A Digital Review of Critical Editions: A Case Study on Sophocles, *Ajax* 1-332

Camilla Rossini
Università di Genova - DIBRIS
`camilla.rossini@studenti.unige.it`

Abstract

English. The paper describes a framework for publishing reviews of critical editions of classical works in a digital environment. After an account of its advantages over 'traditional' reviews, the paper outlines its modelization, realization, and criticalities. Finally, some possible developments are listed.

Italiano. Nell'articolo si descrive un modello per pubblicare recensioni di edizioni critiche in un ambiente digitale. Dopo un'analisi dei vantaggi rispetto alle recensioni 'tradizionali', se ne espongono le fasi di modellizzazione e realizzazione e gli elementi di difficoltà. Infine, si elencano possibili sviluppi futuri.

In the next pages I will give an account of a still ongoing project conducted at the University of Leipzig under the supervision of professor G. Crane. The project aims at modelling a framework for publishing reviews of critical editions of classical works in a digital environment (*Smart Reviews* - SR), thus re-thinking the review genre at its roots. For a first experimental mock-up, the chosen case study is Sophocles, *Ajax*, 1-332. The sequential steps we designed are: 1) to select from two or more editions some noticeable readings; 2) to link them to the corresponding places in a text chosen as a base reference, with an unambiguous reference system; 3) to compare them with the aid of external tools, in order to explain the editorial choices behind them. After a paragraph on the purposes, the uses and the shortcomings of 'traditional' reviews on paper, I will proceed to show in further detail the advantages of a SR and the passages to realize it. Finally, I will list some future developments.

Whenever a new critical edition of an ancient text is published, other scholars carefully read it, compare it to previous texts and finally publish reviews of it on academic journals. Besides overall judgments on the edition's quality, bibliographic suggestions and further comments on specific editor's remarks, a review of a critical edition usually provides an account of the most noticeable editorial choices on the text. Textual renditions of controversial readings, new conjectures or the recovery of old ones, and maybe the comparison with the latest edition(s) on some crucial passages, are what really defines the work of the editor on the text itself, and are thus the ultimate object of the reviewer's judgment.

The reviews of critical editions, finally, play an irreplaceable role for the users as well. Not only are they often, at a practical level, the only way to access a new edition in the absence of it, while waiting, for example, for University libraries to purchase it; even more importantly, they provide a list of the differences between critical texts in different editions, thus saving the time for the reader to detect them by manually comparing two or more printed books.

Nevertheless, such important tasks in this kind of reviews are, at least, hard to perform on a less-than-abstract level. An example will explain why:

> Finglass often succeeds in defending transmitted text: he agrees with OCT against Dawe's Teubner in about 22 cases (for example 446, 771, 782, 790, 988, 1027, 1059, 1282, etc.), the reverse occurring about 15 times (for example 114, 191, 420, 630, 1357, etc.)[1].

This passage, from a review to Finglass' 2011 edition of Sophocles' *Ajax*, is just one of many similar ones. Finglass' work is compared with the two previous major editions (Lloyd-Jones – Wilson's and

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[1] Catrambone, 2013, p.169 on Finglass, 2011.

Dawe's[2]), but only some specimens of agreement or disagreement are quoted, and for each of them the mere verse number is provided. The job of finding out where and how the three editions are unanimous or less so, is for the reader to do. Of course, the limited space of a review requires conciseness, and an extensive - rather than intensive - approach.

Such shortcomings are intrinsically linked to the printed (or printed-like, for the PDF distributed journals) format that the review articles have had so far. The main contents of a review, though, can be described as links between corresponding passages in different editions. In such a way, they could perfectly support a digital metamorphosis of the genre. Moreover, a fully digital distribution (what we could call a *Smart Review*, SR) could provide more effective comparisons between editions, and links to external resources could give the reader insights on the editors' choices. This way, not only the old, consolidated tasks of the 'traditional' reviews are performed better and in a more feasible way; but what is more, a SR could improve and widen the usefulness of the reviewing and comparison on multiple editions[3].

