

## COMMENTARY

# Culture as infrastructure in learning health systems

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## Abstract

Building Learning Health Systems requires the combination of information, regulatory, and cultural infrastructures that create communities focused on changing health outcomes through the application of quality improvement methodology, focused data collection, closed feedback loops, and community-participatory techniques. Accomplishing the vision of the Learning Health System relies on building robust infrastructures, and teaching a wide variety of stakeholders to participate in these novel socio-technical systems. In this commentary, I draw on empirical examples from fieldwork with Learning Networks to describe how social scientists view culture and what this concept might hold for learning health sciences.

## KEYWORDS

culture, infrastructure, learning health system, learning networks

## 1 | INTRODUCTION

Much of the science of Learning Health Systems has focused on how to build the information infrastructures necessary to achieve continuous learning at scale. More recently, scholars have begun to show that the activity of building learning health systems also takes place on a social level. Building Learning Health Systems requires the combination of information, regulatory, and cultural infrastructures that create communities focused on changing health outcomes through the application of quality improvement methodology, focused data collection, closed feedback loops, and community-participatory techniques<sup>1-3</sup>

Future research and development could be enriched by understanding the accomplishment of the Learning Health System through the lens of culture. While the notion of culture has been developed in a number of social science disciplines, I use culture in the sociological sense to mean the systems of social relations, meanings, and forms of expression that are shared among group members. Building on this tradition of work, I want to draw out another property of culture: culture acts as a form of infrastructure. Although culture has been an implicit and explicit focus of Learning Health Systems initiatives, the exact elements of culture have not yet been elaborated in this context, nor has the notion of culture as having infrastructural properties

been developed in learning health sciences (although see Reference 4 for a discussion of the Science and Technology Studies concept of infrastructure applied to Learning Networks). Within sociology, in contrast, there has been a longstanding attention to how culture shapes everyday life, resulting in a vast range of perspectives on culture. My aim is to briefly illustrate some of the foundational concepts in sociology through examples of the ongoing activity in Learning Health Systems, so that members of both fields might have a shared vocabulary for research and practice in learning health sciences.

I will do this by outlining the infrastructural properties of culture as established within social science, weaving in empirical examples from my research. Over the past 2 years, I have been engaged in studying the development of Learning Networks as they are guided through the formation process by the Anderson Center for Health Systems Excellence at Cincinnati Children's Hospital Medical Center (CCHMC). These networks seek to improve health outcomes, including quality of life, for individuals with epilepsy, autism, rheumatic diseases, and kidney disease. Using a combination of participant observation, nonparticipant observation, and interview methods, I have sought to understand the social process of building Learning Networks. My research shows that Learning Network members participate in the creation and ongoing maintenance of cultural

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infrastructures, and that these processes can become institutionalized in the culture of their groups.

## 2 | THE INFRASTRUCTURAL PROPERTIES OF CULTURE

Culture is often described as a laundry list of phenomena: norms, beliefs, worldviews, values, rituals and ceremonies, practices, material artifacts, role structures, space and place, taboos, and a shared sense of the sacred and the profane. These elements have been developed conceptually in sociology to describe systems of social relations, meaning, and practice, and these elements are understood as common to all groups. For example, while not all social groups adhere to the *same* set of norms, all social groups *have* norms.<sup>5</sup> Importantly, culture is not merely an overlay on existing social relations—it is constitutive of social relations and is a structuring force that shapes interactions at and across all levels of social life.<sup>6</sup> This is what makes culture able to act as infrastructure.

By providing ways to understand ourselves, the world, and the relations between ourselves and the world, culture constructs a series of more and less well-worn pathways that we travel on throughout our lives. Culture shapes how we relate to the natural world and the human-made world. Culture shapes how we relate to others, and how we participate in social institutions like schools, families, hospitals, and government. Culture shapes the development of policy, laws, and other guidelines for managing our social relations. Culture shapes our beliefs about ourselves and others—who has moral worth, what are appropriate roles for individuals to hold in society, and how do these change over time? While it is possible (and often necessary) to break new paths through forms of resistance and struggle, it is also worth understanding culture as a stabilizing force: the infrastructural properties of culture.

