NOAO and the NSF Senior Review
Jeremy Mould & Todd Boroson

The report of the Senior Review commissioned by the NSF astronomy division was released on November 3, following months of anticipation (see www.nsf.gov/mps/ast/ast_senior_review.jsp). The goal of the review was to evaluate the scientific effectiveness of all NSF astronomy facilities, and to provide recommendations that could free up as much as $30 million per year through selective closures or facility restructuring. We understand that this was a very difficult undertaking, and that every recommendation to downsize or eliminate something inevitably has real pain associated with it.

From the perspective of NOAO and our community, we find the report very encouraging. At the highest level, it provides a resounding endorsement of NOAO’s role as an effective national organization, as laid out by the most recent decadal survey: NOAO must manage the development of the ground-based optical/infrared (O/IR) system of facilities, and provide effective access to it. It must represent the community and provide leadership in the design, construction, and operation of the largest and most expensive facilities. And it must provide a significant portion of the capabilities available to the broad community through state-of-the-art telescopes and renewed instrumentation, built in collaboration with universities.

All of these roles are described in the decadal survey, and they are all elements of the recommendations in the Senior Review report. These are exactly the precepts that have guided NOAO’s program plan over the past six years.

One goal of the review was to designate resources that could be reprogrammed to address a problem of unprecedented magnitude at the NSF astronomy division: how to fund the pre-construction design and development—and the post-construction operation—of an ambitious set of decadal survey initiatives. The approach taken in our submission to the Senior Review panel was to point out that NOAO was already committing to these new initiatives (GSMT, LSST, NVO) roughly the fraction of facility funding (approximately 25 percent) that the Senior Review was trying to find program-wide at NSF. These funds have contributed noticeably to the scientific and technical leadership in these projects, as well as to community participation in them—just as recommended in the decadal survey.

Whether this approach was enough to satisfy the Senior Review is difficult to say, based on their report. A management review was recommended for each major NSF facility. In the recommendations for NOAO, it is suggested that the Major Instrumentation Program and Data Products Program, as well as administrative and scientific staff, are areas to review. No evidence of inefficiency or identification of activities that they are willing to eliminate was provided. We are confident that any significant cuts in these areas would not allow us to maintain the level of support that the community demands.

The other area of potential change is the nature of NOAO’s participation in the decadal survey initiatives, particularly the Large Synoptic Survey Telescope (LSST) and the Giant Segmented Mirror Telescope (GSMT). The sense of the Senior Review recommendation is that our investments in these projects should be guided by realistic expectations regarding the funding schedule for their expensive construction phases.

It appears we have hit it just right for LSST, with current work aimed at submitting a proposal to NSF’s Major Research Equipment Facility Construction (MREFC) funding process in early 2007, allowing this facility to get in line for funding behind the Advanced Technology Solar Telescope. A more complex problem is presented by the GSMT, due to the emergence of two extremely large telescope projects: the Thirty Meter Telescope (TMT) and the Giant Magellan Telescope (GMT). NOAO must position itself to represent and advocate community participation in either of these projects. The lengthy design and development phases of these projects demands significant early participation as the only way to ensure community access to the resulting observing time.

The subsequent article in this Newsletter, written by AURA President William Smith, presents a more detailed look at the

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evolution of public participation in the GSMT project. These ideas were endorsed by Wayne Van Citters, NSF astronomy division director, during his meeting with the NOAO staff on November 13.

One clear focus of the report is the ongoing productivity of the original observatories of NOAO: Kitt Peak National Observatory and Cerro Tololo Inter-American Observatory. We certainly welcome the acknowledgement that these facilities are important to the community, and that the capabilities they provide are critical elements of the O/IR system. In our role as stewards of the system, NOAO gratefully accepts the offer to upgrade and improve the existing facilities through possible one-time reinvestments. We are developing lists of candidate improvements for these observatories, and will work with the community to gather and prioritize more ideas.

Finally, in the last section of the report, the Senior Review report calls for a new high-level commission to manage US O/IR astronomy. Having immersed ourselves deeply in the development of the “ground-based O/IR system,” we believe that this dynamic combination of public and private facilities is best guided through the creation of mechanisms through which all participants can see their diverse interests served, rather than through a top-down structure.

Although acceptance of the system perspective has been slow, it has been steady, marked by accomplishments such as our stewardship of the Telescope System Instrumentation Program (TSIP) and the well-attended “Third System Workshop on the Ground-Based O/IR System: Developing an Instrumentation Strategy” in mid-November (organized and hosted by NOAO), which provide compelling evidence that this approach is succeeding.

