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Software as Ideology. A Multimodal Critical Discourse Analysis of Microsoft Word and SmartArt

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Abstract:

Software has become ubiquitous in higher education, especially often taken-for-granted Microsoft Word. Educational writing involves more than horizontal lines of text, but also multimodal representations. When students write in Word, the affordances of the program constrain what multimodal representations of knowledge they can and cannot make. Software such as Word is not neutral tool-kits, but also historical and semiotic constructs loaded with social values and ideologies. By taking a social semiotic approach to Word and SmartArt, this article shows how this software is pre-loaded with values and styles from office management. These values are then infused into education, in the case this article investigates, grammar models in language studies.

Key words:
Software, template, Microsoft Word, SmartArt, standardization, multimodality, education, style, semiotic technology

1. Introduction

Digital technology is part and parcel of text composition in higher education today, significantly the ubiquitous software of Microsoft Word. Word was originally developed for office management in business and organizations, but is today used in education all over the world and has total market dominance. Consequently, I argue, Word contributes to shaping and constraining how *knowledge* is and can be represented.

The case to be discussed in this article is language studies, where so-called grammatical trees are important multimodal ensembles. How do students design hierarchical structures in a program developed for composing uniform line-based pages? What values and ideologies are buried in Word, and how do these values contribute to shaping how knowledge is and can be represented? In this paper I show and discuss how Microsoft Word is infused with social values from office organization management and import these into education by standardizing multimodal representations according to digitally templatized styles. The article thereby shows how software like Word is not simple tool-kits offering functions and possibilities, but also historically developed semiotic constructs loaded with ideologies.

2. Software and technology as discourse

The history of Word dates back to 1983, when Microsoft Company introduced a program called "Multi-Tool Word", which later was renamed "Microsoft Word". A Macintosh version was successfully released in 1985 and with the Windows versions from the mid 80's and onwards, sales took off (Edwards 2008). In 2015, Microsoft was

the 25th biggest company in the world and 1st amongst software companies (Forbes undated). In addition to its financial power, Microsoft holds extensive social and semiotic power by exercising control over the actions of text producers by deciding and structuring the choices the programs offer. Hence, Word lends itself as a highly relevant object of study for critical multimodal discourse analysis.

Text composition in Word is often conceived of as "writing," but writing is itself an inherently multimodal practice. Written verbiage by necessity includes choices of fonts, colors, layout and framing, and visual resources like photographs, models and charts are also frequently included. Importantly, all semiotic resources in Word have been deliberately designed and selected.

Norman Fairclough (1996) claims that the social 'technologization of discourse' contains an impetus towards standardizations of discourse practices (Fairclough 1996, 74). Technologized discursive practices are policed not locally nor by the legitimacy of the power of the profession, but on a trans-institutional level (Fairclough 1995, 104), in this case Microsoft Company. The standardizing impetus of Word is particularly critical in terms of how discourses and styles embedded in the program are infusing all semiotic practices in which it is used, including education. Standardization of communication is also part of larger-scale social changes of modernization, bureaucratization and New Public Management.

Software has previously been addressed in several fields outside CDA and multimodality studies, significantly in the field of *software studies*, which advocates thinking about software from other perspectives than those that historically have "owned" the field, for example cultural, historical and aesthetical perspectives (Fuller 2008). Critical attention has been aimed at how the database is replacing the narrative as the dominating cultural form (Manovich 2001), and at how software "takes command" by penetrating all social practices (Manovich 2013). Some software studies scholars have also discussed Word. In an essay from 2003, Matthew Fuller comments on how the screen is divided up into little clusters and groups, each with a particular task. In order to make the fastest possible route between human and computer and screen, a lot of the screen space is filled with icons and tool bars, leaving little space left for writing. Word has over the years become increasingly overloaded with features and functions, or, as Fuller puts it: "Since its early versions Word has swollen like a drowned and drifting cow" (Fuller 2003). On a similar note, Olav Bertelsen and Søren Pold (2004) have compared the interface of Word to art and architecture, arguing that developments in Word can be compared with baroque stylistics i.e. having become so ornamented with elements that it is almost not functional any more. They also claim that the interface design implies readers who will occupy specific roles that are difficult to escape, and that the program promotes a certain kind of business writing where creativity is limited to the use of typography.