Social life is complex, and individuals move through overlapping organizational and institutional environments, often on a daily basis. Our everyday lives are also shaped by a surrounding social infrastructure<sup>7</sup>, which describes “physical places or organizations that shape the way people interact” (p.5). The complexity of social life has led to a proliferation of ways of studying culture, as well as efforts to create common ground among theorists of culture.<sup>8–13</sup> Much of this work helps us understand the dynamic relationship between individual agency, social structures, and group culture. By describing the range of ways sociologists approach culture, my goal is to describe the many ways culture shapes everyday action by acting as a form of infrastructure. Thinking of social life in this way can make it easier to see how and why culture can be so powerful and why we should take it seriously.

## 3 | THREE WAYS TO THINK ABOUT CULTURE

Culture has frequently been portrayed as private, individual, and implicit.<sup>6</sup> While culture may shape some of our most private thoughts,

it can also be felt as stated or unstated rules that guide behavior in our public lives. This is because our socialization into a particular culture teaches us to recognize phenomena like behavior, values, and language as “correct” or “incorrect”—even if we reject what is taught. Here I focus on three ways to think about culture: culture as systems of meaning, culture as social relations, and expressive culture. The distinctions between these conceptualizations of culture are primarily analytical; in real life, these three ways of thinking about and participating in social life overlap and together combine to provide a framework for understanding social action.

### 3.1 | Culture as systems of meaning

Systems of meaning deal with the realm of perceptions, ideas, and standards. But far from being only “in our heads,” the meanings we hold toward objects and people shape how we interact with those objects and people.<sup>14</sup> When we talk about systems of meaning, social scientists are referring to phenomena like beliefs, worldviews, priorities, values, and a shared sense of the sacred and profane. These phenomena often blend and imply each other; for example, central to participating in a Learning Network is the belief that a focus on outcomes should be the central tenet of the network’s work. This generates priorities for the network members, who may describe their focus on outcomes as “relentless” (ImproveCareNow) or who state “we won’t stop until we get there” (Epilepsy Learning Healthcare System). Much of Learning Network work is underpinned by a shared sense of what is sacred. Many Learning Networks focus on pediatric populations, where child health and quality of life are considered sacred<sup>15</sup> (here used in a nonreligious sense).

These beliefs, priorities, and sense of child health as sacred have implications for the values Learning Network members ascribe to their work and the space and place in which this work is carried out. Much Learning Network activity occurs in everyday healthcare settings, where the network’s goals must be made compatible with existing organizational constraints. But the heartland of a Learning Network is Learning Network gatherings like Learning Sessions, as well as at the Anderson Center for Health Systems Excellence’s Learning Network Community Conferences, where the “network of networks” comes together for training, reporting on progress, and sharing of challenges, failures, and successes.

The space where a social group’s activity takes place is bound by the conventions of the culture—what happens where and how and by whom. At gatherings such as the Learning Sessions and Learning Networks Community Conferences, network leaders use “values talk” to set parameters on what conduct will occur in the space. Values can be described as the goals and standards of society in which members have great emotional investment. While values do not always determine our actions,<sup>16</sup> they can guide our choices of what is most desirable or important. Learning Networks events frequently involve the overt and ritualistic articulation of values.<sup>17</sup> Sometimes these values are simply stated as a way of framing the upcoming activity and at other times they are contextualized by a group member who speaks

about the personal meaning of a particular value for their life, health, or work. These articulations of values can be informal (although they are not usually extemporaneous), or they can take the form of an Ignite Talk,\* a formal and highly ritualized speech that includes a motivating “call to action.” In addition to setting the tone, values can also be used as a form of peer regulation, orienting members' action toward the stated values of a group. Finally, values also speak to the general conventions of a group. For example, Learning Networks value anti-hierarchical group structure and relations, resulting in the social practice of members being on a first-name basis rather than using professional titles. Here, the notion of culture as a system of meaning begins to blend with culture as social relations.

### 3.2 | Culture as social relations

Central to the idea of culture as social relations is a set of familiar terms that describe how people get by in the world: norm, role, and status. Norms are social rules that define what is required or appropriate behavior in certain groups and certain situations. They provide guidelines and expectations for the behavior of the members of social groups. Above I linked the value of anti-hierarchical relations to the practice of calling fellow Learning Network members by their first names at network gatherings. As this practice is reinforced and made a “normal” aspect of network relations, it becomes a norm for network members' behavior.