Overall, we find the Senior Review report very supportive of the current NOAO program plan. We look forward to working with NSF astronomy division staff and the O/IR community to develop an implementation plan that reinforces NOAO’s goal of continuing as the effective national organization envisioned by the decadal survey.

The Senior Review and the NOAO Mission

William S. Smith, Jr. (AURA)

As the president of the Association of Universities for Research in Astronomy (AURA), which manages NOAO under a cooperative agreement with the NSF, I would like to convey a few thoughts about the implications of the Senior Review for the NOAO mission and its relationship to the decadal survey of 2000, which has guided us over the past several years.

Although the Senior Review was basically an exercise in examining scientific priorities, and the budget balance within the NSF astronomy division, a great deal of attention was focused on the mission of the national observatory. Despite some of the cost and budget issues, which were a necessary part of the discussion, it is very evident that NOAO is seen as more important than ever.

In every possible place, the Senior Review encourages NOAO to take a leadership position:
− In playing an enabling role in developing the “System.”
− In combining its capabilities with those of the university community to address instrumentation needs.
− And, most importantly in sustaining the astronomical community, by making sure there is access to telescopes of all apertures. Our access today is one to ten meters.

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The Senior Review and the NOAO Mission continued

In the future there will no doubt be 20-, 30- or 50-meter telescopes and NOAO will need to bridge this gap.

There is nothing in the Senior Review suggesting that the vision of the decadal survey is misguided or unachievable. The Giant Segmented Mirror Telescope (GSMT) and Large Synoptic Survey Telescope (LSST) are still seen as some of the most compelling science machines of the future. There is no question that NOAO has dedicated itself to achieving this vision and has fulfilled every expectation in doing so.

The Senior Review has taken a broader view in judging the overall pace that we should expect in achieving these goals, and the balance that should be maintained in the community in the interim. There is no question that the community will depend on NOAO for observing opportunities at Cerro Tololo and Kitt Peak, access to Gemini, and access to independent telescopes. They have called attention to this reality and this is a good thing for all of us. NOAO’s role will be to ensure a healthy system today, while working with the community to ensure that the system evolves to enable the entire US community to plan and carry out front-line research with tomorrow’s telescopes.

The Senior Review spent a considerable effort looking at the landscape for the GSMT. They observed that coordinating the design and technology development for major projects like the GSMT, expediting their passage through the various phases of the NSF approval process, and ultimately preparing for their operations and science phases, requires leadership and planning at a level unprecedented in the NSF. The NSF has approached AURA to discuss the most productive means of carrying out this process, in a manner that best serves US astronomy while capitalizing on the basic purpose of the national observatory.

NSF has asked that NOAO act as the “Program Manager” for the GSMT technology development effort at a national level, in a manner similar to NASA’s major field centers. There is much to be done to restructure and re-tool for this new approach, and AURA and NSF are working together with the two existing GSMT projects to lay out a clear path.

We do not want to squander any of the good work that has been done so far, and it is critical that we continue the activities such as identifying and working toward the establishment of new observing sites in Chile.

Some of the specific things we have discussed involve:
− Assuring that national needs are understood, and that the Thirty Meter Telescope and Giant Magellan Telescope subscribe to them as a requirement for federal participation in an eventual public-private partnership for the construction and operation of either telescope.
− Performing independent evaluations of technical progress by both projects.
− Providing a strong, respected and consistent point of contact for international partnership interests.
− Finally, assuring community support for the GSMT as a national priority and for a healthy scientific enterprise in the GSMT era. This may become the real focus of the “system” as we develop it.

AURA, NOAO, and the community should find much to be encouraged about in the Senior Review.

The SOAR and Gemini South telescopes on Cerro Pachón (Credit: M. Urzúa Zuñiga/Gemini Observatory)
The NOAO Gemini Science Center and the Senior Review

The report of the National Science Foundation’s Senior Review is very positive regarding the role of the NOAO Gemini Science Center (NGSC) in managing US user community access to the two Gemini telescopes. The report also contains discussions and recommendations concerning the Gemini Observatory.

Items discussed in the review include current and future Gemini operations, as well as plans for future Gemini instrumentation. As the “gateway” for US access to Gemini observing time, NGSC would like to highlight a couple of points in the report to bring them to the attention of the user community.

