NATIONAL SCIENCE FOUNDATION
WASHINGTON, D.C. 20550

MAY 16 1980

Dr. John M. Chowning
Department of Music
Stanford University
Stanford, CA 94305

Dear Dr. Chowning: REF:BNS-8015826

We regret to inform you that the National Science Foundation is unable to support your proposal entitled "Instrumental Timbre and Related Acoustical Phenomena in the Perception of Music."

In evaluating each proposal submitted to the Foundation, several factors are considered, of which scientific merit is the most important. The relation of the proposal to contemporary research in the field and the distribution of limited funds among fields of science are also important. Budget constraints are such, however, that many meritorious proposals cannot be funded.

In order to select the best projects for support, written reviews are solicited from scientists throughout the country with special expertise in your area of science and from members of an advisory committee which discusses the proposals.

Copies of the reviews of your proposal are enclosed in order to aid you in understanding the Foundation's action and in preparing future proposals. They are for your personal use and are not available to other parties.

Further inquiries should be addressed to Dr. Terrence R. Dolan, Sensory Physiology and Perception Program, National Science Foundation, Washington, DC 20550.

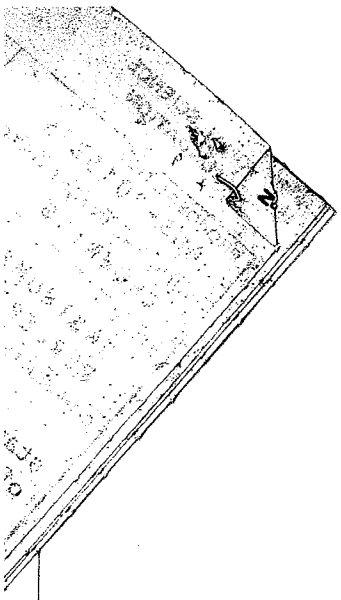
Although we were unable to support this proposal, we would be pleased to consider future proposals that you might wish to submit.

Sincerely yours,

Richard T. Louttit
Director, Division of
Behavioral and Neural Sciences

202-357-7428

Copy To: S. Maxine Yoshimoto
Contract Officer



Chowning BNS 80-15826

The summary of the panel discussion was:

"The panel discussion of this proposal was brief and uniformly negative. The problems are interesting, but the research program is described in vague generalizations, precluding any methodological evaluation. The authors are apparently clever and pretty well informed, but they have a very modest track record of publication in referred journals; too modest to assume support without providing more detail in their proposals. It is recommended that a more modest proposal be submitted, if they still wish to seek support, with a small number of specific experiments carefully justified and described."

Leather $100,000

The Sensory Physiology and Perception Program concurs with the ad hoc reviewers and advisors. There was little information re proposed research in the proposal to evaluate. The Principal Investigators are clearly capable, but their impact on psychoacoustics has been too modest to warrant support without a more detailed proposal. The Sensory Physiology and Perception Program recommends declination.

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PROPOSAL EVALUATION FORM

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INSTRUMENTAL TIMBRE AND RELATED ACOUSTICAL PHENOMENA IN THE PERCEPTION OF MUSIC

COMMENTS (CONTINUE ON ADDITIONAL SHEET(S) AS NECESSARY)

There is really no experimental work proposed here. This application is not appropriate for this panel.

Decline to evaluate

RATING: ☐ EXCELLENT ☐ VERY GOOD ☐ GOOD ☐ FAIR ☐ POOR

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TITLE

INSTRUMENTAL TIMBRE AND RELATED ACOUSTICAL PHENOMENA IN THE PERCEPTION OF MUSIC

COMMENTS (CONTINUE ON ADDITIONAL SHEET(S) AS NECESSARY)

This is a very difficult proposal to evaluate. The main body of the proposal contains only vague descriptions of the proposed experiments and the reader is referred to the voluminous appendices (and a non-current bibliography) for background and experimental paradigms. This is sufficient for the portions of the proposal which are simple extensions of previous work; however, there is not enough information for an adequate evaluation of the basically new research. For example, the proposed investigation of timbre in musical contexts (section A3 and Section B) is more than a straightforward extension of the study of the timbre of isolated tones and will involve such phenomena as auditory streaming and auditory pattern perception. It is not clear from the discussion whether the authors have considered this in designing their experiments.

The weakest section of the proposal is section D on harmonicity and interval perception. It is clear that the authors arennot familiar with the literature in this area (for example, data on the adjustment of simultaneous octaves do exist and are consistent with the results for sequential adjustments). In particular, there is no discussion of the synthetic pitch of inharmonic tones. Given the myriad of possible cues available for adjustments of intervals for simultaneous inharmonic tones, the ambiguous results of their pilot experiment is not surprising. Although it is of some interest to study intercultural differences in scale tuning and in the perception of inharmonic tones, it is unlikely that anything other than mere speculations will emerge from such studies. The $10,000 requested for foreign travel (presumably to fly to Bali) is clearly out of line. This is just the kind of thing Proxmire will pick up on, and with some justification. In any case, there are probably more operational gamelans and gender wayangs in various ethnomusicilogy departments in this country than in Indonesia.

