A commentary on the pluralistic goals, logics of action, and institutional contexts of translational team science

S J Winter, PhD,¹ N Berente, PhD²

Abstract

Teams have emerged as a pivotal form for organizing science efforts. Team goals and issues such as goal alignment are generally considered to be essential to team success. However, given the interdisciplinary and pluralistic goals associated with translational science, team goals become a challenging area for studies that cannot be reconciled without attention to the broader institutional contexts of translational teams. In this commentary, we draw attention to how different goals in team science can be rooted in the broader institutional context and associated logics of action. For the science of team science (SciTS) to impact practice, it is imperative that we be clear about the logic of team goals and their relation to preferred patterns of organizing. We conclude with a reflection on how contextual issues should be at the foreground of SciTS along with the other important issues of team science.

Keywords

Team science, Translational science, Goals, Logics, Institutions, Institutional context

“We need to quit pretending that the system context of group behavior is irrelevant to understanding what happens within groups.... We need to become more inventive in developing conceptual models and research strategies that respect the fact that groups are social systems.” - J. Richard Hackman (2012, p.428)¹

INTRODUCTION

Goals are fundamental to the study of teams, but understanding team goals can be a complicated endeavor. The traditional definitions of teams typically involved a common goal or objective [19] more recent thinking understands that it is not so simple. Teams typically have multiple, nested goals, and these goals can shift, change, and emerge [5, 12, 13, 17]. Team goals are shaped by their institutional contexts [11], and these contexts can be intensely pluralistic [15]—particularly in trans-

Any opinion, finding, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.

lational contexts. Hackman [12] recently called for greater attention to context by researchers of group behavior. Although certain scholarly traditions have attended to elements of team goals and their institutional contexts (e.g., Zellmer-Bruhn and Gibson [25] in organizational science and Schmidt and Bannon [20] in Computer Supported Cooperative Work), the literature on the science of team science and translational science seldom engages the complexity of team institutional contexts and the associated multiplicity of team goals. As a result, we have little understanding about how teams allocate their efforts and prioritize across multiple possible goals. In this commentary, we provide a framework for linking team goals to the pluralistic institutional contexts of translational team science.

Translational science teams are central to addressing urgent social issues, and goal multiplicity is a dominant feature of such teams. As such, goal multiplicity is a fundamental challenge to translational team science. Take, for instance, a recent summary of the targeted outcomes, or goals, associated with typical translational science teams: “scientific discoveries, educational outcomes, and translations of research findings into new practices, patents, products, technical advances, and policies” ([9], p.263). The authors are mute on the subject of where these multiple goals come from and whether they are all compatible in all situations, but goal multiplicity is known to be problematic when making decisions about which outcomes to pursue [4]. Certainly, activities focused on scientific discovery are quite different than those involved with product development, but there is little discussion of how they should be prioritized. If a single team is charged with both activities, there will likely be contestation between the two imperatives and continual negotiation for resources.

The goals of translational team science are not exogenous and stable, but are complex, emergent,

¹National Science Foundation, 4201 Wilson Blvd, Suite 905, Arlington, VA 22230, USA

²Terry College of Business, University of Georgia, 303 Brooks Hall, Athens, GA 30602, USA

Correspondence to: S J Winter
swinter@nsf.gov;

Cite this as: *TBM* 2012;2:441–445
doi: 10.1007/s13142-012-0165-0

and must be navigated by teams throughout a project. Context plays a key role in goal multiplicity, and Hackman [12] argues that structures and processes in levels of analysis adjacent to teams are most likely to shape group level phenomena such as goals. Translational teams, by definition, involve multiple disciplines—situated within distinct institutional contexts and pursuing diverse goals [7, 21]. A single team may be tasked with multiple goals based on the norms of each of its constituent disciplines and the needs of influential stakeholders outside of the team. In addition, each member of a team may have somewhat different goals. Some goals are more relevant than others in different situations, and often, goals can be quite incompatible [5]. Rather than attempting to convince all team members to have the same goals, improving team effectiveness may hinge on helping participants understand why achieving the goals of particular members is essential to the overall success of the group. Translational team scholarship that addresses goal multiplicity and similar challenges presented by context can build more rigorous, robust, and relevant theory and result in more effective management of translational science teams.

When addressing translational team goals, it is important to avoid overlooking the persistent, broad social elements that provide the context and the source of team goals [12]. As a means for thinking about goals within translational teams, we suggest looking at the adjacent institutional sources of the various team goals. Contemporary translational teams lie at the nexus of multiple institutions [15]—be they academic disciplines and professions, or market and political institutions. Each of these institutions implies certain relevant logics of action [6, 11] that guide team goals.

