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# 11 Production modes: Writing as materializing and stimulating thoughts

**Abstract:** In this chapter, we systematize and discuss research on writing and text production as a highly interrelated mode of language use. We start from two examples of professional writing that complement each other: one is about writing in financial communication, the other about *not* writing in public discourse (Part 1). These examples help us illustrate the transition from a detached to an integrative view of writing in text production research (2). We then develop a framework for the integrative analysis of writing as a key mode of language use (3). Within this framework, challenges for and controversial issues of contemporary writing research are identified (4). This allows us to outline what such research can contribute to and benefit from applied linguistics (5) and to sketch a related research roadmap (6). In the reference section, we focus on work explaining the interplay of writing and other modes of language use as mental and societal processes (7).

## 1 Writing in finance and in public discourse – introductory examples

Writing is more than fixing chunks of language in order to store and circulate them. In contemporary views, writers interact with their growing texts. Thoughts are externalized using representations such as verbal signs – which, when read, trigger new, emergent thoughts. Editing text that is stored on external, stable memories, for example handwriting or computer files, decreases memory load in the neural system. This enables writers to allocate more mental resources to the editing process itself, when they restructure, revise, re-draft and transform specific text parts in dynamic contexts. By composing and de-composing chunks of language, representations of thoughts and emotions are re-evaluated and new thoughts and emotions emerge. This is why the external memory and the processing of its material vehicles are considered part of the dynamic system of text production, inseparably coupled with biological, including neural, structures and processes. Writing is a practice of thinking, of processing cognition in an emotional and bodily context: "writing is thinking in action" (Menary 2007: 622).

If mind and environment are inseparably coupled in the dynamics of writing, then the principles of co-ordination and co-adaptation must apply for all the individual, social, and mediating linguistic aspects of text production. In an individual frame of reference, the modes of writing and thinking interact with feeling and acting, with emotions and embodiment. In a social frame, writing detaches thoughts and

verbalized emotions from writers and allows for public discourse, social synchronization, and shared knowledge building. In a linguistic frame, this interplay of individual and social language use inseparably combines writing with other modes of language use, such as reading, speaking, and listening. AL-informed writing research tends to combine these frames when investigating real-life writing, as illustrated by the following two examples.

Recent work in the area of financial communication confirms that investors' decisions and communicative practices are of increasing interest for scholars. Various factors have been examined that influence investment decisions, inter alia the investors' perspective on financial reporting disclosure (Singh and Peters 2013), their investment criteria (Feeney, Haines, and Riding 1999), and the role of investment newsletters (Brown, Cao Alvira, and Powers 2012). Groysberg et al. (2011) focus on the contextual factors that drive analysts' forecasts. Closer to applied linguistics and writing research, Loughran and McDonald (2013) discuss the importance of readability in the context of financial disclosures. However, the review of the state-of-the-art research in the field shows a gap Whitehouse and Perrin (2014a) and Whitehouse and Perrin (2014b) aim at closing: the question why financial analysts' texts are often hard to understand for investors and how writing coaching can improve the communicative potential of these texts.

The transdisciplinary approach starts by identifying how financial texts are embedded in the field of communication, and what the genres, norms and expectations of the addressees are. Second, it investigates the environment and conditions under which financial analysts write their texts and recommendations concerning issues such as commodities, equity, stock, bond, and macro economy. Third, it applies multimethod approaches from AL-informed writing research to examine analysts' writing processes and the resulting recommendations for investors. Fourth, it provides overall findings and exemplary details on the interplay of context, processes, and products of financial communication. Finally, it transfers knowledge from these insights to all the stakeholders involved in the projects, in order to help improve writing in finance in terms of its communicative potential. Sentences like

> 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)

illustrate what financial analysts view as understandable information for investors. A closer look upon the information flow in financial communication reveals a complex interplay of production modes. Financial analysts gather information from companies by talking to the board or by analyzing financial disclosures, they exchange thoughts and knowledge with other analysts, or track the market developments before they form their own opinion and write their recommendations for the investors. Often, however, their texts need to be partly rewritten to make them understandable for the addressees who base their investment decisions on these publications. In a collabo-

rative rewriting process, the author and the bank's writing coach changed the above sentence into a longer, but far more explicit version:

> Furthermore, the earnings before interest taxes depreciation and amortization (EBITDA) will be reduced by roughly CHF 60 million per annum starting from 2013. This is due to a change in the International Accounting Standards (IAS), particularly paragraph 19 defining employee benefits.

The second example of professional writing is to be situated in the domain of mediated public discourse, where politico-economic and socio-cultural issues are entextualized and recontextualized through a host of different platforms, from the traditional news media to social network sites and talk shows. The case that we focus on has to do with the multicultural society in general and with the issue of women wearing the veil in representative positions in western society in particular. The data take us back to the spring of 2009 when a lot was said and – crucially – written in Belgium about the first woman with a veil in parliament. We are interested specifically in one piece of writing – or, as it turns out, non-writing. Two weeks before election day, one of the country's French-language broadcasting corporations' star television journalists, CDB, set out to produce an item for the 1 o'clock news. The item should focus on the buzz that had been going on for a while on a female candidate for the French-speaking Christian Democrats in Brussels. This candidate was a woman of Turkish origin who, it was alleged, had her campaign picture reframed to hide the veil that she is wearing.

The Veil and the Ebitda cases were analyzed in projects of workplace ethnography. Instead of primarily drawing on the final communicational offers (in these cases the news piece and the bank's information for investors) and scrutinizing public and organizational discourse from an external point of view, ethnographic researchers aim at understanding their object of study from an insider's perspective. Their prime interest is in discovering what the people and communities under investigation actually do and why they do it, or put differently, why it makes sense to them.

## 2 From storing to thinking in context: A brief history of interconnected writing

The Veil and the Ebitda cases illustrate that writing and all the complex interactions connected to it do not constitute a one-way process but rather a constant spiralling movement of thinking and writing, for example of setting goals for communicational moves and offers, planning text, translating ideas into written language, and reviewing the results (Jakobs and Perrin, this volume). The close relation between writing and mental activities such as processing thoughts and emotions is reflected in the fact that early models of writing were developed in traditions of psychology rather than linguistics (Donahue and Lillis, this volume).

An early milestone in this development is the model of Flower and Hayes (1981). This model overcame the idea of one-way writing processes by modeling writing as a spiral movement of planning text, translating ideas into written language, and reviewing the results. Scardamalia and Bereiter (1987) focused on writing expertise by distinguishing between knowledge telling and knowledge transforming strategies. Novice writers tend to "tell" automatically in the text what they already know about their object, whereas expert writers use their abilities of metacognitive control to plan and revise an emerging text in order to transform knowledge while writing. In knowledge-telling writing processes, writing itself, reading, and thinking are deeply interconnected. More recent models based on research in psychology and psycholinguistics (e.g., Zimmerman and Risemberg 1997) highlight the socio-cognitive interplay of writer, writing, and context. During writing, all the (sub-)systems involved, such as the writer, the emerging text, and the physical and social environment, co-adapt and change. By – albeit mostly unconsciously (MacMillan 2012: 350) – monitoring these changes and relating them to their own actions, writers learn while writing.

Research traditions rooted in sociology rather than psychology shifted the focus from individual writers to their social environment. Such approaches tend to consider writing a socially pre-existing practice that has to be appropriated by individuals through socialization. This happens for example in informal and formal education, but also in "communities of practice" (Lave and Wenger 1991) such as professional environments. Key activities are communication, imitation, learning, but also "ventriloquation" (Bakhtin 1986) processes such as "writerly reading" (Hirvela 2004: 127), in which writers read exemplary texts in order to copy their main properties on various levels, from dramaturgy to formulation patterns. From linguistic perspectives, genres are the core instances of communicative socialization and social synchronization (e.g., Hyland 2002: 16). They shape – and are shaped by – both individual writing activities and preexisting social structures (Bazerman and Devitt, this volume). In such a perspective, variation and change of genres document social change, for example the need of scrutinizing "habitus" (Bourdieu), deconstructing habitualized and rigid power (Derrida, Foucault), and realizing emerging fresh solutions to face future challenges. It is by highlighting such macro structures and change that approaches, theories, and models from sociology and sociolinguistics set a strong counter perspective to the primate of the individual writer from the early writing research.