Status is one's position in the social structure, and this helps us understand where a person fits into a community. Statuses and norms are related because the norms governing the behavior of people of different statuses shape how these people relate to each other. Often members of groups change statuses over time—these changes are normally marked by rites of passage, which help individuals understand the roles—the rights and duties—that come with their new status. Roles carry with them expectations about appropriate behavior of the person inhabiting the role.

While role and status sound like terms that might immediately introduce hierarchy, this is not always the case. The role structure of a Learning Network often involves leadership teams who distribute responsibilities among themselves and who take the administrative leadership role in a workgroup, but this is balanced by group values like “all teach, all learn” that encourage, or even require, broad participation of network members. Empirically, I have found that this mode of working in Learning Networks can be unfamiliar for newcomers, and have observed instances where even network leaders have difficulty discerning roles, take up overlapping roles, or resist new role structures recommended by project management consultants. Members of all social groups in all cultures go through a process of learning the norms, values, and appropriate roles and statuses of the group they are joining, a process described as socialization<sup>18</sup> and professional socialization.<sup>19</sup> Sometimes, through transposing cultural information and strategies for action from one setting to another,<sup>20</sup> individuals can also change the standards of social groups as they become members.

Norms are reinforced in everyday social interactions by sanctions—rewards and punishments for behaviors that align with or violate group norms. It is therefore important to bear in mind the role of culture in promoting group cohesion and actors' ability to collectively achieve goals. In short, members of social groups must have some way of creating cohesion in order to remain group-like. This reality forces us to confront the knotty problem of social control head-on. Social control is a meta-element of groups and can keep group members moving together in the same direction. Social control is actively enforced by group members, who are sensitive to deviations from group expectations and employ sanctions to get members to adopt “proper” behavior (in the eyes of the group). This can happen in a number of ways, including rituals and various forms of peer policing.

Groups rely on both prosocial behavior and policing to reinforce their norms. For example, social groups often use gossip in prosocial ways—to share information that might help others negotiate social interactions and save face.<sup>21,22</sup> Similarly, they can also use joking and other forms of humor to set boundaries and constructively work through tension.<sup>23,24</sup> Finally, groups can use peer policing through direct confrontation or gossip, either seeking to change the behavior of the offender or by using the offender as an example of how not to act.<sup>25,26</sup> One set of Learning Network leaders has developed a humorous way to alert other members before introducing a sensitive topic—using the exclamation “pretzel!” to announce that there may be tension ahead, so that group members can engage with less defensiveness (this could also be used by other members to diffuse tension with humor and acknowledge that a conversational topic had not been adequately previewed).

Because it is prosocial, ritual does not generally have the punitive connotations we typically associate with social control, but it does accomplish the aims of social control: keeping the group on the same page about traditions and practices, and teaching these traditions to newcomers. In the context of Learning Networks, rituals include values statements, Ignite Talks, and various ways of closing group interactions, such as one network where all members end large group events by singing “Happy Trails” together.

### 3.3 | Expressive culture

Expressive culture is “forms of talk and codes of feelings”<sup>22(p81)</sup> that can include art, music, dance, and other ways of conveying and revealing culture. Indeed, some of the examples described above, such as singing together or feeling emotional connection because of evocative Ignite Talks, are examples of expressive culture. Another important example is the special shared language of Learning Network work—a language infused with the technical vocabulary of improvement science and quality improvement that takes newcomers time and special training to adjust to. Culture is shared among members, and newcomers must adopt the shared culture as a part of the process of gaining membership in a group. As sociologist Gary Alan Fine describes, “It is through the practices of individuals working together,

sharing interpretive frameworks and constructing joint meaning, that community and collective action is possible.”<sup>27(p5)</sup>

## 4 | CULTURE AND STRUCTURE

Indeed, social organization depends on what sociologists frequently describe as a shared, taken for granted reality.<sup>28</sup> By looking at the dimensions of meaning, social relations, and expression, we can see the “building blocks” of this shared reality. These help us understand culture as durable, versatile, and as having inertia.<sup>29</sup> However, an overwhelming emphasis on the shared aspects of reality overlooks the social forces that create, maintain, and privilege particular realities, often through social control, from informal peer pressure to state violence. These include racism, sexism, and other social systems that create unequal pathways through organizations,<sup>30</sup> unevenly structure life chances, and even call into question for whom a particular reality is taken for granted—let alone shared.<sup>31</sup>

