On, for, and with Practitioners: A Transdisciplinary Approach to Writing Research

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In an increasingly globalized and interconnected world, communication entails the transgression of boundaries between "discourse systems" (Scollon, Scollon & Jones, 2012). These systems include 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 the comfortable position of being in growing demand both inside and outside the classroom. Society at large expects applied linguistics to identify and analyze socially relevant "practical problems of language and communication" (Association Internationale de Linguistique Appliquée mission statement, www.aila.info) and to contribute to sustainable solutions which add long-term value from the perspectives of researchers, practitioners, and society at large.

In developing sustainable solutions, applied linguistics can draw on knowledge developed in transdisciplinary research in general (Apostel, Berger, Briggs & Michaud, 1972) and in the research framework of transdisciplinary action research (TDA) in particular (e.g., Stokols, 2006). TDA aims at facilitating theoretically grounded and systematic collaboration between researchers and practitioners, such as writing researchers, on the one hand, and teacher educators, financial analysts, translators, journalists, and policy makers, on the other. 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 (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 (Perrin, 2018) and writing in particular (e.g., Perrin, 2013). In the next section, I describe the methods used within the TDA framework to identify, analyze, and solve problems of written communication in increasingly multilingual and globally connected settings. Next, four examples, from the domains of education, finance, translation, and journalism, illustrate what it means to identify and sustainably solve practical problems. I then offer an in-depth analyses from an exemplary project to explain the trajectory from the problem to the solution step-by-step. Finally, I describe the value that such research can add to the development of both theory and practice.

The Multimethod Approach of Progression Analysis

In all research projects described below, we apply progression analysis, which is a multimethod approach that combines (a) ethnographic observation and interviews, (b) computer recording, and (c) cue-based retrospective verbal protocols (for more details, see Perrin, 2003). Progression analysis has proven valuable in understanding the writing processes of practitioners such as journalists, communication professionals, financial analysts, and translators. It allows data to be obtained on three levels, so researchers can investigate collaborative writing as a situated activity in organizational and societal frameworks (Perrin, 2019).

Ethnographic Observation and Interviews

The first level of progression analysis investigates the writers and the writing situation. Considerations include the writers' professional socialization and economic, institutional, and technological aspects of the work situation as well as the specific writing task that the writers aim to accomplish. Data on the writers' self-perceptions are obtained in semi-standardized interviews that focus on writers' activity, professional experience, and workplaces. Researchers collect ethnographic data through unstructured participatory observations of organizational practices as well as interviews about them. Findings on this level include, for example, writers' general language awareness in the area of coherence problems.

Computer Recording

The second level of progression analysis records every keystroke and writing move-ment in the emerging text with programs that run in the background (behind the text editors that the writers 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 writer. The computer recordings provide information about what writers do during the text production process, with every movement and revision step representing intermediate text versions in the writing process. Findings on this level can reveal, for example, the writing activities that result in a specific text coherence problem.

Cue-Based Retrospective Verbal Protocol

The third level of progression analysis, the sociocognitive conceptualization or reconstruction, draws on verbal data to infer the mental structures that might have guided the writing activities observed on the second level. After finishing a text production process, writers view a playback of their process and watch as their text emerges. While doing so, they are prompted to comment continuously on what they did while writing. An audio recording is made of this verbalization, and the recording is 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, writers' decisions that resulted in a coherence problem in their texts.

In sum, progression analysis enables researchers to consider the multilayered context of a production process; to trace the development of the emerging text; and, finally, to reconstruct the writers' considerations from different perspectives. The three levels of progression analysis allow the strategies and practices that writers articulate in their cue-based retrospective verbalizations to be placed in relation to the situational analysis and the data from the computer recordings. Characteristics such as coherence problems in final texts become understandable as resulting from complex situated activity in dynamic contexts of layered durability (Perrin, 2013, pp. 215–223; drawing on Carter & Sealey [2004] and Layder [1998]).

Examples from Four Domains of Writing

In this section, I outline how transdisciplinary research teams have used pro-gression analysis to understand and improve text production in various domains

and workplaces. 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; Kehler, 2003; Rickheit, Günther, & Sichelschmidt, 1992).

