

The language of numbers

Transdisciplinary action research and financial communication

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Wider parts of society-at-large are not fluent in the language of numbers, and financial literacy in particular is low in many countries (OECD, 2014). This paper shows how research on financial communication with and for practitioners (Cameron, Frazer, Rampton, & Richardson, 1992, p. 22) can foster intra-lingual translation in the financial sector, which increases financial texts' communicative potential and finally enables laypersons to better understand the language of numbers.

Transdisciplinary Action Research (TDA) offers a framework and procedures to approach such goals through close collaboration of scholars and practitioners throughout research projects. Following TDA core concepts, a cyclic process of research and development has been established in the last two decades (e.g. Perrin, this volume; Whitehouse, 2014). Whereas applied linguists involved aimed at better understanding practices of writing and intra-lingual translation at the interface of technical and everyday language, stakeholders from the financial industry wanted to improve their communication. The representatives of society-at-large, finally, were interested in contributing to sustainably increasing financial literacy.

In the first part of the present paper, I sketch the suitability of transdisciplinarity in general and TDA in particular in financial communication (Section 1). Then I define the key concepts of intra-lingual translation, communicative potential, and financial literacy (Section 2). Next, I outline the data corpus and explain how TDA was applied in a series of research projects (Section 3). The presented results on a macro-level shed light on the financial analysts' situation and practices in their multilingual workplace: the findings on the micro-level suggest that financial analysts' texts pose a risk of partial communicative failure (Section 4). The article concludes by indicating empirically based measures to develop financial literacy, intra-lingual translation across stakeholders and texts' communicative potential in finance (Section 5).

Keywords: transdisciplinarity, financial literacy, intra-lingual translation, communicative potential

1. Financial communication and transdisciplinarity

Globalization enables – and requires – society-at-large to participate in life and work matters around the globe. More and more, employees need to make reasonable and informed decisions regarding their financial security and wealth, such as how to deal with the development of their individual pension funds in the face of global economies' developments. On an organizational level, staff of internationally active companies becomes increasingly multi-ethnic, multicultural, and multilingual. This development requires higher management aptness, intercultural competence, and multilingual communication skills (Bhagat & Steers, 2009).

Within the domain of finance, this development is accentuated. A growing percentage of institutions have affiliates and locations in other countries, which expands the demand for intercultural financial communication in two dimensions: geographical width and social depth. On the one hand, communicational attempts span over increasingly distant geographic regions (Yanaprasart, 2016). On the other hand, they are directed towards establishing shared understanding between a growing range of stakeholders, from professionals within the financial industry, to semi-professionals responsible for financial matters in other businesses, and laypeople in society-at-large in an increasingly mediatized world (Hogan-Brun, 2016; Berman & Knight, 2009; Kingsley, 2009).

A prototype case in globally acting financial organizations is the workplace of financial analyst teams. Analysts work as interfaces between the financial core industry of banking and investors in other businesses and society-at-large. By doing so, they face increasing time pressure as well as an increasingly diverse target audience. Information speed and complexity grow, driven by the digitalization of financial markets, whilst the needs and expectations of the sub-groups of addressees diverge more and more. These contextual demands and constraints leave their traces in financial analysts' practices of intra-lingual translation and, finally, in their products, their texts. However, both the practices and the products are widely under-researched, as a review of the state-of-the-art research reveals.

Whereas many studies focus on the texts' micro level (e.g. Loughran & McDonald, 2015; Cheng & Ho, 2015) or on financial analysts' discourse strategies in earnings calls (e.g. Do Carmo Leite de Oliveira & Rodrigues Pereira, 2018; Crawford Camiciottoli, 2018), there are no contextual studies, informed by both theoretical and practical knowledge, that provide an in-depth analysis of financial analysts' workplaces and work within the financial community (Whitehouse, 2017). In particular, the interplay between stakeholders with low financial literacy and practitioners in the financial sector has been largely neglected so far (e.g. Lusardi & Mitchell, 2011; Guiso & Viviano, 2013).

Due to the strong regulations in the sector, research has experienced considerable difficulties in getting access to the back-stage processes of financial communication (Goodhart, 2010; English & Hammond, 2016). Since field research and data collection require this access, practitioners such as banks as institutions and financial analysts as individuals need to be made stakeholders of research in finance. Moreover, only close collaboration with practitioners enables scholars to investigate financial analysts' practices in their natural environment in depth, to access their texts systematically and in breadth, and to include practitioners' views on the relevance of research questions and the appropriateness of methods.

This calls for TDA, Transdisciplinary Action Research. The TDA framework has been shown to offer opportunities for mutual learning between (and benefits for) scholars and practitioners. It requires systematic collaboration of all the relevant stakeholders throughout research projects, from the definition of the research question to the implementation of the knowledge generated. Therefore, doing TDA research means negotiating research essentials such as research questions, field access, key concepts, methods, and roadmaps with colleagues from outside academia – which offers the chance of sustainable solutions to socially relevant problems but carries the risk of over-burdening research teams with contradictory expectations if not carefully dealt with (Perrin, this volume).

The projects summarized in this paper aim to bridge the gap in the state of research, as outlined above, within a TDA research framework, as explained and contextualized in this volume. They focus on financial analysts' written communication in their multilingual workplace in an increasingly globalized, economized, and mediatized society. Drawing, on the one hand, on 20 years of collecting and analyzing data in the field in mixed constellations of scholars and practitioners and, on the other hand, based on a context-annotated corpus of roughly 1500 financial analysts' company reviews (in German, English, and Japanese), the cultural, organizational, and individual variety of the analysts' practices and, finally, their text products' communicative potential for investors were investigated (e.g., Perrin & Whitehouse, 2015; Whitehouse, 2017; Whitehouse, Palmieri, & Perrin, 2018).

2. Definition of key terms

In this paper, I focus on how the increasingly globalized and digitalized and – therefore – multilingual work environment of financial analysts affects the communicative potential of their text products. The question is therefore: To what extent do financial analysts' company updates for investors fulfill their requirement to translate between the disciplines and languages involved and, by doing so, to mediate between laypersons and experts? – The next paragraphs provide

the working definitions needed to understand the thematic focus and the research question in more depth.

Multilingual is defined here as a property of semiotic products, practices, practitioners, or contexts in which or by whom utterances in two or more languages or their varieties are used in combination. Multilingual practices include the ability to switch from one language or variety to another, according to contextual needs. Such practices are enacted by multilingual practitioners or language users in suitable contexts such as communication departments in organizations or newsrooms in media companies (Perrin, Ehrensberger-Dow, & Zampa, 2017) who aim at exploiting their contexts' communicative potential by maximizing their target texts' communicative potential.

By *communicative potential* I understand the property of a context to be conceived – and a text to be written – in a way that fosters thorough understanding of what the authors want to share with the addressees. From the readers' perspective, it can be argued that the readers expect to comprehend a text they are interested in and that they want to be able to extract the relevant information on the basis of their knowledge (Koller, 2011, p. 117). Assuming that the writers intend to ensure comprehensibility of the text in a given context, this would imply that they make themselves familiar with the target reader group and its previous knowledge and expectations.

