

Astronomy Forum: minutes from February 2013

This meeting of the Astronomy Forum was held on Tuesday 12 February 2013 in the RAS lecture theatre at Burlington House, London.

In attendance: David Southwood (RAS President, Chair), John Womersley, Sharon Cosgrove, Colin Vincent, Graeme Blair and Terry O'Connor (STFC), Will Sutherland (QMUL), Keith Smith (RAS, minutes) and approximately 30 Forum members from UK universities.

Apologies for absence: Robert Massey (RAS) and Monica Grady (Open University)

1. Welcome

The Chair opened the meeting at 14:00 and welcomed the participants. The Chair asked the Forum for updates on political engagement; none were forthcoming.

2. STFC engagement update

John Womersley (STFC Chief Executive) presented an update on STFC's engagement with the government. The full presentation can be seen at <http://www.stfc.ac.uk/News%20and%20Events/43451.aspx>

A major concern is the Triennial Review of research councils which is now underway. This is a process driven by the Cabinet Office, and one of their motivations is reducing the number of quangos. The review is starting with the basic question 'do we need research councils?' Only after that is addressed will it consider the funding models / subject split etc. Forum members should remember that UKSA - which was set up in 2010 - is not a research council. The call for evidence has a deadline of 28 February 2013, so there isn't much time.

The next Comprehensive Spending Review (CSR) will not happen until after the next election in 2015. That leaves one year's budget (2015/16) to be set in between the end of the current CSR and the start of the next one. The presumed starting point is flat cash or worse – we will need to argue for more, or there is a risk that pressure from inflation will push us past a tipping point resulting in the closure of large projects.

Discussion:

- Merging STFC and EPSRC could reduce admin costs. Is this a good idea? What would it save?
 - Womersley: There's no evidence that bigger, broader councils are any more efficient or effective in other countries e.g. NSF in the US. Such large councils end up having lots of small internal divisions. The UK already split up SERC in 1994 for reasons of flexibility. The same amount of money but with more bureaucracy isn't a benefit. I've seen no evidence that one big council is more efficient than several small ones.
 - Chair: RCUK does not currently exert much control over individual research councils. If all the councils were merged this would not be the case. Astronomy does not fit well into a one-size-fits-all council.

- Womersley: It's unlikely for the review to recommend *more* research councils, due to the motivation behind its terms of reference.
- Merging the physical sciences councils – STFC, EPSRC, NERC – is a possibility. PPARC was a blue-skies research council, which STFC is not. A larger council would be better placed to withstand crises.
 - Womersley: That depends on the quality of leadership, and introduces a single point of failure. Yes, there's extra flexibility to move funds around, but that can work both ways, and there's no more money in total.
- The RCUK Shared Services initiative has not been a success.
 - Womersley: I agree that the Shared Services Centre has not shown demonstrable benefits to research councils or to universities, and that point could be made to the review.
- The interdisciplinary interfaces between councils are a problem. Some subjects fall into gaps e.g. between STFC and NERC. How would you deal with this? Better in one large or several small councils?
 - Womersley: NSF has the same problems with interdisciplinary research. A large agency with lots of internal divisions will face the same issues as several smaller ones. UKSA was created to address this sort of problem - it removed some interfaces, but created new ones, with no additional money. This was good for subject areas where an interface was removed, but bad for those where one was suddenly created. UKSA has helped the technology and business interfaces, at the cost of the research interfaces.
 - Chair: NERC has existed in essentially its current form since 1965. The research world has changed a lot in that time. Astronomy is a special activity which has moved on a long way - and needs the flexibility for that. A smaller council brings decisions closer to the community.
 - Womersley: The astronomy community has shown that it is not one which resists change. The best way to manage that change is to think long term i.e. decades. STFC has a closer interaction with its community than e.g. EPSRC does. One size does not fit all.
- The best defence of the Haldane Principle is timescale – let academics do the long term planning, not politicians. Do you have a sense for the biases in the review panel members?
 - From the floor: The review panel has been very direct, and seem keen on input from industry more than academia. Astronomy has a very strong argument for long term planning due to the nature of the facilities required.
 - Womersley: The review panel does not seem to have any preconceptions and is asking many questions.
 - Chair: The review panel consists of civil servants with no science background - we need to defend things that seem obvious to us.

