (e.g., Guiso & Viviano, 2013) and the (polito-)economic importance of investment decisions (Whitehouse, 2017), improving the communicative potential of analysts' recommendations is relevant not only in an economic but also in a societal context.

3.3   Capturing Translation Processes: Revealing translators' use of resources

In an extension to Progression Analysis, eye-tracking has been used in the laboratory to investigate at a micro level how TPs confirm or supplement their domain knowledge when working on texts in an unfamiliar area. The focus of attention can be tracked as TPs or translators access and read through digital sources and their emerging texts. This is what transdisciplinary projects such as Capturing Translation Processes do (e.g., Ehrensberger-Dow & Perrin, 2009, 2013). In this project, we compared the translation practices of novices and experts in translation. The novices were selected from our university's professional education program, the experts from the staff of a research partner institution offering translation services to various businesses.

Figure 2 shows a screenshot from the eye-tracking software used in the lab. The connected spots indicate the foci and intensity of attention while a professional translator searched with Google for an acronym that appeared in a text about a military sonar detection system that had recently been banned in the US (see Massey & Ehrensberger-Dow, 2011). The translator was grappling with the task of adequately translating the acronym *MoD* for a German-language target readership that might be unaware of the differences between these two countries' military systems and its political relevance.

The eye-tracking visualization shows that the translator skimmed through the first three hits, barely fixating on the descriptions in the snippet texts. The whole process took only 7 seconds before the translator returned to work on the emerging target text. In the subsequent RVP (see above, Section 2.3), as he viewed his translation process, he remarked that he actually knew that *MoD* must mean *Ministry of Defence* in that context but that he had just wanted to check.

This purposeful confirmation by the professional is in stark contrast to the behavior of the large majority of student translators (no visualisation in this paper). The ethnographic context analysis, on the first level of Progression Analysis (see above, Section 2.1) shows, not surprisingly, that students and novices have much less domain knowledge and experience than professionals. In situations as the one shown above, they seem to have little idea of what to look for. In a case analyzed in detail elsewhere (Massey & Ehrensberger-Dow, 2011) even though the student
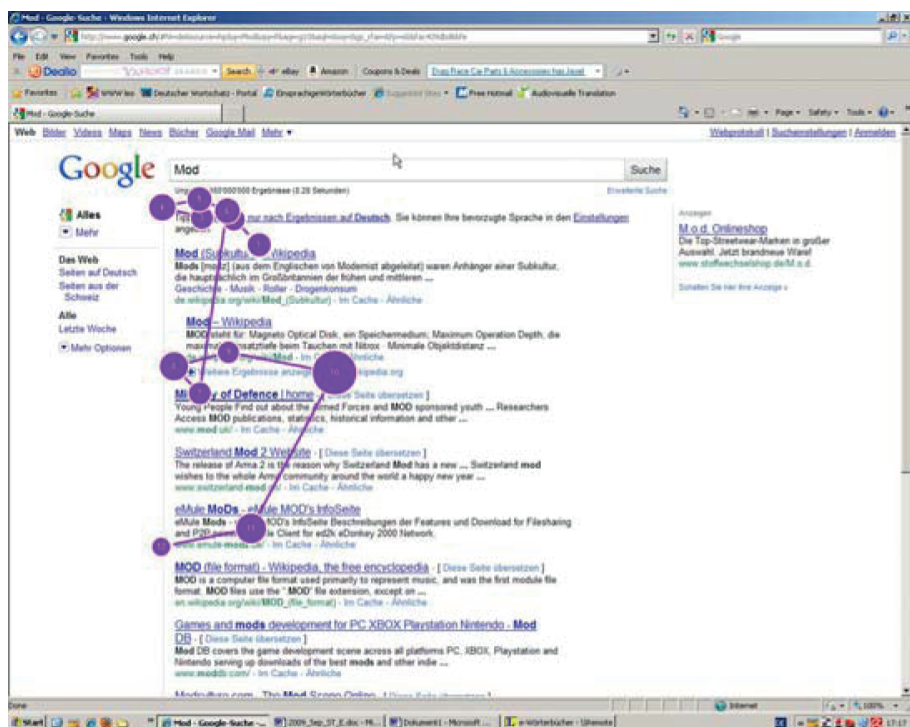
Figure 2. Eye-tracking visualization of a professional translator's use of digital resources

translator's gaze falls on the solution to this particular translation problem in the list of hits that she checks, she fails to recognize it as such.