The Senior Review calls on NOAO to pursue the goals of the last decadal survey and to provide US community access to a strategic set of optical/infrared (O/IR) telescopes of all apertures, up through the twin 8-meter Gemini telescopes—of which the United States (via NSF) is a 50 percent financial shareholder. There is a strong, clear call in the review report for continued access by the US community to the Gemini telescopes and their broad range of instrument capabilities, as well as to do everything possible to maximize science return from this valuable resource.

One of the major tasks of NGSC is to inclusively engage and educate the entire national community about current Gemini issues, observing opportunities, and science results. NGSC is also a strong advocate for the US community within the Gemini partnership. In addition, NGSC will continue to publicize Gemini activities and opportunities via the NOAO/NSO Newsletter, the NGSC Web pages, AAS Meetings, and other means. We pledge to redouble our efforts along these lines in the months ahead, as the user community considers the suggestions put forth by the Senior Review.

The Senior Review notes that the current operating agreement for the Gemini Observatory will expire in 2012, and the future operating agreement beyond this date will be negotiated beginning in 2010. One facet of observatory operations that may enter into these negotiations, also called for in the Senior Review, is a cost/performance analysis relative to other large optical telescopes. Such a cost/performance review is positive, and should be encouraged and welcomed by the partnership. It is crucial, however, that such a review be informed by a full understanding of the structure of the Gemini budget. For example, the Senior Review report overstates the cost of a Full-Time Equivalent employee by at least 30 percent.

Gemini’s mid-infrared capabilities are unmatched anywhere (see related article in this Newsletter). The observatory is currently engaged in deploying adaptive optics systems at both sites, as well as in pursuing a powerful program for procurement of a number of very capable new instruments. As such, access to Gemini is a major component within the US community’s integrated system of ground-based O/IR telescopes. Understanding how to optimize Gemini operations, and planning for its future place in the system, are key issues for discussion in the coming months. NGSC will work hard to provide the US community with the information it needs to help plan this future.

We welcome your comments or questions via email (vsmith@noao.edu) or phone (56-51-205397).
Tribute to Hugo E. Schwarz

Alistair Walker

Hugo Schwarz, an astronomer at NOAO South, died tragically in a motorcycle accident on 20 October 2006. Hugo was integral to all the activities at the observatory, and his loss leaves an enormous gap that will be very difficult to fill.

Hugo arrived at CTIO in 2000, following several years as Officer-in-Charge of the Nordic Optical Telescope on La Palma, Canary Islands, where his energetic leadership and hands-on style were responsible for transforming it into one of the best-performing moderate-aperture telescopes in the world. Prior to that, Hugo worked in Chile at ESO La Silla, so his familiarity and deep understanding of Chilean life and culture made his transition back to La Serena and CTIO relatively seamless.

The SOAR 4.1-meter telescope was under construction at the time of his arrival, and Hugo’s talents made him the perfect choice for deep involvement with this telescope as it transitioned from construction through commissioning to operations. Formally, he was the CTIO scientist assigned to SOAR, but he was much more, acting as Steve Heathcote’s indispensable righthand-man through the whole difficult commissioning period. Hugo led the installation of site testing equipment on the Cerro Pachón site for the LSST, as well as being in charge of the all-sky camera project (see photo), which produced instruments now in use for site testing related to the Thirty Meter Telescope, Giant Magellan Telescope and the Large Synoptic Survey Telescope, as well as observing tool use for most of the international observatories in Chile.

Hugo was also passionate about protection of dark skies near observatory sites, and worked tirelessly with Pedro Sanhueza and Malcolm Smith to ensure the long-term viability of the Chilean observatories. He had just become the president of Commission 50 of the International Astronomical Union, “Protection of Existing and Potential Observing sites.” Despite all this activity, Hugo found time to keep up a strong research program on the late stages of stellar evolution, particularly planetary nebulae, with many collaborators and much student involvement.

Hugo didn’t neglect educational outreach either. This was his final activity for CTIO - late on Friday afternoon, Hugo came into my office after giving a talk to a visiting group of students from the University of Talca, joking that he had been presented with a pen in a smart polished wooden box, very much nicer than the one that had been given to Malcolm Smith! This is so typically Hugo—he gave cheerfully and unstintingly, and was very, very effective in all he did. We shall miss him terribly. Our hearts go out to Hugo’s wife Claudia and her children Maria Josefa and Diego, and to his children by his first marriage, Tamar and Jouke.