When building Learning Health Systems, it is important to understand culture as a powerful structuring force so that we do not underestimate the effect of patterned thought and behavior in the world, and so that we are able to understand how social groups can both include and exclude—and so we can respond by shaping these processes as necessary. However, it is important to note that talking about culture is not a substitute for talking about (and studying the effects of) other social structures like policy, the economy, the legal system, and the State. Moreover, historically there has been a temptation to use “culture” to explain individual- and group-level conditions, such as poverty, that are better described as structurally created (for a discussion see<sup>13</sup>). As scholars have pointed out,<sup>9</sup> theorizing the working of culture is best done empirically, and this article can be read as a charge to do theoretical work in contextualized settings. Thinking carefully about what culture is and does, as well as the relationship between culture and structure, increases our ability to participate in systems thinking and promote systemic change.

## 5 | DISCUSSION

The language that social scientists use to describe culture helps us conceptualize the many aspects of meaning and social relations that are patterned, durable, and nonrandom.

This short commentary is meant to provide a broad overview of some of the terms used by sociologists to describe the many ways that culture influences social dynamics. The study of culture within social science is a longstanding pursuit, and there are many additional ways to describe social life that derive from the concepts I discussed above. Instead of presenting a comprehensive discussion of culture, my goal has been to start at the very beginning by identifying and explicating a shared concern between Learning Health Systems practitioners and researchers and social scientists, namely how to describe the social activity of doing Learning Health Systems work, and to encourage further work in this area. Building on this foundation brings

the richness of sociological theorizing into the interactional space of Learning Health Systems, which will add to research on organizational dynamics and interaction that is already occurring in this space, such as foundational work on actor-oriented architectures.<sup>1</sup> The value of building this conceptual vocabulary is that it provides a common language to describe, and potentially change, a culture.

Sociologists view everyday life as a series of accomplishments. This orientation to the continual reconstitution of social and socio-material relations opens up the mundane elements of everyday life for systematic investigation. Fundamentally, social scientists want to know how the world works—not just the periodic life-changing macro-political or -economic events, but also the small everyday interactions by which relations are created and sustained. Some social scientists want to examine the mundane in order to study the elements of social life, and others want to discover the processes by which social life (both the good and the bad) is reproduced. Blending these orientations allows social scientists to produce rich descriptions of everyday life and suggestions about how to improve the circumstances that create systematic oppression and produce unequal life chances.

## 6 | CONCLUSION

The sociological perspective on culture is optimistic: if a culture is actively accomplished by individual action, group action, policies that shape action, etc., then that culture can be maintained or changed, as necessary. The shift to viewing social life as an accomplishment is a fundamental step for understanding how to form, support, and transform organizational culture. This intellectual project is consonant with and supportive of the aims of the Learning Health System—to transform healthcare and improve outcomes and quality of life for patients. Bringing in an explicit focus on culture could allow us to describe and appraise the social dynamics of groups and to understand the effects of different types of organizational cultures on the delivery of healthcare. A focus on culture could also help the members of new Learning Health Systems by enabling them to think and talk explicitly about what sort of culture they would like to foster as they enter the design phase of network creation. Finally, similar to other tools we have for understanding the impact of Learning Health Systems on patient outcomes, building a conceptual vocabulary for describing the social aspects of Learning Health Systems work will eventually allow us to describe how network and health system culture may shape patient health outcomes and the well-being of patients, families, and other stakeholders in Learning Health Systems.

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**CONFLICT OF INTEREST**

The author declares no conflicts of interest.

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**ENDNOTE**

\* In their original development, Ignite Talks are a public speaking format where participants advance through 20 slides over the course of a 5-minute talk (for more information, please see <http://www.ignitetalks.io/about>). The Ignite Talk format has evolved as it has spread, and the form of Ignite Talk that is common at Learning Network events may be longer, have more or fewer than 20 slides, and must include a call to action that connects participants to the meaning behind their work.

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