Contemporary approaches tend towards integration of micro and macro approaches, focusing on the inseparability of individual, social, and linguistic or semiotic perspectives. Donald (1991) for example connects cognitive, social, and semiotic development in a four-stage model of co-evolution. In a first, "episodic" phase of evolution, humans as individuals remember some of their experience in life, but the knowledge they acquired remains within and disappears with them. In a second, "mimetic" phase, people organize in groups where they pass on their experience to other group members by showing each other what to do and imitating what they are shown. In a third, "mythic" phase, speech is developed and helps people

trade knowledge that still is stored biologically, as neural memories. A fourth, "theoretical" phase, finally, allows humans to use symbols as representational systems to store, develop, and communicate knowledge. It is only within this fourth phase that writing practices evolve, first for mnemotechnical writing in order to store information for the writer him- or herself, then for communicative writing in order to trade thoughts across time and space, and finally for epistemic writing, where flexible writing systems such as pen and paper or the computer screen are used to develop ideas in interaction with an emerging text. By using collaborative digital platforms, today's writers can fuse mnemotechnical, communicative, and epistemic writing in processes of shared knowledge generation (Hicks and Perrin, this volume).

This fusion of individual and social thinking and acting by reading and writing challenges contemporary writing research. Outdated seems the idea of an individual writer engaging in isolated processes of putting thoughts down on paper. Real-life writing, be it in education or professions, is considered a complex, dynamic enterprise, integrating individual and social, cognitive and emotional, as well as epistemic and communicative aspects. However, the less disputed the integrative nature of writing is, the more difficult adequate research and theorizing become. How does one grasp an object that is so diversely connected with modes and contexts of language use? Several recent approaches of writing research draw on integrative, non-simplifying concepts of writing and its research. Contemporary examples include ecological inquiry (2.1), integrationist accounts (2.2), and dynamic systems theory (2.3).

## 2.1 Ecological inquiry

Recent approaches of writing research discuss "[t]he promise of ecological inquiry in writing research" (MacMillan 2012, drawing inter alia on educational research in the tradition of Vygotskian activity theory (e.g., Vygotsky 1978)). In such approaches, individual writers' situated activity is deeply interconnected with social structures and processes. In ecology, "context is the heart of the matter" (Van Lier 2004: 5).

What ecological inquiry (EI) of writing in education, academia, and the professions promises is a thorough and holistic exploration of the interactions between the writer as an individual and his or her social environment. In EI-informed research, neither contexts nor activities of writing are simplified, idealized, de-complexified or over-generalized (e.g., Kramsch and Whiteside 2008). Instead, they are taken into account in all detail and contextualized as comprehensively as possible (e.g., Myers 1985). Genre systems and ecologies, for example, (e.g., Bazerman 1994; Spinuzzi 2003) include all kinds of source texts, notes, outlines, drafts, and versions related to an emerging text. EI-informed writing research

> embraces the uniqueness of individuals and their life experiences, while at the same time recognizing the centrality of environmental factors in constraining what is possible in writing. Produc-

> tive moments in writing emerge when abilities, understandings, and motivations of individuals mesh with the enabling potentials (affordances) of resources and tools available to individuals in the immediate physical and social environment. During the writing process, interaction with material resources brings about the creation of new artifacts (e.g., outlines, drafts, reflective notes) that subsequently populate the writing space and, in turn, can be reutilized. In this sense, the nature of subsequent writing is always constrained by a series of interactions that have taken place beforehand. (MacMillan 2012: 353)

Entities such as "activities, actors, situations, and phenomena" are conceived of as "interdependent, diverse, and fused through feedback" (Fleckenstein et al. 2008: 388). Agency, then, is not primarily located within the individual writer, but "distributed across genre ecology" (Spinuzzi 2003: 115), and the ecological system of writing is seen as "constantly changing, limited only by parameters that are themselves subject to change over longer spans of time" (Cooper 1986: 368). In short, EI considers text production, including seemingly individual micro activities such as thinking and manipulating multimodal semiotic complexes, as socially distributed, highly context-bound, and driven by dynamics far beyond individuals' reach and range.

## 2.2 Integrationist accounts

Integrationist theorizing and research tends to conceive the interconnection between context and individual text production modes as even closer than ecologists. From an integrationist perspective, "we think by writing" (Menary 2007: 631): "writing is thinking in action", an "activity or practice" (Menary 2007: 624) in which "some of the enabling processes are external" (Menary 2007: 622). Representational systems such as

> [a]lgebras, alphabets, animations, architectural drawings, choreographic notations, computer interfaces, computer programming languages, computer models and simulations, diagrams, flow chart graphs, ideograms, knitting patterns, knowledge-representation formalisms, logical formalisms, maps, mathematical formalisms, mechanical models, musical notations, numeral systems, phonetic scripts, punctuation systems, tables and so on (Peterson 1996: 7)

are seen as belonging to the same cognitive system as a writer's mind. They are "external components of a cognitive system with which the internal components interact during a dynamic and task-oriented process of development'' (Peterson 1996: 8). While interacting, "mind and environment function as a coupled system" (Menary 2007: 628). Agents combine and coordinate "bodily processes, including neuronal ones, and manipulations of external material" such as written language (Menary 2007: 626). During socialization, people learn "methods of manipulating vehicles", such as "how to make plans, how to make lists and use diaries, and how to navigate via maps" (Menary 2007: 624). The external components complement the internal ones by extending and transforming agents' abilities:

> [T]here are things I can do with pen, paper, or word processor that I cannot do in my head. Stable and enduring external written sentences allow for manipulations, transformations, reorderings, comparisons and deletions of text that are not available to neural processes. (Menary 2007: 629)

Depriving the coupled system of its external, representational components would "result in the shrinkage of our cognitive systems and knowledge" (Menary 2007: 625). Writing fosters "forms of thought which were previously difficult or impossible" (Harris 1989: 103; see also Harris 2000). This enablement scales up from an individual to a social level. Integrationist approaches consider writing as providing an "autoglottic space" (Harris 1989: 104; Menary 2007: 623) in which verbal conceptualization is both abstracted from individual agents and accessible to all of them: Representational systems such as texts "encapsulate our knowledge" (Menary 2007: 624). In short, "[f]or the integrational linguist, writing provides a new way of thinking about language" (Menary 2007: 621).

## 2.3 Dynamic Systems Theory

Dynamic Systems Theory (DST) is a research framework focusing on principles of change. Systems such as languages or writing processes are dynamic; they change both continually and unpredictably as their elements and contexts interact in "a set of interrelated and interdependent complex systems" (Syverson 1999: 3). In business writing for example, if new technical terms are created and these words become part of the organizational or general vocabulary over time, language is changed through language use – with impacts upon further language use in "the dynamics of writing" (Larsen-Freeman and Cameron 2008: 186).

DST originated in biology, mathematics, and physics and only later was applied to mental and social processes. Today, DST deals with systems as varied as evolution, weather, business organizations – and language. In their position paper, Beckner et al. (2009) proposed a DST approach to explain how language is acquired and used and how it changes. Cameron and Deignan (2006), Ellis and Larsen-Freeman (2006), Lantolf (2006), Larsen-Freeman (2006), and MacWhinney (2006), focus on emergence in the development, acquisition, and use of language. It is this focus on unpredictable change and emergence that differentiates DST from socio-cultural, interactionist, systemic, integrationist, and ecological approaches to language, which also consider language use and mental, linguistic, and societal structures as deeply interconnected. Emergence is "much coming from little" (Holland 1998: 2). In professional writing it happens, for example, when

> revising and criticizing single news reports trigger changes in style policies, or if missed deadlines stimulate a media organization to fundamentally optimize its workflows. The emergent new properties on the higher level of the dynamic system then affect activity on lower levels, for instance stylistic choice or process planning in newswriting. Whereas activities such as quali-

> fied criticism or missing deadlines can be identified retrospectively as some of the reasons for the emergence, it is hardly predictable which specific activity will cause it. Thus, emergence produces a new whole which is not reducible to and not explainable by the sum of its parts [...] (Perrin 2013: 239)

Drawing on concepts from DST, writing research can identify drivers of emergence: conditions that foster the emergence of, for example, creative solutions (e.g., Sharples 1996) as "third ways" in seemingly unsolvable critical situations such as writing a non-stereotype news story based on floods of stereotype pictures from the newsfeeds (Perrin 2012).

In sum, DST offers to writing research the conceptual tools to explain emergent outcomes (2.3) from the integrative interplay of thinking and writing (2.2) in complex and dynamic real-life environments (2.1).

# 3 Four interfaces of integration: State-of-the-art framework

Complexity and emergence determine real-life writing processes such as the journalist's, CDB's, attempt in the Veil case. While waiting in the street to catch a glimpse of the veiled candidate, CDB got a call from the head of the station's news department. This superior is very high in the hierarchy and does not normally interfere in everyday business. Apparently the head himself had just got a phone call from the president of the candidate's political party who said that she (the president) was worried. At the end of the call, CDB was very nervous and told the researchers that they should not be making any notes because they "wouldn't understand anyway". Next, CDB called the party's graphic designer who said that "no one has seen any malice in it". At that stage, it was clear that what these sources had said would impact the writing to the extent that CDB decided to call off the story. On his way back to the TV news room, CDB got a call from a radio journalist who had interviewed the candidate. Apparently she, the candidate, had told him that she was "very disappointed" about the reframing. She would be demanding an explanation from her party, it was said. So at least one person believed there was some malice and CDB decided to get back in business. "On va pas abandonner trop vite", he says. "ça continue à rebondir". Let's not give up too fast. Things continue bouncing back. To make a long story short: At the end of the morning, CDB decided not to write anything at all. His decision was in sharp contrast with that of the same station's online editor, who the researchers interviewed later that day and who was proud to announce that his article on the station's internet site was copied by many others:

> And our great pride today was that the Belga press agency has copied our story for telex that was later included by all our competitors on the internet and may well appear in the print versions of all papers tomorrow. Now it says "According to blablabla" and in fact it's just copy-paste from the site.

