

MIT Lab for Innovation Science and Policy

WORKING PAPER

Leading Innovation:

Identifying Challenges & Opportunities using MIT's Three Lenses

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Leading Innovation: Identifying Challenges & Opportunities using MIT's Three Lenses

MIT's study of innovation emphasizes practical approaches for leaders striving to build effective innovative behaviors as well as long-run capabilities for innovation in their organizations. Given the challenges that leaders face in these efforts, a key to MIT's approach is the 'Three Lenses' perspective on organizations; a framework developed in the 1990s by MIT colleagues for the 1st edition of *Managing for the Future*.¹ This synthetic point of view – developed over time² - was built upon a shared teaching experience at the MIT School of Management and was a core pillar of MIT's organizational processes course that itself was shaped by the seminar work of Ed Schein.³ The framework is an especially useful way to understand both the challenges and the opportunities that leaders confront - or are likely to confront - when making meaningful strides towards innovation, especially in large public and private sector organizations.

'Innovation' is an observable phenomenon around the world, and appears to be increasingly localized in 'hotspot' regions that have become known as hubs of innovation, such as Seoul, Switzerland, Silicon Valley, and Greater Boston. While often associated with today's agile start-ups, innovation is also essential to large organizations. For such organizations, building an internal innovation capability may require significant organizational change and leadership over the long term, not only for private sector organizations but also in the public sector where pressure for transformation may be high but moving more towards greater risk-taking (or at least a portfolio of risky and less risky projects) and uncertainty is a daunting challenge.

MIT has made a systematic study of 'innovation' in different large organizations around the world – including in the public sector, security agencies, healthcare, universities, and global corporates – and this has resulted in an MIT approach to innovation.⁴ This approach highlights eco/systems, capacities and stakeholders, and is built on the definition of 'innovation' from

¹ Ancona, Deborah, Thomas A. Kochan, Maureen Scully, John Van Maanen, and D. Eleanor Westney. *Managing for the Future: Organizational Behavior and Processes*. (1996). Cengage South-Western.

² Webinar by Prof John van Maanen: <https://executive.mit.edu/media-video/mit-sloan-executive-education/three-perspectives-on-organizational-change-with-john-van-maanen/fdfgae9-lpy>

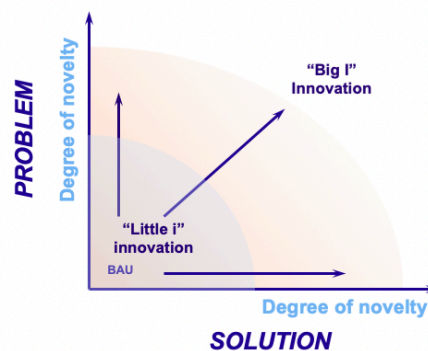
³ Schein, Edgar (1992). *Organizational Culture and Leadership: A Dynamic View*. San Francisco, CA: Jossey-Bass. Now in its fifth edition (2016 with Peter Schein).

⁴ Budden and Murray. "An MIT Approach to Innovation: eco/systems, capacities and stakeholders." A Working Paper (October 2019) by MIT's Laboratory for Innovation Science & Policy (available on the MITii website at: https://innovation.mit.edu/assets/BuddenMurray_An-MIT-Approach-to-Innovation2.pdf)

MIT's Innovation Initiative (MITii) simply as the: “**process of taking ideas from inception to impact**”. (Interestingly, MIT does not include the word ‘technology’ in its definition as innovation is something more than that, even if it harnesses it, especially digital technologies.)

By taking a ‘*process*’ definition of innovation, with a trajectory from ‘*inception*’ all the way through to ‘*impact*’, this goes beyond a single moment of invention: it is then possible to look at the distribution of the underlying activities, assess key determinants and define the role of a range of individuals, teams and organisations (both private and public sector enterprises). In this context, an ‘*idea*’ is a match (initially hypothetical) between a problem and a solution, with ‘*impact*’ going beyond commercial profits (for the private sector), to include a variety of other outcomes, such as environmental, social, medical or security missions (for other sectors).

In much common discourse on innovation, we find at least two distinct types of activities that are often raised, but need to be more clearly distinguished: these can be regarded as being on a spectrum, and best placed within a ‘problem/solution’ matrix (as below).



First, there is formal ‘Innovation’ (with a capital “I”) meaning either the processes of taking novel S&T research and development (R&D) outputs (usually novel technological solutions to existing problems), or transformational innovations (matching novel solutions to novel problems), from inception through to impact: such impact is often described as being out on the frontier (or horizon) in the ‘10x’ transformation category.