In this project, Progression Analysis has provided a framework that allows comparative investigations into the decision-making involved when translators shape their texts to meet the linguistic and cultural needs of their target audiences. Efficient exploitation of the appropriate digital resources is one of many indicators of translation expertise that have been identified in such research, which has fed into empirically-based improvements in the education and professional development of translators (e.g., Massey & Ehrensberger-Dow, 2011). Again, such deep insights into professionals' workplace strategies and practices require these practitioners' thorough understanding and collaboration with the academics in transdisciplinary research projects and teams.

3.4   Idée suisse: Investigating collaborative and multimodal newswriting

The use of digital resources has also become an important aspect of the intercultural communication evinced by multimodal newswriting as journalists work as gatekeepers in increasingly digitized global newsflows. Transdisciplinary research

into news production can help the media improve their contributions to public discourse (Perrin, 2013). The Idée suisse and its follow-up projects (e.g., Zampa & Perrin, 2016) have involved public and private broadcasting and publishing companies as well as media policy makers, although the Idée suisse project itself focused on a public service broadcaster.

Public service broadcasting companies are among the most important broadcasting companies in Europe. In Switzerland, there is only one such company: SRG,[4] previously known as *SRG Idée Suisse*. As a media enterprise, SRG is subject to market and competitive forces. As a public service institution, though, SRG has a federal, societal, cultural and linguistic mandate to fulfill. The trans-disciplinary research team of the Idée suisse project reconstructed this mandate from a sociolinguistic perspective as the remit to promote social integration by "promoting public understanding" (Perrin, 2013, p. 4).

Promoting public understanding in a highly multilingual country such as Switzerland means, at first sight, promoting discourse across the language boundaries: discourse between the German, French, Italian and Rumantsch parts of Switzerland. From a sociolinguistic point of view, however, the *language boundaries* concept has to be refined. Urban and rural, rich and poor, lay persons and experts, immigrants and citizens – all of these form different speech communities with their own cultures and views of the world, as reflected in their linguistic varieties. Thus, *promoting public understanding* means linking speech communities both between and within the German-, French-, Italian-, and Rumantsch-speaking regions and cultures of Switzerland.

However, the various stakeholders of public broadcasting regulation might not share a corporate view of the societal and linguistic mandate. Our interest in this project was to examine stakeholders' practices to determine how they do what they do and how they want to do it. The findings show that policy makers, management, and journalists interpret the mandate in different and partially contradictory ways, in some cases due to a lack of awareness and in others because of specific interests and cultural backgrounds.

According to most media policy-makers under investigation, the mandate of promoting public understanding is a commitment for media in general and SRG in particular; according to SRG managers, it is a commitment for media other than SRG or societal agents other than the media. Managers' statements tend towards the following propositional reconstruction: *Public media are not the right institutions to solve social and pedagogical problems.* This would suggest that SRG fails to do what it says it will and what it is expected to do – essentially neglecting its mandate. However, by looking more closely at the situated activity, at the writing

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4. Schweizer Radio- und Fernsehgesellschaft, Swiss Radio and TV broadcasting company.

processes of the journalists under investigation, we were able to identify emerging practices – ways out of the conflicts, towards language use meant to meet both public and market expectations.

Besides these good practices, we identified their most important counterparts, the critical situations, as explained in the next section for the case of the IDÉE SUISSE project. Whereas critical situations denote exemplary findings of which circumstances could lead to a failure to promote public understanding, good practices represent potential success in terms of the journalists', chief editors', managers' and politicians' criteria reconstructed in the project. Again, vivid and systematic reconstructions of real-life strategies and practices required the transdisciplinary collaboration of language practitioners and Applied Linguists. One example of good practice is what we call *the background-recency split* which emerged in one experienced journalist's conflict of basic practices. This is explained in more detail in the next section.

4.   An exemplary trajectory from the problem to the solution

An in-depth analysis of an exemplary case from the corpus of the IDÉE SUISSE project explains a practitioners' text production conflict and its emergent solution. In the UN ELECTIONS case, the journalist is a professional with over 20 years of experience as a foreign correspondent and news editor for Scandinavian and Swiss print media and television. He criticizes the loss of influence of journalists in the newsroom, feels underestimated by his boss and colleagues, and dares to challenge existing policies ("doing forbidden things") if he thinks this will enhance the quality of the news. At the time of the study, he was working for the TAGESSCHAU, SRG's German-speaking flagship television newscast.