From an AL point of view, analyzing such dynamics and complexity of text production requires appropriate theoretical concepts such as ecological inquiry, integrationist account, and DST – and inclusive and precise investigations of language use. Writing is reconstructed as densely related to thinking and feeling as mental processing (3.1); productive and receptive modes of language use as linguistic processing (3.2); bodily acting and using writing tools as material processing (3.3); and (re-)constructing realities on, e.g., individual, organizational, and cultural levels as social processing (3.4). The next sections foreground questions, problems, and results of research at these four interfaces of writing.

## 3.1 Writing and mental processing

At the mental interface, writing interacts with thinking and feeling, as referred to in concepts such as cognition, affect, emotion, motivation, involvement, interest, attitude, and stance. These concepts partly overlap in their use, both in research in general and in writing research. In any case, they refer to mental states and activities that have long been considered as being located within human bodies (but see integrationist accounts, Part 2.2 above). As internal states and activities, they are not directly accessible for research. However, due to ecological interconnection (2.1), internal processing is densely coupled with external processing, such as "the creation and manipulation of written vehicles" (Menary 2007: 622), which both influences and is influenced by mental processes. It is this deep interconnection that allows researchers to both access mental activity through writing and elaborate their knowledge about writing through theorizing mental activity. Key approaches of research into cognitive (a) and affective (b) mental activities include:

a) Writing is evoked and structured by thoughts – but it also evokes and restructures thoughts. Having long been considered a form and substitute of speech and a tool for fixing (mnemotechnical function) and trading knowledge (communicative function), writing was recognized as "an active and powerful cultural agency in its own right" (Harris 1989: 99) in the 1970s (e.g., McLuhan 1964). The power that literacy adds to language in societies is far more than accumulation and communication of knowledge. Literacy allows for epistemic writing, thinking with writing tools (Ortner 2000) on both individual and social levels. It allows for enhanced, "chirographic" (Molitor-Lübbert 2002: 46) thinking in interaction with an emerging text – and it fosters shared interactive knowledge building (e.g., Goody 2001; Menary 2007).

b) Not only is writing influenced by affective and emotional states, it also influences writers' feelings. Whereas researchers still debate about "[h]ow to define emotions scientifically" (Scarantino 2012: 358; see also Dixon 2012 or Izard 2010), writing research has long explained writing as an "affective experience" (Brand 1989). One of the early investigations shows that emotions from former writing processes are brought into a new writing project like a mortgage, influencing writers' confidence and motivation throughout the process: "Emotions are involved in mobilizing for writing and sustaining it" (Brand and Powell 1986: 212). Such insights led and still lead to numerous educational studies of "developing motivation to write" (Bruning and Horn 2000: 25, see also, e.g., Hidi and Boscolo 2006; Fartoukh, Chanquoy, and Piolat 2012). On the other hand, language in general (e.g., Lindquist and Gendron 2013) and writing in particular influence emotions and feelings such as happiness. This could be shown, for example, in an experiment of "[i]mproving well-being through expressive writing" (Toepfer and Walker 2009).

The Veil case offers to writing researchers a unique perspective on the role of emotions in collaborative, multimodal text production. To explore how professionals feel about their writing and, in particular, how their feelings about it develop in situ is bound to provide dramatic new insights into critical situations of real-life writing.

## 3.2 Writing and linguistic processing

Still in the Veil case, the notion of linguistic interfaces is central to the journalist's writing as whatever he sets out to write about the case is meant to be spoken in the final news broadcast – and as a lot of what he intends to write about is bound to draw on what sources have told him. And in both cases, Veil and Ebitda, spoken negotiation with sources, colleagues and a coach influenced – and were influenced by – writing processes.

At the linguistic interface, writing interacts with reading, speaking, and listening (e.g., Leander and Prior 2004). First, written text is often based on source texts and preceding conversations (a). Second, text production itself always includes reading the text produced so far – and often talking about it with collaborators (b). Third, written text can be produced by speaking, too, by dictating it to humans or machines (c). Fourth, text is produced to be used, be it by readers or a co-producer who speaks it for listeners (d). Fifth, written text is often oriented towards communicative goals in multimodal contexts. Digital and multimodal conversation technologies such as chat, voicemail, or 2nd screen combine elements from formerly separated mode pairs of writing and reading on the one hand and speaking and listening on the other (e). Despite their relevance, the relations between these modes of language use have long been underresearched (e.g., Hartley 2007). Key research approaches include:

a) In the early 1990s, some researchers investigated similarities and differences between reading and writing in general (e.g., Sternglass 1988; Tierney and Shanahan 1991). At the same time, Flower, et al. (1990) published their seminal work on "reading to write". They investigate social and mainly cognitive factors that influence reading during text production. Since then, source reading has become a relevant activity in conceptualizations of "reproductive writing" (Jakobs 2003).
b) Rereading the text produced so far during later phases of text production predicts better text quality than intensive rereading from the beginning. This is the result of experiments by Breetvelt, Van den Bergh, and Rijlaarsdam (1996). Such knowledge about the interplay of writing and reading has been summarized by Jakobs and Perrin (2008). Recently, researchers started using eye tracking technologies for micro-graded experiment on reading during text production (e.g., Johansson et al. 2012). In the field, hermeneutic research has shown how a careful management of rereading, soliloquy, and conversations can help overcome writers' block (e.g., Keseling 2001, 2004).
c) Dictating text into "the listening word processor" (Reece and Cumming 1996) has long been a widespread practice in domains where highly standardized texts are produced, such as pathology reports (e.g., Al-Aynati and Chorneyko 2003). The increasing sophistication of speech recognition software allows for "soundwriting" (Harrison 2000) even in linguistically challenging domains such as scientific writing (e.g., Fassbender and Mamtora 2013).
d) Written communication includes that "people construct meaning from texts through reading and for texts through writing" (Nelson Spivey 1990: 256). Reader-friendly writing has long been an issue in real-life writing research (e.g., Schriver 1989). In higher education of creative and professional writing, a key issue of research is how writing skills interact with competencies of reading and providing feedback to writers (e.g., Freiman 2005).
e) Despite significant differences in mental (e.g., Grabowski 1996) and social (Chafe 2002) processing, writing and reading mostly co-occur in real-life communication, with agents moving "between oral and written discourse to fulfill rhetorical and social goals" (Spilka 1993: 78). Recent communication technologies change both the value and the interplay of these communication modes in people's lives, as "[s]tories about reading and writing in the digital age" reveal (Chandler and Scenters-Zapico 2012: 185).

## 3.3 Writing and material processing

At the material interface, writing interacts with bodily activity, material text, and writing technology. Today, this technology ranges from pen and paper to keyboard, microphone, camera, and (touch-)screen. Such input/output devices are connected to computer networks with language processing and communication software (Dale

and Mahlow, this volume). In any case, the embodied acting and the external technology serve to "manipulate" (Menary 2007: 621) "vehicles such as written sentences and mathematical formulae" (Menary 2007: 622), which "encapsulate our knowledge" (Menary 2007: 624). Contemporary writing tools seem to shift human writing activity from calligraphy, typography, layout, and text design towards filling templates with content. At second sight, the templates, too, need designing. Therefore, what is dramatically changing is not the sum of tasks to be completed but the way these tasks are divided within text production workflows. This example illustrates how bodily activity (a), material text (b), and technology (c) are deeply interconnected with mental and social structures and change.

