Regarding: Te Ara Paerangi Future Pathways Green Paper (2021)

In the Te Ara Paerangi Future Pathways Green Paper (2021), the assumptions underpinning research priorities appear unbalanced. Two risk-scenarios were put forward, and these were that (1) "we risk concentrating efforts on incremental improvements that forgo the opportunity for more transformative long-term problem-solving" or (2) "we risk concentrating efforts on conducting a large amount of fundamental exploratory research at the expense of more immediate needs" (p.26). The two scenarios contrast basic and applied research and – viewed through the lens of Covid-19 fallout and economic recovery – applied research in the sciences appears to be cast as the winning bet for a transformative future, which leaves many research endeavours across the sciences and humanities vulnerable.

There is acknowledgment of room for basic blue-skies research, but one fears that the already limited space for non-mission-oriented research will be squeezed out further, particularly given that the Green Paper acknowledges the Productivity Commission's report (2021) which expressed worry that "research is too focused on science excellence rather than impact and responding to industry needs". Scientists and researchers do work that *is* impactful by focusing on science excellence to promote transparent, open, and reproducible findings, and these findings importantly contribute to evidence synthesis (e.g., meta-analyses). Much of the theoretical, methodological, and empirical foundation for applied outcome-focused (or industry relevant) research is based upon decades upon decades of fundamental blue-skies research that transcends any individual researcher's lifetime, and a therefore a case can and should be made to keep blue-skies research as a priority of research prioritisation. Indeed, it should be that excellent research of all kinds (including those without current thoughts on application) *is* worthwhile.

It is laudable to aim for a system that would be ultimately connected to itself as well as connected to a range of users. However, to get to that point, there are foundational and structural questions and issues that should be reflected upon.

First, can a better fit be achieved by asking the question of whether the science funding system can be improved so that *everyone* can be encouraged and helped to do their best research work (regardless of "priority")? Should we consider removing all or at least significantly reducing competition and pressure within the funding system? Is it possible to consider that we might get more productivity and innovation from a science workforce that did not have to endlessly worry about bids for research funding or worry about whether one's research is seen to have outcome potential and immediate payoffs? Often the best research can be relatively inexpensive to conduct, so could making available much more small-scale external grants help ensure that many more researchers get opportunities to perform their best research and test their best ideas? Will encouraging scientists to think in longer

timescales (with commensurate funding that is spread out beyond the 3-to-4-year term) help to pave the way for blue-skies research that might yield unexpected outcomes and possibilities? Will more concerted governmental support for universities and their researchers to cover open-access fees expediate transmission of research into a range of journals outlets that forge closer connections with various users of research? These questions deserve greater consultation because the current system negatively affects the mental health of many scientists and researchers; many talented scholars (in junior *as well as* mid-career positions) are experiencing severe burnout, imposter syndrome and many are considering leaving the research/academic environment, and Covid-19 is highlighting and exacerbating these long-simmering problems. The nature of the current system is also set up to disfavour Māori and Pacific Island scientists and many other under-represented researcher groups and individuals (e.g., non-Western migrant scholars). It is not clear that the matters being canvassed in the Green Paper will go far in resolving core institutional challenges; in fact, it is possible that further complications and unknowns are being heaped onto existing structural problems.

Second, for a system to connect to itself and others, the individuals that make up that system need to be able to first find each other (to get to know who is out there) to form common grounds. It remains the case that many individual researchers (and even individual research groups) within a system are isolated from other like-minded and complementary-minded researchers outside the specific discipline (and there are even researchers that feel isolated within their own specific discipline). Consider this example. I am a psychological scientist who studies the mechanisms guiding people's ability to produce and comprehend goal-directed and intentional actions. Whilst my exploratory-based research has helped to advance my own discipline, it was only through a chance meeting with an ecologist that I learnt that my research and its methodologies opened new questions of whether radically different taxa such as plants are also capable of goal-directed behaviours and, further, of how human beings conceptualised agency when it comes to plants and the natural world. These new questions are leading me to consider research connected to ecology and climate change, but the point is that basic research can reveal new and applied research pursuits (that one had not even registered), but this takes time to incubate and benefits from cross-disciplinary interactions. These research pursuits weaving together psychology and plants are currently taking me far outside the orbit of my research training in experimental psychology, and their fullest exploration will require identifying and forging genuine collaborations with colleagues from many fields that include chemistry, biology, philosophy, physics, Māori studies, anthropology, science communication and the visual arts. The sting is that collaboration is still not the norm and many of us are already spread too thinly on the ground, exhausted and burnt out, leaving little time for reflection and collaboration.

Silos in research within and between research institutions are magnified by the realities of research organisations and incentives – research is still practiced within contexts of rigid orthodoxies and

power structures, conducted in ways that promotes quantity over quality, and typically rewards fast-paced science. It is not surprising that considerations of Te Triti O Waitangi Framework in research remain consistently marginalised and tokenistic. Discussions around the who, what, why, when, and where of research priorities are remain largely viewed through narrow disciplinary traditions. If we are going to fundamentally change how research knowledge is created and used, every individual making up the system needs to be helped to connect to other individuals so that every researcher can be empowered to participate in the definition, identification, discussion, and evaluation of research priorities.

Developing these connections should not be some reductionist exercise of merely creating and sharing some database that captures the interests and research that scholars in crown research institutes and tertiary education organisations possess and perform. Connecting capabilities and capacities will take considerable time, effort and resourcing so that the working styles, backgrounds, and circumstances of individual researchers are accommodated. A further layer of complexity is that many researchers in university settings are pulled in many directions when teaching and administration also need to be factored alongside. If it were possible that every individual researcher (in universities, for example) is sufficiently networked into communities outside of their discipline, more meaningful links and decision-making processes might the be attempted and, in so doing, the system may become naturally stable and resilient, and transformative and nimble research pathways may organically reveal themselves. It is difficult to get traction on meaningful discussions of research priorities without first inviting and helping individual researchers to actively form trans-sectoral connections outside traditional disciplines. One novel idea from the Green Paper that has tantalising possibilities is the consideration of movement within the research system, where researchers might be incentivised to change roles, form new groupings to pool skills and harness common interests, pursue secondments and so on (p.68). Perhaps this could be piloted to test its feasibility and potential for success.

Yours sincerely,

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