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Female text(ure)s and science: Ada Byron's *Notes* and translation

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1. Introduction

The creativity, stance and positioning of the translator as well as her/his role as an 'intervenient' being (Maier 2007:2) have become an increasingly central theme in Translation Studies (Hu 2004; Pym 2004; Timoczko 2003; Venuti 2002). This paper addresses the issue of translation as addition and creation, as a 'seed' which may give birth to a new text, focusing on Ada Byron's translation of L. F. Menabrea's article *Notions sur la Machine analitique de M. Charles Babbage* (1842) and on her *Notes by the Translator* (1843). The *Notes*, about three times the length of the original text, can be considered a scientific paper, a «strong, persuasive article» (Fuegi and Francis 2003:22), and are now regarded by many scholars as the first set of coding instructions, written a hundred years before any working computer existed, although Stein (1984) argues that Ada's contribution has been overestimated. At the time she received surprised recognition for her work among a small circle of intellectuals (Huskey and Huskey 1980:299). In his reply to *Note A* Babbage himself wrote:

> I am very reluctant to return your admirable & philosophical Note A. Pray do not alter it [...]. All this was impossible for you to know by intuition and the more I read your notes the more surprised I am at them and regret not having earlier explored so rich a vein of nobler metal (Toole 1998:141).

The text, extensively studied by Ada's bioghraphers and historians of technology, has to my knowledge not been analysed from a linguistic perspective. A few comments on her style are provided by Essinger (2004:134) who hints at her «enthusiastic, emotional, well-informed tone» as well as to the «'feminine' feel» of

her translation. The *Notes* are linguistically interesting in terms of female textures since, as a woman, Ada Byron was debarred from attending university, she was tutored privately showing an increasing interest in mathematics at a time when science and discovery were considered men's work (Swade 2001:156-157). Her *Notes* and translation were therefore identified only by her initials, as it was not the done thing for a woman to put her name to a scientific paper (Swade 2001:163).

Ada's extensive *Notes*, «this first child of mine» in the author's words (Toole 1998:153-154), are explored here looking at authorial presence expressed by the use of the first person pronoun *we*. The translated text is then analyzed to find out to what extent it is affected by similar traces of authorial voice, arguing that in spite of the conventional assumption that research is best presented as if human agency was not part of the process, scientific writing is characterized by interactive and rhetorical features, as recent research has shown (Fløttum *et al* 2007; Hyland 1998, 2000, 2001, 2007).

This paper is organized as follows. Section 2 provides an outline of the method and a description of the corpus, some contextual information about Ada Byron and Babbage's work is then given in section 3. The analytical results are presented in section 4 and the findings discussed in relation to the textures they may weave in the *Notes* and their possible influence on the translation (5 and 6).

2. Method and data

Using techniques from Corpus Linguistics, the approach adopted draws on Translation Studies as well as on Academic Discourse research in relation to authorial voice with an interest in exploring how the translator's role and personality may be expressed through actual language choices.

The positioning and identity of translators have become a growing theme in Translation Studies. Researchers from different lines of thought have focused on translators as people (Pym 2004), indicated the need for an understanding of the translator's unconscious (Venuti 2002) and stressed the relevance of the translator's voicing and stance also in relation to the receiving

audience (Timoczko 2003:183). From a translator's centred perspective creativity and personal imprints seem therefore worth studying (Hu 2004) since individuals' social identity, the social world and their place in it, are discursively constructed. Maier (2007:2) names this positioning 'intervenience' and the translator 'an intervenient being', by which she refers to the translator's position with respect to location, activity and language. As the definitions from the *Webster Third International Dictionary* quoted by Maier highlight, both as an adjective and as a noun the term 'intervenient' seems to comprise the multifaceted activity and role of translators[1].

Researchers who focus their attention on translators stress the need for empirical data such as diary entries and correspondence (Maier 2007:5). Making therefore reference to Ada's letters and biographies as well as to the historical relevance of Babbage's work, this paper considers the role of Ada Byron as an intervenient being with an interest in her use of the personal pronoun *we* as linguistic indexing of identity.