a) Writers interact with their texts in a physical way. In writing research, this aspect has attracted most attention in approaches to writing technology. There, practices of writing are seen as based in culture, mind, and body – as embodied practices. However, the materiality is noticeably underresearched and underrepresented in theories of writing (e.g., Haas 1996). The bodily aspect itself is focused in singular studies on roles of the haptics of writing, i.e. the interplay of the human body with the physically tangible writing tool such as the keyboard, the trackpad, or pen and paper (e.g., Mangen and Velay 2012).
b) In such research, the materiality of writing and reading – and the text itself – is identified as highly influential in both text production and appropriation (e.g., Hayles 2002). In their research on "[u]nderstanding the materiality of writing from multiple sources", O'Hara et al. (2002) investigate "a range of everyday writing from multiple sources in their real-world contexts" (O'Hara et al. 2002: 269). Material artefacts such as verbal texts and pictures are recognized as being decisive for the text production process. The authors conclude by highlighting the value of such research for the design of writing technology such as research software. Other approaches focus on emergent new forms of material texts, such as the temporal and highly preformatted texts in the emotional, multimodal environments of simultaneous writing and reading in computer games (e.g., Alberti 2008).
c) Technology impact on writing is investigated in general, for example, through analyzing people's "technological literacy narrative[s]" (Kirtley 2012), and in more specific approaches. A seminal self-report on emotions towards new writing technologies was entitled "Fear and trembling. The humanist approaches the computer" (Nold 1975). By analyzing similar reports, Knievel (2009) seeks to answer the question "what is humanistic about computers and writing?" (Knievel 2009: 92). A number of studies evaluates specific writing and annotation tools. Palaigeorgiou, Despotakis, Demetriadis, and Tsoukalas (2006), for example, investigate the impact of electronic verbatim notes on writing processes; Ivory (2006) discusses implications that "automated web site evaluation tools" could have for writers; McGee and Ericsson (2002: 453) scrutinize "[t]he politics of the program MS Word as the invisible grammarian"; Jones (2008: 70) looks for revi-

sion patterns in Wikipedia" with its "unique structural demands on writers". Another research line faces global changes in overall writing environments, for example Sharples and Van der Geest (1996) on workplace changes; Baron (2009) on being "[a]lways on" in an "online and mobile world"; and Bazerman (2011) on using writing technology to "support humanly satisfying modes of social life" (Bazerman 2011: 75).

## 3.4 Writing and social processing

Neither the financial analyst in the EBITDA case nor the journalist in the VEIL case were working on their own. Crucially, no man is an island, CDB argued in a retrospective interview at the end of the day:

> Somewhere there is a gap because everyone has talked about it, so we cannot keep quiet. We're not an island – at some point we have to give, to do the same thing as the others.

At the social interface, writing interacts with phenomena such as private and public discourse, identity and community building, standardization and repertoire, as well as linguistic and social change (e.g., Lillis 2013). Since, in an ecological view, individual writers' situated activity is deeply interconnected with social structures and processes (2.1), analyzing the microactivity of text production processes allows for insights into macro context. Since, in an integrationist view, the manipulation of representational systems (2.2) reflects both the internal and the external structures and processes of one and the same cognitive system, people's mental reconstruction of their social reality is accessible through their writing activity. And since, in a DST view, emergent outcome from microactivity in context scales up macro levels (2.3), precise analyses of situated activities such as writing allow for insights into the starting points of macro change. Therefore, writing has been investigated as a mode of language use that opens a window onto social structures and processes, for example on the levels of individuals (a), workplaces (b) organizations (c), domains (d), and society at large (e).

a) In an seminal project of sociolinguistic writing research, Myers (1985) investigated in detail, how two biologists revised their research proposals after feedback in order to meet disciplinary expectations and get their projects funded. By comparing successive versions of the proposals, it can be shown "how scientific texts are the products of a community of researchers" (Myers 1985: 219) and how individuals are socialized within the community practice and domain of a scientific discipline. Other research projects document the opposite move: individualization, differentiation, and dissociation through writing. Bremner (2012b) for example looks at "the ways in which writers try and manipulate workplace genres to meet their own goals as well as those of the organisation" (Bremner 2012b: 53).

b) Workplace teams and distant workgroups are the social nexus of collaborative writing (Schindler and Wolfe, this issue). Research into their organization and communication allows for analyzing in detail the interplay of linguistic and non-linguistic (meta-)communication modes: How do writers negotiate when they set goals, plan, formulate and evaluate a text collaboratively? Beyond this direct access to the conversation itself, conversation analyses offer indirect access to socio-cognitive structures and processes, to thoughts and social context. Multimodal analyses of workgroups can reveal the role of underresearched (meta-) communication modes in this complex interplay, for example of gestures in collaborative planning (e.g., Wolfe 2005).

c) From a semiotic point of view, organizations are constituted through communication (e.g., Schoeneborn 2011). In the ongoing dynamics of (re-)constitution, written communication plays a crucial role, all the more as the hybrid mode of "writing-by-the-way" increasingly substitutes and complements formerly oral organizational communication in mobile, digital, and globalized environments (Hicks and Perrin, this volume). Research on writing in organizations shows that organizational structures and processes as well as written and spoken discourse closely interact (e.g., Gunnarsson 1997, 2009). Other research lines focus, among others, on socialization processes related to organizational communication, such as MBA programs and their training for multimodal business writing (e.g., May, Thompson, and Hebblethwaite 2012).

d) Entire domains and communities of practice (Lave and Wenger 1991) develop their own writing cultures and ways of socialization into and through written communication. Writing mirrors appropriate, i.e. acceptably consensual thinking and social behavior. Such domain-specific writing has been investigated for many cases, such as engineering (e.g., Pogner 2003), business (e.g., Gillaerts et al. 2012), international business (e.g., Heynderickx et al. 2012), public relations (Jacobs and Van Hout 2009), or news journalism (e.g., Perrin 2013). Just as with organizations, socialization in domains or professions has attracted researchers' attention. Bremner (2012a) for example shows how an intern's writing changed "considerably" (Bremner 2012a: 7) during professional socialization in PR.

e) On the level of society at large, all the above entities and communities – individuals, workgroups, organizations, and domains – interact with overall structures and processes in an increasingly globalized, networked, and mediatized world. Academia, for example, sees itself confronted with an increasing pressure to publish in English, a "burden" that writing research has tried to quantify (Hanauer and Englander 2011, see also Hanauer and Englander 2013). A key problem in this case is the power of a specific mode of language use, writing in a language which is a foreign language for most people in the world. Such writing has considerable impact on researchers' individual thinking, their social status and reach, and the overall representation of perspectives in scientific and public

discourse. Other research lines focus, for example, on the power of writing in policy making (e.g., Wallace 2003).

Such examples illustrate the complexity research faces when it considers writing as deeply interconnected with mental, linguistic, material, and social structures and processes. Writing is always related to other modes of language use, multimodal communication, human interaction, and collective agency. This presents real-life writing research with the challenge of capturing complexity and dynamics – or simplifying it for theoretical and pragmatic reasons.

## 4 Controversial issues: Capturing or simplifying complexity and dynamics

In the VEIL case we have focused on a piece that was never written, in the EBITDA case on collaborative rewriting in order to reach wider parts of the target audience. Backstage production-oriented research constitutes substantial added value in pointing to what is otherwise bound to remain invisible and in suggesting a redefinition of writing analysis, from the study of what is written to include how this happens and what is *not* written. In line with the mission statement of the field of linguistic pragmatics, whose object of research is to explicate implicitness, i.e. to analyze the different ways a message is implicitly anchored, we have explored how writing interconnects with writers' and readers' attitudes, with aspects of the on-going interactive situation, with the social and cultural setting and with our ideological perceptions (Östman 1986).

In Östman's view research in pragmatics is "primarily interested in what happens in communication over and beyond the propositional information that interlocutors and text producers want to convey in their messages". Of course, the study of implicitness incorporates household concepts of pragmatics like presuppositions and conversational implicatures, but the suggestion we have made here is that writers cannot get more implicit than not writing at all. A corpus-based approach of product analyses, for example, would have been completely inadequate as such corpora can only evidence what has already been done in discourse, not its potential.

As soon as writing research faces processes and backstage activity, it tends to implicitly or explicitly combine research frameworks (Grésillon and Perrin, this volume). Deciding for a particular research framework or a combination of frameworks means focusing on particular aspects of the object under investigation – and giving less priority to the others. Several research frameworks have proved useful in the investigation of language use in general and writing, in particular. In the next paragraphs, we briefly outline how and why state-of-the-art writing research, be it implicitly or explicitly, combines particular frameworks when it conceives writing as multimodal and context bound.

| | EG Ethnography | GT Grounded Theory | TR Transdisciplinary Action Research | RST Realist Social Theory | DST Dynamic Systems Theory |
|---|---|---|---|---|---|
| Focus | case study | + generalization | + real-world problem | + social relevance | + dynamics |
| Outcome | understanding participants' perspectives | building theories by coding data | solving the problem in a sustainable way | contextualizing situated activity in a real world | explaining emergence |

**Figure 1:** Key properties of ethnography and four supplementary research frameworks

In product-related frameworks, researchers primarily draw on final communicational offers such as written texts in order to analyze written communication from an external point of view. In contrast, ethnography also aims at understanding its objects of study from an insider's perspective and relate it to the researchers' external perspective. Ethnographic researchers are interested in discovering what the individuals and communities under investigation actually do and why they do it, or put differently, why it makes sense to them (e.g., Agar 2011). Thus, writing research in ethnographic research frameworks focuses on processes of text production and on sense-making practices of writers instead of only analyzing products (e.g., Lillis 2008).

