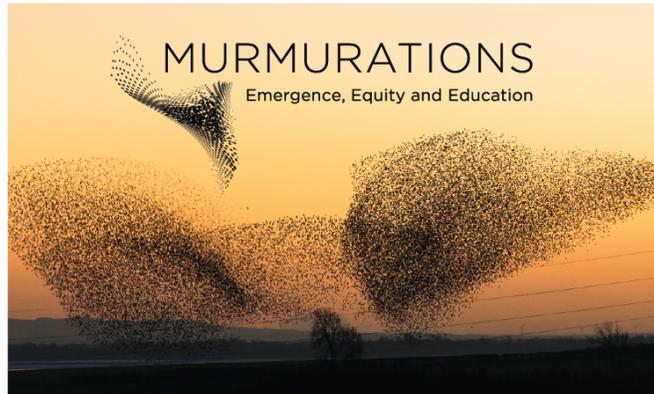# Artifact Download Cover Page

Murmurations emerged as a project by a community of educators who recognize that education and its results arise from interactions of historical, social, political, psychological, biological and environmental factors. As a U.S. institution, education has most reliably produced inequity. We began *Murmurations* with the intent of dissolving the dynamics that support and re-create inequitable educational outcomes.

We are not separate from the systems we wish to transform.

We invite you to reflect with us, examining the relationship between thought, action and the dynamics of the educational systems in which we participate.

murmurations-journal.org

Murmurations - why a dialectic journal?

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Abstract

Point of view: I am a straight white male in my mid-fifties. I have spent most of my life in higher education in engineering departments. My experiences have included undergraduate and graduate education at a private, research-intensive institution, postdoc and faculty at a land-grant institution, serving for several years as a program officer at the National Science Foundation (NSF), and most recently as chair of the Electrical and Computer Engineering department at a private, liberal arts, predominantly undergraduate institution. This article draws on all these experiences, but particularly from my time serving at NSF and in the years since. I am also one of the founders of *Murmurations: Equity, Emergence, and Education* and represent my own perspective on what I hope this experimental journal can contribute to the larger education ecosystem.

Value: This article outlines my rationale in partnering with others to start a dialogue journal. I believe education is one of the best ways to address systemic inequities, but education systems in the US seem to be increasingly subject to criticism that they are unable to change and promote equity. This article hypothesizes that resistance to change is structurally built into the system through the mental models held by the system's participants. These models can be broadly classified as oriented towards identifying problems rather than proposing solutions. While such approaches work in simple systems, they often backfire in complex systems that have multiple and often competing impacts. For meaningful change to occur we ourselves must seek to expand our perspectives and change our mental model of education to one of a complex ecosystem. Changing mental models is hypothesized to occur by engaging in meaningful dialogues with others who have experiences different than our own. By providing a forum for these conversations my hope is that *Murmurations* will serve as a vehicle to share perspectives from different niches within the larger ecosystem, which in turn can shift mental models. Since *Murmurations* is an experiment, an additional intent is to encourage voices from across the education ecosystem to make contributions.

Introduction

Over the last few decades education in the US has been highlighted as a crisis, an opportunity, and a national priority. There have been many calls to action that identify one or more problems then suggest what might be done to address them. Yet despite well-intentioned attempts to identify problems, suggest solutions, and sometimes make investments the "problems" in our education systems stubbornly persist. Such persistence can stem from many causes. One possible reason for the limited success is that the magnitude of the problems outweighs the resources being devoted to addressing them. Another is that more research is needed to understand the issues and devise effective solutions. Still another is bad management or lack of appropriate accountability within educational institutions. All these are commonly cited by those who view education as being similar to public infrastructure or a business. From this perspective, addressing these issues is a priority due to education's

role in sustaining the economy, providing security, and advancing technological progress as well as providing employees for future jobs. For example, recent economic growth has come disproportionately from knowledge- and technology-intensive firms which need to hire individuals educated in science or engineering; this in turn drives policies designed to produce more students majoring in science, technology, engineering, or mathematics (STEM).