In the remainder of this commentary, we illustrate the problems associated with diverse institutions that comprise translational science team contexts and the resulting pluralistic team goals. Through this illustration, we look to motivate team and translational science research that attends to the reciprocal interaction effects of teams and their institutional

contexts. Next, we develop our framework relating pluralistic team goals to reference institutional contexts through divergent logics of action. This is followed by application of this framework to translational team science practices. We conclude with a discussion of implications for practice.

TEAM GOALS, REFERENCE INSTITUTIONS, AND LOGICS OF ACTION

Goals are a central concept in the study of teams. Teams are traditionally defined in terms of multiple interdependent individuals coming together with a common goal or purpose [12, 19]. This implies a number of things: (1) that the goal of a team is singular; (2) that the goal of a team is stable throughout its life; (3) that the ostensive goal of the team (i.e., its *raison d'être*) is the most salient goal of its participants for team-related activity. As previously noted, each of these assumptions is problematic. Teams have multiple goals; some of these goals can shift, change, and evolve over the course of a project; and different goals may rise in salience at different points in time with different members of a team. So, the team-goal relationship is both more complex and more fluid than it is usually portrayed [4, 5].

Although individual motivations provide some guidance in understanding the goals of each team member, these motivations are always embedded in a social context [23]. Therefore, when addressing goals, one must attend to the context of the team and its members. For instance, how might a team come together to translate research findings on obesity into new obesity treatment practices? To begin conceptualizing team goals, we might ask where goals come from. One answer is that they originate and are shaped by the persistent elements of society—in particular, society's broader institutions [11]. Each goal is derived from the logic associated with broader reference institutions (i.e., “institutional logic,” see [23]). We might refer to such logics as “logics of action,” which are sets of organizing principles and associated routines that

Table 1 | Goals, logics of action, and reference institutions

Key Concepts	Definition	Examples	Relation with other concepts
Reference institutions	Broad, established, societal pattern of action	Medicine; Science; Market-based Capitalism	Institutions generate (and are generated by) repeated patterns of activity
Logics of action	Rationales; Principles, standards, and assumptions of cause and effect associated with common practices	Determine cause of symptoms through diagnosis; New knowledge through scientific method; Build awareness through marketing	Logics are derived from institutions and imply goals and methods to realize those goals
Goals	Purpose of action	Cure patient; Test hypotheses; Sell product	Goals come from reference institutions and are realized in accordance with relevant logics of action.

individuals draw upon to guide appropriate action [6]. Table 1 defines and describes the relationship between these three key concepts: reference institutions, logics of action, and goals.

Back to our example, it is widely understood that cultural conditions influence the amount of attention paid to various health issues. Polio and small pox were once top priorities in the USA; today, obesity is of greater concern. The influence of context on obesity translational science can also be seen in the challenge faced when bridging between two disparate reference institutional logics: science which underlies research on obesity vs. market-based capitalism which underlies effective obesity treatments. Western science as a reference institution is rooted in goals of knowledge discovery through a rigorous process (i.e., scientific method). Awareness and the diffusion of treatments, on the other hand, are (at least in part) rooted in the institution of market-based capitalism and its goals of profit maximization and successful competition.

Just as the goals associated with these different institutions are different, so are the practices they entail. Scientific method implies rigorous testing and control (for example), whereas successful competition involves issues such as sales and marketing, pricing, market segmentation, etc. Successful obesity translational science will require collaboration between scientists who are rooted in a tradition of conservatism in testing and control with practitioners steeped in the flamboyance and aggressive pace of sales and marketing. As an example of using logics of action as a way to understand goals, Table 2 shows the imperatives identified by Falk-Krzesinski and associates (2011, p.263) along with their associated goals, logics of action, and reference institutions.

This framework is not an exhaustive list of the reference institutions, logics of action, and goals of translational team science, and every team does not necessarily deal with the same goals. However, it is important to identify the goals of a team, the practices that the team will pursue to realize these goals, and the importance of the adjacent reference institutions that are the key to understanding these practices. By explicitly characterizing these goals

and the relevant logics and institutions, science of team science scholars can attend to context in a way that will allow their research results to be both more generalizable and more comparable.

NEXT STEPS: LOGICS AND TEAM PRACTICES

The scale and complexity of translational science problems require the engagement of multiple, diverse fields. Teams have emerged as a pivotal form for organizing translational science efforts. Such teams involve multiple stakeholders who are increasingly drawn from a variety of disciplinary and organizational boundaries and serve a variety of roles [9]. Team members from different disciplines come from diverse institutional contexts, with different incentive structures, questions, and modes of action that provide a variety of challenges to effective team action. Thus, much of the “science of team science” (SciTS) literature—that literature intended to investigate and enhance team science [10]—calls for research into cross-boundary communication and coordination [21], as well as structural ways these multilevel teams of teams can be bridged [2]. There is, however, a dearth of attention to the contexts within which teams operate. This is problematic. Contextual issues should be at the foreground of SciTS along with the other important issues of team science.

