

4I Framework of Organisational Learning

The 4I framework of organizational learning contains four related (sub)processes-intuiting, interpreting, integrating, and institutionalizing-that occur over three levels: individual, group, and organization.

The three learning levels define the structure through which organizational learning takes place. The processes form the glue that binds the structure together; they are, therefore, a key facet of the framework. Intuiting and interpreting occur at the individual level, interpreting and integrating occur at the group level, and integrating and institutionalizing occur at the organizational level. There are a sequence and progression to these processes through the different levels, and while there is some "spillover" from level to level, not every process occurs at every level. For example, intuition is a uniquely individual process. It may happen within a group or organizational context, but the recognition of a pattern or possibility comes from within an individual. Organizations do not intuit. This is a uniquely human attribute that organizations do not possess. Similarly, organizations do not interpret.

Interpreting has to do with refining and developing intuitive insights. The development of language, principally through an interactive conversational process, is a basic interpretive process. When actions take place in concert with other members of a workgroup, the interpreting process quite naturally blends into the integrating process.

Integrating entails the development of shared understanding and the taking of coordinated action by members of a workgroup. Actions that are deemed to be effective will be repeated. Initially, the workgroup informally makes this judgment about what actions should be replicated. Eventually, the workgroup may establish formal rules and procedures, and routines become embedded. The process of institutionalizing occurs.

The process of institutionalizing is an organization-level phenomenon. Organizations, like other social institutions, are socially constructed. The routines and rules that make up an enduring organization exist independently of any one individual (although individuals and their actions are affected by these rules and routines).

Learning/Renewal in Organizations: Four Processes Through Three Levels		
Level	Process	Inputs/Outcomes
Individual	Intuiting	Experiences Images Metaphors
Group	Interpreting	Language Cognitive map Conversation/dialogue
	Integrating	Shared understandings Mutual adjustment Interactive systems
Organization	Institutionalizing	Routines Diagnostic systems Rules and procedures

Intuiting is the preconscious recognition of the pattern and/or possibilities inherent in a personal stream of experience. This process can affect the intuitive individual's actions, but it only affects others when they attempt to (inter)act with that individual. At its most basic level, individual learning involves perceiving similarities and differences in patterns and possibilities. Although there are many definitions of intuition, most involve some sort of pattern recognition. The expert and entrepreneurial views of intuition are most closely aligned with the framework presented here. The expert view of intuiting is a process of (past) pattern recognition. A highly sophisticated and complex map enables the expert to perceive patterns that novices cannot. For example chess masters gain expert intuition in Chess. One must play a lot of chess, reflect on past experiences, and learn about great plays; all this and much more are required to become a

grandmaster. But an interesting thing seems to happen on the way to expertise. What once required conscious, deliberate, and explicit thought no longer does. What once would have taken much deliberation and planning becomes the obvious thing to do. What has been learnt becomes tacit knowledge. Fred Smith perceived the potential of reliable, overnight, small package delivery, and Federal Express emerged as a very successful business. He was unable to replicate this success with Zapmail-an electronic mail service. Thus, the connection between quality of intuition and commercial success is difficult to make. Intuition is the beginning of new learning. Eventual commercial success is dependent upon effective learning at all levels-not simply the original intuitive insights of the entrepreneur.

Interpreting is the explaining, through words and/or actions, of an insight or idea to one's self and to others. This process goes from the preverbal to the verbal, resulting in the development of language. Whereas intuiting focuses on the subconscious process of developing insights, interpreting begins picking up on the conscious elements of the individual learning process. Through the process of interpreting, individuals develop cognitive maps about the various domains in which they operate. Language plays a pivotal role in the development of these maps, since it enables individuals to name and begin to explain what were once simply feelings, hunches, or sensations. Further, once things are named, individuals can make more explicit connections among them. Interpreting takes place in relation to a domain or an environment. The nature or texture of the domain within which individuals and organizations operate, and from which they extract data, is crucial to understanding the interpretive process. The precision of the language that evolves will reflect the texture of the domain, given the tasks being attempted. The well known example of the Inuit having over a dozen different words for (various types of) snow illustrates the rich interaction between the task domain and the sophistication of language. Moreover, a person with very rich and complex cognitive maps of a domain, like the chess master, will be able to see things and act in ways that others cannot.

