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Leadership and Teamwork in Innovation Ecosystems

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Abstract

As experts acknowledge innovation is rarely driven by individuals acting in an isolated capacity, it is generally a social and collaborative element that triggers the concepts of organizational behavior. The question is then how to create environments in projects and in organizations where individual's creativity and contribution fosters pollination to drive innovation. Studies confirm that the key impacting element in this area is teamwork quality, rather than team composition. Thus, organizations need to create teams with key traits that drive positive collaborations such as communication, coordination, balance of member contributions, mutual support, effort, and cohesion. These traits will allow a social group to deal with the inevitable creative tension needed for innovation ecosystems to flourish. Since human behavior is not mathematical, the only way to do this is creating the conditions for these traits to appear. In this context, leaders as social architects become very important, setting the tone of the organization, clearly defining the mission, identifying and living shared values, setting example, and understanding how organizations and social groups behave. When they are able to build high quality and performing environments, they become innovation brokers generating models that are scalable to be able to impact communities.

Keywords: innovation ecosystems, leadership, teamwork, trust, collaboration, communities, innovation brokers, social architects

1. Introduction

Since prehistoric times, people have gathered together in tribes to seek safety in an environment plenty of uncertainty, life threats, and challenges. Those tribes were not isolated, but they had both conflicting and amiable relations with other tribes. The socialization, organization, and governance within these communities were far from being a haven of peace, as



inevitable tension between the individual and the group arose. Since Ancient Greece, this balance between the individual and the group has been a major field of study as it is the basis for the social interaction and management.

However, it was in this environment where human beings started innovating with things like the wheel, weapons, construction, or transportation, propelled by the need for survival. This kind of innovation would have not been possible by isolated individuals, hence, it is relevant to acknowledge that innovation is not about sole genius but about collaborative genius as [1] have demonstrated. The question then is: how we can create environments where innovation flourishes and nurtures? How organizations can balance the individual creativity and contribution, with the group innovation and performance? Provided that human behavior is not mathematical, can organizations and societies develop a framework to foster innovation?

For centuries, human kind has been acknowledging and rewarding creative individuals, but the truth is that innovation rarely happens without cooperation and collaboration. Therefore, it seems straightforward to understand what the key elements of collaboration are. Looking back again to our ancestors, give us the opportunity to understand that trust is the basis for that collaboration. As mentioned earlier, when the hominids got together, they did it seeking safety for the numerous dangers that they were facing. In order to do that, they needed to build trust between themselves, so they took calculated risks and, therefore, meanwhile some of them were taking care of the babies, some others were hunting, others looking and building shelter, etc. This would not be possible without trust, because when people have to focus on dangers from inside the group, they are less able to handle the dangers from the outside [2]. Therefore, when a group of people feel safe and feel that their objectives and hopes are going to be met, they trust each other and start working together to get things done, share ideas, and collaborate to make them happen. Trust is not only firm belief in the reliability, truth, or ability of something, some person, or some group within the rules, but it is also to know when to follow the rules and when to break the rules. Rules and processes are set for standard operations to make sure that we are able to achieve the objectives and avoid issues, but when there are special situations or there are no written rules, we "trust" in the expertise of people to look for solutions. Knowing when to break the rules is a key challenge in organizations [2]. Therefore, it is then key to create organizations where internal stability, safety, and trust in order for people to focus on external issues, threats, or challenges that ultimately ignite innovation and performance.

The problem happens when there is a general confusion about creating an internal safe, stable, and trustable environment, with the lack of some creative tension, constructive conflict, healthy debate, and positive controversy coming from diversity, ambition, and pursue of excellence. These are different elements but not exclusive between them, as cooperation and collaboration does not mean agreement, it means working together advancing toward a common purpose. The question is how those two elements can co-exist in an effective manner, so that high performance and innovation can happen. As Dyer et al. [3] put it, "one's ability to generate innovative ideas is not merely a function of the mind, but also a function of behaviors," meaning that when working in teams they need to generate the behaviors to be able to generate innovation.

