

Research Statement

What if organizations diversify by selecting for sameness? Organizations increasingly build diverse teams because they expect demographic differences to generate cognitive differences: new perspectives, new expertise, new problem frames, and ultimately better innovation. This expectation has shaped not only managerial practice but also core theories of teams, networks, and organizational learning. The underlying promise is simple: bring different people into the room, and different ideas will follow.

My research shows why that promise can break down. I develop the concept of the **diversity paradox**: efforts to increase observable diversity can sometimes intensify selection for less visible forms of sameness (Gabruk et al., 2026b). When decision-makers face uncertainty about collaboration across differences, they may manage that uncertainty by choosing diverse collaborators who are familiar in other ways: people with similar training, expertise, professional networks, or ways of framing problems. I call this mechanism **compensatory cognitive homophily**.

This argument contributes to organization and management theory by explaining how organizations can expand representation while narrowing the range of knowledge that enters collaboration. The people who gain access may be those who best match existing norms, while those who bring unfamiliar perspectives, expertise, or problem definitions remain less likely to be invited in, heard, or retained. The diversity paradox is therefore not only an innovation problem. It is an equity problem about which kinds of differences organizations are willing to value.

My research program advances this argument across three connected streams that examine when diversity and connectivity generate novelty and when they instead reproduce intellectual closure. Across these streams, I combine natural language processing, network analysis, agent-based modeling, formal modeling, and longitudinal analyses to study large-scale patent and medical claims data. The first stream studies the diversity paradox in patent teams, showing how efforts to increase demographic representation can inadvertently produce cognitively homogeneous collaboration. The second stream separates social distance from knowledge distance to examine when relational proximity reflects shared expertise and when it obscures important cognitive differences. The third stream investigates how the alignment between social and cognitive structures shapes diffusion, demonstrating when networks spread ideas efficiently, when they reinforce intellectual closure, and when they allow ideas to cross knowledge boundaries. Together, these projects develop a theory of organizations as systems of social and cognitive sorting: structures that determine not only who is connected to whom, but what kinds of knowledge can move, combine, and become consequential. Across this work, I ask a question at the heart of organization and management theory: **when do organizations actually allow differences to make a difference?**

The Diversity Paradox: How Pursuing Observable Diversity in Teams Can Undermine Cognitive Diversity

My first major project empirically tests the diversity paradox in patent teams (Gabruk et al., 2026b). I examine whether demographically diverse teams also bring together cognitively diverse collaborators, or whether team formation can reproduce intellectual similarity beneath observable differences.

I test this argument using data on more than 4.1 million United States patent teams from 1976 to 2019, representing over 3.1 million inventors. Patenting is an ideal setting because invention is collaborative, knowledge-intensive, and central to theories of innovation. I focus on gender as a salient marker of demographic diversity in team formation. To measure cognitive diversity, I use natural language processing on millions of patent abstracts to map inventors onto a knowledge space based on the content of their prior work. This allows me to estimate the cognitive distance among collaborators and examine whether gender-diverse teams also combine distinct expertise and problem frames.

The findings show that demographic diversity can coexist with cognitive homogeneity. Teams that appear diverse do not necessarily bring together more varied knowledge and, in some cases, demographic inclusion is associated with narrower cognitive distance among collaborators. This pattern is consistent with compensatory cognitive homophily, whereby decision-makers manage the uncertainty of observable differences by selecting collaborators who are familiar in less visible ways. As a result, organizations may increase representation while constraining the intellectual variation that makes diversity consequential for innovation. A formal model further shows that gender-balanced industries are less likely to reproduce the diversity paradox.

Social Distance Versus Knowledge Distance: Rethinking a Foundational Assumption in Network Theory

A second stream of my research examines a foundational assumption in organizational theory and network analysis: that social distance reflects knowledge distance (Gabruk et al., 2026a). Much of network theory treats social proximity as a proxy for knowledge proximity. Cohesive ties are expected to transmit redundant information, while bridges across distant communities are expected to provide access to novel knowledge. These assumptions underlie influential theories of brokerage, structural holes, social capital, organizational learning, and innovation.

My research shows that this assumption is only partially justified. Social and knowledge spaces are related, but they are not interchangeable. Treating them as equivalent can distort how we understand expertise, innovation, and organizational learning. More importantly, treating them as equivalent masks a key question of why actors located close in social spaces (i.e., those who are directly connected, share indirect connections, or reside in the same social network communities) can retain heterogeneity in knowledge or perspectives. And why those who are distant in social spaces can be surprisingly homogeneous.

I study this problem in medicine, where physicians are connected through referral, co-treatment, specialization, and institutional affiliation, but expertise is highly differentiated. Using medical claims data on billions of healthcare encounters for more than 220 million insured patients from 2016 to 2024, I construct measures of both social distance and knowledge distance. I then examine whether social network maps accurately represent the intellectual landscape of medicine and whether traversing social distance actually provides access to novel knowledge.

The findings show that social ties correlate with knowledge similarity, but imperfectly and unevenly. In some cases, actors must traverse substantial social distance to access new knowledge. In others, actors distant in social spaces occupy surprisingly similar cognitive positions. My research further examines the systematic antecedents of divergence between social and knowledge spaces, with particular attention to geographic context, including urban-rural differences, socioeconomic status, and political orientation.