This allows for the writers to mediate the knowledge across disciplines and the corresponding linguistic varieties – just as inter-lingual translation mediates the knowledge across linguistic regions and their languages. In contrast, Jakobs' experience in practice at the workplace is the following: “The awareness of the target readers and their interests and needs is often lacking, following the policy: a reader who does not understand the text does not understand the matter. A reader who does not understand the matter is not an addressee.” (Jakobs, 2005, p. 20; translation MW).

These practical issues of *intra-lingual translation* have a striking parallel in translation studies: the question as to what extent the translator as mediator needs to overcome or include the differences between the culture or discipline of the source text and the target text is still debated (Seidensticker, 1989; Floros, 2001; Simonnaes, 2001). Whereas translation studies have provided a wide range of approaches over the centuries and thus offer many veins with different emphases, they lack undisputed definitions (Koller, 2011).

As a consequence, there is no consensus as to whether only text operations involving two different natural languages such as Japanese and English, so-called inter-lingual translation, are the “demarcation criterion for the concept of translation” or whether intra-lingual text work is included as well (Hill-Madsen, 2014, p. 58). Zethsen argues “that the challenge of synonymy in *intra-lingual*

translation resembles the challenge of equivalence in inter-lingual translation” and acknowledges that today’s globalized society demands “many different kinds of translation or translation-like activities” (Pym, 2008; Zethsen, 2009, p. 797; Venuti, 2013).

This encompasses translation issues in multilingual workplaces and expert-to-layperson translation as a typical form of intra-lingual translation, for example from *jargon*, understood here as language and vocabulary peculiar to a particular profession, into everyday language. Financial analysts compose a plethora of analyses per day that influence the global stock markets with quantifiable implications, regardless of their communicational potential and the resulting understanding or failure thereof.

This is particularly problematic as the financial literacy of some target reader groups such as retail investors is low. *Financial literacy* is defined as “the knowledge and understanding of financial concepts and risks, and the skills, motivation and confidence to apply such knowledge and understanding in order to make effective decisions across a range of financial contexts, to improve the financial well-being of individuals and society, and to enable participation in economic life.” (OECD, 2014, p. 33; Aprea et al., 2016)

In order to distinguish between agents who command analysts’ educated financial literacy and agents whose financial literacy is considerably lower, I term the target reader groups with low financial literacy *laypersons*, notwithstanding their professional roles. Therefore, *laypersons* here includes, e.g., investors in other industries than finance, as well as mediators such as journalists without professional education in finance.

3. Method and data

In this section, I outline the TDA research framework of the present study and discuss the methods that were chosen (3.1). I then focus on the key analysis unit, the text markers (3.2), and explain the practices applied in data coding (3.3) as well as the composition of the corpus (3.4).

3.1 Research framework and methods

In a series of research projects, applied linguists and professionals from the financial industry have applied and triangulated complementary methods (Denzin, 2012; Grésillon & Perrin, 2014) to analyze the workplace of financial analysts and their practices of text production, as well as the resulting text products and their uptake by the target reader groups. The overall research question has been as to

how financial analysts, by shaping their communicational offers, can contribute to fostering financial literacy and providing information that helps their addressees make reasonable decisions in financial matters, be these addressees professional decision-makers in organizations or individuals in society-at-large.

Investigating such real-life processes and structures in order to reframe and thoroughly understand them from multiple perspectives calls, first, for including an ethnographical approach. *Ethnography* explores sense-making practices of a particular community – here financial analysts – in their natural setting and from their own perspectives. Such, ethnography sheds light on the community's practices from an inner, "emic" perspective and relates them to outer, "etic" perspectives (e.g., Keating, 2001, p. 288, drawing on Pike, 1954). By enacting participant observation in financial communication for more than 20 years and conducting more than 50 interviews with internal leaders and external experts, members of the research groups involved have collected large corpora of data on financial analysts' practices and products in their multilingual settings.

However, since ethnography as a stand-alone research framework is inclined to adhere to case studies and micro-perspectives disproportionately, the ethnographical approach needs to be complemented by other research frameworks: *Grounded Theory* helps researchers generalize findings from case studies comprehensibly and set up mid-range theories regarding "what works for whom in what conditions" (Pawson & Tilley, 1997, p. 72). Similarly, integrative social theory such as *Realist Social Theory* (e.g. Carter & Sealey, 2004) enables researchers to conclude from situated activities to general encompassing structures, for example from practices in a financial analyst multilingual workplace to implicit conditions for communication in a financial institution or for the role of financial literacy in society-at-large.

Finally, *Transdisciplinary Action Research* (TDA) enables researchers to learn systematically "on, for and with" practitioners (Cameron, Frazer, Rampton, & Richardson, 1992, p. 22) by co-constructing prototypes of critical situations and good practices of text production on an empirical base (e.g. Perrin, 2013, p. 202). TDA have helped build the large corpora *banks* and *national bank* (3.4): Practitioners collaborate with scholars to observe situated activity in the workplace and collect data and to develop writing training and coaching programs. The programs offered so far have resulted in a refinement of the practitioners' writing skills and an improvement of the banks internal text production procedures (Perrin, this volume; Whitehouse, 2014).

Within this blended research framework of ethnography, grounded theory, integrative social theory, and TDA, research methods have been applied and further developed. A first group of methods captures text production processes at the workplace, a second group of final text products in the document cycling contexts

and systems of the organizations involved, a third group the uptake by target audiences. Besides these methods oriented towards knowledge generation, methods to implement knowledge in stakeholder groups are applied. For this paper, the most relevant method focusses on products in context: *Pragmatic Text Analysis* (Hoffmann, 2001).

Pragmatic Text Analysis complements procedural analyses by providing insight into the potential of texts to serve as offers of communication in specific contexts. Large corpora can be accumulated for quantitative and longitudinal analyses. Their analyses allow for flexible integration in settings of training and coaching with practitioners. However, a precondition for valid product analyses is the researchers' in-depth, and ethnography-based knowledge of the field. This field knowledge is what allows qualitative research to contextualize and adequately understand text features and, by doing so, to interpret situated activity in the "empirical domain" as traces of "what is going on" beyond (Sealey & Carter, 2009, p. 75).

And here, referring back to TDA, the wheel has come full circle: whereas production and reception can be investigated as situated processes taking place in concrete and observable situations, text products are the traces of, and triggers for, a large variety of communication processes. Therefore, in pragmatic text analyses, text products have to be contextualized by the researchers based on the knowledge of, if possible, all the relevant stakeholders. "The pragmatic analysis of texts and discourse investigates the relations between linguistic items, situated activity, and social conditions. [...] The analysis is always shaped by researchers' knowledge: notably knowledge about language and activity, but also about social and cultural contexts." (Hoffmann, 2001, p. 283; translation MW).

A basic assumption of pragmatic text analysis is that, to a certain extent, communication contexts and processes are reflected in features of the text product itself (cf. Jakobs & Perrin, 2013, p. 19). These features range from single words up to the macro structure of individual texts or entire genre ecologies (Bazerman, 1994; Bazerman & Devitt, 2014). The choice of which features or markers to analyze depends on both the research question and the researchers' contextual knowledge, specifically their theoretical and practical competence in explaining what macro-structural properties certain text markers indicate.