Classical ethnography, however, tends to be limited to single case studies. Writing research can overcome this limitation by combining ethnography with complementary research frameworks (Fig. 1):

- with Grounded Theory (GT) in order to develop theories that are grounded in data and explicit procedures of generalization (e.g., Charmaz 2008);
- with Transdisciplinary Action Research (TD) in order to systematically share knowledge with the practitioners involved and to solve practical problems together (e.g., Hirsch Hadorn et al. 2008);
- with Realist Social Theory (RST) in order to relate situated activity, such as writing, to social macro structures, such as social settings and contextual resources (e.g., Sealey 2010);
- with Dynamic Systems Theory (DST) in order to model conditions that foster emergence and functional change in complex dynamic settings (see above, 2.3).

Apart from their differences, the five research frameworks share five key properties: First, they all start from multitudes of perspectives, stakeholders, subjective realities, and systems. Second, they suggest cyclic procedures of knowledge generation

and transformation. Third, they are oriented towards explaining sense making and development. Fourth, they favor reflective project practice that adjusts to the lessons learned during research. Fifth, they provide situated knowledge about what works for whom under which circumstances. The price researchers have to pay for such multi-perspective approaches is managing the complexity and dynamics of the research itself (Grésillon and Perrin, this volume). The outcome they can expect is a precise explanation of situated multimodal writing in context.

# 5 Outcome: Precise and contextualized explanation of multimodal text production

The dynamic system of multimodal and context-bound text production can be described in terms of key fields of relevant activity, as identified in multimodal text production in complex contexts, such as the Ebitda and the Veil cases. It begins when writers understand and accept a production task and it ends when they send the results of their work along the production chain. In between, reading processes interact with writing processes on various time frames and scales (Jakobs and Perrin, this volume). The activity fields are oriented towards environments (5.1), functions (5.2), and structures (5.3) of writing. The next paragraphs summarize these three groups and describe the activity fields, providing a toolbox for the analysis of multimodal writing as a routinized and creative practice in layered social contexts.

## 5.1 Environments of text production

Writing at work takes place across interpersonal, intersituative, intertextual, and intermodal environments. Text products usually refer to oral negotiations, bridge situations of production and reception, originate from source materials, and combine signs from different systems. The same applies to the processes of writing. Writers negotiate their tasks with possible text agents and other people involved, set their communicational offers as items ready for broadcasting to large and distant audiences, depend on sources, and process words as well as sound and pictures.

In doing so, the writers engage in the activity fields related to the environments of writing: They handle their social environment (a), task environment (b), and tools environment (c) throughout the workflow in the workplace, starting their writing processes at the input interface of comprehending their task (d) and ending it at the output interface of implementing their product (e).

The activity in these five fields is oriented to (re-)producing specific contexts of writing. *(Re-)producing* means that writers create, confirm, and alter the conditions in which their writing process will take place. They deal with people and tools, co-define

their writing tasks together with colleagues and superiors, allocate resources to the writing itself and other tasks, and take care of implementing the final product in a way that fits the workflow their contributions are parts of.

Practices in these activity fields are not directly visible in the products as such, but shape the conditions under which an item is produced. As these conditions restrict or facilitate the emergence of specific features of writing processes and text products, they leave indirect traces in the output and outcome of writing:

a) Activities in the field of HANDLING SOCIAL ENVIRONMENT are oriented towards individuals and collectives who influence – and are influenced by – the text production process or text product, such as peers and competitors. Individual and collective writers' key questions in this field include: How do I interact with people and the institutions they represent? And how can I get access to them or dissociate myself from them?
b) Activities in the field of HANDLING TASK ENVIRONMENT are oriented towards tasks that influence – and are influenced by – the writing itself, such as doing administrative work or dealing with legal issues. Writers' key questions in this field include: How do I manage the different linguistic and non-linguistic tasks I am supposed to carry out? And what resources do I have to allocate at what time to which task?
c) Activities in the field of HANDLING TOOLS ENVIRONMENT are oriented towards tools that influence – and are influenced by – the text production task a writer is performing, such as software, cell phones, archives, and cutting rooms. Writers' key questions in this field include: How do I use the tools available as efficiently as possible? When do I use which tools to best exploit their strength? What weaknesses and risks are related to the use of a tool, and how can I cope with them?
d) Activities in the field of COMPREHENDING THE TASK are oriented towards the input interface of text production: negotiating, defining, and understanding the task a writer has to perform, and allocating appropriate resources such as production time, product time, and space. Writers' key questions in this field include: What am I expected to do? Who tells me to do so? Which resources do I have available?
e) Activities in the field of IMPLEMENTING THE PRODUCT are oriented towards the output interface of text production: implementing the final product in a format and through procedures that fit the overall workflow of content generation and value creation in the workplace. Writers' key questions in this field include: How do I check whether my work fits with what my collaborators do and the overall workflows? And how do I make sure it does?

## 5.2 Functions of text production

Writing at work takes place across referential, cognitive, interactive, and social functions of language use. Text products refer to real-world events, trigger changes in knowledge and behavior, and foster discourse between societal groups. The same applies to the processes of writing. Writers explain what is new, connect it to their audience's previous knowledge, balance stakeholders' goals, and translate between linguistic communities.

In doing so, the writers engage in the activity fields related to the functions of writing: They find their sources (a), limit the topic (b), take their own positions (c), stage the story (d), and establish relevance for the audience (e).

The activity in these five fields is oriented towards (re-) producing contributions to individual, organizational, and public knowledge building and communication. *(Re-) producing* means that writers create, confirm, and alter the contributions brought into the workflows by themselves or their sources. For example, they access and combine contradicting sources and their communicational offers; generate, pick up, broaden, or narrow topics; hide or show the writers' stance in their items; blend information with narration and argumentation; and address target groups in roles such as customers or decision makers.

Practices in the function-related activity fields are directly visible in the text products. They shape product properties such as: whose voices appear in a text, what they refer to, how subjective and unique a text sounds, which dramaturgical means are used in it, and what prior knowledge and interests are required to understand it.

a) Activities in the field of Finding the sources are oriented towards potential sources, such as experts, and towards source materials, such as pictures, soundbytes, and hyperlinks. Writers' key questions in this field include: Who are the relevant sources for my text production project? How can I access them? Which parts of their contributions should I reproduce in my item? How can I shape this item in a way that authentically mirrors the relevant positions and the state of discourse?
b) Activities in the field of Limiting the topic are oriented towards finding, defining, and contextualizing a topic to write on, for example by reshaping something that is already discussed or by setting new issues on the agenda. Writers' key questions in this field include: What matters at the moment? Is it relevant for society at large? Will it concern my audience and raise their interest? Is it recent enough to be presented and sold as (new) information? What do I focus on, and what needs to be contextualized?
c) Activities in the field of Taking own position are oriented towards finding one's stance, taking one's position or hiding it, and developing a unique approach as an author, be it on an individual or corporate level. Writers' key questions in this field include: What makes my story extraordinary and different from others on

the same topic? Where and how do I bring my own voice into the item? How can my individual or corporate signature be perceived in the product?

d) Activities in the field of STAGING THE STORY are oriented towards genres and dramaturgy, for example when well-established patterns of storytelling are reproduced or broken up and changed. Writers' key questions in this field include: What dramaturgical options are preset by the company, the context, the genre – and where am I free to develop my own? What style do I choose then? How do I balance and integrate words and pictures, facts and figures, quotes and contextualization? How can I evoke interest, emotions, suspense, and excitement?

e) Activities in the field of ESTABLISHING RELEVANCE FOR THE AUDIENCE are oriented towards making a text as relevant and accessible as possible for the target audience, for example by tying it to their interests and previous knowledge. Writers' key questions in this field include: Who is my target audience? What matters to them, and what do they expect? Are there contradictory expectations? How do I want my text to be understood? How can I make sure that the audience is attracted, stays tuned, gets the gist, realizes the details, and understands the story?

## 5.3 Structures of text production

Writing at work takes place across phonological, lexical, syntactic, and textual structures of language. Text products consist of functional linguistic units on various levels of complexity, such as sounds, words, sentences, and texts. The same applies to the processes of writing with their subprocesses on various timescales: Writers type characters, choose words, formulate sentences and write or revise texts.

In doing so, the writers engage in the activity fields related to the structure of writing. Closely integrated with writing is reading: Before, during, and after writing, writers read sources (a) as well as the text they have written so far (b). In the actual writing activities, the writers set goals (c), plan their processes and products (d), control their writing flow (e), and monitor and revise emerging products (f).

The activity in these six fields is oriented towards (re-) producing language strings for text products. *(Re-)producing* means that writers create, copy-paste, and alter the strings brought into the workflows by themselves or their sources. For example, they delete and retype characters, use and invent words, paraphrase utterances, reorder sentences and paragraphs, and shorten or extend texts.