The core research interests and methodologies of software studies do however not tend to involve critical analysis of the actual tools and options made available within specific software packages and how these become used in texts within specific social practices. By drawing on social semiotics, this can however be done. In particular, social

semiotics can contribute accounts of the articulations and permutations semiotic resources allow for and analytical descriptions of realizations of the semiotic potentials of these resources in social practices (van Leeuwen 2005).

Furthermore, the sub-field of 'semiotic technology' is currently on the rise within social semiotics multimodality studies (Zhao et al. 2014, van Leeuwen et al. 2013, Djonov and van Leeuwen 2013ab, Djonov and van Leeuwen 2011, Kvåle 2015, Adami and Kress 2010). This notion signals an interest in technology as integral to meaning making by paying attention to how social and semiotic assumptions are inscribed into software.

From this perspective, software like Word is viewed as a semiotic resource, and, as such, it can be investigated in terms of the *affordances* it offers and the constraints it involves for communication (Djonov and van Leeuwen 2011, 560). 'Affordances' refer to what it is possible to do, easily and readily, with a mode, given its materiality and its cultural and social history (Jewitt and Kress 2003, 14-15). Word's affordances thus not only include technological features, but also the program's socio-cultural histories – what functions it was designed for performing and what values it since has been assigned and subsumed in the social practices in which it has been used. Hence, this perspective goes beyond the common *functionality* discourses of 'effectivity' and 'user-friendliness' that software generally is addressed with in culture, as it conceptualizes software as a historically developed semiotic construct.

Microsoft Office offers a variety of *templates* for multimodal representation, today significantly as SmartArt graphics. Templates pre-decide the appearance and distribution of key components (cf. Djonov and van Leeuwen 2013a, 13) and function as standardized modules that can be used for a broad variety of purposes. Templates thus lead to and legitimize bureaucratic processes, and serve as part of the technologization of discourse.

Digital templates come with templatized *styles*. Styles have to do with the manners that discourses are enacted through; with expressions of identities and values (cf. Fairclough 2003, 159ff, van Leeuwen 2005, Machin and van Leeuwen 2005). Word and SmartArt templatize the appearance of documents and graphical elements, and this templatized style brings along social values and identities from the practices the styles are developed and standardized for. In the case of Word, a certain set of style is globally enforced as norm for how texts should look.

3. A social semiotic approach to software analysis

Inspired by Zhao et al.'s (2014) approach to PowerPoint, this article proposes a three-step approach for critical discourse analysis of software: 1) analysis of multimodal realization of software and templates in semiotic practices, 2) analysis of affordances of digital templates, and 3) analysis of affordances of software. The basis for step 1 in this article is 13 Word-aided student assignments on morphology, which involved making grammatical trees.[1] One of the resources the students deployed was hierarchical

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[1] The data was collected as part of a research project called "Digital literacy and the use of digital resources in Norwegian Teacher Education"(University of Agder, 2013-2015).

SmartArt graphic, and in step 2 this template will be investigated. In step 3 the analysis "zooms out" to the affordances of Word in general, with emphasis on the program's visual resources and styles.

Investigating the history of software is methodologically challenging, as earlier versions are not easily accessible. In this study, Norwegian guidebooks and instruction manuals have been used as additional sources of knowledge on past versions. All quotes marked with "Norw" have been translated to English by author from original quote in Norwegian.

4. Step 1: Analyzing Word-aided texts

The first step of the analysis is to investigate how Word contributes to shaping multimodal representations of knowledge.

Figure 1 shows a textbook example of a grammatical tree, which is an *abstract* visual image. In abstract images with high "truth value", or modality, details are reduced to only the essential qualities as the general is given precedence over the individual (cf. Kress and van Leeuwen 2006, 165). Hence, the visual style of this kind of knowledge is a *minimalistic* and *little embellished style*.
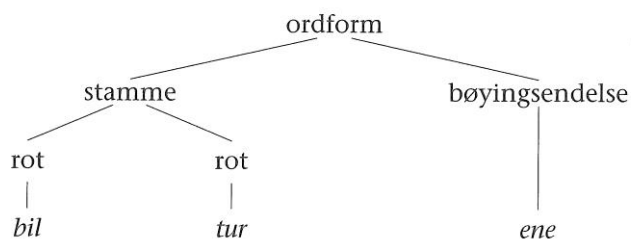

Figure 1: Grammatical tree with high abstract modality. From Kuldbrandstad 2005.