3.2 Text markers and measures

Aspects of comprehensibility (cf. Brun & Hirsch Hadorn, 2009; Drinkmann & Groeben, 1989; Langer et al., 2011) and comprehensiveness of texts produced in situations where financial analysts are free to choose between linguistic options show to what extent the writers are acting as intra-lingual translators in cross-disciplinary knowledge transformation. Whereas a comprehensible text has the

potential to be understood as coherent and meaningful by as wide as possible a range of its target readers, a comprehensive text includes all the relevant information – in whatever form. Thus, financial analysts’ texts for investors bear maximal communicative potential if they combine high degrees of comprehensibility with high degrees of comprehensiveness – or, put simply: if accessible form meets complete content. This differs considerably from, e.g., promotion texts, which include only the information meant to persuade the audience.

Given the research context, several of the earlier, strictly linguistic, definitions of markers do not or not fully apply here, such as: marker as “a free or bound morpheme that indicates the grammatical function of the marked word, phrase, or sentence (Maddieson, 2005); marker in the sense of discourse marker: “discourse marker is a word or phrase that plays a role in managing the flow and structure of discourse” (Zuckermann, 2009, p. 50); and marker as pragmatic marker: “pragmatic markers can be described as those constructions [...] that are present in speech to support interaction but do not generally add any specific semantic meaning to the message” (Romero-Trillo, 2012, p. 4523). In ethnographically-based studies, the concept of *marker* needs to be understood in its sociolinguistic breadth, as “instances of difference in language varieties [...]” (Hodge & Kress, 1988). The following section defines the markers analyzed in this paper – markers of cross-disciplinary knowledge transformation (3.2.1) and markers of intra-lingual translation (3.2.2).

3.2.1 *Markers of cross-disciplinary knowledge transformation*

By markers of cross-disciplinary knowledge transformation, I mean the information units that are indispensable for the thorough analyses of a company (so called due diligence analyses) when mediating expert knowledge in cross-disciplinary financial communication (see Figure 2). To be able to decide how to allocate funds, it is crucial for an investor to be well informed about a company. Information in financial analysts’ texts can be divided into three groups (Volkart, Wagner, & Lautenschlager, 2014; Bucher, 2014, pp. 9–15):

1. Quantitative factors (hard facts), such as profit, cash flow, price earnings ratio, and dividend. Their influence on the share price has been estimated at roughly 65% (cf. Rolke & Wolff, 2000a, p. 233). Quantitative factors help assess the financial risk of a company. Analysts set up a profit model for the next few years that contains different economic scenarios, industry specific developments as well as key figures from the profit and loss statement, the balance sheet, and the cash flow statement. The absolute and relative valuation methods are based on the figures in the profit model. These values are calculated with specific

models defined by the financial institute, which does not leave the analysts with linguistic options. I, therefore, will not include them in this paper.

2. Qualitative factors (soft facts), such as image, company vision, and reputation of the board. Qualitative factors help assess the business risk of a company. Analysts monitor the company closely regarding many different issues that can have an impact on the business risk and hence on the company's share price. In this paper, I focus on the four major standard criteria used in financial analysis: (a) STORY, (b) MARKET POSITION, (c) MANAGEMENT, and (d) MARKET TRENDS.
3. ANALYST'S ASSESSMENT and CERTIFICATION. The (e) ANALYST'S ASSESSMENT provides an evaluation of a company's quantitative and qualitative factors and recommends a strategy with which the investor is most likely to generate the maximum profit with the company's securities. These markers of cross-disciplinary mediation are established in the field of financial analysis as valid and key measures for every company and every industry. They indicate whether the analysts' texts offer comprehensive information for a sound investment decision and, with regard to the qualitative factors, how detailed the information should be. Talking about financial analysts' assessments necessitates mentioning the (f) ANALYST'S CERTIFICATIONS. They are an integral part of company reviews, describing the frame of the analysts' responsibility for the information provided to investors.

In the following, each marker discussed in the results of this paper will be briefly outlined with a short definition, context information as well as an example and relevant comments for text illustration.

a. STORY

Definition: STORY markers are groups of propositions referring to the current development of the company and its strategy.

Context: In order to assess a company, it is important to be informed about its current situation, for example: Is there a merger soon, did the MANAGEMENT change, or was there a turnaround recently?

Example: „Seit dem Verkauf des Konzernbereichs Präzisionsrohre im Jahr 2007 hat die Dynamik beim Aus- und Umbau der Dätwyler-Gruppe zugenommen.“ (text Dätwyler, lines 55–57)
 (“Following the sale of the Precision Tubes division in 2007, the dynamic of expansion and restructuring in the Dätwyler Group has increased.”; translation MW).

Comment: The disposal of the precision pipe unit in 2007 resulted in changes in the company that are still ongoing. Some investors may view

this dynamic as positive, whereas other investors might see some risks because the process is not yet concluded.

b. MARKET POSITION

Definition: MARKET POSITION markers are groups of propositions referring to the position of a company in comparison to other companies in the same market or industry.

Context: The comparison is generally made in terms of sales. It can, however, also be made in terms of revenue, product usage, consumer perception, etc. The MARKET POSITION can be evaluated for the whole company or for only a certain product or brand. Information about the MARKET POSITION of a company is crucial for investors. It is important to know how a company is situated in the market regarding products, quality, costs, or innovation in order to extrapolate the future profits and the development of the share price.

Example: „Mit einem Immobilienportfolio im Wert von CHF 8.5 Mrd ist SPS die grösste Schweizer Immobiliengesellschaft und gehört mit einer Marktkapitalisierung von CHF 4.5 Mrd nach der Kapitalerhöhung zu den Top 5 unter den europäischen Immobiliengesellschaften.” (text Swiss Prime Site, lines 49–53)
(“*With a real estate portfolio of 8.5bn Swiss francs, SPS is the largest Swiss real estate company. After the capital increase, SPS belongs to the top 5 real estate companies in Europe with a market capitalization of 4.5bn Swiss francs.*”; translation MW).

Comment: With this data, it is fairly clear for an investor how the company is situated in the market, making it easier to draw conclusions about its pricing power, for example.

c. MANAGEMENT

Definition: MANAGEMENT markers are groups of propositions referring to highly ranked employees with considerable responsibility regarding the development of the company.

Context: Planning, realization, and controlling of the company’s processes are the main responsibilities. Financial analysts closely monitor the managers regarding credibility, consistency, trustworthiness, and corporate governance. From an investor’s point of view, it is more likely that there will be further shifts in a company whose MANAGEMENT and strategy changes frequently. This is also reflected in the share price often being fairly volatile.

Example: „Seit Oktober 2008 ist CEO Kottmann daran, die Geschichte von Clariant neu zu schreiben.” (text Clariant, lines 69–70)
 (“*Since October 2008, CEO Kottmann has been working on giving Clariant a complete overhaul.*”; translation MW).

