An Inventory of Musical Characters

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We have focused elsewhere on the variety of work going on toward the development of comprehensive internal data structures. The issue of a vocabulary for musical hard copy has, however, received scant attention. Often the notion of common music notation (or CMN) is invoked, with the assumption that it is a clearly defined structure which may be plugged in at the output stage. However, it would seem that the case is otherwise. Not only is our notational system evolving, but there is as yet no satisfactory codification of the system which, in a consistent way, represented the music of Bach and Webern. Such texts as exist on the subject are incomplete and often erroneous in crucial areas. Software developers, without a standard reference, are left to create fonts and rules for their placement on their own. Experts on engraving practice have, with few exceptions, not been involved in this very difficult process. We may be faced in the future with very powerful music processing systems which will still be unable to approach the quality of music printing available to Brahms.

So severe is this lack of standardization that one cannot even be sure what comprises the minimal symbol set needed for music printing. Thus, the present situation for, *e.g.*, someone programming a musical database system, is very like that of someone programming an on-line dictionary without being really sure of what the elements of the alphabet are. The problems confronting designers of high-quality music printing systems are greater, since their task involves not only the use of a complete symbol set but also a definition of the spatial relationships among the symbols.

A step forward has been made by Adobe Systems with the introduction of the Sonata music font. This symbol set, which has been generally favorably received from the design point of view, has the benefit of the flexibility of size and output device of the PostScript family. The positioning of the symbols is defined in the most general graphical fashion, rather than in terms of the staff. This gives great flexibility, but may lead to mispositioning of some symbols when moving from one device to another. The font set has been seen to be redundant in some areas and deficient in others. However, its very existence has been an important stimulus to discussions of what a minimal symbol set for music should contain.

Last year, we made up a questionnaire with a proposal for a provisional description of a musical font. This proposal, although in a very preliminary form, generated some reponses which have been most helpful in our efforts toward a minimal font description. We would like to thank those who have responded to the questionnaire. Further, it should be noted that the inquiry is still open, and additional comments will be gratefully received.

With the help of these respondents, we have compiled the following list of musical characters in an effort to reach some definition of what is needed to represent music on the printed page. A symbol set containing all such symbols could then be characterized as a complete musical font. Our definition is limited by several factors:

1. The definition of "music" is that "serious" music which falls, very roughly, in the period between the 16th century and the present. It is further limited to that which is printed on a staff.

2. We have ignored symbols which appear primarily in the music of a single composer, or in a specialized repertory. Thus, certain ornamentation symbols typical of French baroque keyboard music do not appear here, nor do many contemporary symbols.

3. Symbols which are functionally, but not graphically, equivalent generally appear here in only one guise. An example of this is the variety of glyphs which form the *segno* referenced by repeat indications. The assumption in these cases is that the designer of a font will pick the version which is most appropriate to the "look and feel" of the overall font.

4. To our best knowledge, a complete font in a given size should also be accompanied by at least one complete font in a significantly smaller size, for cues and editorial additions. The only exceptions to this which we have noted so far are (perhaps) figured bass and fingering numbers, which tend to appear in fewer sizes than the full range of staff sizes (*i.e*, rastral 0 through 8).

5. We assume a complete text font, in an appropriate size, in addition to the symbols listed below. Thus, the only text symbols included in the list are those which are traditionally created from within the music font to differentiate them from the prevailing text font. An example of this is the italic "8" positioned below the G tenor clef. "*D.S.*", set ordinarily with the medium italic set of the prevailing text font, is an example of something we have not included.

6. There are a number of crucial symbols of variable extent, including slurs, ties, beams, crescendos and diminuendos, and stems, which we have also omitted. Such symbols correspond roughly to those which a plate engraver would draw with a graver, rather than punch with his dies. We have not included these symbols in our inventory because they are usually created by a graphic algorithm, rather than from a character description.

We have also solicited information from users on the outer limits of duration and dynamics indications in the standard repertory. In the minimal duration category, Vivaldi and Telemann both provide instances of integral 256th notes (that is, notes that occur directly in the score, not in editorial explanations of proper execution). With regard to dynamic range, examples of *pppppp* can be found in the works of Tchaikovsky and Verdi; examples of *ffff* occur in the works of Tchaikovsky and Stravinsky.

Clefs:

(for changes; cue size:)

Noteheads:

Accidentals:

(for grace notes:)

Flags:

(for grace notes:)

Rests:

Meters:

Dynamics: *p m f s r z*

Articulations:

Ornaments:

Performance indications: Ped.

Repetition symbols:

Tuplet numbers: *1 2 3 4 5 6 7 8 9 0*

Octaves: *8* *15* *8*

Fingering, figured bass: 0 1 2 3 4 5 6 7 8 9

Barlines:

Brackets, rehearsal boxes:

Stress:

Arrows: ↑ ↓ ← →

(for arpeggios, accidentals):

Chord frames:

Chant symbols:

Examples of concatenation of font elements:

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