In the following subsections, the trajectory from problem to solution is demonstrated through the journalist's collaborative text production practices (4.1), the strategies beyond the practices (4.2), and the solution that emerged from the situated activity (4.3).

4.1   The collaborative text production practices

In the news production process analyzed in more detail here, the journalist first viewed the video sources he had at his workplace – most of which were in English – and made notes by hand. He then took the pictures he had chosen to the video editor's workplace and they compiled the video together. Before the journalist started writing, he had a clear idea of how to start – and he counted on getting other ideas for the rest of the text while writing it. His idea of how to start was that he

0076	und was ich jetzt da versuche ist eigentlich die geschichte
	and what I'm trying to do here actually is (to give) the story
0077	die schlicht mal einfach eine wahl ist in den sicherheitsrat sozusagen
	which is simply just an election to the security council as it were
0078	in den kontext zu setzen
	to provide a context for it
…	
0092	das sind zwei verschiedene geschichten
	there are two different stories
0093	die man da erzählt
	to tell here
0094	und mit den bildern
	and with the pictures
0095	kann ich natürlich die zweite geschichte schlecht erzählen
	I can't tell the second story very well of course
0096	das sind konkrete bilder
	these are the pictures we have
0097	auf denen man den wahlablauf sieht
	which show the election procedure
0098	wo die quotes sind
	where the quotes are
0099	die sich wohl nur indirekt auf das beziehen
	which really only relate indirectly to it
0100	das heisst in der moderation muss ich jetzt versuchen
	that means that now in the anchor's introduction I have to try
0101	den kontext sozusagen zu umschreiben
	to sort of describe the context
0102	und weil wir ja sehr aktualitätsbezogen sind
	and because we really focus on current topics
0103	muss ich irgendwie schauen
	I have to somehow make sure
0104	dass es eine aktualität hat
	that there is a connection to recent events
…	
0113	chavez das ist noch schwierig in zwei drei sätzen
	chavez this is quite difficult in two or three sentences
0114	für leute die nicht wissen
	for people who don't know
0115	was chavez für eine rolle spielt
	what chavez's role is

Figure 3. Excerpts of the RVP from the UN ELECTIONS case (original German and translation)

would split the story in an unusual way. The idea and the corresponding practice emerged when the journalist tried to solve the problem of contextualizing recent events with the pictures he had available – as can be seen in the RVP (Figure 3).

The RVP comes into being while the journalist views a playback of his recorded text production process (see above, Section 2.3). This means that he is prompted, while speaking, by what he can perceive as his activities while writing, about one hour before recording the RVP. In this cue-based RVP, the journalist develops an argumentation line that takes him from a general statement, telling "two different stories" (line 92), to the explanation and justification why he did so: He wanted to "describe the context" (101) in the "anchor's introduction" (100), especially for those in the audience "who don't know" (114), since the pictures of the news item itself only support a short resumé of the election procedure (94–97).
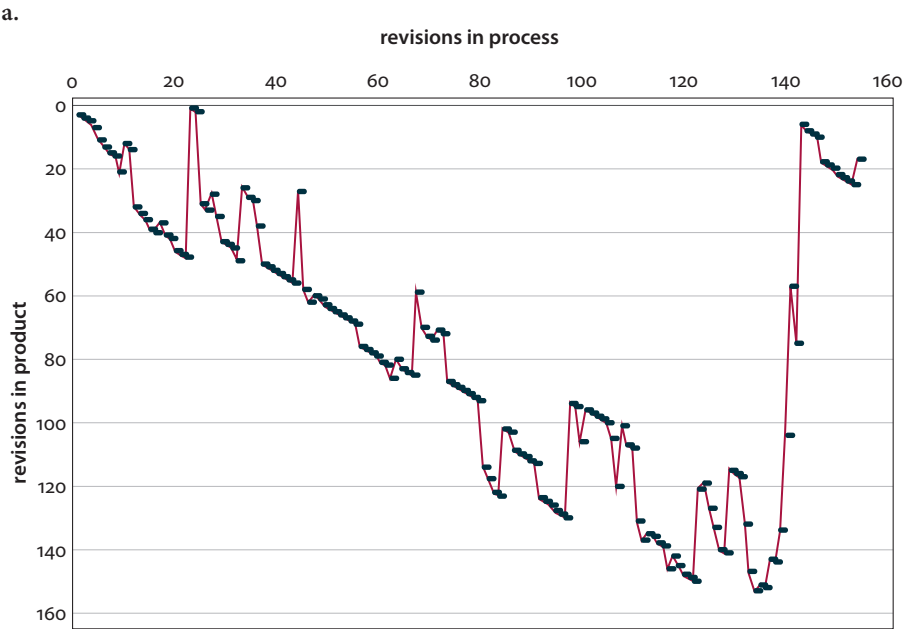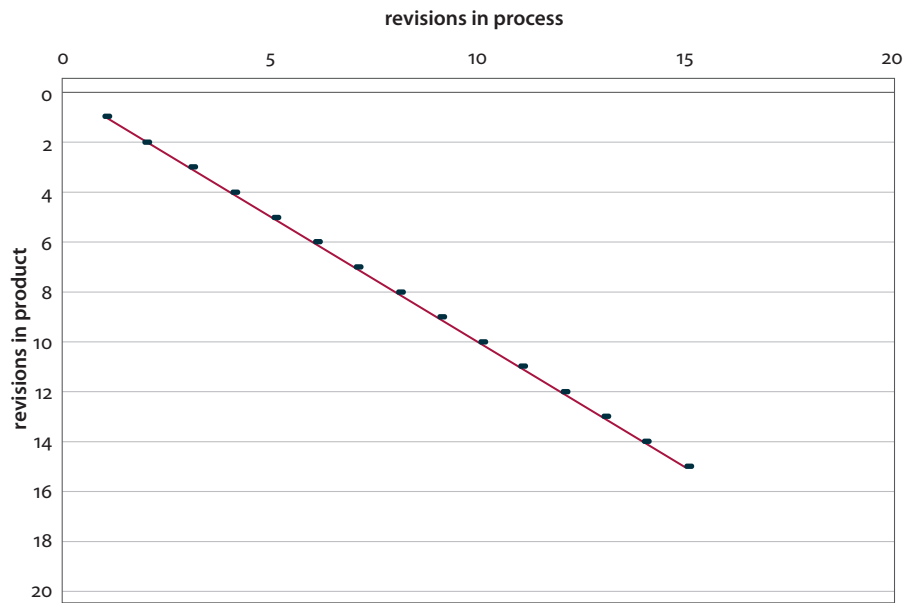
4.2   The strategies beyond situated activity

