Chapter VII
Alternative Design Goals for a General Music Markup Language

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ABSTRACT

Design goals determine the particular structure of a markup language, while the philosophy of what markup languages are about determine the framework within which its structure is developed. Most existing markup languages for music reflect low-level design strategies compared to design that adheres to the high level philosophy of markup languages. An approach to an XML-based music markup language, from the perspective of SGML, would differ from an approach from a markup language such as HTML. An ideal structure for a general markup language for music is proposed that follows a purist approach, and which results in a different kind of XML-based music markup language than most present music markup languages offer.

INTRODUCTION

Markup languages have been around for almost half a century, but have experienced an exceptional explosion in the 1990s. Prior to the World Wide Web, of which the content is primarily based on the HTML markup language, markup languages were used in isolated cases. The Web changed all that. By the turn of the century, another language from the markup family, XML, resulted in a further explosion. In the early 2000s, more than a thousand XML applications, as listed by Robin Cover (2006), had already been developed for applications ranging from chemistry, geography, numerous business related systems, to multimedia and music. Important concepts in the development of markup languages provide a framework that should be considered when designing a markup language for music. The architecture of present markup languages for music seems to suggest a
lack of consideration of the foundation of markup language philosophy. This is partly to be blamed on the explosion of the World Wide Web, which is extremely forgiving to poor markup techniques. Most present XML developers have learnt the tricks of markup not from an SGML perspective, but from an HTML point of view. Important milestones in the development of markup languages are presented and then brief guidelines for an ideal structure of an XML-based language for music are presented from that perspective.

BRIEF HISTORY OF SGML

In the late 1960s, Charles Goldfarb was commissioned by IBM to build a central system for data management, particularly for legal documents. These documents had to be stored, found, and published. Even within IBM, there were many systems that could not communicate with one another. Goldfarb, together with Ed Mosher and Ray (Raymond) Lorie, concluded that a common document representation model was needed, while the mechanism would rely on the concept of a markup language, which means that abstract logical aspects of document content would be marked with special characters that a computer could interpret to have special functions. Goldfarb remarks that the initial letters of their surnames and the name of the resulting language, GML, is not coincidental (Goldfarb, 1998).

GML documents are textual documents, and not binary documents, which makes them relatively easy to read by humans. The purpose of GML itself was to handle large and complex documents, and to manage large information repositories, while the purpose of the marking process is:

- To separate the logical elements of the document.
- To specify the processing functions to be performed on those elements.

The elements of GML were marked by embracing text with special terms, called tags, embraced by Backus-Naur Form symbols, developed in the 1960s to specify the syntax of Algol, that are distinguished from content. The validating parser was not developed until 1974, which Goldfarb regards as the proper birth of GML. In 1985, documentation was prepared to turn GML into an ISO standard. The language was eventually accepted in 1986 as Standard Generalized Markup Language (SGML, ISO 8879:1986). For more details about the history of SGML, see the SGML User’s Group (1990). For some practical guidelines for SGML, see Herwijnen (1994).

SGML basically distinguishes between three aspects of a document: content, structure, and format. Content is the information used by human readers, who may not be particularly interested in the logical structure of a document, but who may be attracted to a document because of its format. The structure of a document refers to its abstract logical structure, and is particularly relevant for managing documents electronically. There are many different types of documents, and they may have different structures. The structure of a novel differs from that of a postcard or from an office memo. These structures have developed during the course of history of human writing, and have certain widely accepted traditions and conventions. SGML is particularly interested in marking this logical structure. The format of a document refers to its appearance, which is only of interest to human readers. In terms of appearance, there may be many different kinds of postcards, but they would share the same structure, such as a To Address, typically a picture on the front side, and an area to write on the back side, that is, for modern postcard formats. An office memo would contain To and From structural elements, but their positioning on paper (left, center, right, vertical, horizontal) and textual appearance (font character size, color, font family) may follow different formats.
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