This shift in perspective is even more desirable if we think about the Scholarly Digital Editions (SDEs). More and more as we move on, new versions of the same ancient texts become available online: not only as scanned out-of-copyright editions, but also as new uploads in large online repositories for plain or annotated texts, like treebanks[4]. Even though the sense to assign to the expression 'SDE' is controversial, each of those new documents bears a specific version of a text that becomes available to a large public; moreover, both the digital-born plain texts and the linguistic annotated ones, often imply a critical revision by the digital editor. Unfortunately, the communication problems that have been acknowledged between printed editions, stand for digital publications as well. The artificial sense of fixedness of each of those 'base texts' is often reinforced by the absence of critical apparatuses, that flattens the editor's opinions and textual decisions in favour of a totally illusory objectiveness. It has been said that the technical possibility to publish all the witnesses and all the editions would lead to «a sort of 'Bédier effect'»[5], where everyone publishes an edition or a witness without establishing a critical text.

Although the study of single editions or single manuscripts can have great applicability in many fields, the differences among SDEs (broadly intended) is often underaddressed, and a great number of divergent passages remains unnoticed. This problem becomes even more visible when translations are involved. Not infrequently, the translations are made available online without their corresponding original text, making it difficult to address and explain the textual choices behind them[6]. To sum up, each digitally published text is liable of becoming an arbitrary base text.

The idea behind a SR is the opposite. Its goal is to show the diverging readings in traditional or digital editions by juxtaposition, thus not necessarily stating a hierarchy between them, similarly to what happens in traditional reviews. It is true, though, that we can not do without a base text to anchor each reading to its proper position, because a section of the text where the two or more editions diverge doesn't have, by its definition, a *lemma* to unequivocally refer to. Thus, the first criticality to address is the need to provide an unambiguous anchoring of the noticeable readings. The most frequently implemented solution, the XML AppCrit module, is not suitable for our purpose. Firstly, it has a binary (and thus, hierarchical) distinction between lemma and reading. Secondly, a core need of a SR is to be flexible, updatable, reusable, and for those necessities a standoff markup seems like a better choice[7].

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[2] Lloyd-Jones and Wilson, 1994; Dawe, 1996.

[3] Gabler, 2010.

[4] See Crane et al., 2014. On editorial interventions on treebanks see *e.g.* Bamman et al., 2009, 10: «A scholarly treebank [...] reflects an interpretation of a single scholar». On textual variation and ambiguity in treebank annotation see also Bamman and Crane, 2010, p. 548; Beaulieu et al., 2012, p. 400.

[5] Bartoli, 2015. In 1928, J. Bédier suggested that, as the Lachmannian method was practically unreliable, a single witness (*codex optimus*) should be chosen and edited. See Bédier, 1928.

[6] A basic example will show it. Accessing Soph., *Aj.* 35 on Perseus, one will find: σῇ κυβερνῶμαι χερί ('hand'). The corresponding English translation perfectly matches the text: «it is your hand that steers me». Oppositely, if we take Romagnoli, 1926, whose Italian translation is freely available *e.g.* on Wikisource, we read: «il senno tuo per guida io prenderò», whic translates as «I will always take your *wisdom* as a guidance», and not «your hand». Poetic license? No, only a *varia lectio* that is recorded in most editions. The tradition is divided between χερί and φρενί. Finglass, 2011, 80 chooses the former, Dawe, 1996, 3, the latter.