- Floor: The panel members have a range of different backgrounds, including science. Just not in research.
- Womersley: The community needs to ensure that the review does not cause damage through ignorance, by making sure the panel is fully informed.
- Floor: Academia cannot fix the current problems in UK industry for the government.
- STFC has improved massively in the last 5 years. But there is continued concern over tension between facilities like Harwell versus the old PPARC grants model.
 - Womersley: STFC Science Board has partitioned money to prevent funds being moved between those.
 - Floor: We've had this discussion many times.
 - Womersley: There are technology synergies between different areas, as well as science synergies between facilities and grants. NERC has a similar system of internal ring-fencing. The same issues would occur in larger councils, and this system is used worldwide.
 - Chair: International and European bodies are subject level. The EU Commission is merging many of these. We do not want a situation where EU science funding is merged with e.g. agriculture, and the subsequent tension of funds in those areas. The existence of a subject level council like STFC helps with international negotiation.
- The STFC ring-fences actually feel like one-way valves. The Triennial Review and CSR are not separate issues – the right response to the review depends on the amount of money available.
 - Womersley: I would have been worried about capital spending recently if I had been leading PPARC rather than STFC. The arguments for providing facilities and 'big data' helped secure additional capital funding from government that benefited astronomy. There is a coherent story between the Higgs boson at one end and venture capitalists at the other. The most fruitful areas for capital funding right now are not necessarily our highest science priorities, but the ones with most overlap between our own priorities and the minister's priorities.
- STFC's business is subscriptions and exploitation grants. NERC is the same. Those two councils have more in common with each other than with EPSRC.
 - Womersley: There are overlaps between STFC and NERC in e.g. supercomputing. The facilities run by the two councils are very different, but still facilities. NERC covers a very wide community. There is enough overlap between the two that a merger could perhaps be made to work, but they are not natural partners.
- Chair: How do we get out of flat cash? Inflation is doing real damage.
 - Floor: Astronomy has been a victim of its own success: we're continuing to do good science with less money. If our outputs started to suffer we could make a better argument that current funding isn't enough.

- Womersley: That is a dangerous argument to make. Instead, give examples of what would have to be cut, and explain how much damage further flat cash would do. It would mean pulling out of major areas e.g. ESO, halving grants... It's important to model outcomes that would be horrible for the UK, not just rebalancing, and then present them to civil servants. There isn't much time to make this argument, due to the politics of setting final spending before an election. The current government has made lots of encouraging noises about supporting science, now is the time to ask them to show us the money. But civil servants have to have the data to back this up.
- Astronomy is sometimes felt to be full of money by other areas of physics. Compare the situation at ISIS, which is only running 100 days per year, with the situation in astronomy. But astronomy has the better international impact e.g. on papers, citations, etc. There is danger in suggesting to other physicists that they should take the pain.
 - Womersley: Show them the plot of PDRAs in astronomy as a function of time. There has been a substantial reduction in funding, but astronomy has managed to continue producing high impact science – that's the argument to be made. The one area where the pain hasn't been shared is international subscriptions, because it's so hard to renegotiate.
 - Chair: At some point renegotiation of large subscriptions has to happen.
 - Womersley: The CSR argument is one about total science funding, not so much on exactly where it's spent.
- Third parties e.g. business and finance are supportive of science funding. Do we have time to engage with these people?
 - Womersley: We don't yet know the CSR timescale, but we do need to start now. Talk to anyone who'll support science funding. Please use your outside contacts, not just on astronomy, but university and other science in general.
- Chair: The RAS will formulate a response to the Triennial Review. Please send your comments to Robert Massey (rm@ras.org.uk). I will be out of contact for much of the time until the deadline, so RAS Astronomy Secretary Martin Barstow will provide leadership on our response.
 - Floor: Does the RAS want to see individual university submissions to the review?
 - Chair: Yes please, that will help produce a coherent response. We need to avoid any outcome that harms the community.

3. STFC astronomy programme update

Colin Vincent (STFC Head of Astronomy) presented an update on STFC's current activities, including grants and the programmatic review. The presentation is available at https://www.ras.org.uk/images/stories/Astronomy_Forum/RAS%20Forum%20Feb%202013.ppt

The current programmatic review is ongoing. The various panels have met and submitted their reports (see talks later in this meeting), and final recommendations will be made by Science Board between June and September. The panels are looking at 3 funding options: +10%, flat cash, and -10%.