Second, there is a more modest (but still honourable) form of ‘innovation’ which covers the innovative adoption or adaptation of existing technologies, practices and resulting capabilities, ie innovation with a little “i” which would fall into more of a ‘10%’ category: this signifies a more widely applicable set of innovative behaviours seen in private (but now also in many public) sector actors.

Empowering and leading these new innovative behaviors in large organizations, leaders will often emphasize the currently-popular “target operating model” (TOM) approach. In this conception, a new set of units, processes and resources are deployed with the goal being to enable innovation within these new units and to empower innovative behavior more broadly. At times, this new TOM is disconnected from the strategic goals for innovation, i.e. the impact that is actually desired in the organization. But even when appropriately linked, these changes in process are often incomplete, and most certainly are inadequate.

There are many failure modes for innovation efforts, but some core issues arise from the fact that, while new processes and units empower individuals to create and test new ideas, this structural and process change is not adequate:

- While processes related to the initiation of ideas have been changed (and are probably the easiest area of the organization to change and adapt), later stages such as those requiring new contracts for scaling, acquisition and procurement etc. are not;
- Individuals or units may find it difficult to access the necessary sources of information across and outside the organization, to be able to appropriately experiment with users and customers, or to learn about key production and scale-up challenges; and
- Individuals may not be appropriately rewarded or recognized by senior leaders for their efforts, or - more worryingly - may even be punished when projects fail (or do not meet desired outcomes).

While not exhaustive, this list illustrates three very distinctive types of challenges that arise for leaders seeking to build an innovation capability in their organization. These three are best thought of through MIT’s Three Lenses Model.

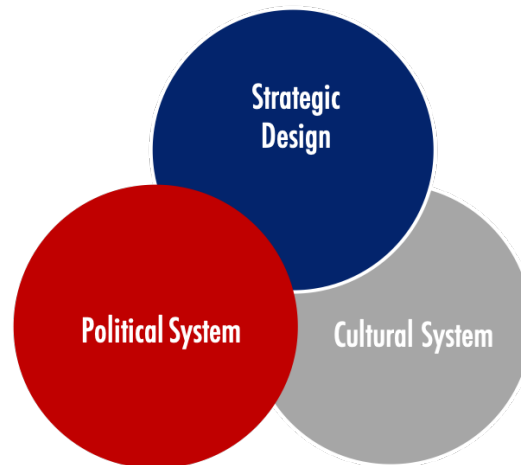
MIT’s Three Lenses

MIT’s Management School has made wide-ranging contributions over the years to managerial thought, from ‘systems dynamics’ and managing innovation to a systems-oriented approach to the organization (whether it be public or private, large and global or start-up and local). One long-standing school of thought that arose from its Organization Studies group - now Work and Organization Studies (WOS) – is the ‘three lenses’ view on organizations. This is an approach to understanding the complexities of organizational life that grew out of the collaborative effort of members of a group co-teaching the introductory MBA course on organizations, building on the work of Gary Morgan.⁵

⁵ Morgan, Gary. Images of Organization. 1998. Berrett Koehler Publishers.

The concept was first formally published in the 1996 edition of an extremely popular text book by a team of faculty: Managing for the Future.⁶ Three critical perspectives on the organization (ultimately referred to as lenses) were identified: the 'strategic design' one written by Eleanor Westney, the 'political' perspective by Tom Kochan, and the 'culture' essay by John van Maanen. Chapters focused on each of these 'three lenses' which examined three distinctive ways to look at an organization (see below):

- Strategic Design lens – represented in blue, signifying calm, rational approaches;
- Political lens - represented in red, denoting power, networks and emotion;
- Cultural lens – represented as grey, so taken for granted and hard to perceive.



A critical insight from this work is a shift in thinking away from simply a purposeful 'strategic' approach to organizations and internal change, towards a recognition that change often fails, not as a result of poor strategic design, but instead due to political and cultural barriers. As John Carroll has subsequently argued:

...the three lenses are distinct enough from each other that they cannot directly compete or combine: don't expect one to "win" a contest among lenses or all three to join in a happy union or comprehensive model. Instead, each represents a different way of thinking, a different lens through which you can view an organization. By trying on each lens, you gain new insights and a richer picture of an organization.⁷

⁶ Ancona, . Kochan, Scully, Van Maanen, and Westney. Managing for the Future (1996).