Stance involves «placing one's 'personal stamp' on the page» (Hyland 2000:23) through expressions that can convey many different kinds of personal feelings and assessments, including attitudes that a speaker has about certain information, and what perspective they are taking (Hyland 2007:94). Stance can be expressed to differing extents through grammatical devices, value-laden word choice, and paralinguistic devices (Biber *et al* 1999:966-969), however «stance structures with a 1st person subject are the most overt expressions of speaker/author stance» (Biber 2006:99), thus playing an important role in constructing social identities. In academic discourse their strategic use allows writers to emphasize their own contribution to the field and seek agreement for it (Kuo 1999). While often considered mainly impersonal, research writing, as a culturally situated social activity, shows different voices (Fløttum *et al* 2007:14) and the decision to adopt an impersonal rhetorical style and/or to represent oneself explicitly seems to affect the way one's message is received (Hyland 2001:211).

[1] Adjective: «being or coming in incidentally or extraneously; situated or occurring between different points or events; intermediary»; noun: «one who intervenes» (in Maier 2007:2).

The corpus analysed consists of the *Notes by the Translator* (18,268 tokens), the *Sketch of the Analytical Engine* (4,609 tokens) and the *Notions sur la Machine Analitique* (4,549 tokens), which in the following tables will be referred to as *NT*, *AE* and *MA* respectively[2]. The analysis presented in this study has been carried out using the corpus analysis software *WordSmith Tools 5.0* (Scott 2007) to get information about the frequency and the co-occurrences of the investigated pronoun *we*. Starting from the *Notes*, the analysis has then taken into account the translation, finally Menabrea's text has been examined in relation to the findings.

3. Ada and the Analytical Engine

Ada first met Babbage at a party in June 1833 when she was seventeen. Known as the father of modern computing, Babbage was a prolific inventor and held regular soirées to show off the fruits of his work. His Saturday parties attracted hundreds of the most prominent people of the time: Charles Darwin, Charles Dickens, Michael Faraday, and Harriet Martineau, to quote but a few. Twelve days after their first meeting, when Babbage showed his Difference Engine, Ada was entranced by its workings and «was inspired to study mathematics and science not as a duty but as a joy» (Toole 1996:6).

Born in London in 1815, Augusta Ada Byron, later Countess of Lovelace, was brought up as an only child in a one-parent family since her mother, Annabella Milbanke, sick of Lord Byron's unstable moods and infidelities fled the marital home when Ada was about five weeks old.

The Princess of Parallelograms, as Byron dubbed his wife, was determined that Ada would be a mathematician and a scientist, not a poet like her father, and supervised her rigorous education from the time she was four years old (Toole 1998:20). Ada had a team of remarkable tutors, among them the scientist Mary Somerville, but in spite of her intense mathematical studies, her opportunities to lead a mentally fulfilling life were close to non-

[2] Tables and formulae have not been included as well as paragraphs 16-24 of both *AE* and *MA* because of the mathematical notations in the text.

existent given her social class and her mother's determination that she would marry an aristocrat and live a secure domestic life (Essinger 2007:126; 130). As a result, in 1835 Ada married Lord William King, later elevated to the title of Earl of Lovelace by Queen Victoria.

After fulfilling for a few years the role that was expected of her as a wife and a mother, she resumed her studies under the guidance of Augustus De Morgan, professor of mathematics at University College, London (Fuegi and Francis 2003:17) and when the physicist and inventor Charles Wheatstone approached her with his proposal to translate Menabrea's paper, a description of Babbage's Analytical Engine based on the successful talks Babbage had given in Turin, she immediately commenced work on the project (Wolley 1999:259-260).

Babbage's new and sophisticated idea, the Analytical Engine, ranks as one of the startling intellectual achievements of the nineteenth century and is often considered a forerunner of modern computers.

However, Babbage did not get any funding for his project since his Difference Engine, an unfinished business, was regarded by the Government as a waste of public money, in the words of the Prime Minister, Sir Robert Peel:

> What shall we do to get rid of Mr. Babbage and his calculating machine? [...] It would in my opinion be a very costly toy to complete and keep in repair. If it would now calculate the quantum of benefit to be devoted to science it would render the only service I ever expect to derive from it (Swade 2001:135).

Thus, the *Translation* had a twofold objective, it was meant to generate interest and support for Babbage's work and at the same time advance Ada's dream of pursuing an intellectual career (Essinger 2007:132). After reading her translation, Babbage asked her «why she had not herself written an original paper on the subject with which she was so intimately acquainted» (Toole 1998:138), which she did, one of the few people who fully understood Babbage's vision, as also reported in Sophia De Morgan's memoir of her husband (Huskey and Huskey 1980:300).