VISTA is now up and running, and is producing its first science. The final ALMA front end has been shipped from the UK to Chile. UK approval for E-ELT funding is still in process, but final project go-ahead is dependent upon Brazil ratifying the treaty. In line with STFC strategy, expressions of interest are being considered for UKIRT – if no new owner can be found then the telescope will cease operations in September 2013. A prospectus for JCMT is being drawn up again, if no new owner is found it will close in September 2014. The ING is funded until 2015, mostly to develop WEAVE. Negotiations over the future of ING are ongoing. Pre-construction development for SKA is underway and has recently benefitted from around £11M of capital funding from BIS for computing.

Last year astronomy grants were oversubscribed by a factor of 2.5. This year's deadline is 13 February (i.e. the day after the Forum). The planned review of the STFC consolidated grants programme will now be held in 2014, due to the programmatic review and the desire to complete a full 3-year cycle first. Standards are very high: 25% of 'world class' science cannot be funded.

Rutherford Fellowships: the standard of associated grants is below that of the open grant programme, but not all funds have been allocated, to reflect this. The Rutherford programme is felt by some to be expensive and is heavily oversubscribed - 148 applications have been received in the current round, with 30 applicants invited for interview.

Discussions are still ongoing over exactly how Open Access funds will be allocated. Initially there will need to be £2m available to cover STFC.

Discussion:

- Our international partners are getting nervous about UK E-ELT funding. How close are we to a final decision?
 - Vincent: Even with UK approval, E-ELT construction cannot start without Brazil, which is the real limitation. We are hopeful for a positive UK decision during March.
- Will the US join SKA? If not, is it viable?
 - Vincent: No, the US will not join at present.
 - Womersley: The US will not join SKA in phase 1. There's no money and it isn't in the NSF decadal review. US involvement is not essential for phase 1, but building phase 2 would be very difficult without them. That decision is about a decade from now.
- STFC will have £2m/yr available for Open Access. At £1500 per paper, that's about 600 papers for astronomy & particle physics. How many papers are currently published?
 - Womersley: We feel the community is already doing Green Open Access through arXiv. This is a government policy which we may already be ahead of. The actual funding will be distributed by universities, not STFC.
 - Floor: How can we convince the relevant people that arXiv is already open access?
 - Womersley: Speak to Paul Boyle at RCUK. RAS input would be helpful.
 - Floor: That's not enough money if article charges remain that high.

- Womersley: Funding will ramp up over years, eventually reaching £15m. This money should supplant library subscriptions, but there isn't yet a mechanism for ensuring that this happens. The Open Access policy is either a very bold or a very foolish move.
- Floor: In my opinion it's a very foolish move without such a mechanism.
- There is a severe imbalance between applications in different grant rounds, especially former standard grants.
 - Vincent: We did tell people they could choose to apply in different years, but very few took that option. The process is not perfect, but we are looking at this and will review next year. The first round was different due to some bridging funding.
 - Floor: I would like to see the full breakdown of the numbers.
- The Consolidated Grants system is biased towards universities which poach postdocs from other institutions. [A detailed example was given.] The Rutherford Fellowships include a minor attempt to stop this, but the Consolidated Grants do not.
 - Vincent: The exact restrictions depend on when the grant is up for review.
 - Floor: The current rules don't prevent people submitting grants immediately when they move, but the rules do stop the departments they leave from adjusting their bids.
 - Vincent: There are some limitations on this. We will keep an eye on the issue.
- The Rutherford panel awarded less than half of their budget - where has the rest of the money gone? Does this not demonstrate that the scheme is too generous?
 - Vincent: That money rolls over to the Rutherford / PDRA / studentship programme next year. The standard of science has been maintained - nothing has been funded unless it was world class. The Rutherford programme is deliberately generous to attract the best candidates.
- Can unsuccessful Rutherford applicants apply again in the next year?
 - Vincent: I don't know the exact restrictions, probably not.
 - Womersley: That was not the intention. Remember that these are not just individual grants, but are supposed to interface with their host departments.
 - PhD studentship funding algorithm has a link to staff fEC but with consolidated grants this did not appear to be fair. The algorithm used was supposed to be revised this year. Is that happening?
 - Vincent: That is being done, but hasn't been finalised yet. The grants panel is aware that the level of support is currently at the lowest it can be without being damaging.