The students were to compose morphological trees for five words, and they deployed the following five strategies for designing trees in Word:

1. Using hierarchical SmartArt templates (5)
2. Inserting trees designed in another program e.g. Paint (3)
3. Compiling visual resources available in Word (2)
4. Inserting digital photograph of a hand-drawn trees (2)
5. Uploading digital photograph of hand-drawn trees as separate file (1)

The affordances of Word influence the students' representations of grammar in different ways, as will be exemplified and shown in the next sections. For ethical reasons, please note that the examples are from their first try of which we do not know the teachers' assessment of (pass/fail), and that the students had been reassured that the visual display of the trees was not part of the assessment criteria.

4.1 Hierarchical SmartArt

Figure 2 shows the morphological structure of the word "usynlege" ("invisible", plural) as a hierarchical SmartArt. In this tree, text appears in boxes with curved corners, and there is blue color on all non-verbal elements. In the background shades of the boxes, color is modulated; running from quite light blue to dark blue. These semiotic choices individually constitute only minor details, but, taken together, they make up a style of *decoration* and *embellishment*.

Because the SmartArt tree is shaped by the style embedded in the template, the student's multimodal representation of knowledge also comes to privileging decoration and embellishment over the abstract. The ornamental SmartArt style however dissociates from the high abstract modality and minimalist style of language studies, e.g. the text book tree. Thus, designing trees as SmartArts involves a software-driven standardization and ornamentation of multimodal representations.
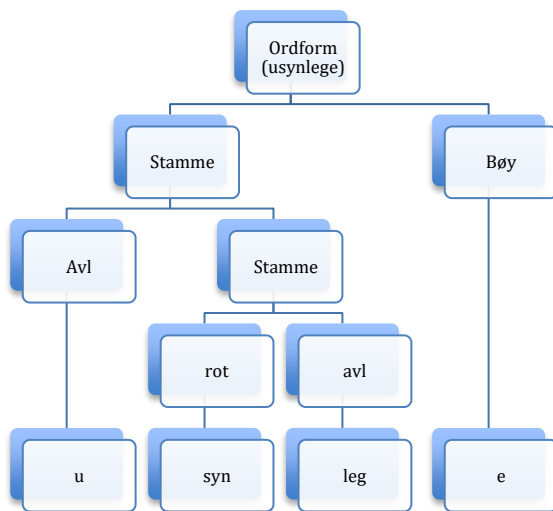
Figure 2: Grammatical tree as hierarchical SmartArt

4.2 Trees designed in other programs i.e. Paint

Some students designed trees in other ubiquitous software i.e. Paint, and inserted these into their Word documents as images. Figure 3 shows the word "læraren" ("the teacher") inserted as a png-file. This tree consists of words in various font sizes placed in a hierarchical layout, connected by non-symmetrical connective lines that slightly deviate from the vertical axis. In result, the image has rather high modality within the abstract coding orientation, but a less neat and well-ordered visual style. Thus, this example shows how not only Word, but also other ubiquitous software, constrains the possibilities for shaping *new* meanings as simple, yet well-balanced abstract models.
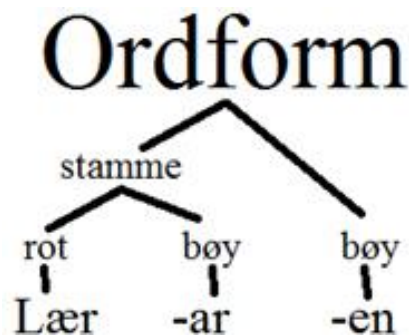
Ordform

stamme

rot   bøy   bøy

Lær   -ar   -en

Figure 3: Grammatical tree in Paint

4.3 Compilations of visual elements (2)

Some students designed trees by assembling visual resources in Word, i.e. lines/arrows and text boxes combined with line spacing. In the tree in figure 4, written text is placed in transparent text boxes connected by blue arrows and framed by empty space. The image enters into the abstract code, but as the blue and arrow-shaped connective lines make inessential semiotic additions, also this strategy leads to a lowering of the modality and to a less restrained visual style.