Practices in the structure-related activity fields are directly visible in the texts. They shape product properties such as orthography, punctuation, prosody, lexical choice, word order, syntactic structures, paragraph rhythm, and text length.

a) Activities in the field of READING SOURCE TEXT are oriented towards understanding all kinds of source materials. *Reading* is meant in a wide sense, including the intentional reception of para- and non-verbal source materials such as pictures or infographs. Writers' key questions in this field include: At which stage of the process do I expose myself to what kind of source materials? How do I do this as efficiently and effectively as possible?
b) Activities in the field of READING OWN TEXT are oriented towards reading the text one has produced so far, which means, in a general sense, looking at and listening to the multimodal sign complex produced so far. Writers' key questions in this field include: At which moments in the process do I read the text I am about to produce? Which text parts have to be read especially carefully? How can I overcome the author perspective and read my text with the eyes of the audience? How can I get back into the writing flow after reading?
c) Activities in the field of GOAL SETTING are oriented towards setting and adjusting goals for a text production project. An example of a process-oriented goal is being fast, an example of a product-oriented goal is being clear. Writers' key questions in this field include: What do I want to achieve in my text production process? What is the gist of my contribution? What sense, what difference does the item make to me, my company, my audience, and society at large?
d) Activities in the field of PLANNING are oriented towards planning an upcoming text production project or adjusting plans for an ongoing one. Process planning can be oriented towards, for example, starting a work session by looking for quotes; product-oriented planning can be oriented towards beginning a text with a quote. Writers' key questions in this field include: What steps do I need to take to achieve my goals? How do I structure my working process? And how do I structure my text product?
e) Activities in the field of CONTROLLING are oriented towards handling the writing flow, for example getting into the flow, staying in flow throughout the process, keeping overall goals and plans in mind while formulating, and coming to an end in time. Writers' key questions in this field include: How can I stimulate and control my writing flow? How do I find my words? Should I jump back and revise what I have written or should I remain in the writing flow, go on writing my story, and revise my entire text from top to bottom in another session?
f) Activities in the field of MONITORING are oriented towards constantly considering the quality of an unfolding text production process and the emerging text. If necessary, improvements such as process adjustments and product revisions are made. Writers' key questions in this field include: What needs checking? How can I improve my text? What do I alter and according to which criteria? How do I implement others' reactions such as evaluations?

# 6 Perspectives: Towards a complex research of the complexity of writing

To sum up, it is only by investigating text production in its complexity and dynamics (instead of oversimplifying) that we are able to identify and explain (non-)writing practices such as remaining silent or adjusting abstraction levels of explanations. Recent global developments, mainly in society and media technology, have dramatically changed writing towards a multimodal, interactive practice of knowledge communication, but also generation, in complex contexts. Of course, this change affects writing researchers' objects of study, as discussed in this chapter. However, on second thought, these developments also, sublimely and overtly, affect research itself.

The semantic web, for example, offers a ubiquitous and exponentially growing plethora of electronically searchable and retrievable publications. Online databases of writing research offer access to large data corpora, analyses, and related discussions (e.g., www.writingpro.edu). This development considerably changes the process of scientific writing: from a primate of focused writing after completed research to ongoing parallel research and writing: "research and writing will merge into a single process" (McClure 2011: 315; see also Purdy 2010). The more interactive and collaborative written communication becomes, the more difficult it gets to allocate certain contributions to certain authors (Schindler and Wolfe, this volume) and to deal with "[e]thical and legal issues for writing researchers" (McKee 2008: 104). Critics of plagiarism detection practices argue that scientific writing, in the long term, does not constitute an exemption in the general shift toward "more challenging modes of writing that rely on community" and a "pedagogy of resistance toward plagiarism detection technologies" (Vie 2013: 3).

In brief, writing is about to change the way we think. Given the interconnectedness of mental, material, and social structures (2.1), the integrative nature of thinking and writing (2.2), and the scalability of emergence (2.3), modes of building and sharing scientific knowledge cannot but change in contemporary media environments. Fundamental changes in scientific knowledge production could follow the dramatic changes in writing we are experiencing. This alienates both our research fields and research in general, as the above contributions and provocative suggestions illustrate. Wasteland ahead? Fruitful reclaim in sight! Writing researchers, due to their awareness of these challenges and their double role as observers and practitioners of multimodal, context-bound text production, could lead the way.

# 7 References


Agar, Michael. 2011. Making sense of one other for another. Ethnography as translation. *Language & Communication* 31(1): 38–47.

Al-Aynati, Maamoun and Katherine Chorneyko. 2003. Comparison of voice-automated transcription and human transcription in generating pathology reports. *Archives of Pathology and Laboratory Medicine* 127(6): 721–726.

Alberti, John. 2008. The game of reading and writing. How video games reframe our understanding of literacy. *Computers and Composition* 25(3): 258–269.

Bakhtin, Michail Michajlovic. 1986. The problem of speech genres (Vern W. McGee, Trans.). In: Caryl Emerson and Michael Holquist (eds.), *Speech Genres and Other Late Essays*. Austin: University of Texas.

Baron, Naomi S. 2009. *Always On. Language in an Online and Mobile World.* Oxford: Oxford University Press.

Bazerman, Charles. 1994. Systems of genres and the enactment of social intentions. In: Aviva Freedman and Peter Medway (eds.), *Genre and the New Rhetoric*, 79–101. London: Taylor & Francis.

Bazerman, Charles. 2011. Electrons are cheap; society is dear. In: Doreen Starke-Meyerring, Anthony Paré, Natasha Artemeva, Miriam Horne and Larissa Yousoubova (eds.), *Writing in knowledge societies*, 75–84. Fort Collins: The WAC Clearinghouse and Parlor Press.

Beckner, Clay, Richard Blythe, Joan Bybee, Morten H. Christiansen, William Croft, Nick C. Ellis et al. 2009. Language is a complex adaptive system. Position paper. *Language Learning* 59(1): 1–26.

Blommaert, Jan. 2013. Writing as a sociolinguistic object. *Journal of Sociolinguistics* 17(4): 440–459.

Brand, Alice Glarden. 1989. *The Psychology of Writing. The Affective Experience.* New York: Greenwood.

Brand, Alice Glarden and Jack L. Powell. 1986. Emotions and the writing process. A description of apprentice writers. *Journal of Educational Research* 79(5): 280–285.

Breetvelt, Iris, Huub Van den Bergh and Gert Rijlaarsdam. 1996. Rereading and generating and their relation to text quality. An application of multilevel analysis on writing process data. In: Gert Rijlaarsdam, Huub Van den Bergh and Michael Couzijn (eds.), *Theories, Models and Methodology in Writing Research*, 10–20. Amsterdam: Amsterdam University Press.

Bremner, Stephen. 2012a. Socialization and the acquisition of professional discourse. *Written Communication* 29(1): 7–32.

Bremner, Stephen. 2012b. Working with genre systems. Accommodating multiple interests in the construction of organisational texts. In: Paul Gillaerts, Elizabeth De Groot, Sylvain Dieltjens, Priscilla Heynderickx and Geert Jacobs (eds.), *Researching Discourse in Business Genres*, 53–70. Frankfurt am Main: Lang.

Brown, Scott, Cao Alvira, J. José and Eric Powers. 2012. Do investment newsletters move markets? *Financial Management* 42(2): 315–338.

Bruning, Roger and Christy Horn. 2000. Developing motivation to write. *Educational Psychologist* 35(1): 25–37.

Cameron, Lynne and Alice Deignan. 2006. The emergence of metaphor in discourse. *Applied Linguistics* 27(4): 671–690.

Chafe, Wallace L. 2002. Writing in the perspective of speaking. In: Ellen Barton and Gail Stygall (eds.), *Discourse Studies in Composition*, 43–69. Cresskill, NJ: Hampton.

Chandler, Sally W. and John Scenters-Zapico. 2012. New literacy narratives. Stories about reading and writing in a digital age. *Computers and Composition* 29(3): 185–190.

Charmaz, Kathy. 2008. Grounded theory as an emergent method. In: Sharlene N. Hesse-Biber and Patricia Leavy (eds.), *Handbook of Emergent Methods*, 155–170. New York: Guilford Press.

