

Progress report by the Royal Society Te Apārangi toward Applying for CAETS Membership.

19 October 2017

Context

In November 2016, the Royal Society Te Apārangi, as New Zealand's academy for "science, technology and the humanities" presented to the CAETS meetings in London an outline case for acceptance of the Society for CAETS membership. The case indicated that in a small nation such as New Zealand it is not sustainable to have separate academies but rather a multi-disciplinary academy could operate successfully across and within a number of domains. The Society presently participates in the global lead bodies in science (International Council for Science), social sciences (International Social Sciences Council) and humanities (Union Académique Internationale) but not with CAETS. It is keen to participate in all global lead bodies.

In its outline case, the Society set out its broad history over 150 years, including the commencement of the academy in 1919, the widening of that to include engineering and technology in the 1980s, and the re-introduction of the humanities in 2012. Approximately 15% of the Fellows associate with the domain entitled "Technology, Applied Science and Engineering" (TASE), noting that the term technological sciences is not used in New Zealand, but rather technology and applied sciences.

The feedback received from CAETS in 2016 was that an application would be welcome, but that there would be scrutiny to ensure that TASE was not subsumed under science. Rather it should have a distinct identity within the Society.

In the event, the Society chose not to apply for membership in 2017, but rather to submit this progress report.

Fellowship Process Changes

The Academy Executive Committee which manages the Fellowship, and Medals and Awards processes independently of the Society governing Council can only be comprised of Fellows. It takes responsibility for the election of new Fellows and Honorary Fellows (the latter are resident outside New Zealand). The 2012 Act specifies Fellows may be elected for "distinction in research or the advancement of science, technology, or the humanities." The Academy Executive Committee sets bylaws to give effect to this role.

The previous report to CAETS in 2016 set out that the Academy Executive Committee recognises four "domains" in which the "distinction in research" can be demonstrated:

- Science
- Social sciences
- Humanities
- Technology, applied science and engineering (TASE).

As previously reported to CAETS, each domain has different performance indicators, including demonstration of impact of the research, and that for TASE this allows for wider forms of research output and impact than published papers.

A major change for 2018 is that the Society will commence accepting nominations for "advancement of science, technology or the humanities". Advancement cases will still require demonstration of advancement of knowledge, but the forms of evidence that will be accepted will be primarily those that demonstrate impact of the knowledge. Thus, it will be increasingly possible for engineers and technologists from industry who do not publish in peer-reviewed literature to be elected. The criteria are attached.

It should be noted that the Act under which the Society operates created a Companion grade to which those who demonstrate leadership and public service can be elected, so the Act does not allow those as grounds for Fellowship.

There will be a distinct Evaluation panel for TASE (one of six). Each evaluation panel makes recommendations to a final Fellowship Selection Committee which ranks candidates from all domains as a single list from which the Academy Executive Committee makes the final election of Fellows each year.

Changes to Awards and Medals Processes

In 2017 all awards and medals were regrouped into the four domains. The significant change for 2018 is that the award for science with application (the MacDiarmid medal) and that for technology (the Pickering medal) will be opened up to teams rather than individuals, and to a wider range of outputs in the evidence portfolio.

Governance/Leadership

The Academy Executive Committee presently includes three Vice-Presidents of the Society, one of whom is for “physical and mathematical sciences, technology and engineering”, the others being for “social science and humanities” and “biological and life sciences”. The Committee is chaired in rotation by the Vice-Presidents, all of whom sit on the Council. Each Vice-President is seen to have an intellectual leadership role. If the President of the Society is a Fellow he or she also sits on the Academy Executive Committee. The Committee has the power to co-opt and of recent times has used this route to ensure that a Fellow who is from the TASE domain is always on the Committee.

The Society recognizes that there is a weakness from a CAETS perspective as TASE does not have an identity and leadership role that is distinctly separate from science in our governance structure. Discussions on the governance structure are proposed for November 2017 to February 2018. A key topic in those discussions will be to clearly demonstrate how we meet the expectation from CAETS of distinct TASE leadership. If changes are required, they can probably be initiated as early as 1 July 2018.

Support from Engineering New Zealand (previously the Institution of Professional Engineers New Zealand)

The Society holds, and will provide with its application, a letter of support from Engineering New Zealand, under its previous name of the Institution of Professional Engineers New Zealand. (Note: the name change occurred on 1 October 2017).

Closing remarks

The Society sees the resolution of the governance/leadership issue to demonstrate a distinct identity for TASE as the remaining critical factor in which it may fall short of CAETS criteria. It would be pleased to hear any other concerns as soon as possible so they can be addressed.

Criteria for “Distinction in Research” in the Technology, Applied Science and Engineering Domain

- (a) *intellect; scholarship; international reputation; and peer recognition;*
- (b) *intellectual achievement; innovation; and an ability to creatively synthesise and critically interpret knowledge in a way that has impact on the field.*

It is expected that these criteria will be demonstrated via a combination of publications (which may include commissioned investigative reports), intellectual property creation, impact of the research, peer- recognition and end-user recognition, such recognition normally being wider than solely at a national level.

When assessing impact, nominations address relevant indicators for impact from within the following list (which is expressed generically to apply across all of technology, science and the humanities):

- a. Significant changes in the way a body of knowledge is organised and used (as a result of challenging previous conventional wisdom)
- b. Longevity of impact of citation
- c. Major changes to practice in a professional community, at least at a national level
- d. Major changes in relevant public policy and/or government investment strategy, e.g., in social policy, environmental protection, education, or justice
- e. Successful promulgation of new products, processes, IP, or services based on the research
- f. Significantly increased investment in the research programme over an extended period of time by potential technology transfer partners or end-users

Criteria for “Advancement of Technology”

The nomination statement must be in two parts – a clear statement describing the innovation/new knowledge for which the nominee is responsible, and a summary of the evidence of impact to show there has been major and excellent advancement from the contribution of the nominee. Relevant criteria for impact would be drawn from the following list:

- a. Major changes to practice in a professional community, at least at a national level;
- b. Major changes in relevant public policy and/or government investment or operational strategy, for example in health, social policy, environmental protection, conservation, education, justice or emergency management;
- c. Successful promulgation of new products, processes, IP, or services based on the innovation/new knowledge;
- d. Major cultural or social change within communities of significant size;
- e. Major environmental change.

It is expected that these criteria can be evidenced in a variety of ways. Key pieces of evidence are to be presented – these can be proxies of impact, e.g., level of uptake of a new technology, evidence of previous practices or technologies being rendered obsolete, peer esteem recognition, etc.