⁷ John S. Carroll. Introduction to Organizational Analysis: The Three Lenses, August, 2001.

Through a strategic lens, an organization's planning and structure are closely linked, with it being considered as a rational machine and a mechanical system that can be subject to redesign and 're-engineering'. In this conception, organizational design (especially the Target Operating Model) must fit with the desired goals. And, it therefore follows that action comes from planning and designing. The implications for leading innovation are clear: it is essential for leaders to design the system of units and create any new ones that are given the mandate and resources to lead innovation. These new units are often referred to as 'skunk works' when they are secretive or separated and outside of the broad span of the organizational system. More recently, these units are thought of as 'innovation labs' set up not only to drive innovation internally but also to reach out to innovators (and entrepreneurs) externally. Other elements of a strategic approach to leading innovation include rewiring the innovation decision-making process – eg considering how resources are allocated, the criteria for decision-making and the speed and autonomy in such choices.

Considered through a political (red) lens, organizations are social systems made up of networks of individuals which are often competing, eg for resources or promotion. These individuals are formally linked through the organizational chart, but a range of other affiliations, connections and networks will link people together in ways that provide more informal (and at times more rapid) systems for distributing resources. While this can lead to contests and, at times, be fraught with competing or contradictory interests, it also may enable requisite variety and allow passionate people with different ideas pursue those resources in order to get things done.⁸ In this sense, tension can be a positive thing, especially with respect to bringing in new ideas and innovation to bear. This is most obvious in healthcare organizations where the distinctive networks between physicians on one hand, and those of professional administrators on the other, can lead to organizational challenges but might also allow for rapid innovation in mission-critical settings as individuals work around traditional organizational charts in the service of an urgent goal. Similar, although at times less effective, dynamics arise between academics and administrators in universities, or between the military and civilian personnel in defence ministries. Other affiliations such as gender, race or age can also become salient.

While they cannot simply be wished (or designed) away, these networks should not simply be seen as a source of conflict or obstructive power relations: they can also be especially effective in moving projects forward rapidly or gaining access to otherwise complex resources. Indeed, power in an organizational system is "like the energy in the system coupled with the wires or channels to connect that energy to action".⁹ In driving innovation in an organization, these overlapping networks can effectively help link new innovation units and their managers to

⁸ Thanks to our colleague Roberto Fernandez for this helpful corrective on the political lens.

⁹ Carroll, John. Ibid.

internal customers and other experts within the organization – whom they might know through other shared experiences. On the other hand, claims for resources or protectiveness towards contacts and customers may cause strategic mandates to be ignored or impeded.

The third perspective on organizations is the cultural lens. While Peter Drucker's (probably apocryphal) remark that 'culture eats strategy for breakfast' may be rather too trite, it does helpfully signify that strategy and organizational design alone are not going to prove sufficient for leading an organization, especially one that requires managing change, such as an innovation initiative, especially in a period of uncertainty. Pioneered by Professor Ed Schein (1992), the study of an organization's culture is important in that this is likely to be the most difficult organizational attribute to observe and therefore change. The hard-to-see 'culture' usually outlasts organizational products, services, founders, leadership and all the other physical attributes of the organization. Seen through a grey lens, organizations are organic institutions and as such are imbued with symbolic frameworks of meaning represented in artifacts, values and routines.¹⁰ From this perspective, leading innovation is about changing meaning, changing traditions and informal norms, and changing habits. Not surprisingly then, it is building (or shifting) an innovation culture that is often the hardest and most overlooked aspect of any innovation initiative, and the one for which leadership is the most essential.

Taken together, the 'three lenses' provide a more balanced perspective of an organization, through which any change initiative (such as for innovation) needs to be viewed.

Leading for an Innovative Culture

While culture is the hardest lens or lever for any organization attempting to build an innovation capability, it is rarely the initial focus of significant leadership attention. Why is it that the 'cultural' dimension is often overlooked, and yet often undermines the most rational elements of any innovation initiative? In his definition of culture, Prof Schein provides some clues:

"A pattern of basic assumptions that a given group has invented, discovered or developed in learning to cope with its problems and which have worked well enough to be considered as valid and therefore to be taught to new members as the correct way to perceive, think and feel in respect to [its] problems."¹¹

¹⁰ Schein's organizational model illuminates culture from the standpoint of the [observer](#), described at three levels: *artifacts*, *espoused values* and *basic underlying assumptions*.

