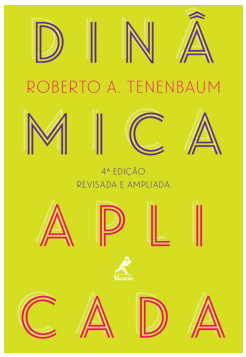
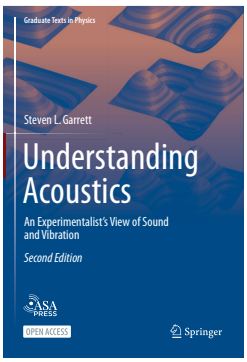
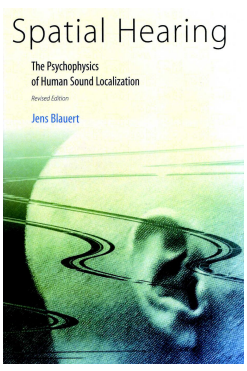
A&V n. 53 Editors







Book Reviews

Issue 53 also receives reviews from the authors

In this issue of the magazine, this section has five book reviews. In addition, there's something new: the first two reviews were written by the authors of the respective books themselves. The other three reviews were under the charge of the editors of issue 53. Another novelty is that all of them are also available in the English language (Portuguese versions start on page 151).

We remind you that the reviews are written in an abbreviated and concise way in order to summarize the content of the books (in matters related to the various sciences that involve acoustics, vibrations, and audio) and to provide information about their authors (to further contextualize the works).

For this issue we bring reviews of the following books:

- Sound-Politics in São Paulo

  Author: Leonardo Cardoso | Oxford Press, 2019

- Applied Dynamics (*Dinâmica Aplicada*)

  Author: Roberto A. Tenenbaum | Editora Manole, 2016 (4 ed.)

- Acoustics in Buildings (*Acústica nos Edifícios*)

  Author: Jorge Patrício | Publindústria, 2018 (7 ed.)

- Understanding Acoustics: An Experimentalist's View of Sound and Vibration

  Author: Steven L. Garret | Springer, 2020

- Spatial Hearing: The Psychophysics of Human Sound Localization

  Author: Jens Blauert | MIT Press, 1996 (Rev. Ed.).

Leonardo Cardoso, professor at Texas A&M University, presents his book on sound policy in São Paulo. Roberto Tenenbaum, professor at UFSM, presents the fourth edition of his important work on the understanding of Acoustics & Vibrations.

Then, one of the books by Jorge Patrício, a Portuguese reference in Building Acoustics, is presented. The fourth book is "Understanding Acoustics", authored by Steven Garrett. Finally, the classic text by Prof. Jens Blauert, "Spatial Audio", is also presented.

We hope that reading the reviews will give you first understanding/impressions about the works and will help you want to get to know them in full: an excellent way to broaden your knowledge and keep up to date in the field of Acoustics.

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Leonardo Cardoso

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Author: Leonardo Cardoso
Publisher: Oxford University Press
Year: 2019
Language: English
ISBN: 978-0190660093
doi:
10.1093/oso/9780190660093.001.0001

Sound-Politics in São Paulo

A sociological approach to urban noise

In *Sound-Politics in São Paulo* (Oxford University Press, 2019), Leonardo Cardoso tries to answer a simple question: *why does urban noise persist without a solution in sight?* Through a careful reading of laws, technical standards, court rulings, newspaper collections, and interviews with experts from various fields, the book proposes a sociological approach to the subject. Chapter 1 traces a history of the problem. Cardoso examines complaints about noise in newspapers since the 1910s and the successive attempts by municipal authorities to control these sounds. For example, in São Paulo the concept of "noise pollution" began to circulate in the press in the 60s and 70s with the arrival of jet planes at Congonhas airport and the inauguration of the famous "Minhocão". The two cases show how the city has not only ignored the importance of acoustics in urban planning but has contributed to making the problem worse.

The second chapter analyzes debates involving two important technical standards on environmental noise, the ABNT NBR 10151 and 10152. Based on interviews, minutes of meetings, and participation in several meetings, the author shows that the review of the two documents proved to be difficult due to disagreements about the purpose of a technical standard.

