

Dr. Michael Turner,
Assistant Director,
Math and Physical Sciences Directorate

Dr. Wayne Van Citters,
Division of Astronomical Sciences

National Science Foundation
4201 Wilson Boulevard
Arlington, VA 22230

November 26th, 2003

Dear Michael and Wayne,

We are writing to you concerning the Giant Segmented Mirror Telescope (GSMT), a 30m- class instrument recommended by the Astronomy and Astrophysics Survey Committee (AASC). We concur with the AASC that at least one such instrument represents an essential step in the evolution of U.S. groundbased astronomy, and that it is scientifically highly desirable to have overlap in operation in the era of the James Webb Space Telescope (JWST) and Atacama Large Millimeter Array (ALMA).

We believe that the GSMT represents an enormous technical challenge. It is not yet clear which investments the NSF should make now to ensure that the best GSMT concepts are uncovered and developed and that the nation's astronomers receive optimum access to larger aperture. We think that it is important that the NSF gather the information needed to make an informed decision on its GSMT strategy and to think strategically about how to proceed in the next one to two decades. Any such strategy should recognize the long history of private and state investment in optical/infrared telescopes and encourage such investment in the future. The outcome might be involvement in more than one project (including possibly a European collaboration) to secure for U.S. astronomers access to ELTs with different apertures, configurations, and locations as appropriate for different scientific tasks such as optical wide-field studies, sensitive observations in the thermal infrared, and high spatial resolution observations on faint objects).

In order to address the long-term strategy we think it is important that NSF establish:

- 1) A mechanism to elicit the best concepts for large optical/infrared telescopes and to develop an overall strategic plan; and
- 2) A program to fund the development of promising designs and the associated technology. The program should be of finite duration (say 3 years) and open to the entire U.S. community on a competitive basis.

We are very concerned that the current agreement between AURA and the CELT institutions may not be in the best interests of the U.S. astronomical community and, depending on how the NSF responds to their joint proposal, may violate the principle of open competition. By committing prematurely to a specific design, AURA cannot be viewed as an unbiased national coordinator for the GSMT effort. AURA's justification for the proposed design concept as being required by the AASC report seems to us to be a very narrow reading of a recommendation that was intended to lead to a national program to learn how to build and use telescopes

of aperture significantly larger than the current generation. Finally, AURA's statement that technologies to be developed under the proposal will benefit all potential projects is not based on input from those projects. We have brought these concerns to the attention of AURA President Bill Smith - see attached letter - so far with little discernible impact. Since we firmly believe in the need to develop concepts and technologies for the next generation of large optical/infrared telescopes, we would like to explore with you various options for ensuring that the best ideas are brought forward and explored.

We would, therefore, like to arrange for a few of us to meet with you at your earliest convenience to discuss these issues.

Sincerely,

Charles Alcock (Pennsylvania)

Roger Angel (Arizona)

Tom Barnes (Texas)

Frank Bash (Texas)

Wendy Freedman (OCIW)

David Helfand (Columbia)

Jacqueline Hewitt (MIT)

Jim Houck (Cornell)

Robert Kirshner (Harvard /CfA)

David Lambert (Texas)

Pat McCarthy (OCIW)

Pat Osmer (Ohio St.)

Douglas Richstone (Michigan)

Irwin Shapiro (Harvard/CfA)

Paul Schechter (MIT)

Peter Strittmatter (Arizona)

Ed Turner (Princeton)

Don York (Chicago)

cc: W. Smith (AURA)

Attachment/Letter sent June 18th, 2003 to AURA President, Bill Smith

Mr. William S. Smith
Association of Universities for Research
in Astronomy, Inc. (AURA)
Suite 350
1200 New York Avenue, N.W.
Washington, D.C. 20005

June 18th, 2003

Dear Bill,

We are writing to express concerns about the role AURA is pursuing for the GSMT. Our concerns are based primarily on your communication of 7 May, "Status of AURA's Activities on GSMT and CELT." We consider the plan presented here to be inappropriate for the following reasons:

1. The principle of open competition, which you espouse as AURA's and with which we agree, seems to be violated by the signing at this time of an MOU with the CELT partners. Such a signing, in practice, precludes fair and open competition;
2. Although AURA states that its process for reaching decisions requires "the user community to have a strong voice in all phases of any program," it has not consulted the user community about this MOU and planned subsequent proposal to the NSF;
3. The justification for the proposed design concept as being required by the AASC report seems unwarranted. The AASC conducted no review of telescope approaches that might achieve its stated scientific goals. Moreover, a premature choice of concept might foreclose a more effective, efficient, and/or less costly approach; and
4. The statement that technologies, to be developed under the proposal to be sent to the NSF, will benefit all relevant projects has not been vetted with the astronomical community.

As an alternative to AURA's pursuing an agreement with CELT at this time, we suggest that AURA:

1. Arrange a broad community discussion of the NSF GSMT committee report, due to be released shortly, on the scientific goals for OIR astronomy;
2. Invite proposals from interested parties on instrumental approaches to achieving those goals;

3. Oversee a peer review process to evaluate the various concepts in terms of both the scientific goals and the needed technology, and extract the technology developments required to enable the most credible of the concepts to reach the stage where competition between them could be based on firmer evidence; and
4. Submit a proposal to the NSF to provide funds to be awarded on a peer review basis for the development of the key technologies and relevant demonstrations thereof, exclusive of adaptive optics which is already being handled.

Sincerely,

Roger Angel (Arizona)

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Peter Strittmatter (Arizona)

Ed Turner (Princeton)

Don York (Chicago)

cc: W. Van Citters (NSF)