The propositional analysis of the journalist's RVP led to the description of the repertoire of his conscious activities. In the UN ELECTIONS case, the key activities consist of practices (DOING X) and strategies (DOING X IN ORDER TO ACHIEVE Y, or DOING X BECAUSE Y IS TRUE; e.g. Perrin, 2013, p. 258) that help the journalist deal with background and recent information in a dramaturgically new way the research team called the *background-recency split*. It includes four basic practices and strategies:

– DISTINGUISH BETWEEN TWO STORIES: the recent story and the background story (see Figure 1, e.g. line 92).
– TELL THE RECENT STORY IN THE NEWS TEXT
  BECAUSE IT MATCHES THE RECENT PICTURES AVAILABLE (e.g. lines 94–99).
– INCLUDE THE BACKGROUND STORY
  BECAUSE NOT ALL OF THE AUDIENCE IS UP-TO-DATE ON THIS ITEM (e.g. lines 113–115).
– TELL THE BACKGROUND STORY IN THE ANCHORWOMAN'S TEXT
  BECAUSE THERE ARE NO PICTURES (e.g. lines 94–95).

Having researched the core sources and decided to split the story, the journalist sees one clear thematic focus for each of the two short stories he will write. This writing can be evaluated visually in the progression graphs of the two writing processes. It becomes visible as he produces the introduction for the anchorwoman first and the news text next. The progression graphs in Figure 4 show that the journalist writes his ideas fluently in the order they will be read or heard. The background story for the anchorwoman is generated in a single linear sweep.

The recent story is written in a mostly linear composing sequence followed by a second, revising sequence.

a.

b.

Figure 4. Progression graphs of the background story (left) and the recent story (right)

4.3 The emerging solution

The *background-recency split* practice emerged in the journalist's conflict with two basic requirements: He had to meet market demands and policy demands at the same time. On the one hand, the pictures he had at his disposal only covered recent events, on the other hand, he needed to provide background information. However, he decided not to compromise – neither to overburden the pictures with inappropriate text nor to sacrifice background information due to the lack of appropriate pictures.