Unfortunately she could not go further along the professional path she had been looking for since she died at the age of 36. Her *Notes* and translation are therefore her only publication.

4. From the *Notes* to the translation

Within the outlined framework the *Notes* have been taken as the starting point and data related to the 20 most frequent words have been examined against both the translation and Menabrea's article. The results (*Table 1*) show that the use of *we* characterizes the *Notes* and to a certain extent the translation, ranking 13th and 14th respectively. On the contrary Menabrea's text shows a preference for the pronoun *on*, the 8th most frequent word. As Fløttum *et al* (2007:24) point out *on* has a complex semantic potential since it can have different referents ranging from *I* and *we* to *they*. This means that if on the one hand it can be used for a variety of rhetorical purposes, on the other it reflects a preference for avoiding more explicit authorial reference.

Table 1. Frequency of we/on *in NT, AE, MA.*

text	word	rank	freq.	%
NT	we	13	208	1.11
AE	we	14	51	1.09
MA	on	8	74	1.60

The analysis has then taken into consideration the verbs with which *we* occurs, the wider verbal environment and Ada's choice of *we* in relation to Menabrea's text.

4.1 The *Notes*

In order to identify the process types in which *we* is involved a concordance has been obtained which shows that it occurs above all in 'mental' clauses (89%) with verbs such as *know, conceive,*

consider, perceive, suppose, think, which give the text its reasoning and argumentative flavour.

'Mental' clauses serve to construe the speaker's own processes of consciousness and are able to set up another clause or set of clauses as the content of thinking (Hallyday and Mattthiessen 2004:198-199).

They convey, in Ada's words, a «strong sense & union of the most minute & laborious accuracy» (Toole 1998:155):

> a. **We think** this of importance, because **we know** that there exists considerable vagueness and inaccuracy in the mind of persons in general on the subject. (Note A)
>
> b. [...] our conjecture therefore as to the principle on which **we conceive** the accomplishment of such results may have been made to depend [...] (Note A)
>
> c. But **we are not taking this view**. On the contrary, **we suppose** the engine to be in the course of computing the Numbers to an indefinite extent, from the very beginning; (Note G)

Traces of authorial agency can also be found in some occurrences in which the mental process is behind the actual material process in the text as in the following explicit reference to the translation, in which Ada's professional self is again highlighted:

> d. In order to prevent the possibility of confusion, **we have**, both in the translation and in the notes, **written** Variable with a capital letter when we use the word to signify a column of the engine, and variable with a small letter when we mean the variable of a formula. (Note B)

4.2 The translation

The concordance obtained for the translation shows occurrences of *we* in mental processes (39%) as well, but also in many material processes with verbs such as *add, obtain, calculate*, involving operations to be carried out by means of the machine.

Treading this backward path leading from the *Notes* to the translation, the translated text has then been examined against Menabrea's paper using *Viewer and Aligner* (Scott 2007), a utility that allows us to visualize both source text and target text. The texts are presented here in 'sentence mode', i. e. both texts are displayed sentence by sentence (sentence number is given in the left column):

Table 2. Sample sentences from MA and AE

N	Text
11	**On ne doit point s'attendre** à trouver ici une description de la machine de Mr. Babbage [...]
11	**But the reader must not expect** to find a description of Mr. Babbage's engine [...]
14	**On sait** que le gouvernement français, voulant faciliter l'extension du système decimal [...]
14	**It is well known** that the French government, wishing to promote the extension of the decimal system [...]
38	[...] si **on observe** que, pour un grand nombre de fonctions, **l'on parvient** à rendre convergentes les séries qui les représentent, de sorte que, selon le degré d'approximation que l'on désire, **on pourra se borner** à ne calculer qu'un petit nombre des termes de la série [...]
38	[...] if **we observe** that for a great number of functions **the series** which represent them **may be rendered** convergent; so that, according to the degree of approximation desired, **we may limit ourselves** to the calculation of a certain number of terms of the series [...]
93	En résumant ce **qui vient d'être dit** sur la machine analytique, **on peut conclure** qu'elle est fondée sur deux principes: [...]
93	Resuming what **we have explained** concerning the Analytical Engine, **we may conclude** that it is based on two principles: [...]