[7] See the fundamental benchmark of the database of latin texts by the Digital Latin Library (LDLT, 2019) that, in a much wider perspective, modified the XML TEI P5 module 12 for Critical Apparatus (Guidelines, 2019) for its own purposes (Cayless

For these reasons, I tokenized and corrected an OCRed file of Pearson's 1922 out-of-copyright edition[8]. From this, I provided an automatically compiled list of references to each word, with unique identifiers (see fig. 1). To do so, my benchmark has been the CTS URNs model as implemented by the Perseus Catalog[9]. Each work in the Perseus Library (and in the new Scaife Viewer as well) has a string that identifies it. For example, the greek edition of Soph., *Aj*. 1-332 is referenced by *urn:cts:greekLit:tlg0011.tlg003.perseus-grc2:1-332*, where *tlg0011* and *tlg003* are the traditional codes assigned by the TLG project respectively to the author Sophocles and to the work *Ajax*, and *perseus-grc2* identifies the edition digitized by the Perseus team. The reference goes as far as pointing at a verse or a group of verses (in the example above, verses 1-332). Basing on the work already done on texts from the Perseus Digital Library and the *First Thousand Years of Greek Project*, I extended the unique reference system down to the word level[10]. Thus, each word has an identifier with this ideal structure:

<div align="center">urn.soph.ajax.pearson@134Τελαμώνιε[1]</div>

Firstly conventional abbreviations of the author, the work, and the edition are listed, separated by a mark (I used a dot); then, after an @, the verse and the word are reported and, finally, a number between square brackets that indicates the occurrence of the same word form in that verse. This formulation of the CTS URN is totally conventional. For our purposes here, it could be cited also in its abbreviated form: 134Τελαμώνιε[1].

```xml
<?xml version="1.0" encoding="utf-8"?>
<cts_group id="urn.ajax.pearson">
    <cts id="1">urn.ajax.pearson@1Ἀεὶ[1]</cts>
    <cts id="2">urn.ajax.pearson@1μέν[1]</cts>
    <cts id="3">urn.ajax.pearson@1,[1]</cts>
    <cts id="4">urn.ajax.pearson@1ὦ[1]</cts>
    <cts id="5">urn.ajax.pearson@1παῖ[1]</cts>
    <cts id="6">urn.ajax.pearson@1Λαρτίου[1]</cts>
    <cts id="7">urn.ajax.pearson@1,[2]</cts>
    <cts id="8">urn.ajax.pearson@1δέδορκά[1]</cts>
    <cts id="9">urn.ajax.pearson@1σε[1]</cts>
```

Figure 1: A section of the CTS file from Pearson's edition, referencing Soph., *Aj*. 1: Ἀεὶ μέν, ὦ παῖ Λαρτίου, δέδορκά σε. Note the *[2]* in the cts with id 7, that denotes the second comma in the same verse.

I then divided the material into four sections: an ordered list with vv. 1-332 of Pearson's edition, where each word is assigned with such a CST URN reference (see fig. 2a); a database containing the noticeable readings found in the editions under analysis, and their position in reference to file 1 (see fig. 2b); another database containing the matches between each edition and the readings that could be found in it[11] (see fig. 2c); finally, in another database, the broadly meaning commentary material has been linked to the corresponding readings (see fig. 2d).

Linking the noticeable passages of each edition to the correct unit of text is not an easy matter. I came up with a conventional set of rules. I considered lexical substitutions, additions, subtractions and movements. For each of them I had to keep in mind that both the reading and the referenced passage could be formed by one word (see fig. 3a) or by a group of words (see fig. 3c). To each reading I added two attributes: *from* and *to*. They respectively mark the point in the CTSized text where the variant begins and ends; if they coincide, it means that the reading modifies only a word in the base CTSized

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and Huskey, 2018). See also the XML structure of the *Euripides Scholia Project* (Mastronarde, 2010), whose editor chose not to use the TEI module for the Critical Apparatus «because in a project of this kind it seems to me that it would involve an unjustifiably large overhead of markup». About it, see Driscoll and Pierazzo, 2016, 213. For a theoretical comparison between inline and standoff markup see *e.g.* Schmidt, 2012; Eide, 2014; Petersen, 2016; Boschetti, 2007; Monella, 2008. For an overview of the criticalities of the XML TEI module 12, see the report issued by the Critical Apparatus Workgroup (Workgroup, 2014).

[8] Pearson, 1924.