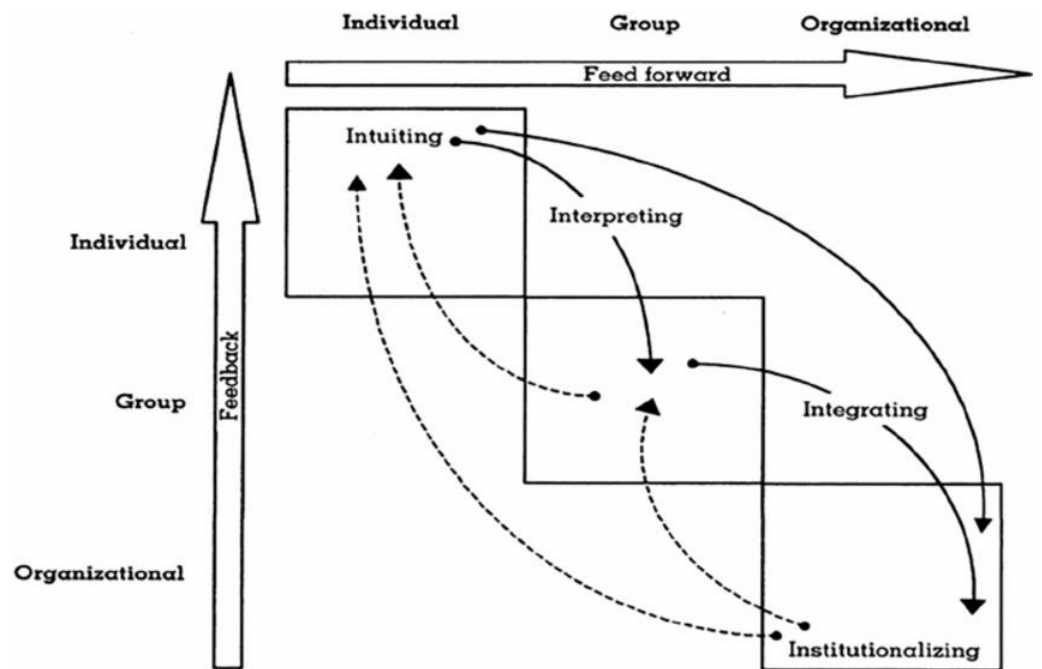
Integrating is the process of developing shared understanding among individuals and of taking coordinated action through mutual adjustment. Dialogue and joint action are crucial to the development of shared understanding. Whereas the focus of interpreting is change in the individual's understanding and actions, the focus of integrating is coherent, collective action. For coherence to evolve, shared understanding by members of the group is required. It is through the continuing conversation among members of the community and through shared practice, that shared understanding or collective mind develops and mutual adjustment and negotiated action take place. Language not only helps us learn-it preserves, for better and for worse, what has been learned. For an organization to learn and renew, its language must evolve. Conversation can be used not only to convey established meaning but also to evolve new meaning. Through dialogue the group can evolve new and deeper shared understandings. This shared meaning can cause those who have participated to more or less spontaneously make mutual adjustments to their actions. This process will initially be ad hoc and informal, but if the coordinated action taking is recurring and significant, it will be institutionalized.

Institutionalizing is the process of ensuring that routinized actions occur. Tasks are defined, actions specified, and organizational mechanisms put in place to ensure that certain actions occur. Institutionalizing is the process of embedding learning that has occurred by individuals and groups into the organization, and it includes systems, structures, procedures, and strategy. The four learning processes operate over the three levels. Because the processes naturally flow from one into another, it is difficult to define precisely where one ends and the next begins. The process of institutionalizing sets organizational learning apart from individual or ad hoc group learning. The underlying assumption is that organizations are more than simply a collection of individuals; organizational learning is different from the simple sum of the learning of its members. Although individuals may come and go, what they have learned as individuals or in groups does not necessarily leave with them. Some learning is embedded in the systems, structures, strategy, routines, prescribed practices of the organization, and investments in information systems and infrastructure. For new organizations there are few established routines or structures: there is no organizational memory. Often by the nature of their small size, their open communication, and their

formation based on common interest and dreams, individual and group learning dominate in young organizations. As organizations mature, however, individuals begin to fall into patterns of interaction and communication, and the organizations attempt to capture the patterns of interaction by formalizing them. This institutionalization is a means for organizations to leverage the learning of the individual members. Structures, systems, and procedures provide a context for interactions. Over time, spontaneous individual and group learning become less prevalent, as the prior learning becomes embedded in the organization and begins to guide the actions and learning of organizational members.

Once something is institutionalized, it usually endures for a period of time. Changes in systems, structures, and routines occur relatively infrequently in organizations; as a result, although the underlying processes of intuiting, interpreting, and integrating are more fluid and continual, significant changes in the institutionalized organization typically are punctuated. For this reason much organizational change is interpreted as being radical or transformational, rather than incremental, in nature. However, even though the institutional changes may appear disjointed, the underlying learning processes of intuiting and interpreting at the individual and group levels that result in these changes may be more continuous. Institutionalized learning cannot capture all the ongoing learning at the individual and group levels. It takes time to transfer learning

from individuals to groups and from groups to the organization. As the environment changes, the learning that has been institutionalized may no longer fit the context; there may be a gap between what the organization needs to do and what it has learned to do. As the gap widens, the organization places more reliance on individual learning and initiative. Given that the environment is constantly



changing, the challenge for organizations is to manage the tension between the embedded institutionalized learning from the past, which enables it to exploit learning, and the new learning that must be allowed to feed forward through the processes of intuiting, interpreting, and integrating.