The centrality of context in team goals is illustrative. SciTS scholars have considered the importance of team goals in motivating action but not the context within which they arise, and it is that context which is often crucial to team success. The relative inattention to the context of teams is unfortunate, because many of the contextual elements that shape the very goals upon which teams are founded and the structures within which teams operate—things like national and organizational cultures, historical traditions, reference institutions, legitimate practices, rationalities, and ideologies—are all fundamentally intertwined with the practices of a team [12].

Indeed, recent scholarship has determined that team effectiveness may best be predicted from

Table 2 | Goals of team science (based on goals identified by [9], p.263)

Goal	Logic of action	Reference institution
Scientific discovery	Uncover new knowledge through scientific method	Science
Educational outcomes	Educate through classroom lectures	Academia
Translation to practices	Clinical care–patient–doctor–nurse interaction	Medicine
Translation to patents	Protect new ideas through patent filing	Legal profession
Translation to products	Develop and market desirable products	Market-based capitalism
Translation to technical advances	Solve technical problems by designing and building artifacts	Engineering profession
Translation to policies	Strategically regulate behavior through supervision and planning	Management

external conditions such as having compelling direction or purpose, clear norms of member conduct and a context that supports (rather than opposes) teamwork in terms of reward systems, etc. [12]. Hackman [12] argues that managers should set the contextual conditions for effective team performance through, for example, determining the standards by which teams will assess their goals, and then let the team self-organize around these standards and chart its own path. This may involve getting people to accept the goals of others as legitimate rather than insisting on a single shared group goal.

Although SciTS scholars engage many of these concepts, they are often subsumed under “policy” issues and generally treated as exogenous elements hampering or enhancing translational science team effectiveness (e.g., [9]). For example, tenure policies favoring publications by a single author are seen as an impediment to collaborative research by multidisciplinary translational science teams. Goals such as tenure, single author publications, and multidisciplinary collaboration arise from a historically-rooted set of well-established (institutionalized) practices and structures that influence translational science teams. Conversely, the rise of team science can influence the value placed on multi-authored publications and affect the tenure policies. Effective translational science requires an understanding of teams that includes these contextual, institutional practices and structures.

IMPLICATIONS FOR PRACTICE

Engaging goals, logics, and institutions can further the aims of practitioners of team science. Organizational scholarship has a rich history of tracing organizational practices to the goals of organizations and SciTS could benefit from similar thinking. In understanding the variety of organizational structures and practices, the organizational sciences have long recognized that there is no single best option. Instead, contingency theory fundamentally asserts that different organizational contexts and goals imply different modes of organizing [8]. In their seminal work, Lawrence and Lorsch [16] found that organizations in uncertain, innovative environments benefit more from including diverse disciplines each with different goals and modes of practice (i.e., “differentiation” in their terms) in combination with dedicated, cross-disciplinary individuals to integrate across these disciplines. Similarly, in more predictable environments, direct management control and hierarchy works best for coordinating activity. While these insights may appear somewhat simplistic, Lawrence and Lorsch (together with Woodward, Katz and Kahn, and others; see [18]) ushered in a new era of organizational scholarship that was focused on aligning different organizational practices with different organizational goals. This research spans a half century and has recently been taken up by researchers calling for a condition-focused ap-

proach to group research [12, 14]. This line of research has been impactful across industries (while at the same time has been criticized on a number of fronts). It is out of the scope of this commentary to review contingency theory, but this tradition affords us the insight that different contexts can benefit from different modes of organizing.

Similarly, different institutional logics and goals can benefit from different team structures and practices. Translational science team members may draw upon different institutional logics to guide their actions, and team designers and managers can benefit from an understanding of the team structures and practices associated with success. For example, obesity researchers will likely draw upon the logic of scientific discovery which is also a fundamental part of research and development (R&D) organizations. This logic is substantively different from the logic of product design and development organizations [1]. Research has shown that R&D activity benefits from explicit goals and role definitions at the outset of a project, a great deal of autonomy during the project, and a great deal of recognition afterwards [22]. It is likely that obesity science teams will also benefit from these conditions. Product design and development, on the other hand, benefits from a structured process with strictly defined stages, timelines, and hands-on decision making from “heavyweight” managers throughout [3,24]. It is likely that obesity product design teams would be similarly affected. Thus, obesity teams charged with R&D and product development must simultaneously navigate research autonomy with product development oversight. This is not a straightforward problem to deal with, but identification of the problem is the first step toward solving it.