[9] See the usage of CTS URNs and the Cite Architecture, both developed by the Homer Multitext project, by the Perseus Catalog. See Blackwell and Smith, 2014; Babeu, 2015; Blackwell and Smith, 2019b; Architecture, 2019; Tiepmar and Heyer, 2019; Blackwell and Smith, 2019a; Babeu, 2019.

[10] See Celano, 2017 on texts taken from the Perseus Digital Library (Perseus, 2019a,b) and the *First Thousand Years of Greek Project* (OGL, 2016). See also the new *Scaife Viewer* (Perseus, 2019c).

[11] Thanks to this organization of the material, I reduced the redundance to much less than if, say, I had to list the noticeable readings for each edition.

```
 <cts id="247">
     urn.ajax.pearson@35χερί[1]
 </cts>
```
(a)

```
<rdg id="rdg5"
     from="urn.ajax.pearson@0035χερί[1]"
     to="urn.ajax.pearson@0035χερί[1]">
     φρενί
</rdg>
```
(b)

```
<group id="Dawe1996">
    <choice ref='rdg2'/>
    <choice ref='rdg3'/>
    <choice ref='rdg5'/>
    <choice ref='rdg6'/>
```
(c)

```
<comment source="Dawe1996" ref="rdg5">χερί is a "literal-minded
substitute"</comment>
<comment source="Finglass2011" ref="rdg5">φρενί looks like a
correction</comment>
```
(d)

Figure 2: A reading (**b**) linked to its initial and final CTS URNs (**a**) and chosen in Dawe's edition (**c**), with comments on it by Finglass and Dawe (**d**).

```
<rdg id="rdg1"
    from="
    urn.ajax.pearson@0008εὔρινος[1]"
    to="
    urn.ajax.pearson@0008εὔρινος[1]">
    εὔρινος
</rdg>
```
(a)

```
<rdg id="rdg2"
    from="urn.ajax.pearson@0028.[1]+1"
    to="urn.ajax.pearson@0029καί[1]-1">
    <movement
        from="
        urn.ajax.pearson@024κἀγὼ[1]"
        to="urn.ajax.pearson@024.[1]"
    />
</rdg>
```
(b)

```
<rdg id="rdg26"
    from="urn.ajax.pearson@0191ὄμμ'[1]"
    to="urn.ajax.pearson@0191ἔχων[1]">
    ἐμμένων
</rdg>
```
(c)

```
<rdg id="rdg61"
    from="urn.ajax.pearson@0243,[1]"
    to="urn.ajax.pearson@0243,[1]">

</rdg>
```
(d)

Figure 3: Types of variation. Interpretive (**a**), movement (**b**), substitution (**c**), subtraction (**d**).

text. This method works fine for substitutions (see fig. 3a[12]). For subtractions as well, it was enough to clearly show the reading as empty (see fig. 3d).

In the case of the word(s) addition, one needs to use a clear way to show it. I pointed at the space between two words by using the conventional formula 134Τελαμώνιε[1]+1 (to refer to the position after the word Τελαμώνιε) or 134Τελαμώνιε[1]-1 (to refer to the position before it). Finally, movements have been pointed at with the self-closing element *movement* (see fig. 3b, that also shows the use of +1 and -1).

This system has multiple advantages: in the first place, it becomes machine-inferable (but quite clear to the human reader as well) where and how each edition differs from the chosen base text, and from each other. The material is kept separate and clean, with an easy way to add, change and modify parts of it without having to alter the structure of the existing files. Moreover, the overlapping of variants becomes possible without complex systems as it is in the XML TEI. The basic types of intervention adopted by each edition can be easily inferred by an algorithm, by comparing the reading with the *from* and *to* attributes and, if necessary, by directing the reader to the comments (see footnote 12 about fig. 3a). Whatismore, in the exact same way as a group of readings is connected to an edition, other groups may be figured out and collected under specific types that go beyond the core distinction between orthographic,

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[12] When the reading is identical to the 'base text', the comment material could tell us if the word is listed as a variant because it is a homograph - like in the case of fig. 3a - or because it is just an interpretive variant on the same word form.