Comment: CEO Kottmann has restructured Clariant significantly since October 2008 and will carry on doing so. This means that Clariant of today can no longer be directly compared to the company before October 2008.

d. MARKET TRENDS

Definition: Market trend markers are groups of propositions referring to patterns of developments in an industry.

Context: MARKET TRENDS depend on various factors, such as cyclicity, trends in investors’ behavior, and market psychology. Depending on whether a company is active in a procyclical, countercyclical or acyclical industry, the investor will decide against the backdrop of the current economic situation what the best investment strategy is.

Example: „In den 27 Ländern der EU (EU-27) ist die Stahlproduktion im Elektrostahlverfahren, das durchweg auch von Schmolz + Bickenbach angewendet wird, während der letzten zehn Jahre von 71 auf 76 Tonnen pro Jahr gestiegen.” (text Schmolz + Bickenbach, lines 194–198)

(“*Steel production in the 27 EU-member countries (EU-27) using the electric arc steel-making process – a process that Schmolz + Bickenbach consistently utilizes as well – has surged from 71 to 76 million tons per annum in the past ten years.*”; translation MW).

Comment: The market trend shows that the steel volumes produced with the electric arc steel-making process have increased over the last ten years. Since Schmolz + Bickenbach is also producing steel with the electric arc process, it can be assumed that the company’s volumes in this section have also soared. If they have not, a closer look at the reasons for this would be justified.

e. ANALYST’S ASSESSMENT

Definition: ANALYST’S ASSESSMENT and recommendation markers are groups of propositions referring to an analyst’s evaluation of a company’s quantitative and qualitative factors.

Context: The value of an analyst’s text is that the investor does not have to base the investment decision on prepared data and facts only. Drawing on models, tools and experience, the analyst provides

an assessment of the company and recommends a strategy with which the investor is most likely to generate a maximum profit with the company's securities. The summary of the analyst's opinion is usually expressed by one word: "buy", "hold", or "sell". The text analysis in the present article examines whether analysts explain in more detail why their ratings and recommendations are justified. This would enable investors to understand the reasoning behind the assessment.

Example: „Wir sehen für die nächsten Monate keinen positiven Kurstrigger für die hoch bewertete Panalpina-Aktie und stufen sie daher neu mit ‚Untergewichten‘ ein.“ (text Panalpina, lines 400–403)
 (“For the next few months, we do not see a positive trigger for the Panalpina share. Therefore, we downgrade the rating for the overvalued stock to ‘sell.’”; translation MW).

Comment: Since the analyst views the company's share price as high and does not foresee any relevant news or triggers to justify it, he downgrades the rating of the share to “sell”.

f. ANALYST'S CERTIFICATION

Definition: ANALYSTS' CERTIFICATIONS are groups of propositions referring to the analyst's responsibility for the information provided.

Context: Especially in the aftermath of the financial crisis in 2008, market participants began to ask questions as to how and by whom financial ANALYSTS' ASSESSMENTS are influenced. ANALYSTS' CERTIFICATIONS declare that the analysts are independent in their view, and that they are not remunerated by the companies they cover with their analyses. At the same time, the disclaimer ensures that neither the analysts nor the bank can be held responsible if investors follow the analysts' advice and do not achieve the yield they were anticipating or hoping for.

Example: ANALYST'S CERTIFICATION

アナリスト証明

私 高宮健は、(1)レポートに記述されている全ての見方が私のここで議論した全ての証券や発行企業に対する私の見方を正確に反映していることを保証いたします (2) さらに、私は私の報酬が、直接的あるいは間接的にこのレポートで議論した推奨や見方によって、現在、過去、未来にわたって一切影響を受けないこと[...]を保証いたします。(text Mitsubishi UFJ, page 11)

(“I, Ken Takamiya, (1) hereby certify that the view about the companies and their securities discussed in this report accurately

reflects my personal view about all of the subject companies and securities. (2) Moreover, I confirm that my recommendations and opinions that I directly or indirectly express in this report have no effect on my remuneration in the past, the present or the future [...]”; translation MW)

Comment: The analyst declares that his assessment of the companies discussed in his text is independent and has not been forced upon him by any other stakeholder and that his salary is not dependent on his assessment of the security.

3.2.2 *Markers of intra-lingual translation*

By markers of intra-lingual translation, I mean all the linguistic text features that are likely to foster cross-disciplinary communication when processed by the target readers. Acknowledging that expert-to-layperson communication is a typical form of intra-lingual translation (Zethsen, 2009, see above, Part 2), the text product for the target readers must reflect this by translating the experts’ technical language according to the target readers’ literacy and expectations (Koller, 2011, p. 117) – “what works for whom in what conditions” (Pawson & Tilley, 1997, p. 72, see above, Part 3.1). If financial analysts’ company reviews for retail investors read the same as the reports that are meant for other financial experts such as peers, traders or institutional investors, they cannot be considered intra-lingual translations. In this paper, I focus on two obvious markers: (a) ABBREVIATIONS and (b) SPECIALIST TERMS, which consist of single words or small word groups. In the following paragraphs, I define the marker types, explain their contextual relevance, and provide a short sample analysis.

a. ABBREVIATIONS

Definition: ABBREVIATION markers are acronyms of complex technical terms which are not explained in the text and, therefore, impede full comprehensibility of the text in cross-disciplinary communication.

Context: Even though many investors are familiar with some general financial terminology and key words, such as “cash flow” or “balance sheet”, many of them do not have specific knowledge about accounting or technical financial terms and even less about the ABBREVIATIONS of these terms. Every use of an ABBREVIATION that is not explained diminishes the comprehensibility of the text (Schneider, 2011) and its communicative potential. Hence, the higher the number of unexplained ABBREVIATIONS in a text, the more difficult it is for an investor to process the information

provided. Whereas publishers in many other disciplines do not allow the use of abbreviations or acronyms that have not been explained at least at first occurrence, the stakeholders in the document cycle who deal with financial analysts' texts most often do not oppose (see 5, occupational bias).

Example: „Zudem wird der EBITDA durch die Umstellung bei IAS 19 (Pensionskassenverpflichtungen) ab 2013 jährlich mit ca. CHF 60 Mio belastet.” (text Swisscom, lines 432–434)
 (“Furthermore, EBITDA will be negatively impacted to the tune of roughly CHF 60 million per annum starting from 2013 due to the changeover to IAS 19 (pension fund obligations.”; translation MW).

Comment: The ABBREVIATIONS “EBITDA” and “IAS 19” are not explained in the text. For an investor who is not familiar with these terms it is not possible to fully understand the meaning of this information and its implications for the company's result.

b. SPECIALIST TERMS

Definition: SPECIALIST TERMS are words or phrases referring to technical issues in a precise way that is defined by the discipline(s) using the term. Since understanding such definitions requires thorough disciplinary background, technical terms tend to be incomprehensible, vague, or even misleading for language users from outside the discipline.

