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BARTON K. BARTLE, *COMPUTER SOFTWARE IN MUSIC AND MUSIC EDUCATION*
(Scarecrow Press, 1987)

Charles G. Boody

The impact of microcomputers has reached everywhere in society, and certainly the field of music is no exception. Some of the first programs for microcomputers were intended to be useful in producing music. Several programs allowing a user to write single-line tunes and play them back were available for the Apple II before the end of 1977, the year of its introduction. Nothing has been the same since.

Both computer and music hardware are constantly developing. The greatest impact on music has been the advent of MIDI specification. MIDI (Musical Instrument Digital Interface) is a combination of hardware specifications and communications protocols that allow communication among all sorts of different musical and computational devices. It might best be likened to the standardization of the gauge of railways throughout the country. Without such standardization nothing can go forward; with it a great deal can happen.

Software is also developing very rapidly. Some music teachers have been bitten by the programming bug and have produced programs for use by their students. Some programmers have been fascinated by music and have developed programs to help themselves and their friends learn more about music. Occasionally musicians and computer experts have collaborated to attempt large-scale development of music programs. The amount of software is a bit staggering. The newly released Courseware Directory of the Association for Technology in Music Instruction lists over 600 items, and it was out of date the day it appeared.

Barton Bartle's book is a welcome effort to make some sort of sense out of the technology for those just getting involved with it. It attempts to review much of the material published up its' publication date of 1987. No book can be expected to be complete and fully up to date in such a rapidly changing field, but it seems reasonable to assume that any book advertising itself as a guide should be expected to provide a well-rounded examination of most of the important efforts underway at the time the book went to press. The contents were examined with this assumption in mind.

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The writer of such a guide must have rather broad ranging skills, and must be willing to go to considerable effort to make sure that the work is useful. S/he must, for example, have access to all of the commonly used computer systems, must be conversant with the strengths and weakness of those systems so that one does not mistake computer limitation for software limitations, must be familiar with music and music education so that usefulness of the software can be ascertained, and must be familiar with the fundamentals of computer-based instruction so the quality of the software can be judged against what can be done. In addition, as with any such bibliographic project, the writer must be tireless in the effort to see that the materials are complete and accurate and to insure that reviews of the various items are consistent. If one or another of the skills is missing, the book will be considerably less useful and may, despite the author's best efforts, misguide rather than inform the reader.

This book begins with an introductory outline of the history of the field, and an overview of the different sections of the book. This introduction serves also to describe the methodology used in the reviews of software that make up the bulk of the book (229 of the 252 pages). Following the reviews are appendices listing computer manufacturers, peripheral manufacturers, software publishers, a bibliography of sources of information, and listings of the software according to the publishers' suggested audience and according to the computer for which the programs are designed. These appendices will be helpful even when the contents of the book are dated, for they include many other sources to which a new user may turn for information.

One can approach a bibliography like this in two ways: by asking what is missing, or by asking how well the materials included have been covered. In the first instance one should not seek to determine if the bibliography is complete (unless, of course, it claims to be and this book does not). Rather, one must ask if there is material missing that makes the bibliography off balance, or that shows bias or lack of knowledge on the part of the writer and makes one doubt his/her grasp of the field or suspect a deliberate slant. In the second instance, the question is twofold: is the material consistently examined, and does the information included indicate that the writer has the skills to fulfill the function of a reviewer. In this day of word processors it is very simple to produce a book. It is as difficult as ever, however, to accumulate the knowledge to do so well.

First the question of missing information: the book seems quite uneven. Materials describing the Soundchaser™ music system of Passport design are quite well covered even though the product was dropped from the market in 1986. Macintosh computers have been the "machine of choice" for many in the pop music field, and there are several exciting

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products for music education on that machine, yet no Macintosh materials are discussed (editor's note: see the Spring 1988 issue of JMTP for a thorough review of current Macintosh music theory software). IBM has become a much more important computer to music educators through the release of the GUIDO materials from the University of Delaware and through the extensive series of educational software packages marketed by the Roland Corporation. None of these items are discussed. The "new generation" of computers that immediately followed the Apple Macintosh from Commodore and Atari are not mentioned. No computer that reached that market after 1984 appears to be discussed. An entire new generation of hardware is ignored. The importance of MIDI is recognized by the author but there is little attention to the software that has been developed to use MIDI. The early sequencer from the Soundchaser™ (Four Track) is discussed as is the early transcriber package for the Soundchaser (Polywriter), but none of the many newer and more powerful sequencers and notators for use with MIDI equipment are mentioned. If the author felt such programs were outside the scope of the bibliography, that could have been made clear by a different title or by discussion in the introduction. The MIDI developments are having considerable impact on how we think about and teach music; probably more impact than the tutorial and drill and practice software. Software that uses MIDI should be included in any computer and music bibliography that presumes to be a guide. Perhaps the book simply languished at the publisher too long to be current in these matters. However, many of the pieces of software discussed have publication dates of 1986, and many of the missing items predate that—and so do many of the missing machines.