Cooper, Marilyn M. 1986. The ecology of writing. *College English* 48(4): 364–375.
Dixon, Thomas. 2012. "Emotion". The history of a keyword in crisis. *Emotion Review* 4(4): 338–344.
Donald, Merlin. 1991. *Origins of the Modern Mind.* Cambridge: Harvard University Press.
Ellis, Nick C. and Diane Larsen-Freeman. 2006. Language emergence. Implications for applied linguistics. Introduction to the special issue. *Applied Linguistics* 27(4): 558–589.
Fartoukh, Michaël, Lucile Chanquoy and Annie Piolat. 2012. Effects of emotion on writing processes in children. *Written Communication* 29(4): 391–411.
Fassbender, Eric and Jayshree Mamtora. 2013. A workflow for managing information for research using the iPad, Sente and Dragon Dictate: a collaboration between an academic and a research librarian. *The Australian Library Journal* 62(1): 53–60.
Feeney, Lisa, Georges H. Haines and Allan L. Riding. 1999. Private investors' investment criteria: Insights from qualitative data. *Journal Venture Capital* 1(2): 121–145.
Fleckenstein, Kristie S., Clay Spinuzzi, Rebecca J. Rickly and Carole Clark Papper. 2008. The importance of harmony. An ecological metaphor for writing research. *College Composition and Communication* 60(2): 388–419.
Flower, Linda S. and John R. Hayes. 1981. A cognitive process theory of writing. *College Composition and Communication* 32(4): 365–387.
Flower, Linda S., Victoria Stein, John Ackerman, Margaret J. Kantz, Kathleen McCormick and Wayne C. Peck. 1990. *Reading to Write. Exploring a Cognitive and Social Process.* New York: Oxford University Press.
Freiman, Marcelle. 2005. Writing/Reading. Renegotiating criticism. *Text* 9(1), http://www.griffith.edu.au/school/art/text, last accessed on 11.09.2013.
Gillaerts, Paul, Elizabeth De Groot, Sylvain Dieltjens, Priscilla Heynderickx and Geert Jacobs (eds.). 2012. *Researching Discourse in Business Genres.* Frankfurt am Main: Lang.
Goody, Jack. 2001. The semiotics of writing. In: Patrick Coppock (ed.), *The Semiotics of Writing. Transdisciplinary Perspectives on the Technology of Writing,* 63–77. Turnhout: Brepols.
Grabowski, Joachim. 1996. Writing and speaking. Common grounds and differences toward a regulation theory of written language production. In: C. Michael Levy and Sarah Ransdell (eds.), *The Science of Writing. Theories, Methods, Individual Differences, and Application*, 73–92. Mahwah: Erlbaum.
Groysberg, Boris, Paul Healy, Nithin Nohria and George Serafeim. 2011. What factors drive analyst forecasts? *Financial Analysts Journal* 67(4): 18–29.
Gunnarsson, Britt-Louise. 1997. The writing process from a sociolinguistic viewpoint. *Written Communication* 14(2): 139–188.
Gunnarsson, Britt-Louise. 2009. *Professional Discourse.* London: Continuum.
Haas, Christina. 1996. *Writing Technology. Studies in the Materiality of Literacy.* Mawah: Erlbaum.
Hanauer, David I. and Karen Englander. 2011. Quantifying the burden of writing research articles in a second language. Data rrom Mexican scientists. *Written Communication* 4(28): 403–416.
Hanauer, David Ian and Karen Englander. 2013. *Scientific Writing in a Second Language.* Anderson: Parlor Press.
Harris, Roy. 1989. How does writing restructure thought? *Language and Communication* 9(2/3): 99–106.
Harris, Roy. 2000. *Rethinking Writing.* London: Athlone Press.
Harrison, Stanley. 2000. Cyborgs and digital soundwriting. Rearticulating automated speech recognition typing programs. *Kairos* 5(1), http://kairos.technorhetoric.net/5.1/binder.html?features/harrison/bridgenw.html, last accessed on 11.09.2013.
Hartley, James. 2007. Reading, writing, speaking and listening: Perspectives in Applied Linguistics. *Applied Linguistics* 28(2): 316–320.
Hayles, N. Katherine. 2002. *Writing Machines.* Cambridge: MIT.

Heynderickx, Priscilla, Sylvain Dieltjens, Geert Jacobs, Paul Gillaerts and Elizabeth De Groot (eds.). 2012. *The Language Factor in International Business*. Frankfurt am Main: Lang.

Hidi, Susanne and Pietro Boscolo (eds.). 2006. *Motivation and Interest in Writing*. Amsterdam et al.: Elsevier.

Hirsch Hadorn, Gertrude, Susette Biber-Klemm, Walter Grossenbacher-Mansuy, Holger Hoffmann-Riem, Dominique Joyce, Christian Pohl et al. 2008. The emergence of transdisciplinarity as a form of research. In: Holger Hoffmann-Riem, Susette Biber-Klemm, Walter Grossenbacher-Mansuy, Gertrude Hirsch Hadorn, Dominique Joye, Christian Pohl, Urs Wiesmann and Elisabeth Zemp (eds.), *Handbook of Transdisciplinary Research*, 19–39. Berlin: Springer.

Hirvela, A. 2004. *Connecting Reading & Writing in Second Language Writing Instruction*. Ann Arbor: University of Michigan Press.

Holland, John Henry. 1998. *Emergence. From Chaos to Order.* Redwood City, CA: Addison-Wesley.

Hyland, Ken. 2002. *Teaching and Researching Writing*. London: Longman.

Ivory, Melody H. 2006. Automated web site evaluation tools. Implications for writers. In: Luuk Van Waes, Mariëlle Leijten and Chris Neuwirth (eds.), *Writing and Digital Media,* 105–114. Amsterdam et al.: Elsevier.

Izard, Carroll E. 2010. The many meanings/aspects of emotion. Definitions, functions, activation, and regulation. *Emotion Review* 2(4): 363–370.

Jacobs, Geert and Tom Van Hout. 2009. Towards a process view of preformulation in press releases. In: Jan Renkema (ed.), *Discourse, of course. An Overview of Research in Discourse Studies,* 239–251. Amsterdam et al.: John Benjamins.

Jakobs, Eva-Maria. 2003. Reproductive writing. Writing from sources. *Journal of Pragmatics* 35(6): 893–906.

Jakobs, Eva-Maria and Daniel Perrin. 2008. Training of writing and reading. In: Gert Rickheit and Hans Strohner (eds.), *The Mouton-De Gruyter Handbooks of Applied Linguistics. Communicative Competence* Vol. 1, 359–393. New York: De Gruyter.

Johansson, Roger, Victoria Johansson, Åsa Wengelin and Kenneth Holmqvist. 2012. Reading during text production. In: Mark Torrance, Denis Alamargot, Montserrat Castello, Franck Ganier, Otto Kruse, Anne Mangen, Liliana Tolchinsky and Luuk Van Waes (eds.), *Learning to Write Effectively. Current Trends in European Research*, 359–363. Bingley: Emerald.

Jones, John. 2008. Patterns of revision in online writing. A study of Wikipedia's featured articles. *Written Communication* 25(2): 70–96.

Keseling, Gisbert. 2001. Sprechen mit sich selbst als Strategie zur Vermeidung und Überwindung von Schreibblockaden. Erkundungen zur Funktion der inneren Sprache beim Sprechen. In: Claudia Mauelshagen and Jan Seifert (eds.), *Sprache und Text in Theorie und Empirie. Beiträge zur germanistischen Sprachwissenschaft. Festschrift für Wolfgang Brandt*, 157–169. Stuttgart: Steiner.

Keseling, Gisbert. 2004. *Die Einsamkeit des Schreibers. Blockaden und Schwierigkeiten bei der schriftlichen Textproduktion*. Opladen: Verlag für Sozialwissenschaften.

Kirtley, Susan. 2012. Rendering technology visible. The technological literacy narrative. *Computers and Composition* 29(3): 191–204.

Knievel, Michael. 2009. What is humanistic about computers and writing? Historical patterns and contemporary possibilities for the field. *Computers and Composition* 26(2): 92–106.

Kramsch, Claire and Anne Whiteside. 2008. Language ecology in multilingual settings. Towards a theory of symbolic competence. *Applied Linguistics* 29(4): 645–671.

Lantolf, James P. 2006. Language emergence. Implications for applied linguistics. A sociocultural perspective. *Applied Linguistics* 27(4): 717–728.

Larsen-Freeman, Diane. 2006. The emergence of complexity, fluency, and accuracy in the oral and written production of five Chinese learners of English. *Applied Linguistics* 27(4): 590–619.

Larsen-Freeman, Diane and Lynne Cameron. 2008. *Complex Systems and Applied Linguistics*. 2nd edition. Oxford: Oxford University Press.

Lave, J. and E. Wenger. 1991. *Situated Learning. Legitimate Peripheral Participation*. Cambridge: Cambridge University Press.

Leander, Kevin and Paul Prior. 2004. Speaking and writing. How talk and text interact. In: Charles Bazerman and Paul Prior (eds.), *What Writing Does and How it Does it: An Introduction to Analyzing Text and Textual Practice*, 201–238. Mahwah, NJ: Erlbaum.

Lillis, Theresa. 2008. Ethnography as method, methodology, and "deep theorizing". Closing the gap between text and context in academic writing research. *Written Communication* 25(3): 353–388.

Lillis, Theresa. 2013. *The Sociolinguistics of Writing*. Edinburgh: Edinburgh University Press.