(a)   (b)

Figure 4: Link to treebank (**a**). Treebank and aligned translation: Finglass *versus* Pearson (**b**)

morphological and lexical variants that is provided, for example, by the Digital Latin Library[13].

Another advantage of a SR is that it can point to external sources in order to give the reader insights about the differences between texts. The variants chosen by each editor alter the surrounding text in different ways. Some of them may generate syntactic differences, some other may remain on the lexical level. Finally, other variants are only due to different interpretations, and don't affect the texts themselves, but are only visible in the translations. Through the 'comments' section, the available online tools can be linked to specific passages in the considered editions to show these differences.

For the variants that have an impact on the morphology and the syntax, links to their treebank annotation and graphical visualization on the Arethusa Treebank Editor can be provided in the 'comment' database. In this experimental case, the treebanks for each critical edition have been compiled using as a base the file uploaded by the Ancient Greek and Latin Dependency Treebank project[14]. The comparison between treebanks of corresponding passages in different editions makes us able to encode precisely the difference between editorial choices. Finally, not all variations affect the translation. For the ones that do, links to parallel translation alignments can be provided[15] (see fig. 4).

A theoretical framework for a SR addresses, on the one hand, some problems that are known to the long-lasting debate over Scholarly Digital Editions (SDEs) and, more broadly, to the field of annotated texts. The comparison between editions, core element of the SR, urges to find a way for handling the textual variation in a digital fashion, i.e. to represent variants and to link them to the base text, which is itself the object of a dispute[16]. On the other hand, though, the SR's intrinsic differences from SDEs compel us to find new solution. The main distinction is probably the programmatic desultoriness of the provided data. Only the important readings, and not all the text as in SDEs, are named in 'printed' reviews, hence the same principle should apply to SRs as well.

A model for a SR, besides being a useful improvement of the current printed reviews, can prove to be a valid testing ground for the cooperation and co-existence of various instruments to annotate and encode different features of the texts that are edited in critical editions. Moreover, such a model proves once again that 'linguistic' instruments such as the treebank annotation can and should be integrated into strictly speaking philological resources, as precious means to gain a better understanding of the text and the critical editors' choices[17]. Finally, the possibilities offered by the SR to its users would increase significantly from those of a traditional review, in what we could call a re-purposing of a known instrument through digital means. At the same time, though, its final goal of helping the reader in assessing the degree of innovation or conservativity of an edition, and in evaluating specific editorial choices, would

[13] See the LDLT Guidelines (Cayless and Huskey, 2018). One could group together, *e.g.*, variants that affect the translation or the staging, or particular types or variants according to one's specific needs.

[14] See Alpheios, 2019. For the Guidelines for Greek Treebanking see Celano, 2014. See also Celano and Crane, 2015; Celano, 2019.

[15] I used Ugarit, 2019.

[16] On the base text see *e.g.* Andrews and Macé, 2013, p. 506. About variants see *e.g.* Boschetti, 2007; Monella, 2012; Lana et al., 2017.

[17] See Berti, 2019; Passarotti, 2019; Mambrini, 2016; Beaulieu et al., 2012; Bamman et al., 2009.

not be altered; quite the opposite, they might be enhanced.

From this starting ground, some crucial points need to be addressed. The connections traced between readings, base text and editions could be properly defined semantic. Should the path of semantic annotation be embraced more fully, by developing an ontology[18]? What can (or should) the role of automated processes both in variant detection and in word analysis be[19]? What can the visualization and the dissemination of the project be? Which platform will best suit the open source paradigm? The previous pages only provided a first, experimental model that is still under development and that may take various directions. As for now, my hope is that this paper might provide some additional discussion material for some long known questions, more than answers to those very doubts.

Acknowledgements

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[18] Romanello et al., 2009; Tomasi et al., 2015; Andrews and Macé, 2013; Ciotti and Tomasi, 2016; Oren et al., 2006.
[19] See Bizzoni et al., 2014; Boschetti, 2007; Passarotti, 2006.

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