Instead, the journalist opted for an emergent third way: reaching both goals properly by writing two different texts, each of them internally coherent and contributing to a dramaturgically coherent ensemble. For the text of the news item, he took into account recent events, the market for short and well-illustrated news, and the pictures available. For the anchorwoman's introduction, he supplied the background information he expected to be useful for the less informed of the audience. This is how he practiced what the public service media policy understands by *promoting public understanding.*

However, this goes against unwritten policies in his newsroom. Normally, TAGESSCHAU journalists leave most recent information to the anchorperson and keep the background story for their news items. In another case study from the IDÉE SUISSE project, a journalist explained this policy as enabling the editorial teams to pick up on the latest information in the introduction even immediately before broadcasting. Whereas the item with its complex interplay of prerecorded text and pictures cannot be instantly rewritten and recut, the anchorman or anchorwoman can adapt his or her introduction on the spot to recent developments.

Thus, the *background-recency split* is part of this journalist's tacit knowledge (Polanyi, 1966). Tacit knowledge includes factual and procedural knowledge which is highly routinized. Therefore, it is not consciously accessible for the individuals who have it, let alone the organizations these individuals are part of. This means that the knowledge impacts what the knowers do but cannot be shared among individuals or within and across communities and organisations. As a result, tacit expert knowledge remains unshared, inseparably tied to individual knowers. Identifying such knowledge and making it sharable among colleagues and accessible to entire organizations can contribute to organizational learning (see below, Section 5).

In the UN ELECTIONS case, the tacit knowledge includes collaboration modes, text-picture ratios, storytelling, and combining public demands and market needs, as enacted in what the research team termed *the background-recency split* (see above, Section 4.2). This knowledge and practice complement the widespread and explicit practice of always leaving the production of the introduction to an

anchorperson who might have less thematic competence and therefore less cognitive and communicate resources to contribute to promoting public understanding. By enabling the journalist to do what the media policy expects him to do, the tacit knowledge belongs to a set of good practices of experienced but isolated professionals, as identified in the Idée Suisse and similar projects.

This knowledge deserved to be detected and transferred to the knowledge of the entire organization. Professional training with journalists, organizational development with media management, and discussions with media policy makers after the research phase of the project fostered the knowledge transformation in the domains involved in the project. The sustainability of the solution is visible in a shift from what was identified as hypocritical (Brunsson, 2002; Perrin, 2011) top-down media policing towards inclusive processes involving practitioners but also media scholars and Applied Linguists.

5. Conclusion: Mediating the relationship between disciplines and real-life domains

In our research on, for, and with practitioners, we have analyzed "local" practices (Pennycook, 2010) of text production at workplaces in various domains. Cases such as the Un elections in the Idée suisse project demonstrate how experienced practitioners in the role of "positive deviants" (Spreitzer & Sonenshein, 2004; see also Nicolescu, 1996; Pascale, Sternin, & Sternin, 2010) manage to find emergent solutions that overcome the conflict between seemingly contradictory expectations from their environments.

I conclude by suggesting measures for systematic knowledge transformation between academic disciplines and real-life domains. They allow, for example, experienced practitioners' tacit knowledge to be made available to the entire organization, domain, and society-at-large. At the same time, these measures contribute to the development of theories of text production in, across, and beyond academic disciplines. The following catalogue groups the measures around the key conceptual aspects of TDA, of transdisciplinary action research: the *trans-* (5.1), the *action* (5.2), and the *research* (5.3) aspect.

5.1 The trans- measures

Transdisciplinary action research transgresses and overcomes boundaries on four levels: between domains such as science, education, finance, translation, and journalism; between disciplines such as applied linguistics and communication studies; between institutions such as universities and banks or broadcasting

companies; within individual researchers. This aspect of TDA is covered by the general methodological principle of integrating instead of excluding relevant stakeholders throughout a project. It is reflected in specific measures such as:

–   getting support from the relevant parties – instead of co-perpetuating the routines of institutions that structure "the ways in which research is funded, organized, conducted, and evaluated" (Pohl et al., 2008, p. 417) and that are still strongly rooted in disciplinary paradigms (e.g., Choi & Pak, 2006; De Souza, 2017; Pennycook, this volume).

    In the myMoment project, for example, all the parents of all the children in all the classes investigated needed to be made supporters of the project since they had to explicitly understand and agree to the recording of their children's text production activity. Of course, this applied to the pupils themselves as well as to the teachers. In addition, getting funding for such a project was a challenge at the time since it did not yet fit into funding institutions' schemes. Finally, the software company who had developed the online writing environment needed to be convinced that it was worth developing the keylogging modules and integrating them into the software.