Lindquist, Kristen A. and Maria Gendron. 2013. What's in a word? Language constructs emotion perception. *Emotion Review* 5(1): 66–71.

Loughran, Tim and Bill D. McDonald. 2013. Measuring readability in financial disclosures. *Journal of Finance*, pre-print version downloaded on Social Science Research Network, http://www.papers.ssrn.com, last accessed on 11.09.2013.

MacMillan, Stuart. 2012. The promise of ecological inquiry in writing research. *Technical Communication Quarterly* 21(4): 346-361.

MacWhinney, Brian. 2006. Emergentism. Use often and with care. *Applied Linguistics* 27(4): 729–740.

Mangen, Anne Jean-Luc Velay. 2012. The haptics of writing. Cross-disciplinary explorations of the impact of writing technologies on the cognitive-sensorimotor process involved in writing. In: Mark Torrance, Denis Alamargot, Montserrat Castello, Franck Ganier, Otto Kruse, Anne Mangen, Liliana Tolchinsky and Luuk Van Waes (eds.), *Learning to Write Effectively. Current Trends in European Research*, 405–409. Bingley: Emerald.

May, Gary L., Margaret A. Thompson and Jennifer Hebblethwaite. 2012. A process for assessing and improving business writing at the MBA Level. *Business Communication Quarterly* 75(3): 252–270.

McClure, Randall. 2011. WritingResearchWriting. The semantic web and the future of the research project. *Computers and Composition* 28(4): 315–326.

McGee, Tim and Patricia Ericsson. 2002. The politics of the program MS Word as the invisible grammarian. *Computers and Composition* 19(4): 453–470.

McKee, Heidi A. 2008. Ethical and legal issues for writing researchers in an age of media convergence. *Computers and Composition* 25(1): 104–122.

McLuhan, Marshall. 1964. *Understanding Media.* London et al.: Sphere books.

Menary, Richard. 2007. Writing as thinking. *Language Sciences* 29(5): 621–632.

Molitor-Lübbert, Sylvie. 2002. Schreiben und Denken. Kognitive Grundlagen des Schreibens. In: Daniel Perrin, Ingrid Boettcher, Otto Kruse and Arne Wrobel (eds.), *Schreiben. Von intuitiven zu professionellen Schreibstrategien*, 33–46. Wiesbaden: Westdeutscher Verlag.

Myers, Greg. 1985. The social construction of two biologists' proposals. *Written Communication* 2(3): 219–245.

Nelson Spivey, Nancy. 1990. Transforming texts. Constructive processes in reading and writing. *Written Communication* 7(2): 256–287.

Nold, Ellen W. 1975. Fear and trembling. The humanist approaches the computer. *College Composition and Communication* 26(3): 269–273.

O'Hara, Kenton P., Alex Taylor, William Newman and Abigail J. Sellen. 2002. Understanding the materiality of writing from multiple sources. *International Journal of Human-Computer Studies* 56(3): 269–305.

Ortner, Hanspeter. 2000. *Schreiben und Denken*. Tübingen: Niemeyer.

Östman, Jan-Ola. 1986. *Pragmatics as implicitness. An analysis of question particles in Solf Swedish, with implications for the study of passive clauses and the language of persuasion.* Unpublished Ph.D. dissertation, University of California, Berkeley.

Palaigeorgiou, George E., Theofanis D. Despotakis, Stavros N. Demetriadis and Ioannis A. Tsoukalas. 2006. Synergies and barriers with electronic verbatim notes (eVerNotes): note taking and report writing with eVerNotes. *Journal of Computer Assisted Learning* 22(1): 74.

Perrin, Daniel. 2012. Coming to grips with complexity. Dynamic Systems Theory in the research of newswriting. In: Charles Bazerman, Chris Dean, Jessica Early, Karen Lunsford, Suzie Null, Paul Rogers and Amanda Stansell (eds.), *International Advances in Writing Research. Cultures, Places, Measures*, 539–558. Fort Collins: The WAC Clearinghouse and Parlor Press.

Perrin, Daniel. 2013. *The Linguistics of Newswriting.* Amsterdam, New York et al.: John Benjamins.

Peterson, Donald. 1996. *Forms of Representation.* Exeter: Intellect Press.

Pogner, Karl-Heinz. 2003. Writing and interacting in the discourse community of engineering. In: Daniel Perrin (ed.), The pragmatics of writing. *Journal of Pragmatics* 35(6): 855–867.

Purdy, James P. 2010. The changing space of research. Web 2.0 and the integration of research and writing environments. *Computers and Composition* 27(1): 48–58.

Reece, John E. and Geoff Cumming. 1996. Evaluating speech-based composition methods. Planning, dictation and the listening word processor. In: C. Michael Levy and Sarah Ransdell (eds.), *The Science of Writing. Theories, Methods, Individual Differences, and Applications,* 361–380. Mahwah: Erlbaum.

Scarantino, Andrea. 2012. How to define emotions scientifically. *Emotion Review* 4(4): 358–368.

Scardamalia, Marlene and Carl Bereiter. 1987. Knowledge telling and knowledge transforming in written composition. In: Sheldon Rosenberg (ed.), *Advances in Applied Psycholinguistics* Vol. 2, 142–175. Cambridge: Cambridge University Press.

Schoeneborn, Dennis. 2011. *Organization as communication. Management Communication Quarterly* 25(4): 663–689.

Schriver, Karen A. 1989. Evaluating text quality. The continuum from text-focused to reader-focused methods. *IEEE Transactions on Professional Communication* 32(4): 238–255.

Sealey, Alison. 2010. Probabilities and surprises: A realist approach to identifying linguistic and social patterns, with reference to an oral history corpus. *Applied Linguistics* 31(2): 215–235.

Sharples, Mike. 1996. An account of writing as creative design. In: C. Michael Levy and Sarah Ransdell (eds.), *The Science of Writing. Theories, Methods, Individual Differences and Applications,* 127–148. Mahwah: Erlbaum.

Sharples, Mike and Thea Van der Geest. 1996. *The New Writing Environment. Writers at Work in a World of Technology.* London et al.: Springer.

Singh, Mohini and Sandra J. Peters. 2013. *Financial Reporting Disclosures. Investor Perspectives on Transparency, Trust, and Volume* (Vol. 2013): CFA Institute.

Spilka, Rachel. 1993. Moving between oral and written discourse to fulfill rhetorical and social goals. In: Rachel Spilka (ed.), *Writing in the Workplace. New Research Perspectives*, 71–83. Carbondale et al.: Southern Illinois University Press.

Spinuzzi, Clay. 2003. Compound mediation in software development. Using genre ecologies to study textual artifacts. In: Charles Bazerman and David Russel (eds.), *Writing Selves Writing Societies,* 97–124. Fort Collins: The WAC Clearinghouse and Mind, Culture and Activity.

Sternglass, Marilyn S. 1988. *The Presence of Thought. Introspective Accounts of Reading and Writing.* Norwood: Ablex.

Syverson, Margaret. 1999. *The Wealth of Reality. An Ecology of Composition.* Carbondale: Southern Illinois University Press.

Tierney, Robert J. and Timothy Shanahan. 1991. Research on the reading-writing relationship. Interactions, transactions, and outcomes. In: Rebecca Barr, Michael L. Kamil, Peter B. Mosenthal and P. David Pearson (eds.), *Handbook of Reading Research* Vol. 2, 246–280. New York et al.: Longman.

Toepfer, Steven M. and Kathleen Walker. 2009. Letters of gratitude. Improving well-being through expressive writing. *Journal of Writing Research* 1(3): 181–198.

Van Lier, Leo. 2004. *The Ecology and Semiotics of Language Learning. A Sociocultural Perspective*. Boston: Kluwer.

Vie, Stephanie. 2013. A pedagogy of resistance toward plagiarism detection technologies. *Computers and Composition* 30(1): 3–15.

Vygotsky, Lew S. 1978. *Mind in Society. The Developments of Higher Psychological Processes*. Cambridge: Harvard University Press.

Wallace, Derek. 2003. Writing and the management of power. Producing public policy in New Zealand. In: Charles Bazerman and David Russel (eds.), *Writing Selves, Writing Societies*, 159–178. Fort Collins: The WAC Clearinghouse and Parlor Press.

Whitehouse, Marlies and Daniel Perrin. 2014a. Writing in finance. *Zeitschrift Schreiben*.

Whitehouse, Marlies and Daniel Perrin. 2014b. *Writing in Financial Communication / Schreiben in der Finanzkommunikation*. Wiesbaden: Springer.

Wolfe, Joanna. 2005. Gesture and collaborative planning. A case study of a student writing group. *Written Communication* 22(3): 298–332.

Zimmerman, Barry J. and Rafael Risemberg, Rafael 1997. Becoming a self-regulated writer. A social cognitive perspective. *Contemporary Educational Psychology* 22(1): 73–102.