In Chapter 3, Cardoso analyzes debates on noise in the City Council of São Paulo, SP. The author describes the various attempts by evangelical groups, bars, and restaurants since the 1990s to exclude or minimize the impact of anti-noise laws on their activities. The next chapter narrates the many challenges that the military police and the Urban Silence Program - PSIU (a municipal initiative created in 1994) face when trying to inspect and punish noisy neighbors and commercial establishments. Chapter 5 addresses litigation involving noise in the second instance. The author describes how this is a problem that permeates several fields of law, such as criminal, public, civil (neighborhood law), and administrative law. The chapter also shows that the topic is controversial among judges of the São Paulo Court of Justice in their attempts to assess different types of evidence.

Chapter 6 discusses the funk street dances known as "street pancadões". Following the controversy over the pancadão, Cardoso describes how the groups studied in previous chapters (PSIU, Military Police, councilors, etc.) sought to solve the problem.

The book concludes by proposing a multidisciplinary approach to the initial questioning: *why is this such a difficult problem to solve?* The author suggests that the study of urban noise involves the careful investigation of four types of interrelated controversies: (1) "sound complexes" (traffic, bar, industrial noise, etc.); (2) "axes of debate" (e.g. noise as a public health issue or as a factor in crime); (3) "government dilemmas" (which public agency should deal with the problem and how should it do so?); and (4) "governance solutions" (e.g. should you control the noise emitter or receiver?).

Roberto A. Tenenbaum

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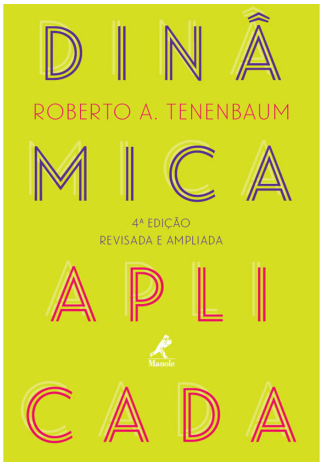

Author: Roberto Tenenbaum
Publisher: Editora Manole
Year: 2016 (4 ed.)
Language: Portuguese
ISBN: 978-8520446775
Link: publisher

Applied Dynamics

A mechanics classic on the optics of acoustics and vibrations

The textbook Applied Dynamics (*Dinâmica Aplicada*), whose first edition dates from 1997, was conceived from lecture notes produced by the author in the 1970s for the discipline *Rational Mechanics*, offered in the introductory course for engineering qualifications at the Federal University of Rio de Janeiro (UFRJ), Brazil. The notes imposed themselves on the author since the textbooks then available — translations of works by North American authors (NAs) produced in the 1950s — proved to be inadequate for Brazilian students. This inadequacy was due, among other things, to the differences between the ways of thinking of Brazilian students and NAs. These are used for programmed instruction. Those, on the other hand, have a more chaotic — and therefore much more creative — way of learning. This ended up resulting in a text of approximately 700 pages with 8 chapters and 5 appendices whose approach — contrary to that used by the aforementioned NAs authors — is always from the general to the particular and, as the preface to the 4th edition states: *This option is deliberate and the initial difficulty is apparent. The didactic experience has fully demonstrated the exact opposite: the student, introduced to the concept in all its generality, gets used to it quickly, easily mastering the simplifications that particular cases insert, and above all, not hesitating in the face of more complex situations.*

Over several decades of teaching and six editions later (two in digital format and two produced in the USA by Springer-NY), the 2016 edition, naturally, has matured greatly and has had virtually all of its errors corrected — although it is known that this is a task of Sisyphus. However, what the author observed over that time were generations of engineers with excellent training in *Dynamics*, which seems to indicate the correctness of the methodological option adopted in the textbook.

The reader of this review may be wondering what this text is doing in A&V journal. Well, *Dynamics* is the scientific discipline that studies systems undergoing *changes of state*. In the human quest to understand the world in which they live, scientists have found in the continuous change of state what is most perennial in the Universe. As *acoustics and vibrations* deal with changes of state, that is, fluctuations, it can be safely said that *Dynamics* is the science that underlies the understanding of A&V. That's how this author came to Acoustics & Vibrations.

The author takes the opportunity to acknowledge the brilliant Professor Emeritus of UFRJ, Luiz Bevilacqua, responsible for coordinating the discipline offered in the 1970s in engineering at UFRJ, and for inviting this author to compose the faculty of the discipline at the time. In the Preface to the 1st Edition, he says, at the end: "*This is a book I wish I had written.*", of which I am very proud.