Furthermore, everyone who has ever tried to perform similar operations in Word will recognize this tree as the result of time-consuming negotiations and frustrations, as the program's preferences continually threaten to overrun and change the visual display. It thereby also illustrates how knowledge construction in Word requires intensified semiotic action as soon as the forms of representations go beyond written lines.
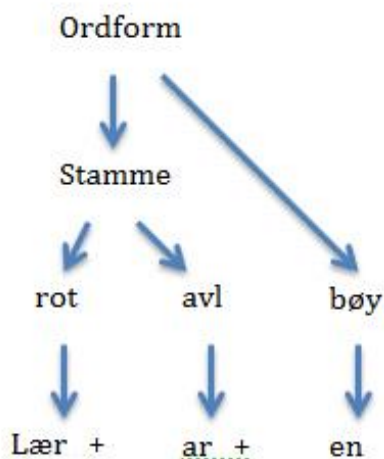
Ordform

Stamme

rot   avl   bøy

Lær +   ar +   en

Figure 4: Grammatical tree as compilation of visual elements

4.4 Photographs of drawn trees

Some students designed trees by drawing them on paper, photographing the trees and then inserting the photos into their Word documents. In the example in figure 5, elements could be placed anywhere within the sheet, unlike the Word-aided designs.

Inessential additions are nevertheless made by the personal style that handwriting necessarily brings along, so the modality is nevertheless lowered. This strategy also indicates that some students regard the design of hierarchical representations as demanding more, or harder, semiotic work in Word than the process of photographing and inserting hand-drawn trees.
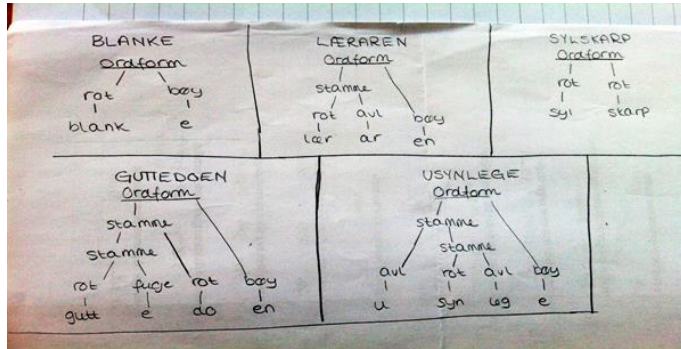

Figure 5: Grammatical trees as photograph of hand-drawn trees

4.5 Digital photographs of drawn trees as separate files

This strategy is visually similar to the latter, but differs in how the trees were not integrated into Word, but uploaded to the LMS as a separate file. Hence, the digital production as well as the distribution of the tree took place separated from Word. This example thereby further accentuates how Word may constrain the production of non-linear abstract representations.

Summing up, the variety of strategies chosen shows that the production of the simple multimodal structure of hierarchical trees can be done in several ways with Word, but that the program plays a crucial role in shaping how hierarchies can be represented. Designing an abstract image with high modality in a visually minimalist and well-ordered style is in fact made difficult by Word. This is not to be understood as merely a matter of whether Word is "functional" or not, but as social and semiotic consequences of the styles and assumptions written into the program. Fairclough (1995, 104) argues that one aspect of the technologization of discourse is the development of 'context-free' techniques, and that local discourses are 'colonized' by discourses that are culturally more prominent. In this perspective, Word's constraining of images with abstract coding orientations is to be understood as one of many instances where practice-specific representation forms are constrained and colonized by the semiotic resources made available as allegedly 'context-free' possibilities in the program.

The students' approaches differ in several ways, significantly in terms of how visually *standardized* their hierarchies appear. The most frequently deployed resource, the Smart Art template, comes across as the clearly most standardized element. However, it is standardized according to other style conventions than those of language studies. Consequently, it is necessary to critically consider whose interests and what purposes and values this resource is standardized in accordance with. Hence, the next analytical step involves further critical investigations of the hierarchical SmartArt template.

6. Step 2: Analyzing SmartArt graphics

The second step in this analysis is to map the affordances of the hierarchical SmartArt in order to reveal the social values that are buried in this template.

SmartArt graphics was introduced in Office 2007. It is promotionally described by Microsoft as "a visual representation of your information that you can quickly and easily create, choosing from among many different layouts, to effectively communicate your message or ideas", and promises users that they can create "designer-quality illustrations with only a few clicks of your mouse" (Microsoft undated). These descriptions promote values of "effective communication" and "design quality", and the SmartArt style is therefore to be understood as a templatized realization of these values.