¹¹ Schein, Edgar (1985). *Organizational Culture and Leadership: A Dynamic View*. San Francisco, CA: Jossey-Bass.

By reminding us that culture is a pattern of assumptions, Schein hints at the lack of visibility of cultural practices. The somewhat shorter Deal and Kennedy definition works too to remind us of the difficulty people have in seeing or recognizing cultural barriers: after all, culture is simply:

“the way we do things round here.”¹²

In a recent note by MIT faculty Prof Kate Kellogg and her PhD student Emily Truelove, they define culture as the “social and personal identities carried by people, the cognitive or mental maps they utilize to come to terms with the requirements and difficulties they face in their day-to-day activities”.¹³ The cultural lens is an equal member of the trio, but is deliberately grey and therefore hard to perceive (until an initiative runs into it). As such, it can be hard even to understand or diagnose an organization’s culture as a first step to determining whether its key elements are helping or hindering any change programme (or specific innovation initiative). As Schein says: asking someone about the culture they are in is like trying to “ask the fish what [it] thinks of the water” (1995). To that end, for leaders building innovation capabilities, it is worth using some simple tools to get to grips with culture, especially the more readily perceived ‘artifacts’ that may be inhibiting innovation practices from taking root and reinforcing new strategic units and processes.

One simple approach that has proved especially useful in our work with organizations derives from an understanding of the ‘Cultural Web’ as developed by Gerry Johnson and Kevan Scholes in 1992 and outlined by Johnson in application to a public sector organization.¹⁴ Their ‘web’ is a simple but practical way to start to diagnose the culture of an organization by looking at a set of elements or ‘artifacts’ that together usefully represents and renders culture for an organization: drawing on the ‘cultural lens’ approach, we focus on the three most relevant aspects of the ‘web’ that allow one to get to grips with the culture, namely:¹⁵

- **Stories:** the stories (true or fabled) told by members of the organisation to each other and especially to new members when they have first arrived that somehow represent the culture of an organization. Stories that often include the heroes and villains;

¹² Deal, Terry and Allan Kennedy (1992). Corporate Cultures: The Rites and Rituals of Corporate Life.

¹³ Kellogg, Kate and Emily Truelove (2019). A Cultural Perspective on Organizations. Note.

¹⁴ Mapping and Re-Mapping Organisational Culture: A Local Government Example, Gerry Johnson. And, Exploring Public Sector Strategy, Edited by Gerry Johnson and Kevan Scholes (Prentice Hall, 2001)

¹⁵ This is adapted from Johnson, G., Whittington, R., and Scholes, K., Exploring Strategy: Text and Cases (9th edn) (Pearson Education, 2011).

- **Symbols:** visual representations of the organization that can be easily seen by employees and others, but that have important meaning, including logos and lingo, offices and other spaces, cars, titles, prizes, technology,
- **Rituals & Routines:** the organisation's habits and the daily habits of individuals, daily expectations, meeting habits, how we behave; town halls, ceremonies, rites of passage, celebrations.

Even through a simple exercise in which leaders and their teams explore their main stories, symbols, and rituals/routines, it is remarkable how consistent the observations by insiders are. This offers a great insight into the organization's prevailing 'culture' and a foundation from which to explore what changes might need to be made to enable specific innovation goals.

Applying those cultural insights to the leadership of innovation and building of an innovation capability can be especially helpful but also a seemingly daunting task. This is especially true because almost 'nothing is neutral' about a culture when it comes to change, such as innovation (regardless of where on the spectrum from little "i" to big "I" innovation the emphasis is being placed). Every aspect of the culture is likely either to help such a change programme, or hinder it (by reinforcing the status quo). And so, leadership is required to consistently shift the cultural narrative in the organization in every conversation, speech and announcement, and in every reaction in a meeting with the new innovation units or with new innovators attempting (at times not succeeding) to do things that are different and uncertain.

While an organization's dominant culture may not change swiftly, it is also not static. Every act by those attempting to lead or deliver change (such as an innovation initiative) will – rather like specific aspects of the culture – either 'help' or 'hinder' that effort. Beyond the leader him- or herself, it is essential to empower others at every level in the emerging new innovative organization, to serve – even in a small way – as a 'cultural agent' not perpetuating the stories, symbols, and rituals/routines that 'hinder' change, but helping to reinforce new ones, as more of a 'change agent'.