In this context, leadership allows of creating groups where internal trust happens and where focus is on external factors that help people develop from individual performance to team performance, to organizational performance, and finally to community performance. As Sinek remind us "the responsibility of leaders is to teach their people the rules, train them to gain competency, and build their confidence. At that point, leadership must step back and trust their people know what they are doing and will do what needs to be done" [2].

2. Team composition and diversity

The key element to consider when working in social environments (groups, teams, organizations, communities, or networks) is, as reflected by Collins research [4], to have the right people in the organization. His studies conclude that instead of first setting up the mission, objectives, and processes, it works the other way around, hiring first the right people and then figuring out the next steps. Main reasons are that in a rapid changing world, adaptation is better as direction has not been set yet, motivation issues largely go away, as people motivations are self-driven and trying to implement a vision with the wrong people has many chances of failure. Catmull [5] from Pixar coincides with this approach when he says "My conviction that smart people are more important than good ideas probably isn't surprising. I've had the good fortune to work alongside amazing people in places that pioneered computer graphics."

The right people for the organization should be considered based on character traits, soft skills, and core values rather on knowledge, background, or skills. Bennis and Thomas [6] identify that key elements for outstanding managers are adaptive capacity through resilience openness, creativity and observational skills, clear ethical framework, and deep sense of purpose and self-awareness with comfort of dissent. Thomas [7] will later propose that another key skill is the learning capacity from experiences focused more on soft skills, values, and evolving as a person.

One very important question that has been discussed in the academic and scientific literature is diversity, propelled by the fact that missions and tasks faced by teams are becoming more and more complex involving different technologies, fields of knowledge, and processes. Paulus et al. [8] reviewing the studies available mention that they are not fully conclusive as some are positive, some are negative and say that there is no impact. As these authors suggest, the main reason for this lack of comprehensive results is that it depends on the type of diversity. The authors suggest, after reviewing previous research, that background diversity has a negative impact in innovation, whereas job diversity has a positive impact.

However, in this context, Kurtzberg [9], starting from previous studies, concluded that heterogeneous teams outperformed homogeneous teams despite the perception of creativity of those diverse teams was not consistent with reality (quantitative and qualitative). This means that the perception of the ability to generate creativity and innovation might be more important than ability itself. In our opinion, this research demonstrated the intuitive approach that diversity has a positive impact in innovation, provided that there are not prejudices and preconceived ideas that preempt the team to perform. The self-fulfilling prophecy seems to have a very important impact again in human behavior.

Hoegl and Parboteeah [10] demonstrate that high teamwork quality (measured in several factors as communication, coordination, balance of member contributions, mutual support, effort, and cohesion) has a positive impact in innovation, whereas they are less dependent on domain relevant skills, creative-thinking skills, or team efficiency (as adherence to schedule and budget). These conclusions are in line with literature that suggest, that to be effective, teams need to have effective cognitive processes, be cohesive, have a sense of efficacy, coordinate their activities, have effective task structure, have goals and feedback, be trained, and have appropriate leadership [11, 12]. These could also help understand why some of the research about innovation and creativity in teams is not conclusive about its impact in performance, as the key factor is quality of teamwork rather than the diversity itself. In short, how to manage a group or community is the key relevant factor to performance and innovation. For us then, it is relevant to focus on how to create a culture that generates the conditions for high performance organizations where creativity and innovation can flourish, rather than the creative process itself.

3. High-quality teamwork and stages of group development

In order to reach a high teamwork quality, we need to understand how a group evolves from a sum of individuals to a high performing team. Tuckman [13] defined in 1965 the four different stages of group development which have been widely used, and despite other authors have different number of stages, all of them seem to be quite similar [14]. These stages are as follows:

- Norming: This is an existential phase where people are cautiously exploring the situation
 and the relationship. Members are trying to understand who are they as a group, what will
 be the individual roles, and how they are going to operate.
- Storming: People start working together but diverse perceptions about mission, vision, objectives, and roles emerge. Disagreement and conflict turns up creating tension in the organization. If the conflict is constructive and if the group is able to manage the conflict appropriately, clarification will start happening and then the group is able to mature and go to the next stage.
- Norming: The team works together toward the agreed objectives in a cohesive and collaborative manner. Members develop their tasks and they start getting results.
- Performing: In this phase, performance reaches the maximum, exchange of ideas, successful implementation of new concepts and shared leadership appear in the team.

