

Comments on “Observing Using Sound and Light”

General comments: Frankly, I do not like the paper. It is a rag-bag of bits and pieces with about as much internal structure and theme as a laundry list. The English is often indifferent. There are typographical errors which just should not be in a four-author manuscript on, apparently, its second turn around the block. Most reviewers would not feel affronted at having to pick up the occasional stylistic error, but this document pushes patience beyond any reasonable limit. This is characteristic of the rather slapdash way in which the subject matter is presented. Furthermore, it seems clear to me that no one author has taken up the task of finalising the draft. Consequently, some sections are markedly less-well written than others.

In a review paper, some degree of critical appraisal would be appropriate. In general, this is lacking. Most probably, this is because - as is admitted in the Introduction - too wide a scope has been addressed and the authors, both individually and in concert, just do not have the breadth of experience necessary to achieve this.

Furthermore, in averring that optical and acoustical techniques are of key importance in oceanographic measurement, there is a great danger that, that a much broader swath of activity is ignored. Thus there is no mention of WOCE, RAFOS floats and the like, which currently provide the dominant mechanism for obtaining primary oceanographic parameters concerning circulation. Although ocean acoustic tomography is discussed at some length, its manifest limitations are not presented.

Some specific comments .. but this list is far from comprehensive

p.820 “mosaicking” is awful. Probably it is a form of jargon now widely employed within a small community of specialists. “Making mosaics”?

p.821 “certain turtles have evolved sonar” news to me. Can’t locate a copy of Curtis and Barnes, so I can’t comment further.

Urlick is not the appropriate reference to L da V. The earliest I have yet been able to find is in one of the NDRC reports (which URICK actually refers to). I have searched the Notebooks but cannot find ANYWHERE anything like the comment ascribed to da Vinci. Incidentally, the Juru Selam (“Expert Divers”; Bahasa Malay) of Terengganu were using sound underwater as a means of detecting a wide range of fish species, by listening for their vocalisations, LONG before the excellent Italian.

p.822 I think Westerveldt actually heard the effect before he theorised on it ... be a good idea to check, however. Probably in Albers, Underwater Acoustics ... a copy of which I no longer seem to have!

p.824 A single transducer is not necessarily a point source; a point source doesn’t illuminate “a large portion”, it insonifies everything. The echosounder does not create ambiguities, it just has resolution limitations brought about by aperture size and bandwidth. These things are fundamental but their significance seems lost on the authors.

p.825 Typo “atwhartship:

“etc.” If the latter is used, the etc it refers to would have been better stated. Etc. implies that the reader already knows what is going on. If that is the case, the paper is unnecessary.

p.826 It is difficult to unscramble this page. It is only by the end of the page that it becomes more or less clear that the author is referring to sidescan images.

“... when deployed in other environments ... “ What other environments? What was the “first” environment?

p. 827 (Cutrona) not (Cutron) and this refers to radar not sonar. The reference precedes the sentence which actually states this.

p. 831 Reference to cetacean use of the SOFAR channel greatly predates Abileah, et al.

I just do not agree with many of the conclusions presented in section 2.2.6.

p. 839 What does cross-cutting mean? Bioacoustics dismissed in seven lines.

p. 840 “Challenges” reads more like a list of past failures. In the 1970’s the SAS challenge was platform stability. So, it would appear, it still remains.

p. 841 “Underwater video is a descendant to underwater photography and cinematography, which can be dated back to the mid 1800s and where underwater video has existed since the 1940s.” What on earth does this sentence mean?

p. 844 Some short explanation of how structured light imaging is done might be a good idea.
(Structured light methods for underwater imaging: light stripe scanning and photometric stereo, Narasimhan, S.G.; Nayar, S.K., OCEANS, 2005. Proceedings of MTS/IEEE Volume , Issue , 2005 Page(s): 2610 - 2617 Vol. 3)

p 846 to end. This section (3.1) is comprehensive but often wanders off into areas concerned with standard videography. Doubtless this is important enough since, as the paper comments at one point, there is relatively little that can be done by the academic researcher that will not already have been tackled by the commercial camera manufacturers. Possibly this information might be more usefully handled as a Table, since that would permit easier comparison of available technologies.

The compression section seems to me to be gilding the lilly. I am also doubtful that some of the conclusions offered are correct, anyway.

The holographic imaging session is comparatively long, fairly detailed and does discuss primarily underwater applications. However, it appears immediately after sections concerned with the imaging of large objects and segues rapidly into the world of planktonic organisms. Perhaps some reasons could be inserted as to why holography is inappropriate for large-scale imaging and conventional optical TV microscopy is inappropriate for plankton recorders might be inserted. Always assuming that is, indeed, the case.

p. 858 Tis paper => This paper.....

Conclusions ... just not very inspiring or helpful!