Innovation Practices in Large Organizations

In the context of innovation, MIT's traditional 'three lenses' approach provides a powerful tool for better understanding the organization that leaders face when attempting to implement new innovation practices e.g. through units, activities and programmes intended to drive innovation (i.e. to generate more ideas and taken them to impact but allow for learning and failure. While many innovation initiatives often address explicitly the 'strategic/design' elements (and more implicitly the 'political' ones, such as going for 'easy wins' with a 'coalition of the willing'), the

‘cultural’ dimension is much more likely to be the factor affecting the long-term sustainability of innovation efforts. More specifically, cultural understandings of the intolerance of failure, stories and celebrations typically associated with success (not learning), and implicit beliefs about promotion being associated with visible success or avoidance of failure drive out risk-taking, even when the desirable innovation outcomes are, implicitly associated with some risk.

To address this, we recommend one particular approach from the innovation practice toolkit, namely the familiar practice of ‘experimentation’: while this is a key aspect of entrepreneurial efforts, often through the vehicle of ‘start-ups’, this also matters to large organizations. Experiments are powerful in that they create both learning and results (especially if properly designed) that can be evaluated and controlled.¹⁶

Given the insights from the ‘three lenses,’ the experimentation approach is recommended as it helps leaders and managers of innovation to navigate the organization in all three dimensions.

First, experimentation avoids the need for either a wholesale re-design of the organization’s structure or strategy. Instead, it requires ‘only’ that leadership create the space for doing some new and innovative things within the larger enterprise. This is itself not trivial (especially as it requires time away from ‘business as usual’ (BAU)), and it requires leadership’s commitment not only to run the experiments (under controls) but also to evaluate their results.

Second, experimentation can avoid stepping on the main power rails within the organization, by being run within limits and subject to predetermined controls. As such, those creating the space for the experimentation can launch the efforts in directions – and with partners – that need not provoke political opposition (or ‘anti-bodies’) to innovation within the organization.

Last, experimentation may not be entirely new to the culture of an organization, but even if it is, this approach can avoid overt opposition by proceeding within limits and subject to controls. As the culture is not static, and almost nothing in it is neutral, the simple act of experimentation can start to expand the realms of the possible for such innovation – not least by creating new stories, symbols, and rituals/routines, no matter how small at the outset.

We offer this ‘experimentation’ approach to those leading innovation initiatives as a means to provide advice that – in the way it recognises the organization’s three main dimensions – is less likely to be ‘career-limiting’ for such leaders and executives. In a time of crisis, an organization

¹⁶ See Thomke, Stefan. “Experimentation Matters: Unlocking the Potential of New Technologies of Experimentation” (2003), Harvard Business Review Press. Schrage, Michael. The Innovator’s Hypothesis: How Cheap Experiments Are Worth More than Good Ideas (2004). Experimentation is widely regarded as a key element of innovation, whether in the ‘Innovator’s DNA’ (where it is one of the five key ‘discovery’ skills) or ‘Smart Business Experiments’ (Anderson and Simester, HBR 2011).

may find itself 'innovating' out of necessity, and the resulting 'natural experiments' can be especially important in overcoming traditional resistance to changing the way things are done.

Conclusion

Innovation is a key management and leadership challenge of our times, and especially in a time of uncertainty or crisis. As such it is important to see which tools of the management trade might best help. In this context, the fundamental insights from the 'organizational studies' (OS) side of the house (eg MIT's 'three lenses') are proving to be as relevant for innovation as they have been for a variety of other leadership and change efforts over the years.

To that end, we wish to acknowledge our many Org Studies and Leadership colleagues on whose shoulders and hard work we stand in producing this Working Paper as an effort to connect their insights to the world of innovation.¹⁷ We also wish to acknowledge the insights from others on our innovation and entrepreneurship side of the management house, especially on the power of 'experimentation'. Taken together, such a combined 'school' of thought can clearly offer much to managers and leaders of innovation, in the public, private and third sectors.

As ever with our Working Papers, we produce these to provide practical insights, and also seek feedback from practitioners – as much as from academics – so that we might build together a greater understanding of these important topics.

¹⁷ We have already recognized the foundational work of Eleanor Westney, Tom Kochan, Deborah Ancona and John van Maanen, along with other colleagues in the Organization Studies group in the 1990s and the long-standing role of Edgar Schein in understanding culture. We also wish to acknowledge colleagues who continue to teach this approach in today's classroom - Roberto Fernandez, Kate Kellogg, Cat Turco, Ray Reagans, as well as other colleagues who have been our tutors on organisational culture, especially Dr. Elsbeth Johnson.