Dalton, A., Wolff, K., & Bekker, B. (2022). Interdisciplinary Research as a Complicated System. *International Journal of Qualitative Methods*, 21, 16094069221100397.

In their second paper, Dalton, Wolff, and Bekker (2022) delve into the intricacies of interdisciplinary research systems, employing a critical realist perspective to develop a foundational understanding of these systems. Critical realism, a philosophical approach combining ontological absolutism and epistemic relativism, provides a framework for understanding the real world's structures and mechanisms. It asserts that these structures exist independently but are perceived through subjective experiences and social contexts. This perspective is particularly relevant in interdisciplinary research, where it aids in understanding and navigating the complexities arising from various disciplines working together.

The authors describe interdisciplinary research systems as complicated systems formed through a central organizing principle (CrOP), distinguishing them from the more decentralized and dynamic multidisciplinary systems. CrOP plays a key role in shaping research, defining the 'metaproblem', and selecting researchers. This central element transforms the nature of the research from a loosely associative multidisciplinary approach to a more structured and unified interdisciplinary effort.

The paper outlines a hierarchical structure of collaborative research, consisting of multidisciplinary, interdisciplinary, and transdisciplinary tiers. Interdisciplinary research, the focus of their exploration, emphasizes cooperation and centralized control, contrasting with the minimal or non-cooperative interaction in multidisciplinary research. Transdisciplinary research, at the pyramid's apex, includes not just academic disciplines but also external actors, offering a holistic approach. Addressing 'metaproblems'—complex societal issues like climate change—requires collaboration beyond the scope of individual disciplines. The authors argue for the necessity of interdisciplinary research in tackling these challenges, considering the 'epistemic incompleteness' of individual disciplines and their increasing specialization.

The paper also discusses the formation of CrOP through Top-Down and Bottom-Up approaches. The Top-Down approach, often seen in traditional research settings, involves centralized decision-making and objective setting, whereas the Bottom-Up approach originates from researchers organically forming teams based on shared goals. Both approaches play a critical role in shaping the nature and direction of interdisciplinary research.

In exploring successful interdisciplinary research, Dalton, Wolff, and Bekker emphasize balancing diverse disciplinary perspectives, managing structure-agency tensions, and engaging in a reflective process to address epistemic incompatibilities. An epistemological incompatibility example is natural scientists often approach problems deterministically, viewing environmental issues as part of a causal chain, whereas economists may focus on societal processes with less determinism. Another example is the ontological differences between archaeology and anthropology, with archaeology traditionally focusing on a substance-based ontology, while anthropology adopts a more relational approach. The authors propose three mechanisms to overcome these incompatibilities: Circumvention, Epistemic Pragmatism, and Disciplinary Coherence and Synthesis.

The Circumvention mechanism focuses on structuring interdisciplinary research to avoid potential conflicts arising from disciplinary incompatibilities. By carefully designing research objectives and team compositions, Circumvention ensures that the scope of the metaproblem does not intersect with areas of epistemic conflict. This approach does not necessitate epistemic convergence or synthesis between disciplines, significantly reducing the potential for conflict. Success in this framework heavily depends on the system's structure, including the top-down formulation of the metaproblem, careful selection of agents, and establishment of modes of inquiry to ensure harmony. Circumvention aligns with Kuhn's concept of 'normal science', prioritizing task orientation and recruiting necessary disciplinary skills without addressing deeper epistemic conflicts.

The Epistemic Pragmatism framework prioritizes agency and involves compromising on strict truth conditions to facilitate practical utility in interdisciplinary research. When disciplinary incompatibilities arise, Epistemic Pragmatism encourages a process of mutual discovery and negotiation among researchers, leading to epistemic convergence. This approach involves softening restrictive disciplinary language codes and underlying epistemological understandings to allow the research to progress towards shared objectives. In this context, truth is defined in terms of its utility to the project, requiring both researchers and audiences to embrace the compromises made for the sake of the communal goal.

The Disciplinary Coherence and Synthesis approach seeks to achieve a synthesis between seemingly incompatible disciplinary epistemologies through a collective paradigm shift. It involves resolving perceived incompatibilities by creating a new discipline that unites different perspectives. This multivalent paradigm shift leads to a change in the understanding of the disciplines themselves and their subject matter. Unlike Epistemic Pragmatism, Disciplinary Coherence and Synthesis emerge organically and bottom-up from the collaborative process between researchers. It reintroduces complexity and dynamism into the research system, fostering a more reflective and critical approach and allowing for the development of truly interdisciplinary outcomes.