Diffusion, Contagion, and the Alignment of Social and Cognitive Structures

My third stream of research builds on prior work to examine how the alignment between social and knowledge spaces affects the diffusion of ideas, behaviors, and innovations (Gabruk & Page, 2026). Much of the diffusion literature focuses on network topology: whether networks are clustered, centralized, hierarchical, or rich in long-range ties. My work adds a second dimension: the degree to which social proximity corresponds to knowledge proximity.

Using agent-based modeling, I examine how different alignments between social and knowledge spaces shape diffusion outcomes. I model networks with varying topologies, including random, small-world, and hierarchical structures, and simulate both simple and complex contagions. I then vary the correlation between social closeness and knowledge similarity to examine how social-cognitive alignment affects the speed, reach, and diversity of diffusion.

The results show that the same network structure can produce different diffusion patterns depending on the degree of alignment between social and knowledge spaces. When social closeness and knowledge similarity are highly correlated, diffusion may be fast but intellectually concentrated: ideas travel quickly among people who already understand one another but fail to reach cognitively distant domains. When social and knowledge spaces are less correlated, diffusion can become less predictable but more generative, allowing ideas to move across intellectual boundaries.

This project contributes to theories of organizational change and innovation by showing that diffusion depends on the joint configuration of social and cognitive systems. Networks that efficiently reinforce new ideas within cohesive groups may be poorly suited to fostering intellectual diversity or cross-domain recombination. Conversely, weaker alignment between social and knowledge spaces may slow diffusion while increasing its generative potential. Effective organizational design therefore requires attention not only to the structure of social ties, but also to the knowledge domains those ties connect and the cognitive boundaries they help bridge.

Future Research: Designing Organizations That Let Differences Matter

In my ongoing and future projects, I aim to develop a broader theory of how design choices pertaining to teams, networks, and institutions can enable or constrain the effects of differences on various individual (e.g., innovation and creativity) and collective outcomes (e.g., diffusion of novel ideas). In my current work, I show that demographic diversity, knowledge diversity, and network connectivity are not automatically generative. Their effects depend on how social actors evaluate differences, manage uncertainty, and structure access to knowledge. My future work will extend these ideas in the following ways.

First, I will examine the micro-mechanisms that produce compensatory cognitive homophily (Gabruk & Sytch, 2026). The patent team project identifies a large-scale pattern: demographic diversity can coexist with cognitive similarity. My next step is to study how this pattern emerges in real-time selection. Using lab and field experiments, I will examine how decision-makers evaluate potential collaborators under uncertainty and when they use familiar credentials, networks, or work styles to manage the perceived risks of differences.

Second, I will examine how physician networks shape the evolution of medical knowledge. A central question motivating this work is whether divergence between physicians' social relationships and their knowledge domains can signal moments of innovation, fragmentation, or paradigm change. In particular, I ask whether mismatches between who collaborates and what they know increase before the emergence of new specialties, practices, or diagnostic categories. If so, social-cognitive divergence may serve as an early indicator of knowledge evolution in medicine. To study these dynamics, I will use medical claims data to analyze physician networks as systems of expertise diffusion and knowledge evolution, examining how new practices spread, how diagnostic and treatment expertise circulates, and how new knowledge domains emerge (Gabruk, 2026a; Gabruk, 2026b).

Third, I will develop interventions that help organizations explicitly value cognitive diversity rather than assume it follows from demographic diversity. This work will revolve around studying how teams recruit, how evaluators define "fit" and how actors anticipate and manage uncertainty and conflict. The goal is not to replace demographic diversity with cognitive diversity. It is to understand how organizations can pursue both: expanding access while protecting the forms of knowledge, perspective, and problem-framing that make diversity consequential for innovation.

Finally, I will extend this research to additional dimensions of demographic diversity, including race, age, and socioeconomic status, and examine whether similar dynamics emerge beyond medicine and patenting in other knowledge-intensive domains such as entrepreneurship, academia, scientific collaboration, and the creative industries. By comparing these settings, I aim to develop a more general theory of when and how organizations transform social differences into intellectual possibility, and when they instead absorb, constrain, or domesticate differences into familiar forms.

At its core, my research is about access and opportunity. But access is not only about who enters the room. It is about whether organizations are prepared to value what people bring with them. The promise of diversity is not fulfilled when different people are included only on familiar terms. It is fulfilled when organizations create the conditions under which different people can bring different ideas, expertise, and problem frames into collective work. That is the question my research will continue to pursue: **when do organizations actually allow differences to make a difference?**

References

- Gabruk, M. E.** (2026). Catalysts of Change: Social and Knowledge Diversity as Levers of Physician Novelty. *Data analysis*.
- Gabruk, M. E.** (2026). How Social and Knowledge Spaces Shape the Evolution of Knowledge. *Theory development*.

- Gabruk, M. E.,** Aceves, P., Sytch, M., & Shedden, K. (2026). Proximity and Perception: Social Distance as a Measure of Knowledge Distance. (In preparation to submit to *Nature*).
- Gabruk, M. E.,** & Page, S. E. (2026). Simple Versus Complex Contagion: The Influence of the Concordance of Social and Knowledge Spaces. (In preparation to submit to *Organization Science*).
- Gabruk, M. E.,** & Sytch, M. (2026). When Diversity Produces Similarity: Compensatory Cognitive Homophily as a Mechanism. *Data collection*.
- Gabruk, M. E.,** Sytch, M., Aceves, P., & Page, S. E. (2026). The Diversity Paradox: How Pursuing Observable Diversity in Teams Can Undermine Cognitive Diversity. (Under review at *American Journal of Sociology*).