The view of education as an infrastructure or business dominates public discourse, resulting in an increasingly utilitarian view of education. In order to "fix" it, linear "find problem, fix problem" approaches such as devising the right policy, management, or accountability levers are often used. It may be, however, that these approaches are actually contributing to the problems rather than leading to solutions.

The Wicked Problem of Education

I have observed that many of the issues and challenges in education have characteristics of a complex system or *wicked problem*(Rittel and Webber 1973); one that is difficult to solve because of different beliefs, changing requirements, and complex interdependencies and inter-relationships between education policy makers, students and parents, and the faculty and institutions that provide education.

While linear thinking is useful for solving problems in simple and complicated systems[1], it fails when systems become dynamic and complex. Because of the strong interdependencies within complex systems, substantively addressing issues in education will require shifting away from linear thinking. While problem decomposition—breaking a problem down into parts—is common for simple and complicated problems, in a complex system isolating one part of the system from the rest leads to ineffective or even harmful decisions. The urge to decompose problems is strong however, and many discussions about education separate school from the societal matrix in which it is embedded, despite the fact we know that learning is strongly culturally situated(Gee 2004). For example, we talk about getting an education "in something" as evidenced by the college conversation starter "what is your major?" rather than becoming educated. Such focus on one's major (and the widespread belief that some majors are more difficult or rigorous than others) can help to perpetuate power hierarchies and exclude under-represented students. This tendency often further isolates groups of faculty and researchers who view education only within their own domains and sub-domains such as STEM education or the more recent term "discipline-based educational research (DBER).[2] In reality, even within disciplinary silos many separate and often incompatible views of education co-exist that have roots in different philosophical traditions as well as individuals' beliefs about the aims of education(Davis 2009; Schiro 2012).

Dialogues

It may be, however, that our own mental models of education help promote the viewpoint that education is a system in crisis and by changing these models we would see the educational system in ways that could allay some of our fears. One shift is to begin to consider education as a complex system in which beneficial change can *emerge spontaneously* rather than having to be achieved through direct interventions. While the science of complexity is still developing, humans have been faced with complex problems for ages and have developed

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1. In simple and complicated systems there is a clear relationship between cause and effect so best actions can be determined from past experience. In a complex system there is continuous change or flux which makes linear cause and effect relationships impossible to determine. Managing change in complex systems requires continuous sensing and adaptation. For more details see Snowden and Boone 2007.

2. The idea of offering a large array of majors is a relatively recent development given that the "modern university" has existed for nearly a millennium. When education was less accessible and knowledge more bounded the number of majors was not as prevalent (see for example the course curricula on page 30 of the 1851 college catalog of the University of Pennsylvania). Earlier in medieval times the curriculum was the *trivium* (logic, grammar, and rhetoric) and *quadrivium* (arithmetic, geometry, music and astronomy).

effective ways to deal with them without the need for large data sets and complex algorithms. One of my own hypotheses in helping to start *Murmurations* is that we can understand the complexity inherent in educational systems by engaging in meaningful dialogues with others, positioned differently in the system, around what its purposes are and who benefits. While there are many respected forums that publish research on *how* to improve education or *what* works in a given situation there are fewer venues to discuss *why* we educate students and *whose* purposes such education serves[3]. Such discussions should ideally extend beyond the usually siloed academic and policy forums, since in a society where education is increasingly necessary to open doors to opportunity such discussions have a profoundly moral aspect. To extend conversations we must set aside the usual "rules of academic engagement" that limit participants in the discussion to those equipped with years of education and highly stylized discourse. I note somewhat ironically that such is my own style of writing from the ingrained habits of decades as an academic. Rather, the conversation needs to draw in all stakeholders and range outside the sphere of the wholly intellectual by using other forms of communication that speak to emotion and belonging.