4. Astrophysics Advisory Panel

Will Sutherland (QMUL) presented the conclusions of the Astrophysics Advisory Panel, as part of the STFC programmatic review. The slides can be seen at https://www.ras.org.uk/images/stories/Astronomy_Forum/obrien-aap-ukon-Jan2013.pdf

The advisory panels have been restructured: the previous split of Far Universe and Near Universe panels has been replaced by Astrophysics and Solar System panels.

The Astrophysics panel started work in August, followed by a web consultation and town meeting. The draft report was made available to the community in October, from which feedback was received and adjustments were made. The final report went to PPAN in November.

In the baseline plan, there is a facility gap between pulling out of the island telescopes and building E-ELT and SKA. There would be six or more years during which the only ground-based facility is ESO. This is a particular problem for diversity and talent retention e.g. radio astronomers without any radio telescopes, followed by SKA. A flat cash solution can bridge the gap, but there would still be problems with shutting down facilities while the replacement is only under construction.

Highest priorities items: grants, ESO, E-ELT + SKA, high performance computing.

High priority: SCUBA2 surveys, eMerlin, LOFAR, a new MOS, NGST, LSST, access to a northern 4-8m telescope. These projects can be funded at flat cash, but not in the -10% scenario.

UK access to LSST data can be relatively cheap at about £1.5M/yr, but a memorandum of understanding will be needed in 2014. The UKSA programme has direct impact on astronomy research, but STFC has no control over it. There will be a need for ground facilities to exploit UK investment in space.

Discussion:

- How did you cost the northern telescope?
 - Sutherland: The costing was based on slimmed down ING running costs, but was not specific about which facility.
- Regarding access to LSST, is that a definite offer from the Americans?
 - Sutherland: That's the basis they were negotiating on. There's a discount for signing up early due to a Congressional deadline for LSST to find international partners.
 - Floor: That is very cheap, but we would need the postdocs to exploit it.
- What does NGST offer that e.g. HARPS North does not?
 - Floor: NGST is a dedicated transit discovery machine; HARPS will do the radial-velocity follow-up.
- The baseline plan from Science Board was a 10% cut. Why?
 - Sutherland: The implication was that the money would go elsewhere in STFC.
 - Vincent: Ground based facilities were previously ranked as a lower priority and were cut to enable Science Board to recommend an affordable programme at the last Review. Since then, we had to cut the E-ELT budget to give a chance for other

facilities (such as ING and MOS development). That isn't much more we can do without cutting everything.

- Will flat cash really fund all of that?
 - Sutherland: Yes.
 - Floor: But many of those facilities assume we can cut existing costs e.g. JCMT at half the current running cost.
 - Sutherland: Indeed. If the savings can be made then we fund it, otherwise we do not.

5. Solar System Advisory Panel

Monica Grady (Open University) was due to present the conclusions of the Solar System Advisory Panel, as part of the STFC programmatic review. In her absence, her presentation was delivered by David Southwood (RAS). The slides are available at https://www.ras.org.uk/images/stories/Astronomy_Forum/SSAP%20to%20PPAN%20Nov%202012.ppt

The Solar System panel has a similar size community to the Astrophysics panel, with similar process and time scale for the review. UK strengths are in molecular data, instrumentation, MHD, observational data analysis and plasma physics.

The Solar System programme is very dependent on UKSA-funded projects. There needs to be an ongoing dialogue between STFC and UKSA, particularly over optional ESA projects.

Top priority is grants. If at all possible they should be increased.

Discussion:

- Womersley: If you want to do life sciences in space, apply to BBSRC not STFC.
- ELIPS isn't just exploiting the space station – it also includes parabolic flights and ground experiments. It covers materials science and astrochemistry, not just life sciences.
 - Chair: Good point. The UK has bought into ELIPS, now we need to decide exactly how to exploit it.
- Where should astrobiology grant proposals be submitted?
 - Womersley: If the research is looking for life on other planets, STFC. If it's medical research, elsewhere.

6. Any other business

The Chair summarised the main issues raised during the Forum, and reiterated the need for community engagement on the Triennial Review.

- Womersley: The STFC Programmatic Review is being considered now. The results will be tensioned against each other and fed into the spending review. We recognise the community emphasis on grants.

The Chair reminded the participants that the Astronomy Forum is facilitated by the RAS, but is not part of it. If there are items the Forum wishes to discuss, please contact Robert Massey. The RAS can arrange attendance by representatives of other bodies.

The meeting closed at 16.40.