As shown in the previous section, the ornamental SmartArt style is different from the minimalist style of language studies and higher education. Hence, the template does not universally function as "effective communication". The SmartArt templatizations of "effective communication" and "professional design" are rather revealed as socially contingent standardizations of aesthetical preferences and communicational needs of other social practices, and the quest for a CDA approach is therefore to investigate which ones and how.

The standardizing impetus for the decorative style of SmartArt in particular comes from social practices of office management. This is evident from the history of hierarchical structures in Word. Past program versions and instruction manuals unambiguously connect the development of hierarchy in Word to one specific interest: Representation of *organizational charts*.

The historical development of hierarchy in Word can be shown to consist of four stages of which SmartArt for now constitutes the final stage (cf. Kvåle 2015):

1. No template
2. Organizational chart: One template, hierarchy mandatory
3. Relationship diagram: Many templates, hierarchy preferred
4. SmartArt graphic: Many templates, hierarchy not preferred

In the first Word versions, there were no specific functions for making hierarches. Instruction manuals from the 80s and 90s however clearly show that one particular interest poses a need for it: report structures in organizations. The solution Word offered was not yet a template, but to make hierarchies by compiling lines and shapes available in the program (cf. strategy 3 in the analysis of the student assignments). This can be illustrated with the following procedure from a guide book for Word 6.0, where the first step is to open an exercise document from an accompanying disk:

2. Click the **rectangle** button in the Drawing tool bar
3. Click beneath the text in the document
4. Hold down the mouse button and drag diagonally from the starting point
5. Release the mouse button when the rectangle has the right size (...) (Husby et al. 1995, 145, Norw)

Hierarchical representation later, in stage two, became integrated as a standardized template in Office as a feature called "insert organizational chart". An instruction manual for Word 1997 explains this semiotic action as follows: "1. Select the command Insert → Object, select Microsoft Organizational Chart and click OK" (Arlov 1997, 256, Norw). The assignment of the proper name "Organizational Chart" unequivocally links this resource to social practices of report lines in large organizations. Organizational report structures were also, by the singularity of the template, defined as hierarchal.

In the third stage, the name shifted from the specific of "organizational charts" to the more general "relationship diagrams". Hierarchy and organizational charts thereby became linked to other kinds of relations and semantic domains. Taking Word 2002 as an example, there were six different types of relations. Hierarchy was listed first of them, and the caption in the program read "Organizational chart / Used for displaying hierarchical relations" (Norw). Hence, even though hierarchy as organizational structure was no longer the only possibility, hierarchy was nevertheless still the structure preferred by Word, and still explicitly connected to organizational charts.

In the fourth stage, hierarchy became part of the SmartArt template collection. SmartArt in Word 2010 for Windows contained eight groups of templates. Hierarchy was one of them, but as it was listed fourth in the SmartArt caption window, the decreasing preference for hierarchy was enhanced. The purpose of the hierarchy was also expanded to including other aims beside organizational charts, like showing "decision trees" (Microsoft undated) and "hierarchical information" (program captions).

The SmartArt hierarchy template group in Word 2010 for Windows includes 13 different templates, varying in for instance shape (rectangles vs. ovals) and orientation (vertical vs. horizontal). They can also easily be visually altered, for instance in terms of color. SmartArt graphics thus allow for a broader variety of appearances, but nevertheless still constrained to pre-selected and deliberately designed options. Consequently, SmartArt limits users to designing visual representations by selecting among a restricted menu of preset choices, and to decorate them not freely, but in accordance with the style Microsoft has chosen to templatize.

Summing up, the hierarchical SmartArt has been shown as a historically and socially evolved resource for designing organizational charts, or more specifically, a templatization of Microsoft's conceptualization of how bureaucratic organizations should design their report lines. Because of the profound status of Microsoft Office today, the company's templatized idea of the most "effective" visual style of organizational charts is infused into all social practices, including education, as the commonsensical standard for hierarchical representation. Consequently, when students choose to represent their knowledge of language as SmartArt hierarchies, they are in fact constructing their knowledge in the guise of organization charts. Ideologies from organization management are thereby infused into higher education in general and language studies in particular – not explicitly by verbal instruction, but by being buried in the templatized formats for multimodal representation as part of the technologization of discourse.

In order to fully understand the SmartArt style and the social values it embeds, it is however necessary to further expand the scope by considering the visual affordances of Microsoft Word in general.

6. Step 3: Analysing Word

The third step is to investigate affordances for multimodality in Word in general in order to get a more comprehensive understanding of the social values that are buried in the program.