Stories

Beyond dialogues another way humans have addressed complex issues is through stories. The psychologist Jerome Bruner identified two modes of thought, rational (logico-scientific) and narrative(Bruner 1987). When situations are too complex for rational understanding humans often frame them as stories. Stories are judged differently than are the proofs used in rational modes of thought. Stories take complex issues, explore possible outcomes, humanize them, and from them derive relatively simple heuristics which guide behavior in complex scenarios. If we were one tribe, one culture, we would share the same stories. But an education system as complex as ours has many cultures and thus many stories. STEM education uses the logico-scientific mode of thought almost exclusively, but as Kuhn(1996) pointed out, this mode itself is a model that has its own conventions and limitations which affect behaviors to a lesser degree than is often imagined(Kahneman 2011).

The Purpose of *Murmurations*

Murmurations was created as an experiment to try to reframe and expand the discussion on education, to allow space for dissenting voices, and to share stories not just of successes but of failures and unanticipated consequences. A founding assumption of *Murmurations* is that education is a complex, dynamic, and interconnected system and that by seeing this system from additional perspectives readers will be able to shift their mental models. In complex systems actions always have consequences, some anticipated and some surprising. Negative consequences emerge from good faith actions and their impacts are not always equitably distributed. *Murmurations* is a journal devoted not to questions of the intellectual merits of different approaches to education but the broad impacts they can have on the diverse range of individuals and communities found throughout our world. The word "murmuration" means both a low murmur and the sudden change in direction of flocks of starlings or schools of fish. Murmurations arise from critical transitions, when small actions by individuals within a system change its overall properties. In keeping with its name the journal *Murmurations* seeks to catalyze ongoing dialogues on the purpose of education, highlight existing inequities through the voices of participants, and capture ways that the complex system of education can be changed to produce more equity through small, local efforts.

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3. The following is modified from a comment by a reflector: The Latin root of education is *educo*. There are two verb derivatives–*educare* and *educere*. *Educare* means to bring up, rear, or train. It is the traditional understanding of education as developed during the industrial revolution for vocational training. *Educere* is translated as to draw out or lead forth, such as out of darkness. See also Davis 2009.

Murmurations is not a journal for publishing the results of a successful experiment, contributing to theory, or producing other "bricks of knowledge" that may contribute to the larger edifice of understanding(Forscher 1963). While such works are absolutely vital to education they can be published in many other venues. Rather, *Murmurations* seeks to publish insights or perspectives of the large and complex edifice of education which are, in the words of the American pragmatist William James(1912) "living, forced, and momentous". A *living* view is one that appeals to your beliefs so you have a personal stake in believing it or not; a *forced* view is one you must either accept or deny rather than have the option to avoid the choice; and a *momentous* view is one with high stakes, is non-trivial or uncommon, and is one that cannot be forgotten once you have gained its perspective. James appreciated the role of such views or beliefs in creating the world in which we live since beliefs as well as facts influence outcomes. Having faith in certain outcomes helps make these outcomes possible. As a journal focused on impact, *Murmurations* seeks to capture these views in a visible and ongoing dialectic that sheds light on impacts in education so that together we can stem the greater inequities and perhaps address perennial and systemic issues. While one's personal beliefs may seem irrelevant or misleading when making purely rational decisions, one's beliefs should influence answers to moral questions[4]; choices in education always have rational, narrative, *and* moral consequences.

I would like to invite you to join us in this experiment by sharing your work, insights, experiences, and passion in a submission to *Murmurations*. *Murmurations* accepts articles but also artwork, videos, poetry and other genuine artifacts that represent lived experiences, whether it be scholarship or otherwise. You may participate as a creator, a reflector, or both. You are also encouraged to comment on existing work; all accepted submissions to *Murmurations* receive a digital object identifier (DOI).

Alan Cheville 2018

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4. "A moral question is a question not of what sensibly exists, but of what is good, or would be good if it did exist."(James 1912).