–   overcoming through emergent, creative approaches (e.g., Leavy, 2011; Bernstein, 2015, pp. 16–17) the apparent incompatibilites, for example of goals and timescales – instead of over-compromising, perhaps by sacrificing theoretical precision to a customer's interests in practical solutions (e.g., Hammersley, 2004) and "quick answers" (Agar, 2010, p. 8).

    In the Nationalbank project, the partner from financial industries expected quick findings and absolute data privacy: The analyses of individual text progressions and collaborative workflows should immediately be transformed into as practical as possible guidelines and good practice cases and both the data and the results should be kept under wraps forever. In contrast, the project partners from applied linguistics required time for comparative studies and theory building and aimed at discussing the study in their research communities. In the preparatory meetings of the project, the solution emerged to combine short and long timeframes. As a result, immediate findings were implemented on an ongoing basis as soon as possible after data gathering. Measures based on substantial generalizations, in contrast, were implemented after three years only. After ten years, the data were allowed to be shared with scientific communities.

–   fostering communication and mutual learning in a "reciprocal dialogue" (Jones & Stubbe, 2004, p. 189) across stakeholder groups and project partners while doing applied linguistics as "the practice of language study" (Kramsch, 2015, p. 455) – instead of neglecting such communication and

mutual learning, perhaps by failing to organize regular workshops for all the stakeholders during a research project (e.g., Scholz & Steiner, 2015; Stokols, 2014, p. 56; Morales, 2017, p. 33).

In the Capturing Translation Processes project and its follow-ups, workshops of researchers, translation students, experienced professionals, and clients have been organized as platforms for knowledge transformations between all the relevant project phases. During these workshops, participants share their understandings of key concepts and make their mental reconstructions of the research objects explicit. It is mainly through finding words to share such reconstructions that the stakeholder groups become aware of differences in conceptualizations of the seemingly same world. Once accessible, such differences are excellent starting points for all the parties involved to broaden their horizons, think out of their boxes – and re-define in more inclusive ways what they are talking about, thinking of, and working with (e.g., Liddicoat, this volume).

– In sum, *trans-* measures in TDA research ensure inclusion of all the relevant stakeholders throughout all the phases of a research project. This is in sharp contrast to disciplinary research, where researchers tend to develop study designs by keeping to themselves in what critics have named the ivory tower or even "patterns of ignorance" (Rooney, 2011, p. 13), then access practitioners to gather data, then keep to themselves again to process this data, and only then contact the practical world in order to disseminate what they found out. TDA research actually starts with bringing the potential stakeholders together. All the research projects mentioned in the previous sections required such a substantial phase of collaborative preparation.

The first year of the Idée suisse project, for example, was used mainly to build trust between the journalists and the researchers and establish a consensus about shared goals. Both the managers and the journalists participated in the transdisciplinary process from the beginning. Editors-in-chief, training managers, and representatives from the newsroom staff were able to bring in their ideas during the project planning phase, and each journalist was invited to discuss the project with the research team before any computer or video recordings were made. From experience with previous similar, albeit smaller research projects, the head of the research team was able to provide convincing evidence that the journalists involved would benefit from feedback sessions about their individual and organizational text production practices.

5.2   The action measures

TDA is oriented towards solving practical problems by taking action. Science tends to strive for "true" mid-range theories about situated activity; practitioners to look for "authentic" insights into their own circumstances and practices; and society-at-large to aim for "prudent" measures for solving practical problems (Kemmis, 1988, p. 46, based on Habermas, 1973). This aspect of TDA is covered by the general methodological principle of solving problems instead of shifting them. It is reflected in specific measures such as:

–   observing and scrutinizing organizational power, for example beyond tendencies of "increasing professional effectiveness" (Argyris & Schön, 1974), together with all the stakeholder groups involved – instead of ignoring it, such as by unintentionally encouraging practitioners to amplify conflicts between management and employees (Jones & Stubbe, 2004).

Projects such as Capturing Translation Processes involve stakeholders in the language and communication industries. Such companies tend to be organized hierarchically. This means that members in different roles at different levels of the organization have complementary tasks and pursue complementary or sometimes even contradictory goals. Whereas, in an oversimplified example, translators might want to keep to familiar routines, procedures, and standards, managers could intend to reshape the organization for more profit or growth. Both stakeholder groups then tend to interpret and reframe research in ways that foster what they have in mind: The translators interpret the findings as supporting stability, the managers as supporting change. But there is more. Since TDA requires integrating practitioners from the very beginning of a project, the controversy needs to be made explicit and overcome before designing the research project and, in particular, before formulating the research question and goal. Integrating the previous knowledge of all the stakeholders is a substantial part of the "co-creation of knowledge" in TDA (Gravengaard, 2018).