For SciTS to impact practice, it is imperative that we be clear about the logic of team goals and their relation to preferred patterns of organizing. In this commentary, we have drawn attention to how different goals in team science can be rooted in the broader institutional context. Future work should translate findings from analogous organizational scholarship, point to areas where findings apply, and identify areas where more research is in order.

1. Balachandra R, Friaf JH. Factors for success in R&D projects and new product innovation: a contextual framework. *IEEE Trans Eng Manag.* 1997;44(3):276-287.
2. Börner K, Contractor N, Falk-Krzesinski HJ, Fiore SM, Hall KL, Keyton J, Spring B, Stokols D, Trochim W, Uzzi B. A multi-level systems perspective for the science of team science. *Sci Trans Med.* 2010;2(49).
3. Clark KB, Fujimoto T. *Product development performance: strategy, organization, and management in the world auto industry.* Cambridge: Harvard Business School; 1991.
4. Coyle RT. The National Cancer Institute's transdisciplinary centers initiatives and the need for building a science of team science. *Am J Prev Med.* 2008;35(2S):S90-S93.
5. DeChurch LA, Zaccaro SJ. Teams won't solve this problem. *Hum Factors.* 2010;52:329-334.
6. Dimaggio, P. (1997) "Culture and cognition." *Annual Review of Sociology* (23), 1997.

7. Disis, M.L. and Slattery, J.T. (2010) "The road we must take: multidisciplinary team science," *Science of Translational Medicine*, 2(22) March 2010.
8. Donaldson L. *The contingency theory of organizations*. London: Sage; 2001.
9. Falk-Krzesinski HJ, Contractor N, Fiore SM, Hall KL, Kane C, Keyton J, Klein J, Spring B, Stokols D, Trochim W. Mapping a research agenda for the science of team science. *Res Eval*. 2011;20(2):143-156.
10. Falk-Krzesinski HJ, Börner K, Contractor N, Fiore SM, Hall KL, Keyton J, Spring B, Stokols D, Trochim W, Uzzi B. Advancing the science of team science. *Clin Transl Sci*. 2010;3:263-266.
11. Friedland, R. and R. Alford (1991) "Bringing society back in: symbols, practices, and institutional contradictions." Powell & DiMaggio, *The New Institutionalism in Organizational Analysis*, 1991, 232-263.
12. Hackman JR. From causes to conditions in group research. *J Organ Behav*. 2012;33:428-444.
13. Ilgen DR, Hollenbeck JR, Johnson M, Jundt D. Teams in organizations: from input-process output models to IMOI models. *Annu Rev Psychol*. 2005;56:517-543.
14. Kozlowski SWJ, Ilgen DR. Enhancing the effectiveness of work groups and teams. *Psychol Sci Public Interest*. 2006;7:77-124.
15. Kraatz MS, Block ES. Organizational implications of institutional pluralism. In: Greenwood R, Oliver C, Suddaby R, Sahlin-Andersson K, eds. *Handbook of organizational institutionalism*. London: Sage; 2008.
16. Lawrence PR, Lorsch JW. *Organization and environment—managing differentiation and integration*. Boston: Harvard Business School; 1967.
17. McGrath, J.E. Arrow, H. and Berdahl, J.L. (2000) "The Study of Groups: Past, Present, and Future," *Personality and Social Psychology Review*, 2000;4(1):95-105.
18. Mintzberg, H. (1979) *The structure of organizations*, Prentice-Hall, 1979.
19. Salas E, Dickinson TL, Converse SA, Tannenbaum SL. Toward an understanding of team performance and training. In: Swezey S, ed. *Teams: their training and performance*. Stamford: Ablex Publishing; 1992.
20. Schmidt K, Bannon L. Taking CSCW Seriously: supporting articulation work. *Comput Supported Coop Work*. 1992;1(1):7-40.
21. Stokols D, Hall KL, Taylor BK, Moser RP. The science of team science: overview of the field and introduction to the supplement. *Am J Prev Med*. 2008;35(2S):S78-S89.
22. Thamhain HJ. Managing innovative R&D teams. *R&D Management*. 2003;33(3):297-311.
23. Thornton PH, Ocasio W. Institutional logics. In: Greenwood R, Oliver C, Suddaby R, Sahlin-Andersson K, eds. *Handbook of organizational institutionalism*. London: Sage; 2008.
24. Ulrich and Eppinger 1995. *Product design and development*. 4th edition. McGraw-Hill.
25. Zellmer-Bruhn M, Gibson C. Multinational organization context: implications for team learning and performance. *Acad Manag J*. 2006;49(3):501-518.