Sound & Recording:
Applications & Theory, 7th Edition

By Francis Rumsey & Tim McCormick. Published by Focal Press
Reviewed by Alan Hardiman

Since this wonderfully comprehensive textbook first appeared in 1992, *Sound and Recording* has been updated six times to keep up with the rapid changes in studio technology and practices. In this, the seventh edition, the authors have substantially revised its digital audio chapters to include parametric and high-resolution audio coding, new interfaces and file formats, networks – including RAVENNA, AVB, Q-LAN, and X-192 – and innovations in workstation audio processing, including issues relating to mixing entirely inside the box.

The book has also been revised to cover contemporary digital mastering issues such as loudness normalization and Apple's Mastered for iTunes initiative. Production techniques for two-channel stereo and existing and emerging surround and immersive sound formats are explored in detail, including Dolby Atmos and wave field synthesis.

The authors include chapters on analog recording, including analog tape machine alignment procedures, double-ended noise reduction systems, and record players. A considerable number of studios continue to offer analog recording services for their clients – many of which still elect to release their creative output on vinyl – and the inclusion of these technologies remains vitally important for studio personnel.

Also well covered are such topics as digital radio microphones and MIDI and remote control, reflecting developments in the use of computer networks to enable conventional looking console control surfaces to communicate with computer-based recording, editing, and mixing processes. These include the Open Control Architecture and AES64-2012 proposals, as well as Avid's EuCon format, which has been around for some time now.

The last chapter concerns sound quality: what it is and how it relates to fidelity, naturalness, and liking. Anyone familiar with studio monitors is well aware that the loudspeaker with the most faithful reproduction is not necessarily the one we like the most. The authors survey various methods of evaluating sound quality, and cover aspects of audio system performance that affect sound quality: frequency response; harmonic and intermodulation distortion; dynamic range and signal-to-noise ratio; and wow, flutter, and jitter. They end with a discussion of sound quality in the digital signal chain and in audio codecs.

The easy narrative style of the book is maintained through the use of sidebars
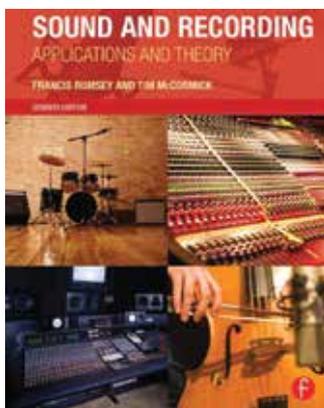
to cover thorny technical issues that might otherwise interrupt the flow. These "Fact Files" appear in boxes and cover 103 diverse topics, such as sum and difference processing, phantom powering, magnetic reference levels, stereo misalignment effects, and jitter.

The book includes a useful glossary of technical terms, an index, and a short list of books for general further reading. Although a comprehensive bibliography is not provided, each chapter concludes with a list of recommended books for further reading and a list of useful websites.

Navigation of the labyrinth of pro audio subject matter is facilitated by a well laid out table of contents, which is further detailed at the beginning of each chapter in bold typeface. The book has been well proofread and is remarkably free of typographical errors. Its many figures, tables, and graphs illustrate the material and help to drive home the core of each concept under discussion.

Given that the authors hail from the U.K., there are, however, a few Briticisms that may jar the ears of North American readers, such as references to capacitor microphones (which is, nonetheless, the correct term for what we commonly call condenser mics) and 100 V loudspeaker distribution systems as opposed to 70 V systems here.

If I were to nitpick, I'd suggest the authors take a second look at a few admittedly small things. For one, their explanation of the naming of the XLR connector is at odds with history. They say, "XLR stands for Xternal, Live, Return." In fact, according to the inventor Cannon Electric's 1955 catalog that described the plug, the nomenclature stems from the X-series connector (smaller than the O- and P-series connectors then in use), with a Latching mechanism (the XL connector), and a Resilient polychloroprene insert surrounding the contacts in the female connector (XLR). (Cannon later made an XLP connector, a latching X-series connector with a hard Plastic insert which, ironically, has become the standard, the resilient insert having apparently been discontinued decades ago.)

The authors also join the large ranks of practitioners who refer to inversion of polarity as phase reversal. Since phase is related to time, and cannot be the same for different frequencies with differing wavelengths, a reversal of hot and cold conductors is not a phase reversal, but rather a polarity inversion. Lastly, the useful and increasingly common practice of parallel compression is given no consideration, as the authors instead refer to compression as strictly a serial process.

I admit these are very small quibbles indeed, and do not detract in any material way from the very high quality that the authors have achieved with this volume.

Sound and Recording: Applications and Theory, 7th Edition, is a comprehensive authoritative work, and it belongs on the reference shelf of every conscientious audio professional. I highly recommend it.

Alan Hardiman is Producer & Creative Director at Associated Buzz Creative, a media agency he founded based on 25 years as a sound editor & mixer for TV & film. He also writes extensively about sound and audio. His website is www.abcbuzz.com.