Aspects of this phenomenon are illustrated in the next four subsections with data from four projects: the MYMOMENT project, which tracked children's essay writing to improve teacher education; the NATIONALBANK project, where the production of financial analysts' recommendations for investors was analyzed to improve stakeholder communication; the CAPTURING TRANSLATION PROCESSES project which focused on the use of information sources and decision-making; 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.

MYMOMENT: Tracking Writing Behavior to Improve Teacher Education

Children perform a variety of writing tasks using digital devices, and word processing programs are quickly becoming their natural writing environment. The development of computer logging programs has enabled researchers to track the process of writing without changing the writing environment for the writers 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 writing environment for reading and writing stories and for making comments in class and at home. Writing processes were recorded automatically with progression analysis. Teachers and researchers collaborated in transdisciplinary setting to jointly create knowledge about children's writing practices.

In the following example, the fourth-grader Doris (pseudonym) writes a German text entitled "Der Regenbogen" [The Rainbow] as a piece of free composition; she was able to determine both the form and the content herself. Figures 7.1, 7.2, and 7.3 show the production of the first five (of 30) sentences of Doris' text. The notation system used in the figure is called S-notation (Severinson-Eklundh & Kollberg, 1996), which marks insertions and deletions and shows 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

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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.
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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 woods. ²[I|₂]² The fresh air did me a lot of
g⁴[oed|₄]⁴ood.

Figure 7.1. First two sentences of a fourth-grader's composition (translation by the author).

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Ich sah ⁵[viele Tie|₅]⁵ nicht so viele Tiere wie let⁶[s]²|₆⁷[z]⁷te Woche
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I ⁵[saw many ani|₅]⁵ didn't see as many animals as la⁶[z]⁶|₆⁷[s]⁷t week

Figure 7.2. Third sentence of the fourth-grader's composition (translation by the author).

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).

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 Figure 7.2).

Once she writes the third sentence, Doris moves back through the text, correcting the spelling of a word (i.e., *letste* to *letzte*). She continues to write about her experience in the woods (Figure 7.3). 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).

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 decides to leave it because she is afraid of her mother's reaction. While walking home, observing a rainbow in the sky, she feels sad and guilty. But when she comes back the next day, she sees the hedgehog alive, fully recovered – which, in her understanding, is what the rainbow had promised.

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

Figure 7.3. Fourth and fifth sentence of the fourth-grader's composition (translation by the author).

This story only works because Doris changed the description of the hedgehog from *dead* to *half dead*. This local change ensures the dramaturgical coherence of the narration. The girl's decisive conceptual change in revision 8 (see Figure 7.3) 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 writers' behavior, global coherence seems to be established on the fly, while typing, not by planning key elements in advance. The fourth-grader Doris tells her story linearly, correcting typos and altering far-reaching dramaturgical decisions by deleting all the characters on her way back to the stretch she wants to change.

The MYMOMENT project suggests that analyses of text production processes can provide teacher-education insight. Detailed empirical information shows teachers how children at specific stages of development—thinking, writing, and, in this case, ensuring narrative coherence – and how they are, by doing so, influenced by their writing environment, peers' feedback, and teachers' instructions. The trans-disciplinary approach fosters both an age-specific understanding of essay writing and the design of writing education, addressing central questions such as how to establish narrative coherence in a text. By doing so, it facilitates communication among generations that have different discursive cultures (for example, linear text development versus top-down planning).

NATIONALBANK: Analyzing Financial Analysts' Recommendations for Investors

Another strand of transdisciplinary projects investigates text production in the domain of finance, for example, financial analysts' writing (e.g., Whitehouse & Perrin, 2015; Whitehouse, 2018). Financial analysts continually write recom-mendations for investors. They can be considered professional writers without a professional writer's background – their professional education mostly focuses on technical knowledge about banking and finance but neglects language awareness and writing skills. In the NATIONALBANK project and its follow-up projects, ana-lysts' text products, writing processes, and workflows in financial institutions such as banks were investigated to raise individual and organizational language aware-ness and to promote an orientation toward the addressee's communicative needs.