Quite clearly, intuiting occurs at the individual level and institutionalizing at the organizational level; however, interpreting bridges the individual and group levels, while integrating links the group and organizational levels. Insights, the seeds of adaptiveness and exploration, begin with the individual but, if "successful," eventually become embedded in the formal organization.

Feedback and Feed Forward

Organizational learning is a dynamic process. Not only does learning occur over time and across levels, but it also creates a tension between assimilating new learning (feed forward) and exploiting or using what has already been learned (feedback). Through feed-forward processes, new ideas and actions flow from the individual to the group to the organization levels. At the same time, what has already been learned feeds back from the organization to group and individual levels, affecting how people act and think. The concurrent nature of the feed-forward and feedback processes creates a tension, which can be understood by arraying the levels against one another. Doing so illustrates that, in addition to the processes that feed forward learning from the individual and groups to the organization, learning that has been

institutionalized feeds back and impacts individual and group learning. The importance of these interactions can be highlighted by two relationships that are especially problematic: interpreting-integrating (feed forward) and institutionalizing-intuiting (feedback). Moving from interpreting to integrating (feed forward) requires a shift from individual learning to learning among individuals or groups. It entails taking personally constructed cognitive maps and integrating them in a way that develops a shared understanding among the group members. There are many challenges in changing an existing shared reality. The first is that individuals need to be able to communicate, through words and actions, their own cognitive map. Since many aspects of cognitive maps are tacit, communicating them requires a process of surfacing and articulating ideas and concepts. This process makes tacit knowledge explicit.

Assuming individuals can surface and articulate their maps, a second challenge arises from the collective interpretation of the maps. Making something explicit does not necessarily mean the understanding is shared. Imprecision of language is complicated by cognitive maps that act as unique filters on the communication; we tend to "see/hear what we believe" rather than "believe what we see." The real test of shared understanding is coherent action. Yet, for novel ideas, shared understanding may not evolve unless shared action or experimentation is attempted. The learning perspective suggests that leading with action, rather than bluntly focusing on cognition, may provide a different migration path to shared understanding. As in experiential learning, action provides the opportunity to share a common experience, which may aid in the development of shared understanding. The second problematic interaction is between institutionalizing and intuiting (feedback). Institutionalization can easily drive out intuition. Intuiting within established organizations with a high degree of institutionalized learning requires "creative destruction"-destroying, or at least setting aside, the institutional order to enact variations that allow intuitive insights and actions to surface and be pursued. This is extremely difficult because the language and logic that form the collective mindset of the organization and the resulting investment in assets present a formidable fortress of physical and cognitive barriers to change. Further, members of the organization must step back from proven, objective successes and allow unproven, subjectively based experimentation. One example of the tension and the potential for resolution is in the resource allocation process (institutionalized learning). Many resource allocation processes inhibit the development of new insights, given their emphasis on track record and proven success. However, some firms, such as 3M, have recognized this problem and have institutionalized a different resource allocation process that provides funding for new projects, and also holds the business accountable for having a significant portion of the revenue derived from new products. The system tries to ensure that exploitation (feedback) does not drive out exploration (feed forward). The tension between assimilating new learning (feed forward) and using what has already been learned (feedback) arises because the institutionalized learning (what has already been learned) impedes the assimilation of new learning. Fully assimilating new learning requires the feed forward of learning from the individual and group to become institutionalized within the organization. Utilizing what has been learned is a feedback loop of institutionalized learning from the organization to groups and individuals. For example, rules and routines that once captured the logic and learning of how to facilitate learning at the individual level may no longer apply in a changed circumstance, yet the systems still focus an individual's energy and attention in ways that impede the assimilation and feed forward of new learning. With the 4I framework we identify the flow of learning between levels and the tension between feed-forward (exploration) and feed-back (exploitation) processes as fundamental challenges of strategic renewal. There are many factors that could facilitate and inhibit this process, some of which are part of the institutionalized learning itself (e.g., reward systems, information systems, resource allocation systems, strategic planning systems, and structure). However, in the 4I model we recognize that ideas occur to individuals and that individuals ultimately share those ideas through an integrating process. It is the individuals, and the social processes and group dynamics through which they interact, that may facilitate or inhibit organizational learning. One promising area for further research is to examine the role of leadership and management of the 4I learning process.