As the examples in Table 2 show, there seems to be a need for clarifying the «complex and flexible semantic content» (Fløttum *et al* (2007:23) of *on,* drawing on a range of translation choices that includes existential subject, passive forms and the personal pronoun *we,* which is often privileged when human agency plays a role in cognitive, perceptive and verbal terms. One of the occurrences of *on* becomes *the reader*, never explicitly mentioned in Menabrea's text. The *Notes* have thus been analysed again focusing on *reader(s)* and ten occurrences have been found, suggesting that this may be regarded as a further feature of the created

text which permeates the translated one. The choice of bringing in the reader seems relevant in relation to authorial stance (*we/ reader*) but also with respect to one of the text communicative functions, that is persuading the readership of the relevance of Babbage's invention in a context where funding had been denied.

5. Female textures

The results suggest that Ada uses language to position herself, present her ideas and interact with her readers, which might be regarded as just an expression of authorial rather than female presence. However, although Ada herself wrote of her style «It is especially unlike a woman's style surely; but neither can I compare it with any man's exactly» (Toole 1998:155), her preference for more explicit self-mention seems to weave female textures in relation to her life and to the fact that she wrote a scientific text at a time when the writing on science and technology produced by women was usually classified as 'popularization'. It had nothing to do with cognitive development, knowledge production, and other creative aspects of science and engineering (Neeley 1992:208). As Plant (1995) points out, women writers have often occupied the marginal zones of footnotes, translation and transcription, but Ada's *Notes* are not simply notes by the translator. They show a preference for giving voice to her professional self, which seems to permeate her translation as well, and characterize her writing since scientific texts from the same period show an opposite tendency with first person pronouns more widely used in French than in English (Banks 2005).

It can thus be argued that Ada is an intervenient being in the sense referred to in section 2. She definitely comes in and is situated between two points, not only the source text and the target text, but also, perhaps mainly, her translation and her own achievement. In addition, she is an intermediary in many ways, obviously between two languages, between Babbage and the English readership, and ultimately between her professional identity and the social world in which she lives. In a letter to Babbage dated 30 July 1843 she wrote «I hope another year will make me really something of an Analyst» (Toole 1998:156). In the end she intervenes above all by expanding the translated text

and creating one of her own with great determination and strong commitment, as she wrote to Babbage: «I fear you will think me detestably persevering» (Toole 1998:143), an attitude which is also shown by her comments on her translation (d. in 4.1) and on Menabrea's essay:

> e. The power of repeating cards, **alluded to by M. Menabrea** in page 680, and **more fully explained in Note C** [...] (Note F)
>
> f. **M. Menabrea, on the contrary**, exclusively develops the analytical view; taking it for granted that mechanism is able to perform certain processes, but **without attempting to explain *why***; (Note A)

6. Conclusions

The analysis carried out throws some light on the role of the translator as an intervenient being. Relying on the data available – Ada's *Notes* and correspondence, biographical and historical research– the approach adopted has allowed us to trace the presence of authorial voice expressed through the personal pronoun *we* along a path leading from the *Notes* to the translation.

The results suggest that it may be worth looking at translations also in relation to the translator as an individual and Ada's life was no doubt a special one in many ways. Besides receiving an uncommon education, she lived in a family where mathematics and reason were coded as female, and passion and poetry were coded as male (Lewis 1995:393), coming up with a vision of her own, what she defined «poetical science» (Toole 1996:5). She was an unconventional woman who tried throughout her life to trespass the boundaries made for her by others in search of her identity.

Ada positions herself as the promoter of Babbage's engine and of her own insights into the possible applications of a still non existing machine. Her preference for explicit authorial presence might therefore explain the strong sense of personal commitment we get from Ada's *Notes,* which are permeated by the subjectivity of a writer weighing evidence and drawing conclusions. And the conclusions she draws are definitely remarkable, since Babbage's idea of his machine was still bound by numbers, while

Ada saw that numbers could represent entities other than quantities (letters, musical notes). She is therefore considered the first person known to have crossed the intellectual threshold between conceptualizing computing as only for calculation and modern computing with wider applications made possible by symbolic substitution (Fuegi and Francis 2003:16). Her *Notes*, signed simply «A.A.L.» (Augusta Ada Lovelace), are now regarded as the first set of coding instructions which anticipated advanced work in the next century.

It is worth adding that the programming language developed for the United States Department of Defense in 1983 was named «Ada» in her honour. Today «her name shouts from the spines of a thousand manuals» (Plant 1995:64), and her voice can still be heard from her *Notes* which deserve further attention in relation to more subtle traces of the author in the text such as the use of modality as well as of brilliant and effective metaphors.

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