In this chapter, I briefly highlight one particular outcome of this transdisci-plinary 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 writers switch from linear progression to jumping back-and-forth in the emerging text, they risk losing control over their text and its coherence. Phase

shifts have turned out to be strong predictors of coherence problems. In Figure 7.4 below, the two graphs illustrate writing processes with and without such phase shifts (and the resulting breaks of coherence).

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, by 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 writer 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 Figure 7.4, a straight line from the upper left to the lower right on the left graph indicates a completely linear writing process. In the right graph, however, shifts between more linear and more fragmentary phases are visible. This is where text coherence problems tend to occur.

Such knowledge can help transdisciplinary research teams design measures for professional writing education 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. Measures can help members of an expert community overcome their discursive culture's boundaries and communicate with lay people. Given the low average financial literacy of investors (e.g., Guiso & Viviano, 2013) and the (polito-) economic importance of investment decisions, improving the communicative potential of analysts' recommendations is relevant not only in an economic but also in a societal context (see Whitehouse, 2017).
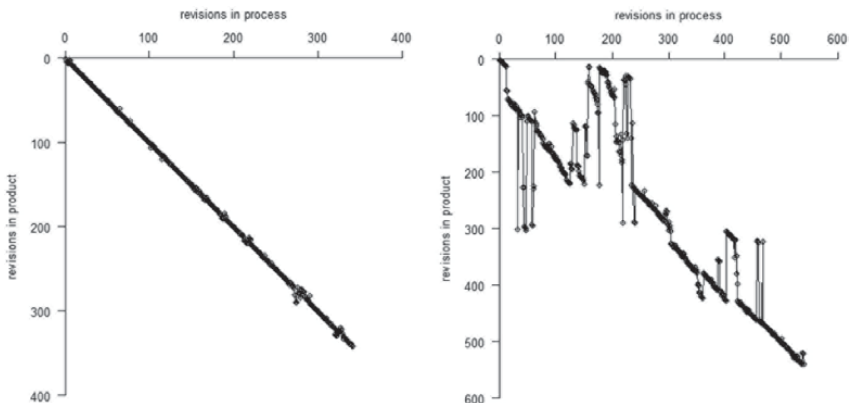

Figure 7.4. Linear progression (left) and multi-phase progression with phase shifts (right).

Capturing Translation Processes: Revealing Translators' Use of Resources

In an extension to progression analysis, eye-tracking has been used in the laboratory to investigate how writers confirm or supplement their domain knowledge when working on texts in an unfamiliar area. The focus of attention can be tracked as writers 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 Figure 7.5 (below), the set of connected spots shows 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 recently banned in the U.S. (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 what relevance a U.S. judge's decision might have for the U.K.. 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.
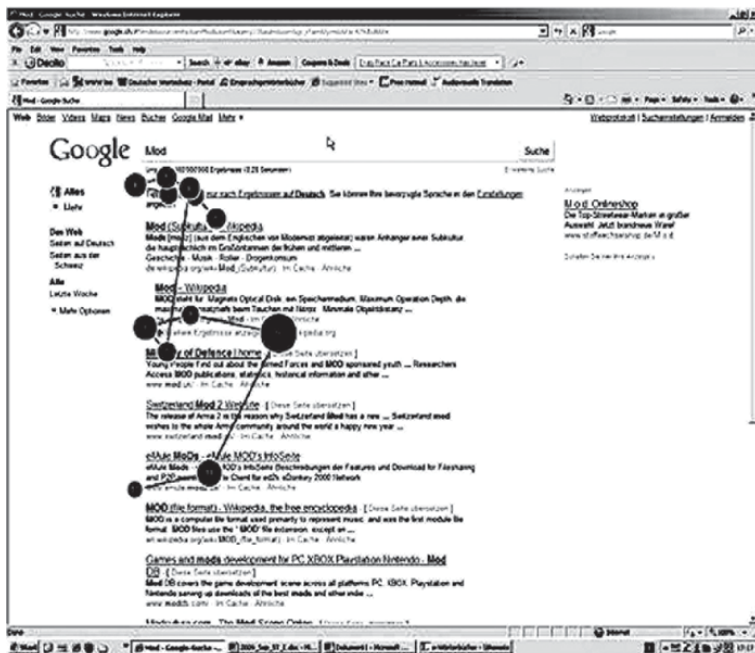

Figure 7.5. Eye-tracking visualization of a professional translator's use of digital resources.