Context: In order to make texts more comprehensible in cross-disciplinary communication, most authors of style guides in the field of technical and professional communication recommend explaining SPECIALIST TERMS (cf. Langer et al., 2011, p. 22). SPECIALIST TERMS are considered to alleviate communication between insiders while raising barriers for outsiders (cf. Schneider, 2011, p. 175). Financial analysts' texts aim to inform investors sufficiently about a company and, therefore, should explain matters in a way that is understandable for the target reader. The text analysis investigates how much the texts are interspersed with SPECIALIST TERMS from the relevant industry sector and from finance that can be expected to fail in cross-disciplinary communication.

Example: „Die Akquisition von Guidici bringt ausserdem führendes Know-how in der Falschdralltexturierung („false-twist texturizing’) in die Gruppe.” (text Schweiter Tech, lines 312–315)
 (“The acquisition of Guidici moreover brings leading know-how in the area of false-twist texturizing to the group.”; translation MW).

Comment: The information about Guidici cannot be assessed if the investor does not know what “false-twist texturizing” and its importance in the market is. Should this be an important production process in the industry, Schweiter can strengthen its MARKET POSITION considerably with this acquisition. If “false-twist texturizing” is a niche, however, sales are not likely to increase significantly with this new part of the company. Both cases would have an impact on the investors’ expectations and, therefore, on Schweiter’s share price.

3.3 Data coding

Both categories of markers were analyzed taking into consideration that

- all the texts had been read by another team member before publication;
- the financial analyst had adjusted the text according to the team colleague’s feedback;
- all the texts were proofread and copy-edited by an in-house editorial team and made compliant with the guidelines of the bank.

These contextual conditions allow for the basic assumption that the texts have undergone the organization’s quality processes of text production in the document cycle and correspond to the intended quality standards.

The following scales have been applied for markers of intra-lingual translation: if there is no occurrence of unexplained ABBREVIATIONS, or unaccounted SPECIALIST TERMS, a text is considered to fulfill the communicative potential in terms of the relevant marker. One occurrence of a marker is viewed as an accidental problem due to inattentiveness in the document cycle. Two or more occurrences of a marker are regarded as a systematic problem thoroughly affecting a text’s comprehensibility; these texts are expected to be hard to understand for the target reader.

The scale applied for markers of cross-disciplinary knowledge transformation is as follows: if a marker is substantially present in the text, the text fulfills the communicative potential in terms of the respective dimension. Occasional instead of substantial occurrences of markers are considered accidental problems. A marker’s total absence in a text is classified as a systematic problem. Of course, such a classification raises the issue of quantification. In the present investigation, I refer to due diligence guidelines which require an appropriate minimal count for each marker (Bucher, 2014, p. 25; Volkart et al., 2014). This quantification has been examined in the main project but cannot be discussed here due to space limitations. All the texts were examined regarding the markers explained in

Sections 3.2.1 and 3.2.2 and were coded with HyperResearch, a standard program for qualitative data analysis.

3.4 Data corpora

The findings as presented in this paper are based (1) on ethnographical data collected between 1990 and 2018, and (2) on the two text corpora *banks* and *national bank*.

The ethnographical data comprise notes of participant observation of several roles of employees over more than 20 years, 240 files and documents such as guidelines explaining internal structures and processes, as well as over 50 focused interviews with employees, internal leaders and external experts. The data were collected in several large Swiss banks with strong international activities and number of staff between 7'000 and 45'000. They help the researcher identify rich points of the multilingual workplace development from 1990 to 2018. Given the length limitations of this article, the ethnographic data are not discussed in detail from a methodological point of view but explicitly taken into account when interpreting the data and drawing conclusions.

The text corpora *banks* and *national bank* were collected in collaboration with practitioners, in this case financial analysts. The corpus *banks* consists of several context-annotated international sub-corpora of German, English, and Japanese financial analyst company reviews, the corpus *national bank* encompasses financial analysts' macroeconomic texts and production processes. The overall research base of analysis contains roughly 2000 texts. The sub-corpora used in this paper are mid-size texts. *Mid-size* refers to a standard format of four to eight pages, as opposed to short updates of less than two pages and large ones of more than eight pages (Bucher, 2014).

Frequency and scope were the determining factors for the focus on mid-size updates. First, equity analysts produce, and for performance measuring reasons have to produce, mid-size company updates frequently and regularly. Long formats, such as industry reports with up to 100 or more pages are usually published only a few times a year. Second, the mid-size format requires analysts' elaborate assessments in contrast to the short format, which is used for highly focused short-term news only. As the banking sector is a highly regulated and standardized sector, the template structure of the mid-size format texts in the German, English and the Japanese corpora is very similar. As a whole, the texts in the sub-corpora cover all industries. All of them were proofread and copy-edited by an editorial team within the bank.

Roughly a third of the front page comprises standardized fields such as the analyst's investment recommendation (sell, hold, or buy), the current share price, and the development of the covered company's major key figures over the last

couple of years – for example Earnings per Share (EPS), or Price/Earnings ratio (P/E ratio) – as well as the financial analyst’s estimates for the next few years. There are also details as to which entity of the bank issued the recommendation, and the name of the analyst who wrote the text. The data fields are followed by a short summary. The text itself is roughly five pages long, interspersed with tables and graphs illustrating the status quo, the development over the last few years, and the assumed trend of the next few years regarding the company’s figures, share price, market share, strategic moves, or business field, and finally followed by a disclaimer. In the present paper, the financial figures and graphs are not discussed.

The distribution channels of financial analysts’ texts include online, paper mail, and print copies. They are illustrated in Figure 2 (4.1.1).

4. Results

In this section, I first discuss exemplary findings on the macro-level. By doing so, I draw on ethnographical data to explain key properties of financial analysts’ multilingual workplaces that enable and constrain their practices of text production (4.1). Second, I focus on the micro-level, and the text products’ communicative potential (4.2). Finally, I triangulate the macro and micro findings used as examples in this paper (4.3).

4.1 Macro-findings

This section explains how financial analysts are situated in their environment (4.1.1) and how this environment shapes their text production practices (4.1.2).

4.1.1 *Financial analysts in multi-layered contexts*

Financial analysts are professionals who collect and prepare economic data in the areas of shares, bonds, funds, and sustainable investments, who make short and long-term estimates and forecasts from a micro and macro perspective, and who publish their recommendations in and for the financial community. They are professional writers, working in a complex field of competing colleagues, guidelines, and interests of companies, investors, and journalists, whilst having to align with legal requirements as well as the guidelines of their employer (Whitehouse, 2017). Figure 1 situates financial analysts within the financial sector.