As already indicated is the multimodal style of Word documents related to the program´s historical and present connections to office management. This connection is not only deducible from features in the program (e.g. the 'desktop' metaphor) or its templates (e.g. the SmartArt organizational chart), but also overtly communicated in guidebooks. Like all semiotic practices, office management includes normative discourses on what kinds of semiotic work the semiotic modes are expected to perform. The following excerpt from an early introduction to Word 1.1 illustrates how the program's connection to office management is linked to a functional division of labour between verbal and non-verbal resources:

> Most offices today use text processors on PC in addition to ordinary typewriter. Letters, notes, lists, catalogues and reports are written, edited, printed and distributed in the offices. PC and printer are indispensable tools for this.
> Because the amount of paper is huge, layout has become important for getting the message across. Text must be placed nicely; it can be made exciting with various fonts and perhaps an illustration. (…)
> Most word processors available on the marked are rich with options for "spicing" up the text (Danielsen 1991, 17, Norw).

This quote unambiguously connects Word to discourses and genres of office management, and, importantly, to norms for visual displays emerging from this practice. Importantly, a specific division of semiotic labor is thereby set up, in which written text is for representation of content, while other visual resources are for decoratively "spicing up" the verbally represented content. The visually embellished style of SmartArt graphics (cf. step 2) is thus neither unique nor new for SmartArt, but a continuation of norms in Word and Office.

As a so-called 'text processor' Word has obviously always given preference to written verbiage, but the program has nevertheless always also included visual resources beyond letters. In the 1980s, the multimodal affordances were closely connected to writing as a visual mode, including the possibilities to display words in bold, italics or underlined, and in an ad from 1983, Microsoft uses these affordances for promoting Word. In the ad, codes and algorithms are hidden, while the "natural" look of the visual display is promoted:

> With Microsoft Word, what you see on the screen is what you get on the paper (…). **Boldface**, <u>underline</u>, and *italics* look like this, not this: ^Bboldface^B, ^Sunderline^S, ^Iitalics^I. (Microsoft 1983)

In the 1990s, two important visual resources were introduced to Word. One was WordArt, which further expanded on the visual dimension of writing by affording the creation of graphical text effects, often in breach of horizontal lines. Another resource was ClipArt, which included a collection of simple illustrations to be inserted into documents. Instruction manuals from the era univocally connect the functions of WordArt and ClipArt to visual decoration:

- On Word 6.0: "Figures are drawings that accompany Word. The figures are simple drawings that are used for making a more appealing document" (Husby et al. 1994, 163, Norw)
- On Word 97: "Let's say your group has to submit a report every second year. The group likes to decorate and smarten up an otherwise rather boring report. To spice up the pages, you want to…" (Ljunggren 1998, 95, Norw)

In the 00s, Microsoft Office introduced SmartArt. The names of these visual resources – WordArt, ClipArt, SmartArt – are significant: There is a metaphor of *art* running throughout the history of Word. The art metaphor and the discourses surrounding these resources combine into a style in which all non-verbal visual elements are regarded as art-ish, decorative spice.

Summing up, Word has been shown to be historically connected to office management and social norms for text composition in this practice. When Word and SmartArt are used in education, values from office management thereby contribute to shaping how students can represent knowledge. These norms include the relegation of visual elements to arty party aesthetical spice, while written text is for representing content. In short, "effective" visual communication in Word means to deploy and dress up standardized, context-free modules, such as SmartArt, i.e. to adhere to the logic of the technologization of discourse.

7. Conclusion
This article has showed how organization management styles and discourses are imported into education through Word and SmartArt. Students´ multimodal representation of knowledge is thereby enforced into becoming standardized in accordance with ideological assumptions that are written into the templates and software. These assumptions include, importantly, a historically developed and templatized conceptualization of hierarchies as organizational charts, and a style in which visual elements is relegated to function as decorative spice, at odds with the traditional abstract and minimalist style of academia.

In a world increasingly penetrated by digital media, software and digital templates constitute relevant objects of study for CDA and the field´s aim to "reveal buried ideology" (Machin and Mayr 2012, 1) in texts and interactions. By conceptualizing software not as technological tools but as social and historical semiotic

constructs i.e. as semiotic technology, the article has also tried to demonstrate how MCDA may engage with software.

PS: this article has been written in Microsoft Word.

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