Ranny L. X. N. Michalski

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Acoustics in Buildings
7th Edition, Revised and Enlarged

International reference in Portuguese

Author: Jorge Patrício
Publisher: Publindústria
Year: 2018 (7 ed.)
Language: Portuguese
ISBN: 978-9897232626
Link: publisher

Acoustics in Buildings (*Acústica nos Edifícios*), authored by Jorge Patrício, is in its seventh edition, revised and expanded. Divided into eleven chapters and an annex, the book provides fundamental information regarding the acoustic performance and acoustic quality of buildings, along with assessment methodologies from the design phase to that of buildings already constructed, in accordance with legislation and international standards. With an outside-in approach, that is, from the external to the internal environment, the work deals with issues such as urban acoustics, airborne sound insulation, impact sound insulation, vibrations and noise from equipment and building installations, flanking transmissions, acoustic conditioning of closed spaces, sound absorption, reverberation time and sound diffusion.

The author emphasizes the importance of thinking not only about the building but also about the relationship with the surroundings and different sources of noise in order to achieve an integrated assessment of the users' acoustic comfort. He also emphasizes the importance of urban planning for noise management and control.

The compatibility between acoustics and thermal dynamics, a very relevant and complex topic, deserves to be highlighted. The eighth chapter specifically addresses the interrelationship between acoustic requirements and thermal comfort and ventilation requirements. Tables are presented relating the acoustic and thermal performance of different elements and construction systems, as well as regulatory and normative requirements. An annotated transcript of the Building Acoustic Requirements Regulation (RRAE) is presented in the tenth chapter, with annotations by the author. Organizational charts of typical building acoustics assessment procedures are also provided.

The last chapter presents constructive solutions, complementary tables, and examples of exercises and tests. Finally, the annex presents other methods to determine sound insulation, in addition to those presented throughout the chapters.

Jorge Patrício, Ph.D. in civil engineering, is a researcher at LNEC (National Civil Engineering Laboratory of Portugal) and president of the Portuguese Society of Acoustics (SPA), among other relevant positions. Author of several books and expressive publications on acoustics, he is a great contributor to Brazilian acoustics.

An excellent international reference, which is easy to read in Portuguese, the book Acoustics in Buildings (*Acústica nos Edifícios*) should be present in the library of all acousticians. On the publisher's website, it is possible to see a small preview of the book and buy it (in electronic and printed versions). The printed version can also be purchased on the Brazilian Amazon website.

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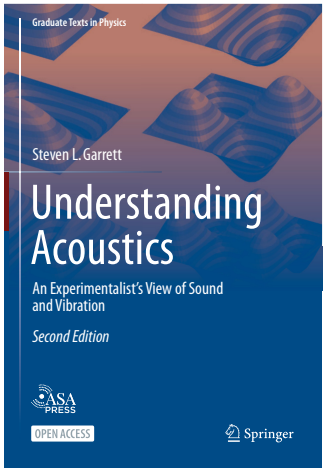
Understanding Acoustics: An Experimentalist's View of Sound and Vibration

An "open" conversation about acoustics and vibrations



Author: Steven L. Garret
Publisher: Springer
Year: 2020 (2 ed.)
Language: English
ISBN: 978-3030447878
doi: 10.1007/978-3-030-44787-8
Link: *open-access*

"*Acoustics and vibration are the 'sciences of the subtle'.*" This is one of Steven L. Garrett's first sentences in the second edition of his book, in which he describes the fundamentals of these important areas of knowledge. In a subtle way, it also presents the reader with all the concepts found in consecrated texts through a conversation full of examples and applications, without far-fetched mathematics, and always using the first person singular or plural. With a modern language style and several illustrations, it even makes use of scenes from renowned films to facilitate the understanding among readers who are in the initial phase of their training. The care taken with the theoretical basis throughout the text is admirable, with several footnotes pointing to auxiliary reading or even the presentation of concepts from other areas.

Steven L. Garret has a Ph.D. in Physics and has taught for 40 years at several US institutions (UCLA, Naval Postgraduate School, and Penn State University), and is currently a fellow of the Acoustical Society of America. He has had a strong presence in experimental procedures throughout his career, such as the development of sensors and thermoacoustic refrigerators, with dozens of registered patents. He is, in fact, an "experimentalist." Throughout the book, we get the impression that Steven has already "seen" everything that is presented.