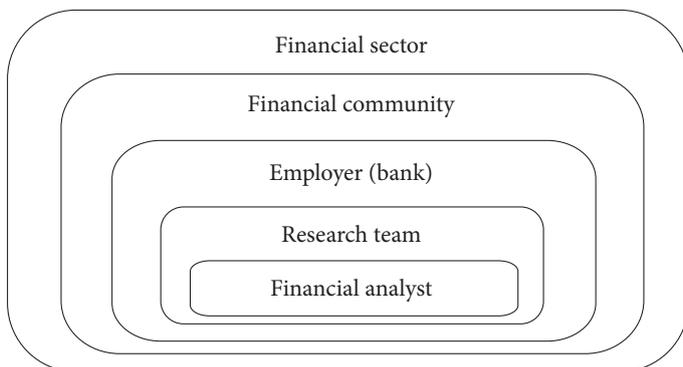


Figure 1. Financial analysts in context (Whitehouse, 2019)

Research teams (Figure 1) are the core units for financial analysts. Since the *employer* (Figure 1) is active around the globe, these teams consist of employees with multi-ethnic, multinational and multilingual backgrounds who sometimes are not located in the same place even though they belong to the same organizational unit. For example, a team leader can be based in London while some of the team's employees are based in Zurich. Even though the corporate language is English, the research team leaders face several challenges. First, they have to consider different cultural backgrounds and with it different attitudes as to how work is performed by the individual employees. Second, the multilingual setting with its different language backgrounds can lead to misunderstandings in communication which is particularly detrimental in a sector where the impact of individuals' utterances or texts can influence the whole market (Whitehouse, 2017).

By simply looking at these factors from a theoretical perspective, it might appear that a successful cooperation in such a workplace is very difficult. However, results from ethnography show that there is a strong and often underestimated melting pot in this work environment: financial jargon. Just as with the information technology sector, the ruling language in the international financial sector is English. Therefore, financial analysts actually do have a broad common ground of mutual understanding regarding work matters. This professional understanding is further strengthened by the bank's internal guidelines and codes for financial analysts. A rich point, in the sense of the anthropologist Agar (Agar, 1986), here is the set-up of financial analysts' published company updates for investors: they follow an international standard format and are very much alike throughout the whole financial sector worldwide (Perrin & Whitehouse, 2015).

Another factor influencing financial analysts' workplace is the banks constant intention to cut costs: in the aftermath of the financial crisis but also due to restructuring, the research teams in all the banks under research were decimated. On the one hand, this leaves fewer analysts with more work; on the other hand,

it means that the same recommendations are frequently used for several groups of investors with different background knowledge. Thus a text genre like financial analysts' company updates originally intended for a particular audience might be indiscriminately distributed to multiple addressees within the *financial community*. And this is where the problems of communication begin.

In the following paragraphs, a schematic visual representation of the financial community (Figure 2) might help understand how communication problems and broadening the range of addressees within the financial community are connected. The blue frame in Figure 2 shows that investors (including laypeople deciding on their pension funds), financial analysts (including rating agencies), and journalists (including laypersons in finance) are the participants in the financial community. They influence each other and depend on each other at the same time. The roles and their interdependencies are explained in the following.

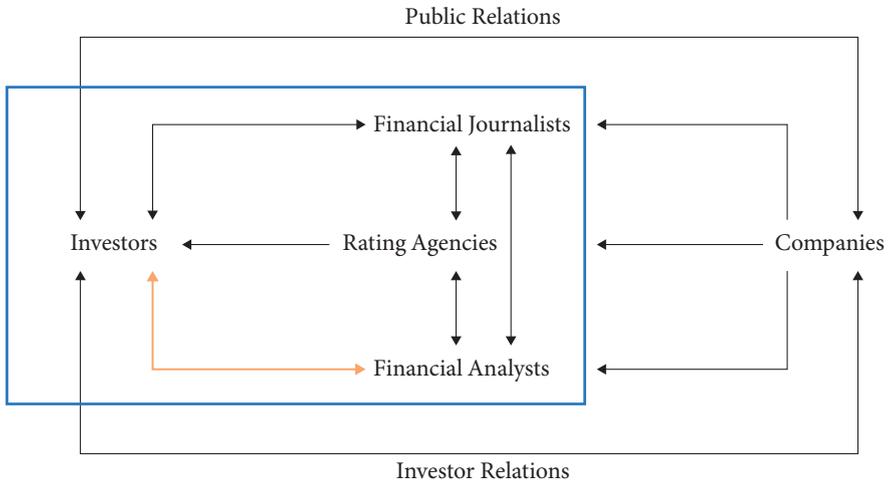


Figure 2. Flow of information in the global financial community (Whitehouse 2019)

Investors are individuals, companies, institutions, or similar entities committing money to investment products with the expectation of financial return. They rely on information and forecasts about financial markets and firms that are provided by other participants in the financial community, especially financial analysts. Analysts' judgments are considered to be the most appropriate approximation of market expectations (Jorns, 2009). Sound analysts' reports with processed data can help investors gain a clearer picture of events on the financial markets. Whereas institutional investors have profound knowledge in finance, retail investors' financial literacy is often very low and they must be viewed as laypersons (Lusardi & Mitchell, 2011; Krische, 2014).

Journalists and financial analysts influence each other: journalists often seek analysts' opinions and complement or replace their own judgments with the analysts' assessments. Especially when companies undergo a crisis or are involved in a scandal, analysts' opinions are often cited in the press or broadcast where financial analysts can even reach "celebrity-like status" (Kuperman, Athavale, & Eisner, 2003). According to a journalist, inserting financial analysts' quotes "spices up the story" (Schaffner, 2017). In order to be recruited for the job, every financial analyst needs additional qualifications in economics. A majority of journalists covering business and financial topics have a sound economic background, a good part of them, however, lacks profound technical knowledge. In consequence, there is a number of journalists who can be considered laypersons regarding financial matters (e.g. Reckinger & Wolff, 2011).

Companies inform the financial community by using different channels such as investor relations, public relations, different media, and different genres. Financial analysts play an important role here as well: the companies regularly organize meetings between their management or board and financial analysts (Rolke & Wolff, 2000b).

The *financial sector* (Figure 1), finally, as the all-encompassing frame, is characterized by rapid changes, and it reacts very sensitively to news, events and information. Even minor changes in society-at-large, let alone major events, have the potential to have an impact on the financial sector. A natural disaster, for example, sets the share prices of the insurance industry in motion, or increasing unemployment rates can weigh on the car industry share prices. Especially after the 2008/2009 financial crisis, the ongoing debate on how much influence individual participants exert on market developments has again become relevant. Financial analysts' texts, but also their work practices are one form of influence on the market participants.

4.1.2 *Practices: The workplace toolset*

To be able to cope with the demands in a specific work environment requires a prototypical set of qualifications. Strongly standardized repetitive processes, e.g. printing out a document or typing on the keyboard, can be managed with routine. However, more complex tasks, such as explaining and describing the future development of a company to the investors in form of recommendations, ask for practices.

Practices are being reproduced in analysts' teams, more or less consciously, as part of standardized text production. In comparison to routines, practices are aimed at completing a task in a constantly changing environment. Reflective practitioners further develop their practices. Such, practices comprise a dynamic and a strategic component. In the case of financial analysts, the strategic part is

reflected in a conscious and nameable vision of how to set up and write a company update for investors for it to be the intended shape and to fulfill the envisaged function (Perrin, 2013, p. 263), complemented by the dynamic part of executing and implementing this vision into action. Thereby, practices are constantly reflected, questioned, and changed by the practitioners themselves (e.g. Jones & Stubbe, 2004), whereas routines such as copying a document stay the same.

