Opportunities and challenges in improving research quality by drawing on lessons across sectors and disciplines

A joint UKRI and UKRN session at the UKRI Future Leaders Fellowships conference session
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Introduction

The session, co-chaired by Professor Emily Farran (UKRN) and Dr Neil Jacobs (UKRI), comprised introductory comments, and two panel sessions, the first on research culture and the second on research procedures. This summary note gives only the headlines from (and does not do justice to) a very rich set of contributions from both speakers and other participants with experience in business, the military, and international research collaborations.

Introductory Comments

Professor Emily Farran, UKRN and University of Surrey

A range of common practices within research can compromise research quality, including low statistical power and questionable research practices, poor quality control, and biases of various kinds. These are often incentivised in a hyper-competitive, individualistic, 'publish or perish' culture. However, research practice is constantly improving, toward more standardisation, transparency and cooperation. These changes are coming from researchers, and are increasingly encouraged by sector leaders. Remaining challenges include limited awareness and knowledge and training in open research practices and limited time. The UKRN, and affiliated institutions (including the University of Surrey) are addressing these challenges by socialising and incentivising transparency in research across all disciplines, developing standard procedures, and harmonising training across the sector.

Panel 1: Culture

Leadership for an open and inclusive culture that supports challenge, transparency and continual improvement – lessons from across sectors and disciplines.

Tatiana Salisbury, Leah Morabito, Nadia Soliman

Transparency within the team is important to foster the importance of transparency within the research. Understanding and valuing the skills of the individuals in your team will motivate them and uncover unexpected talents, especially if done from early in a project. This form can help.
Lessons from experience in the military include that it is important to:

- Demonstrate trust in individuals and be open to (and seek) feedback
- Set clear expectations of your team members, for example of behaviour, and to address occasions when these are not met. This can be difficult, but knowing your team members well may help.

Leadership is a core attribute for everyone in the military, but it is not sufficiently valued (for example in training and promotion criteria) in academia. The military can use hierarchy positively, perhaps in contrast to academia. Hierarchy is about enabling the team; leaders taking responsibility, including for difficult

decision making (that everyone can feed in to) and accepting that they are where the buck stops. This approach to leadership is not so common in academic, and this affects research quality, for example when members of a team do not feel able to challenge others if they have concerns. The military have a values-based approach to leadership, and academic research might learn from this.

The quality of academic research would also benefit from greater formalisation of the requirements and procedures supporting openness and transparency; a theme picked up by the second panel.

Panel 2: Procedures

Leadership that enables and promotes the adoption of transparent and common procedures that underpin integrity and reproducibility – lessons from across sectors and disciplines.

Jon Stark, Mike Prior-Jones, Virginia De Cesare

Research quality is improved by the use of standard processes and protocols, but these are only effective if they are grounded in a research culture (leadership) that values them and the people using them. Competition can encourage good processes but also risk premature advocacy for findings and even bias. Quality assurance does not have to stifle creativity, and seems not to be built into academic research as it is in many businesses:
- Discussion about experimental design, from exploratory to repeatable research, encourages continual improvement.
- Transparency and collaboration, especially across sites, encourages repeatability and builds in peer review.
- Process-oriented (rather than results-oriented) expectations and incentives promote honesty.
- Standard, or least documented, operating procedures allow others (including future you) to improve and/or repeat and/or build on and/or automate parts of research, and to capture the team's collective memory (perhaps especially important in academic settings with high staff mobility)

Quality Assurance (QA) looks different as we move from exploratory studies, to repeatable Research and Development, to research / data infrastructure; different things may benefit from documentation, standardisation and QA. QA requires:
- Leadership buy-in
- A move away from an individualist research culture
- Time to adapt as technologies, methodologies, regulatory environments, etc. evolve.