This work is divided into three parts (with 15 chapters, totaling 783 pages), starting from a preliminary section with mathematical foundations, review of dimensional analysis, and notions of propagation of uncertainties and data adjustment. The first part focuses on the area of Vibrations, bringing all the concepts found in classic books, including the analysis of discrete and continuous systems. Following the author's proposal, all topics are directly related to examples and experimental tests, with sections dedicated to the description of types of transducers and signal acquisition systems, including the determination of mechanical properties of materials through vibration tests. The second part is focused on Acoustics, starting from the fundamentals of hydrodynamics, with a clear and illustrative way of presenting the main concepts used in linear acoustics: propagation, reflection, transmission, refraction, radiation, and scattering of waves; acoustic cavities; as well as sound dissipation and attenuation mechanisms. As in the first part, many examples and practical tests are demonstrated. The third part is dedicated to Non-Linear Acoustics, demystifying some concepts of this subject that, for many, is still a black-box.

An open-access copy of the book can be obtained from the Springer publisher's website. A hard copy can be purchased on the Brazilian Amazon website.

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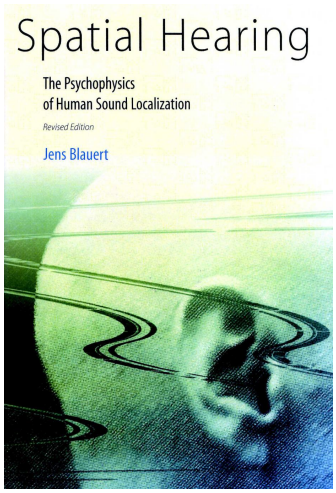

Author: Jens Blauert
Publisher: MIT Press
Year: 1996 (Revised Ed.)
Language: English
ISBN: 978-0262268684
doi: 10.7551/mitpress/6391.001.0001
Link: *open-access*

Spatial Hearing: The Psychophysics of Human Sound Localization

A classic of binaural technology now with open-access

The book Spatial Hearing was initially conceived in 1974, still in its German version. In 1982, it earned an English version and in 1995, it received a new Revised Edition. In the Revised Edition, a new chapter (the fifth) was added with new information that emerged with the technological evolution of the set of methods that make up the so-called "binaural technology". As the author himself writes, 20 years have passed since its original release (until the revised version) and, in that time, computers have ceased to be exclusive parts of laboratories to integrate a space in people's homes. Along with popularization came the advancement in processing capabilities. Thus, what were once theories started to become calculations performed in an offline way during the 90s, and nowadays, almost 50 years after the original edition and almost 30 years after the last edition, we can say that a good part of the documented processing can take place in real-time (or online), either on computers and/or mobile devices.

As originally designed, the book covers much of the knowledge needed to understand the physical phenomena of sound and their relationships to the sound sensations promoted. Thus, it builds a foundation on the relevant topics in an easily readable text, also is supported with graphics and illustrations (see Figure 2). It is essential reading for students, researchers and consultants working with *spatial audio* or *virtual acoustics*. Although "only" around 500 pages long, the book also doubles as a reference collection, pointing to over 900 bibliography items for the reader to delve deeper into the field.

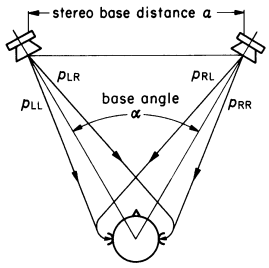

Figura 2: Sound paths for a stereo system (Figure 3.1 of the book).

The print run of the physical book (edited by MIT Press) is out of print. However, for the happiness of enthusiasts in the area, the book has become open-access, now fully available in PDF format on the publisher's website (see this link) — which is one of the reasons why we bring this review to A&V.

The author, Professor Jens Blauert, from the University of Bochum, Germany, has an extensive career in acoustics and hearing with dozens of published articles as well as supervised doctoral theses. He is also the author of several other books on the subject. On his profile at Research Gate the reader may access much of his material and production. More information can be also found at his website.

While still a graduate student, I had the pleasure of meeting Prof. Jens in 2005 in Brazil. Recently, we were able to talk at the ICA 2019 event, held in Aachen, Germany, but this time as a professor from the subject of Auralization of the Acoustical Engineering Department at UFSM, Brazil. Prof. Jens made a point of making more educational material available when he learned that his works are widely used in the course.