In the subsequent RVP, as he viewed his translation process, the translator 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 establishes coherence between the emerging text and the ongoing discourse in the field. It is in stark contrast to the behavior of a student translator with much less domain knowledge and experience who seemed to have little idea of what to look for. Even though her gaze fell on the solution to this particular translation problem in the list of hits that she checked, she failed to recognize it as such (for more details, see Massey & Ehrensberger-Dow, 2011).

Progression analysis provides 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 transdisciplinary research, which has fed into empirically based improvements in the education and professional development of translators (e.g., Massey & Ehrensberger-Dow, 2013).

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., Perrin & Zampa, 2018; Zampa & Perrin, 2016) have involved public and private broadcasting and publishing companies as well as media policy makers. Our interest in these projects is to examine stakeholders' practices to understand what precisely they do, how they do it, and why they do it this way.

One of our large projects focuses on the Swiss public broadcaster SRG (*Schweizer Radio- und Fernseh-Gesellschaft)* [*Swiss Radio and Television Company*]. The findings show that policy makers, management, and journalists interpret their public or private mandates in different and partially contradictory ways. Most media policymakers under investigation see the mandate of fostering societal integration by promoting public understanding as a commitment by media in general and SRG in particular. However, SRG managers' statements made in semi-standarized interviews tend toward the following propositional reconstruction: *Public media are not the right institutions to solve social and pedagogical problems.*

Basically, this proposition means that SRG fails to do what it says it will and what it is expected to do – essentially that SRG neglects its public mandate of

promoting public understanding. However, by looking more closely at the writing processes of the journalists under investigation, we were able to identify emerging practices – ways out of the conflicts and dilemmas, toward multilayered yet coherent texts that meet both expectations: on the one hand, the public demand for societal integration through fostered public discourse and shared public knowledge; on the other hand, the market expectations of reaching large audiences and generating income with attractive programs and stories.

In transdisciplinary collaboration, we identified these good practices and their most important counterparts, the critical situations. 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. 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.

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 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 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 worked for the Tagesschau, SRG's German-speaking flagship television newscast. In the following subsections, I demonstrate the trajectory from problem to solution through the journalist's collaborative text production practices, the strategies beyond the practices, and the solution that emerged from the situated activity.

The Collaborative Text Production Practices

In the news production process analyzed in 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 chose pictures and took them to the cutter's workplace, where 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 would split the story in an unusual way. The idea and the corresponding practice

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0076    and what I'm trying to do here actually is (to give) the story
0077    which is simply just an election to the security council as it were
0078    to provide a context for it
...     ...
0092    there are two different stories
0093    to tell here
0094    and with the pictures
0095    I can't tell the second story very well of course
0096    these are the pictures we have
0097    which show the election procedure
...     ...
0100    that means that now in the anchor's introduction I have to try
0101    to sort of describe the context
0102    and because we really focus on current topics
0103    I have to somehow make sure
0104    that there is a connection to recent events
...     ...
0113    chavez this is quite difficult in two or three sentences
0114    for people who don't know
0115    what chavez's role is
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Figure 7.6. Translated excerpts of the German RVP from the UN ELECTIONS case.

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 cue-based RVP (Figure 7.6).

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 that we called the *background-recency split*:

- Distinguish between two stories: the recent story and the background story (see Figure 7.6, e.g., line 92).
- Tell the recent story in the news text because it matches the recent pictures available (e.g., lines 94–99).
- Tell 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 anchor's text because there are no pictures (e.g., lines 94–95).
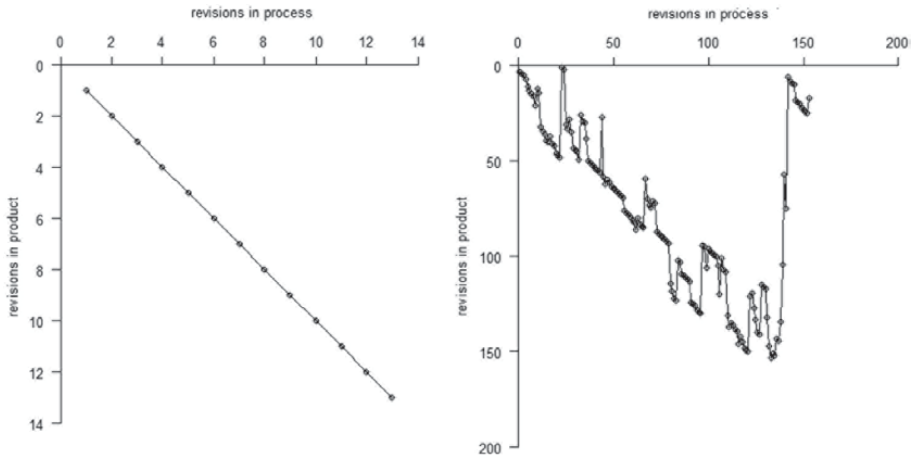
Figure 7.7. Progression graphs of the background story (left) and the recent story (right).

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. The split becomes visible as he produces the introduction for the news anchor first and the news text next. The progression graphs in Figure 7.7 show that the journalist writes his ideas fluently in the order they will be read or heard. The background story for the anchor is generated in a single linear sweep. The recent story is written in a linear composing sequence followed by a second, revising sequence.

The Emerging Solution

The *background-recency split* practice emerged when the journalist attempted to overcome the conflict between basic expectations: He had to meet market demands and policy requirements at the same time. On the one hand, the pictures available only covered recent events; on the other hand, he needed to provide background information to establish discursive coherence for the audience. 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 anchor's introduction, he supplied the background information he expected to be useful for the less-informed of the audience. This is how he practiced *promoting public understanding*.

The *background-recency split* is part of this journalist's tacit knowledge (Polanyi, 1966) that includes collaboration modes, text-picture ratios, storytelling, and combining public and market needs. By enabling the journalist to do what the media policy expects him to do, it belongs to a set of good practices of experienced yet isolated professionals, as identified in the Idée Suisse and similar projects. From an organizational perspective, it deserves to be detected and transferred to the knowledge of the whole media company, as a situational alternative to the widespread practice of always leaving the production of the introduction to an anchor who might have less thematic competence—and as an encouraging answer to management's resignation regarding combining policy and market demands.

Conclusion: Organizational Learning from Tacit Knowledge

In projects such as the four examples briefly discussed above, we have analyzed "local" practices (Pennycook, 2010) of text production at workplaces—for example, practices of establishing discursive coherence—in various domains. Cases such as Un elections in the Idée suisse project demonstrate how experienced practitioners in the role of "positive deviants" (Spreitzer & Sonenshein, 2004; Pascale, Sternin & Sternin, 2010) manage to find emergent solutions that overcome the conflict between seemingly contradictory expectations from their environments. TDA allows experienced writing practitioners' "tacit" knowledge (Polanyi, 1966) to be made available to entire organizations, domains, and society at large.

In all of our research projects, the findings from case studies 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. Many of the earlier models of writing and text production, in contrast, neglected aspects of collaboration. This is because they had been developed in experimental settings where individual text producers were told to solve predefined problems in individual writing processes. That is quite the opposite of a text production task in natural professional settings (Perrin, 2013, pp. 150–152).

To cut a long story short, combining applied linguistics with principles and measures from TDA research in fields such as professional writing requires communication and collaboration across discursive cultures of stakeholders.

Transdisciplinarity, in contrast to interdisciplinarity, actually is about "mediating a relationship between two quite different 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, projects of writing research informed by applied linguistics and transdisciplinarity can result in a threefold benefit. Researchers (a) enact their key competence of mediating between languages of academic and professional disciplines and their discursive cultures; (b) provide evidence of their societal relevance by finding sustainable solutions to socially relevant problems in which language and writing play key roles; and (c) contribute to the development of empirically grounded theories on writing in an increasingly complex, dynamic and interconnected world.

Writing matters, now more than ever, and we are in an excellent position to approach writing with research that matters to all those involved—research on, for, and with practitioners.

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