In general my recommendation for funding would depend on the amount of support the group has in addition to this proposal. If this is their only support, then I would recommend funding as the group has done some interesting work in the past and should be supported, at least at a minimal level. However, if they are already adequately funded, I would prefer to see a revised proposal with a more explicit description of, and rationale for, the proposed experiments.

RATING: ☐ EXCELLENT ☐ VERY GOOD ☒ GOOD ☒ FAIR ☐ POOR

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COMMENTS (CONTINUE ON ADDITIONAL SHEET(S) AS NECESSARY)

This proposal is dificult to evaluate since it gives few particulars about the proposed experiments. Nevertheless, the somewhat general discussion of the current and future research projects displays such a high level of sophistication that I am confient that the detailed research will be carried out on a technologically and methodologically sound basis. I find especially appealing the baisc approach which calls for simplifying the acoustic signal to determine just what cues are relevant to various complex musical and psychoacoustic judgments. Their powerful computer technology enables this group of researchers to carry out this program which otherwise would be extremely difficult to execute. In this respect the proposal is highly creative, although I cannot attest to its originality. For example, the proposed continuation of the investigation of Indonesian music seems to me both creative and original, but my ignorance of thefield may make this aspect seem more original to me than it is. The investigation of contextual effects if not a simple task, but the authors seem to have a handle on the problem.

The CCRMA has a highly qualified group of people with right mix of training, background, and intersts to pursue the goals of this research.

~~Thisxproposalxisxdifficultxtoxevaluatexsincexitxgivesxfewxparticularsxabout thexpropx~~ The budget seems amply justified and generally reasonable except for the wholly unspecified foreign travel. The failure to specify the planned "field research" follows the failure to specify the research in general. I should think that NSF would want more information on the foreigh travel plans.

In summary, this proposal says to me that the CCRMA is probably our major center for research in musical acoustics, wspecially with respect to basic perceptual dimensions. Accordingly, the Center should receive strong support. The proposed areas of research are well chosen and the general discussion of these areas is excellent. However, owing to the lack of specificity in the research proppsal, I cannot rate the proposal as excellent but only as very good (and veryx close to excellent).

RATING: ☐ EXCELLENT ☐ VERY GOOD x ☐ GOOD ☐ FAIR ☐ POOR

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This is, as far as I can see, not a proposal as they are usually written. It informs the reader about the current research and what the investigators are intending to do but does not provide more detailed information about the future projects (as stimuli to be used, procedures, analysing techniques). Therefore this proposal has to be evaluated much more than usually in the light of the scientific "credit" of the investigators.

In my opinion the CCRMA is a major center for studying musical sounds with highly qualified scientists. The proposal reveals that they are quite aware of the problems in their field and that they have the instrumentation (including data analysis) for performing this research. I am convinced that we may expect highly significant contributions to a better understanding of how musical sounds or musically oriented attributes of sounds are perceived by the human ear.

RATING: ☐ EXCELLENT ☒ VERY GOOD ☐ GOOD ☐ FAIR ☐ POOR

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This proposal addresses a number of basic questions which are important for understanding the nature of the perception of music. Furthermore, I strongly support the goals of an institute like CCRMA which is intended to bring modern technology and solid psychoacoustic analysis procedures to the study of music. However, I find a number of disturbing deficiences in the proposal:

(1) The description of previous findings is always in terms of a superficial summary of the researcher's conclusions. Some of the problem is due to the use of jarg n, while some is due to a lack of information about how and why such conclusions might be reached. The extensive appendices are only of some help in resolving the deficienc

(2) The proposal often glosses over such issues as:
   (a) how many subjects were (or will be) used, or
   (b) what the subjects were (or will be))asked to do.

(3) CCRMA has been functioning since 1975 with all of its key staff. In the following five year period, CCRMA staff would appear to have published an average "total" of no more than two research manuscripts and an equal number of instrumentation papers per year (I am excluding internal tech reports, presented papers with published abstracts, and grant proposals). Strictly in terms of numbers, that is less than what one would expect from such an institute; the dissemination of research findings is critical for our scientific community.

(4) One major deficiency in the proposal and in some of the appendicies is the lack of contact with the majority of the current literature outside of CCRMA publication. For instance, in discussing categorical perception for musical stimuli, the author reference Cutting & Rosner (1974), the Burns & Ward (1974) abstract, and CCRMA's Gregs work (1977 and "in preparation"). The extensive publications by Burns & Ward (1977), by Zatorre & Halpern (1979 - with earlier abstract), and the work of the Siegels all are very relevant, and they all seem to address the same question in the proposal. Also, Macmillan, Kaplan & Creelman's (1977) discussion of the procedures used to study categorical perception would tend to explain why Greg did not find categorical perception where other's (cited above, but not in the proposal) have found the phenomena. I find similar deficiences in the treatment of other research topics.

On the positive side, the instrumentation papers are generally excellent, and CCRMA staff are employing some very sophist cated analysis techniques. However, in some instances I had the feeling that this sophistication far exceeded the design of the experiments and the level of the questions being asked.

RATING: ☐ EXCELLENT ☐ VERY GOOD ☑ GOOD ☐ FAIR ☐ POOR