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Sent: Wednesday, September 15, 2021 3:58 PM

To: disb@deltacouncil.ca.gov, brandt.disb@gmail.com

Subject: On scientific confluence and the challenges of avoiding a ghastly future in California water

Dear Chair Brandt and Delta Independent Science Board members,

I wanted to send all of you a draft of an article I'm working on, "On scientific confluence and the challenges of avoiding a ghastly future in California water."

It is the result of much personal reflection on the nature of scientific discourse on California water issues in a time of rapid climate change and escalating crises, and the role of independent review panels such as the Delta Independent Science Board. "Try to be one of those on whom nothing is lost." -- Henry James, *The Art of Fiction*.

Respectfully,

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On scientific confluence and the challenges of avoiding a ghastly future in California water

by Deirdre Des Jardins

Discussion draft

September 15, 2021

Seventy years ago, psychologists Fritz Perls, Paul Hefferline, and Richard Goodman defined confluence as considering different viewpoints and assimilating them into one's own worldview [1]:

At the end of any successful experience – one that is not interrupted but allowed to complete itself – there is always a confluence of energy or energy producing materials. For example, when food has been savored, chewed and swallowed, one is no longer aware of it... The stored energy of the food is assimilated – literally, made similar to – what is already present in the tissues and organs of the body... It is now new strength added to the resources of the organism. It and the organism flow together, that is, what was food and what was organism are now in confluence.

What is new must attract attention by its being different from what one already knows, and must excite interest as something to be accepted, rejected, or partly accepted and partly rejected. It may be a potential extension of one's existing knowledge, or possibly a replacement or substitute for something one has hitherto believed. To assimilate it one must inspect it, try it for fit, work it over, and to some extent work oneself over. In this way the already-known and the new knowledge are actually assimilated to each other. The range and scope of what one can understand and do are thereby increased.

Scientific confluence is reached by scientists engaging with others to come to a common scientific understanding. It involves the same internal processes that Perls described, and is something that the best scientists do naturally. True scientific confluence is critically important in an era of rapid climate change.

Seventeen of the world's leading biologists and ecologists recently wrote about the essential role of scientists in avoiding a ghastly future (Bradshaw et. al., Jan 2021. [2]):

The scale of the threats to the biosphere and all its lifeforms—including humanity—is in fact so great that it is difficult to grasp for even well-informed experts. Second, we ask what political or economic system, or leadership, is prepared to handle the predicted disasters, or even capable of such action. Third, this dire situation places an extraordinary responsibility on scientists to speak out candidly and accurately when engaging with government, business, and the public. We especially draw attention to the lack of appreciation of the enormous challenges to creating a sustainable future. The added stresses to human health, wealth, and well-being will perversely diminish our political capacity to mitigate the erosion of ecosystem services on which society depends. The science underlying these issues is strong, but awareness is weak. Without

fully appreciating and broadcasting the scale of the problems and the enormity of the solutions required, society will fail to achieve even modest sustainability goals.

In a response to commentary on the opinion the biologists and ecologists referred to scientific confluence (Bradshaw et. al., Sept 2021. [3]):

Scientific confluence is reached by curiosity, rigorous testing of assumptions, and search for contradictions, leading to many — sometimes counter-intuitive or even conflicting — insights about how the world works.

They further stated that

... humanity will be more successful tackling challenges simultaneously and from multiple perspectives, by exploiting manifold institutions, technologies, approaches, and governances to match the complexity of the predicament we are attempting to resolve.

Yet in our experience in working on California water issues, rigorous testing of assumptions and willingness to consider alternative viewpoints is rarely found in state and federal agency scientific work, and true scientific confluence is rarely achieved. Multiple perspectives are rejected, particularly perspectives that could require dedicating more water to environmental needs, or otherwise reduce water supplies. Fritz Perls described this interrupted confluence:

It is only what one has been told he should believe, only what one has felt compelled to accept as what he ought to do – in other words, what one has not fully accepted as his own and assimilated to himself – that one feels himself unable to question, even though all present circumstances warrant it.

To even begin to adequately address the catastrophic impacts of climate change on California water, a profound change in agency culture is needed. There must be a safe space for agency scientists to fully consider the severity of the crisis that is facing California. And there must be real dialogue and engagement with all stakeholders and external experts.

Independent scientific panels are also essential in achieving true scientific confluence. Independent reviewers can bring into focus critical issues and problems that have been ignored or swept under the rug. For these reasons reviews by truly independent panels such as the Delta Independent Science Board, the National Academy of Sciences, and the independent peer review panels convened by the State Water Resources Control Board under the independent peer review statute (HSC section 5004) are critically important.e

In conclusion, it is only through processes of real stakeholder engagement, debate, and rigorous independent review that we can achieve true scientific confluence in California water issues. And without true scientific confluence, we will fail to address the profound crises caused by rapid and accelerating climate change.

References

- [1] Perls, F. Hefferline, R.; & Goodman, P. [Gestalt Therapy: Excitement and Growth in the Human Personality](#), 1951, p. 236.
- [2] Bradshaw CJA, Ehrlich PR, Beattie A, Ceballos G, Crist E, Diamond J, Dirzo R, Ehrlich AH, Harte J, Harte ME, Pyke G, Raven PH, Ripple WJ, Saltré F, Turnbull C, Wackernagel M and Blumstein DT (2021) [Underestimating the Challenges of Avoiding a Ghastly Future](#). *Front. Conserv. Sci.* 1:615419. doi: 10.3389/fcosc.2020.615419.
- [3] Bradshaw CJA, Ehrlich PR, Beattie A, Ceballos G, Crist E, Diamond J, Dirzo R, Ehrlich AH, Harte J, Harte ME, Pyke G, Raven PH, Ripple WJ, Saltré F, Turnbull C, Wackernagel M and Blumstein DT (2021) [Response: Commentary: Underestimating the challenges of avoiding a ghastly future](#). *Front. Conserv. Sci.* [Provisionally accepted version -- accepted September 6, 2021.]
- [4] Des Jardins, D [On the Delta Independent Science Board and Inconvenient Truths](#), April 19, 2021, California Water Research blog.
- [5] Carl Safina, [Avoiding a 'Ghastly Future': Hard Truths on the State of the Planet](#), Yale 360, January 27, 2021.
- [6] Becker, R. [Could Our Species Usefully Become Social Psychiatry's 21st Century Scientific Concern?](#) May 1, 2021. *J. World Social Psychiatry* 10.4103/wsp.wsp_23_21 P 100-109 V 3
- [7] Steffen, W., and Morgan, J. (2021) [From the Paris Agreement to the Anthropocene and Planetary Boundaries Framework: an interview with Will Steffen](#), *Globalizations*, DOI: [10.1080/14747731.2021.1940070](#)