Based on the ethnographic data, the following key properties of practices can be found in the workplace of financial analysts:

- functional. The observed practices help achieve tasks. Examples include ANALYZING THE KEY FIGURES OF A COMPANY.
- partly routinized. Albeit routinized in general, the practices observed change slightly in accordance with the task. Examples include WRITING A COMPANY REVIEW FOR INVESTORS IN ENGLISH BASED ON A GERMAN ANNUAL REPORT.
- related to roles and organizations. Practices are typical for certain roles, e.g. financial analysts. A job role can be seen as consisting of the bundle of practices an employee masters. Moreover, they are typical for organisations and institutions such as specific banks or workplaces within banks. Examples include INFORMING INVESTORS ABOUT THE DEVELOPMENTS ON THE FINANCIAL MARKETS.
- embodied, multi-semiotic, mediatized. The practices observed are always embodied, meaning linked with physical action, e.g. typing on the keyboard. They involve not only letters but also pictures, layout, and several sign systems, and nowadays they are invariably connected with and transmitted by media. Examples include WRITING ON THE COMPUTER.
- organized in sequences, networks, and clusters. Often, practices are fixed sequences of sub-practices; at times practices are organized in networks; they are not always completely determined. Examples include WRITING A COMPANY REVIEW. This complex practice basically consists of a sequence of sub-practices, but there is network-like flexibility regarding the order, e.g. first SETTING UP THE TABLE WITH KEY FIGURES, then WRITING THE TEXT BODY, then WRITING THE TITLES – or first WRITING TITLES, then WRITING THE TEXT BODY, then SETTING UP THE TABLE WITH KEY FIGURES etc.
- interacting with context, domain, culture, thus historically bound. Practices are influenced by contextual frameworks such as the domain of financial communication, but they slightly and gradually change these frameworks through their own modification and adaptation. Driven by this interaction, both practices and contexts develop and change over time. For example, since the financial crisis 2008/2009, more and more legal requirements force financial

analysts to ADAPT THEIR TEXTS TO RESTRICTIONS OF COMPLIANCE. At the same time, this adaptation fosters further standardization and juridification.

Taken together, these findings echo a Bourdieuan understanding of the concept of practice (e.g., Bourdieu, 1977; Hanks, 1996; Pennycook, 2010). Embodiment (Varela, Thompson, & Rosch, 1991) and co-adaptation (e.g. Larsen-Freeman & Cameron, 2008, p. 105) matter. Practices combine material, mental, medial, semi-otic, and social activities. They encompass the reflecting head, the typing body at the cross-linked computer at the workplace, the changing characters on the screen and the communities that are connected by the use of the characters (Perrin, 2016). Since practices interact with their environment – they change the environment and are changed by it – they are bound to and fundamental for communities, domains, cultures and history (e.g. Wenger, 1998). And they are engraved in the text products as their material results.

4.2 Micro-findings

In this section, the results for the markers of cross-disciplinary knowledge transformation (4.2.1) and intra-lingual translation (4.2.2) are discussed. These markers have been identified as the key properties of the text production (see above, Section 3.2) in the light of both the research question (2) and the ethnographic findings (4.1).

4.2.1 *Results for markers of cross-disciplinary knowledge transformation*

The results for the markers of cross-disciplinary knowledge transformation suggest that the communicative potential is fully or at least partly exploited in almost all the texts and that the analysts as experts inform the institutional investors, but also retail investors as laypersons well and sufficiently. The results for the markers *STORY* and *ANALYST'S ASSESSMENT* show that all the texts reach their full communicative potential for these markers. The count for the marker *MARKET POSITION* indicates that the majority of the texts offer sufficient, although not very detailed, information about how a company is positioned in the market. Generally, the analysts inform well or sufficiently about the *MANAGEMENT* and the *MARKET TRENDS*.

Especially interesting are the results for the marker *ANALYST'S CERTIFICATION* in the Japanese sub-corpus. Even though equity analysts' texts are strongly standardized on a macro level regardless of the place where they are published, the *ANALYST'S CERTIFICATION* in the Japanese texts are highly personalized. These highly personalized parts cannot be found in any of the German or English texts in the overall corpus. This reflects the adaptation of the genre to the environment and its expectations of individual responsibility. In the Japanese context,

responsibility is one of the core cultural concepts across all disciplines – for experts as well as laypersons.

However, whereas the results for the markers of cross-disciplinary knowledge transformation suggest a high adaptability of the text production system to the target readers, we find a considerable lack thereof regarding the markers of intra-lingual translation.

4.2.2 *Results for markers of intra-lingual translation*

The results for the markers of intra-lingual translation indicate that financial analysts use significantly more technical terms and ABBREVIATIONS than their readers can understand. On average, there were 7 unexplained ABBREVIATIONS and 12 unaccounted SPECIALIST TERMS in the equity analysts' company updates in the analyzed sub-corpora. The highest numbers were reached with 11 ABBREVIATIONS and 39 unexplained SPECIALIST TERMS; the lowest numbers were 4 ABBREVIATIONS and 4 unexplained SPECIALIST TERMS. That these high numbers of ABBREVIATIONS and SPECIALIST TERMS impede the readers' text understanding considerably has been confirmed by a customer survey conducted by a large Swiss bank (Weber, 2013).

Implementation of these findings within the TDA framework confirmed the results: Writing coaching seminars with financial analysts (3.1) revealed that bond and stock analysts who work for the same bank (!) could often not fully understand each other's texts due to too many specialist terms and abbreviations.

4.3 Triangulation of macro and micro findings

So far, I have developed and interwoven working definitions of three key concepts of financial communication in context: intra-lingual translation, communicative potential, and financial literacy (Part 2). Then, I have explained the research framework, the data corpus, and how we applied TDA in a series of research projects to combine breadth and depth of long-term analyses of sense-making practices in a changing and inter-culturally increasingly challenging context (Part 3). The presented examples of results on the macro-level shed light on financial analysts' practices in their multilingual workplaces, whereas the findings on the micro-level suggest that financial analysts' texts pose a risk of partial communicative failure (Part 4).

Taken together, the macro and micro findings allow for conclusions that indicate which measures can further develop the financial analysts' writing practices in context and, most of all, improve the texts' communicative potential against the backdrop of changing workplace conditions in the financial sector. I conclude by explaining the measures taken in the research projects so far and by outlining

which effects such measures can have on communication within the domain of finance – and beyond, for the benefit of laypersons, organizations in general, and society-at-large. The measures result from applying extended ethnography within a TDA framework (see above, Part 3.1) and are based on insights such as the micro and macro approaches outlined above (Parts 4.2.1 and 4.2.2 respectively).

Counting the number of lexical items (such as SPECIALIST TERMS and ABBREVIATIONS) only makes sense if researchers are able to explain why these micro-features matter from a macro-level viewpoint. Such an explanation requires contextual approaches, informed by both theoretical and practical knowledge. This is what traditional comprehensibility studies in the field of financial communication have neglected so far (for an overview see, e.g., Antos, Hasler, & Perrin, 2011). Linguistic indicators, as simple as they may seem, need to be explained carefully and from complementary perspectives regarding their theoretical and practical relevance in context. This sound contextualization is the theoretical value that TDA can add to the investigation of socially relevant phenomena such as intra-lingual translation for cross-disciplinary financial communication.