–   motivating practitioners' superiors – instead of threatening them, such as when translating "organizational enthusiasm" (Agar, 2010, p. 24) and "what was learned from lower levels" (12) into "actual and enduring organizational change" that risks frightening conservative management (24) and augmenting management's reluctance to change.
    The goal of the Idée suisse project was to find out how the Swiss public broadcasting company fulfilled the public mandate of *promoting public understanding* (see above, Section 3.4). Interestingly enough, the company's media management scrutinized or even denied that it was possible for the media

company to fulfill this mandate in the context of increasingly competitive media markets. In contrast, practical solutions that emerged from the conflict of promoting public understanding on the one hand and catering to media markets on the other were found on the ground floor of the organization only. Experienced journalists had developed strategies and practices to overcome this conflict. One of the challenges of the project was to make sure that the knowledge from these good practice cases could be offered to the entire organization without threatening the faces of the media managers who had considered fulfilling the mandate quite impossible a mission.

–   collaborating with practitioners and putting tacit knowledge to use (e.g., Padmanabhan, 2018; Stokols, 2014) – instead of exploiting them, perhaps as cheap sources of scientific data (Davies, 2007, p. 23) or destroying positive deviants' incentive to be one step ahead (McNamara, 2010).

Discussing good practices as identified in projects such as myMoment in classes of, for example, 4th-graders requires sensitivity to children's habits and norms of self-display in peer groups. On the one hand, children as well as adults may not want to share their successful practices with potential competitors. On the other hand, being identified as a good practitioner can be (mis-) understood as wanting to be better than the rest – which can result in ostracizing group dynamics. Moreover, including pupils, parents, and teachers in a TDA project such as myMoment implies that these stakeholders learn something relevant about children's text production practices in general and about processes of establishing text coherence in particular – something beyond and above the practitioners' previous knowledge in this field and something that could not have been learnt as well in less complex, less demanding projects.

–   In sum, *action* measures in TDA research ensure sustainable solutions. In the projects outlined in the previous sections, the problems were solved by carefully mediating between the expectations of the stakeholders, by developing a shared language to reflect on shared goals such as *promoting public understanding*, by identifying crucial tacit knowledge at the bottom of the organization (where most of the situated activity of text production actually takes place), and by jointly implementing knowledge transfer measures such as coaching and training.

The sustainable solutions based on projects such as Nationalbank include teaching, training, and coaching of financial analysts as text producers. Similar measures have been taken in the professional education of (business) journalists as the addressees of financial analyses. Furthermore, organizational development programs based on project findings have resulted in measurable improvement of the document cycling in many institutions in the financial industry. Finally, the

results have impacted the public discourse about financial literacy and the academic reflection of this public discourse (Palmieri, Perrin, & Whitehouse, 2018).

5.3   The research measures

TDA, after all, is research, which is a theoretically-based enterprise. In contrast to disciplinary research, TDA is oriented towards a "quadrangulation of disciplinary depth, multidisciplinary breadth, interdisciplinary integration, and transdisciplinary competencies" (Klein, 2008, p. 406; but see Pennycook, this volume, for a critical approach to the concept of disciplinary depth). This aspect of TDA is covered by the general methodological principle of developing as theoretically and practically adequate as possible a multiperspective reconstruction of the interplay between layered structures and situated activity. It is reflected in specific measures such as:

– grasping the complexity of problems (e.g., Bernstein, 2015, p. 16) – instead of missing it, perhaps by limiting research to "the bleeding obvious" (Harcup, 2012) or by overlooking the diversity of scientific, professional, political, and societal views of questions, problems, and approaches (e.g., De Souza, 2017; Guo & Beckett, 2007; Kumaravadivelu, 2016).

In projects such as NATIONALBANK, identifying and questioning coherence problems in text products would fall short of theoretical and practical relevance. Both theorists and practitioners of financial communication can be expected to know that a lack of coherence risks lowering texts' communicative potential. In contrast, a theoretically interesting question could be why these problems appear, whereas a practically relevant question could be who is most disadvantaged by these problems and how the problems can be avoided with context-sensitive measures. Similarly, applying readabilty formulae only to evaluate texts' communicative potential, as done in promintent studies in economics (e.g., Loughran & McDonald, 2014), fails to recognize that linguistics has developed more meaningful methods for evaluating text quality. In TDA frameworks, in dense collaboration across disciplines and domains, it is easier to become aware of the complexity of a problem and its potential solution – which, of course, makes it more demanding to actually develop this solution. However, solutions to practical problems can only be sustainable if the complexity of the problem has been taken into account.