The book shows a similar unevenness when the quality and consistency of the reviewing are examined. Bartle has been careful to be consistent in the general outline of each review, but often the materials included in the reviews seem rather unimportant, or the things mentioned are misleading. Several examples should suffice to make this unevenness clear.

First, it is well known that the sound produced by the Apple speaker leaves a great deal to be desired. It is equally well known that by bringing the sound out to an external speaker the quality of the sound can be greatly improved, though that is not discussed. Bartle repeatedly points out the problem with the Apple sound as part of the review of software he examined on the Apple. A general comment might better be stated once in the discussion of the hardware, leaving space for more insightful matters in the software reviews. Further, that sort of comment can be quite misleading when the software is available for more than one machine. Pieces of software available for many machines often get widely differing comments about the acceptability of the sound "they" produce; apparently because

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Bartle reviewed them on different machines. Such comments really have no place in the discussion of the software at all; they belong in the discussion of the hardware. And, in that context, one would do well to recognize that the sound of the Apple speaker (or the IBM speaker) can be useful for much ear training rather than rejecting both out of hand.

Second, some repeated comments serve to show a lack of understanding about the history of much of this software. Bartle repeatedly complains about Apple software that does not remind the user to depress the caps-lock key and does not work properly without the caps-lock key depressed. It is quite understandable that some software and documentation does not mention this problem. When the Apple II was first produced it did not have upper and lower case letter available. There was, in fact, no caps-key available or needed. It is certainly appropriate that Bartle makes notice of this problem, but the repeated litany of "Both the documentation and the instructions within the program neglect to warn the Apple IIe user that the <CAPS LOCK> KEY MUST be depressed throughout the program in order to make and responses" is not necessary. It does not seem appropriate that the word "neglect" be applied at all. Recognition of the historical circumstance and discussion of the problem in the section on hardware would be more suitable.

Third, Bartle mentions various sound boards in his hardware discussions, but he mistakenly applies the term DAC board to all of them, and he implies that many are available for all of the brands of computers. Actually, all of the boards he discusses except the University of Delaware sound card are for the Apple II series of computers. The University of Delaware board is for the IBM. Further, only the Mountain Computer board (no longer produced), the MMI DAC board (now quite obsolete in sound capabilities), and the University of Delaware board are DAC boards. DAC stands for Digital to Analog Conversion. Sound is produced by turning a series of numbers into a series of voltages to push a speaker back and forth. The procedure is exactly the same as that used for compact discs, though at a much lower level of fidelity and with much more noise. The remaining boards that Bartle discusses all produce their sounds by subdividing a rapid square wave. They, and the sounds of the Commodore 64 and 128, share the limited timbral qualities of the Apple II and IBM systems. Neither of these errors is a major one, but it does make one less confident of the reviewer's knowledge. A more important issue not mentioned in the discussion of sound devices is that of pitch accuracy. The IBM speaker, the Commodore 64 and 128, and the ALF 3 voice card produce pitches that deviate less than 2 cents from equal-tempered scales based on A-440. The ALF MC16, the Mockingboard, and the Applied Engineering Board (which Bartle does not mention) all begin to deviate quite drastically from standard pitch at about

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A-880. The MMI DAC board has good pitch accuracy possible, but the software has (or had—the programs may have been changed) an error that produced some fairly wide deviations from accurate tuning in a rather inconsistent manner. Programs using the Apple speaker must be evaluated separately for each seems to use a different software routine to produce the pitches. Accurate pitch is possible, but is seldom attained. The advent of MIDI makes all of this discussion somewhat moot, but it is relevant to software using these devices, and the reviewer should mention the problem, particularly of Apple software.

By now, the reader must think I feel Bartle's book is not worthy of attention. This is not so. Bartle has done a real service in bringing together reviews of much of the music education software, and attempting to describe and critically analyze that software. If readers will realize the work is somewhat inconsistent in treatment of the software and is by no means complete they can gain from it. To date it is the only attempt I have seen to discuss all of this software. Dr. Fred Hofstetter, of the University of Delaware, has undertaken a similar project, but that book was not yet available at the time of this review. Because Bartle's book is unique, it can serve as a useful starting point for getting acquainted with the field. The book, together with the Association for Technology in Music Instruction Courseware Directory, would give a reasonably complete overview of the music education software currently available. However, the book cannot stand alone as a single source and it should not be viewed as a final authority.