The multilingual workplace combined with English as corporate language would suggest that financial analysts as professional writers have a heightened language awareness that is also reflected in their text products (e.g. White, Maylath, Adams, & Couzijn, 2000). Whereas the results indicate that the examined texts offer investors sufficient information about a company to decide whether or not to consider an investment and can, therefore, be regarded as target-reader-oriented products of cross-disciplinary knowledge transformation, the findings for intra-lingual translation point to other issues. Financial analysts use significantly more technical terms and abbreviations – financial jargon – than their readers, especially retail investors with low financial literacy, can understand (e.g. Nell, Lentz & Pander Maat, 2018; Heri, 2014; Krische, 2014; Seibel, 2013; Tetlock, 2007).

5. Conclusion and implementation

Insights from our TDA projects, as explained above, provide empirical evidence for the conclusion that three contextual factors and related practices are strong and systemic drivers of a development of communication that fosters understanding through the use of expert speak within expert groups but can lead to non- and misunderstanding in the larger domain of finance and in society-at-large. The three contextual factors are:

- *Educational gap*: Most financial analysts in our project partners' professional education are not trained in professional writing. This applies both to the

university programs the financial analysts went through and to the advanced training programs offered by the organizations and professional networks. In this environment, writing has simply not been an issue in the last two decades. The focus on the subject, finance, leads to marginalizing writing in the system of professional education. This marginalization of procedural knowledge contributes to the lack of language awareness in identifying and solving language problems in the intra-lingual translation of financial communication.

- *Chunkism*: Standardized text formats and formulaic language – writing as combining chunks of language – are used within sub-communities in the financial sector. These semiotic templates are considered undisputed fixed-point attractors of communication, which means that, from insider perspectives, all communicational attempts need to result in reproducing texts of certain formats. Since these formats are not discussed nor taken into question, doubts about their functionality do not arise. Authors are simply not aware that what they write when following their sub-communities' rules is not understood by colleagues from other departments within their financial organization, let alone by the entire range of addressees and stakeholders of financial communication.
- *Occupational bias*: Within their work teams and world-wide communities of peers, financial analysts are unified by jargon as a vehicle for sharing technical information. This is the case with most of the technical languages (see also Jakobs, 2006). However, a key problem in many institutions of financial communication is that all parties involved in the document cycling (proofreading, copy-editing etc.) share the same hermetic jargon. Since all of them are, for example, familiar with the same specialist terms in their field, they do not question nor object to these expressions. In consequence, many linguistic means impede the readers' understanding of the texts even though the texts passed various quality checks within the organization before publication (Widdowson, this volume).

Taken together, these three factors lower the communicative potential of texts and text parts. They explain why highly qualified institutions investing considerable resources into communication fail when speaking the language of numbers. The addressees, such as investors, cannot access the information offered by financial analysts or can only partially do so. The result is non-understanding or, even worse, misunderstanding. From a producers' perspective, this means that the message does not get across or is taken up in a dysfunctional way, which can lower the financial institutions' credibility and reputation. From an addressees' perspective, it means a lack of foundation for sound individual, organizational, and societal decisions on financial matters such as investment or pension planning.

What can be done to overcome this dysfunctional state of financial communication? The knowledge on contexts and practices of intra-lingual translation,

as generated in the TDA projects, allows stakeholders to derive empirically based measures to improve the communicative potential of financial analysts' texts according to addressee groups' specific needs and expectations. For example and in contrast to widespread assumptions in the professional field, financial analysts do not have to pack more information into their texts to offer investors a solid foundation for a sound investment decision. Instead, there are strong empirical arguments – such as the markers investigated and explained above (Part 3.2) – for them to understand themselves as cross-disciplinary mediators and write their texts with a heightened awareness of intra-lingual translation.

Since TDA research aims to include all the relevant stakeholders, findings are to be transformed into measures that benefit all these stakeholders' needs. TDA usually combines bottom-up and top-down approaches to making changes in professional practice. In the case of the projects explained above this means, for example, that research tackles the problem from perspectives of financial analysts' agency as writers (bottom-up) as well as from perspectives of organizational structures that enable or constrain this agency according to management decisions (top-down):

In a bottom-up approach, research-based writing coaching, especially in multilingual settings, can point out critical writing situations and situative good practices to these professional, yet mostly not professionally trained writers. Both scholars and practitioners profit from such writing coachings. Since scholars are able to witness how financial analysts produce texts under real conditions, they can provide tips and tricks that practitioners can effectively apply in their work environment. Moreover, such settings allow scholars to carry out text analyses twice; first before the text products enter the organization's document cycling such as proofreading and editing, and second after the text products are compliant with the organization's guidelines regarding language use. Analysts profit most from settings in groups that consist of experts in different fields, e.g. technical analysis, bond analysis, stock analysis. Since they often do not understand each other's texts, their language awareness increases considerably.

In a top-down approach, organizations need to be made aware that, in cross-disciplinary communication, different customer groups need different texts – even when (or, better: just because) costs have to be kept to a bare minimum – and that the transdisciplinary collaboration of professional writers and writing researchers can enhance the communicative potential of an organization's key products. Only if also laypersons can understand financial texts, will they be able to set up investment plans for the current and future wealth. And this will have a positive impact on individuals, social welfare, and society-at-large.

But there is more. Even if financial analysts manage to translate between jargon and their addressees' languages and, by doing so, succeed in offering recommendations that can be taken up by various stakeholders, they are still mediators in the

name of their financial institutions. Increasing societal financial literacy cannot be reduced to developing analysts' communicative practices and raising their texts' communicative potential. Translating the language of numbers includes discourse mediators such as journalists, and it comprises addressees in the professions and in everyday life. These addressees are investors, whether they are aware of it or not, and they partly depend on financial information. They need to be financially literate on their own (Heffes, 2011).

In other words, a systemic approach such as TDA, which aims at including all the stakeholders of a problem and its solutions, cannot limit solutions to some parties involved only. Sustainable solutions, i.e. solutions that are implemented and have a beneficial long-term impact, arise from making specific functional changes throughout the range of stakeholders. This includes journalists, who need better financial education to complement their writing skills (Reckinger & Wolff, 2011). In addition, it entails society-at-large and it depends on laypersons' financial awareness and knowledge, which can be developed in primary, secondary, tertiary, and professional education. Both journalists and laypersons are in charge of re-contextualizing, of re-framing the information provided by analysts according to their own perspectives and needs.

In contrast to research that starts with a question formulated by scholars or professionals only, TDA must and can take this systemic complexity into account from the very beginning of a research project. Including all the relevant stakeholders means raising the research questions and developing the solutions from complementary and often contradictory perspectives. Therefore, a central and re-iterated question in TDA processes is: Who's question, who's problem is dealt with by whom? Findings, conclusions and measures depend on perspectives. Put simply, solving problems related to financial literacy within a TDA framework both requires and fosters mutual learning across stakeholders. There are good reasons to consider this insight the most sustainable yield of investment into such projects.

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