– integrating practitioners' views (e.g., Roberts, 1997) in multiperspective approaches of bringing together "socially distributed" knowledge (Gibbons, 1994, p. 24) in "multi-stakeholder discourses" (Padmanabhan, 2018, p. 8) – instead of simply reproducing them, perhaps by uncritically reformulating

everyday concepts in more complicated words (Bergman et al., 2010, p. 11; Kühl, 2008, p. 178).

The CAPTURING TRANSLATION PROCESSES project and its follow-up projects aimed at going beyond translators' professional knowledge and ethics. Translators as language professionals tend to be aware of a wide range of problems related to languages, language use, and language tools. In result, educators and experts in the field of professional translation are often disappointed by translation studies. If research wants to add value from practitioners' perspectives, it has to understand what these practitioners already know – and to take this domain-specific shared knowledge into account when defining research questions and goals. This is why TDA postulates dense collaboration of scholars and field professionals from the very beginning of research projects (e.g., Makoni, 2003).

– exploiting methodological rigor in favor of "mutual enhancement of disciplinary epistemology" (Jantsch, 1970, p. 403; see also Padmanabhan, 2018, p. 10) – instead of losing it, perhaps by abandoning precise knowledge and rigorous methods (Arber, 1964; Denzin, 2010; Hirsch Hadorn et al., 2008; Jantsch, 1970, p. 403; Padmanabhan, 2018, pp. 9–10) of, e.g., linking case-specific information to abstract knowledge (Hammersley, 2004).

The MYMOMENT project exploited the large myMoment initiative in Swiss primary and secondary schools. This initiative resulted in a new writing ecosystem for 1st- to 9th-graders, including teacher training, essay writing classes, and an Internet-based environment to write essays and comment on the essays written by peers. What the research project added to this initiative is the recording part. Since all the essays of all the pupils were written by what later was termed *cloud computing*, it was comparably possible to track all the text production processes by implementing keylogging routines in the software on the host computer. As a result, such projects record the keyboard interaction of all the TPs for the duration of the project, which can easily result in tens of thousands of recorded text production processes after a year of recording. This data is minimally contextualized, for example with recording time and the TPs' log-in data. However, if research wants to understand why the TPs did what they did, it needs to overcome the big limitations of big-only data. This shift from big to deep data requires, for example, the theoretically sound selection of cases for cue-based retrospective verbal protocols (see above, Section 2.3). In our projects, this is done following principles of grounded theory and theoretical sampling (e.g., Perrin, 2013, pp. 181–188).

In sum, *research* measures in TDA ensure the sound interplay of theory and practice. Ideally, this joint way of "coming to terms with reality" (Widdowson, 2001) results both in sustainable practical solutions *and* in advances of theory.

In all of our research projects, the findings from case studies such as Un elec-tions were generalized according to principles of grounded theory to develop a model of the dynamic system of situated text production. This model contributes to both theory and practice in the field of writing by foregrounding the dynamics and complexity of collaborative text production. Most of the earlier models of writing and text production, in contrast, neglected aspects of collaboration since they had been developed in experimental settings where individual TPs were told to solve pre-defined problems in individual writing processes – which is quite the opposite of a text production task in natural professional settings (Perrin, 2013, pp. 150–152).

To put it simply, combining applied linguistics with principles and measures from transdisciplinary action research requires communication and collaboration across discursive cultures of stakeholders. Transdisciplinarity, in contrast to inter-disciplinarity, actually *is* about "mediating a relationship between two quite differ-ent planes of reality: that of the abstract discipline and that of the actual domains where the folk experience of language is to be found" (Widdowson, 2006, p. 96). On the one hand, this raises project workloads and slows down research. On the other hand, TDA-informed research projects allow language-aware researchers to

– enact their key competence of mediating between languages of academic and professional disciplines and their discursive cultures;
– provide evidence of their societal relevance by finding sustainable solutions to socially relevant problems in which language and communication play key roles;
– and contribute to the development of empirically grounded theories on lan-guage use in an increasingly complex, dynamic and interconnected world.

This means a threefold benefit, yielded by TDA in applied linguistics. Language matters, more than ever, and by taking appropriate measures, we are in an excel-lent position to do research that matters in real life – which is research on, for, and *with* practitioners.

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