'Essentials of Music Technology' by Mark Ballora (ISBN 0-13-093747-9)

Errata

Ch. 2 - Music and Acoustics

p. 17 - The discussion of 'the difference between musical sound and noise' is based on, and reinforces, arbitrary and outdated definitions of both and misrepresents the nature of the continuum of pitched to non-pitched sounds. Both have been used in musical contexts for centuries, both within Western traditions of popular & classical music, as well as (even particularly) in many if not most non-Western musics, to say nothing of the over 75-year history of electroacoustic music. In fact, most traditional "musical sounds" contain a significant degree of non-harmonic and/or non-periodic spectral components, i.e. noise.

p. 17 - The table of subjective vs. objective properties of musical sound misrepresents the aspect of timbre. Timbre is a multi-dimensional property that is a composite of a whole range of quantitative and qualitative attributes of sound perception. Perhaps the single most important aspect of timbre left out of the table is that of *dynamic envelope*, or how a sound's amplitude changes over time. This is, demonstrably, in many cases a more important determinant of timbre than frequency content or spectrum. This information is not even discussed until page 41 in the section on 'the mismatch between measurement and perception' in chapter 3.

p. 32 – The discussion of 'the difference between consonance and dissonance' misrepresents the basis of these terms. Though a number of attempts have been made over the past few centuries to define and quantify these terms, it has become all too clear that these terms are subjective in nature, and largely culturally determined. In Western classical music alone, these terms have been disparately applied to different combinations of pitches, both consecutively and simultaneously presented, by various composers, theorists & researchers. The definitions are not only highly subjective; they have changed dramatically over time. Also largely ignored in this discussion are the timbral and intonational bases for much of the discussion as to what constitutes consonance vs. dissonance in any given context. (see James Tenney, *A History of*

'Consonance' and 'Dissonance', and William Sethares, *Tuning, Timbre, Spectrum, Scale*)

Ch. 5 - Representing Numbers

p. 50 – There is no definition of the term 'word' as a 16, 24, 32, or 64-bit sequence, dependent on design of processor or software system.

p. 51 - The explanation of hexadecimal makes several references to "hexadecimal bits" which should more properly be "hexadecimal digits." The term 'bit' is defined as a 'binary digit', and so is not appropriate in reference to hexadecimal.

p. 52 – The equations at the top of the page are mixed up. They should be as follows:

$6_{10} = 0110_2$

$-6_{10} = 1001_2 + 1 = 1010_2$

p. 52 – The sentence that begins, "Numbers that include a decimal point..." is not accurate. There are fixed-point decimal representations as well as floating-point. In fact, the following explanation of floating-point seems rather to be explaining fixed-point decimal representation by focusing on the need to use a certain number of digits (relegating the exponent to 1 byte, for example), rather than explaining how floating-point representation moves (and keeps track of) the decimal point as needed. Also, this discussion leaves the impression that decimal representations are inherently less accurate than integer representation, which is not true.

Ch. 9 - Digital Audio

p. 106 - The sentence which continues after the aliasing equation, "where the minus sign..." should read, "...the frequency is phase inverted."

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