Later on Tuckman and Jensen [14] added one final stage called adjourning to reflect the final disband of the group.

Not all the groups make it to stage 4 because, although they can reach to stage 3 and start providing results, they do not necessarily maximize their synergistic performance. In this context, a group that has already moved out from the storming phase will become a team, instead a mere group, and it will be more able to build and nurture trust between the different members and commitment with the mission. However, if the team is able to start delivering

results in the norming stage, then it will be more capable to move to the next stage to handle creative tension, diversity, and conflict, which are key conditions to innovation behaviors to emerge (associating, questioning, observing, networking, and experimenting), producing a synergistic team value called innovation premium [3]. That is the reason that high performing teams (stage 4) are generally associated with creativity, innovation, and shared leadership as described in the research [14, 15].

Therefore, leader's role is to create the conditions to enable teams to become high performing groups, where there are three key elements for success: Collaboration, discovery-driven learning, and integrative decision making. To make sure this happens, leaders need to be able to balance the paradoxes of innovation [1], meaning that they need to make sure there is appropriate balance between individual and collective value, support on the ideas and constructive confrontation, learning and performance, structure and improvisation, and patience and urgency.

Additional to this, the roles of senior leadership in developing disruptive innovation according to Christensen and Raynor [16] include:

- Bridging the interface between disruptive growth and mainstream business.
- Designating the appropriate resources and processes for the innovation process; creating and mentoring a disruptive growth engine that starts early, providing oversight, and engaging an expert team of well-trained movers and shakers; and sensing when the context is changing and training others to recognize the signals.

4. Innovative leaders as social architects

So how can leaders create those organizations? In order to answer that question, we need to understand how effective leaders behave. In a study of more than 10 years, 24,000 people and two dozen corporations, Logan et al. [17] reached to the conclusions that human behavior in the corporate world is not very different to the aforementioned of our prehistoric ancestors. People gather together in groups (namely, tribes) of 20–150 people as that is exactly the Dunbar number [18], which is the suggested cognitive limit to the number of people with whom one can maintain social relationships. Each of these tribes has a particular culture that is set by tribal leaders, and those tribes can be defined in a scale from 1 to 5.

- Stage 1: People in this group are alienated. Motivation is power and survival. Trust only happens for safety reasons. They perceive that "life sucks."
- Stage 2: People in this group are passive, reactive, and noncollaborative. They rarely cluster together and it is usually temporary. It represents 25% of the population. Their perception of the situation is "my life sucks."
- Stage 3: Forty-nine percent of people are in this stage. Relationships are dual (1-to-1) with increased egocentric and competitive approach. These people feel "I am great" and there is an implicit thinking of "and you are not."

- Stage 4: Relationships at this stage move to triads, in which the group is preeminent versus the individual. Competitiveness happens only at group, team, or organization level, but not between members. Full collaboration at organizational level happens. The perception of these people is that "we are great" with the inner thinking of "and they are not."
- Stage 5: People at this level are not competitive, but fully collaborative. They do not see the boundaries in the organization as long as they share values and mission. The perception here is that "life is great." They do not see the traditional hurdles of other stages set as "I can't, I don't want, or I don't know" and they focus on making things happen.

This classification seems very relevant to innovation for us as these authors set up different grades of collaboration according to the stage of the tribe. **Table 1** shows their adapted proposal.

Therefore, in this case, stages 1 and 2 represent a situation with no teamwork and collaboration. Stage 3 shows a typical organization where there is very limited teamwork and management approach is command and control. Stage 4 is a stage where teamwork happens and high-performing teams can definitely be represented here. Stage 5 for us represents collaboration communities where different nodes connect each other to work together. In this context, innovation happens within organization in a very limited amount in stage 3 (i.e., military environment); however, within organizations, innovation is strongly happening in stage 4 (i.e., 3M, Google, Microsoft, etc.). Maximization of innovation can only happen in stage 5 where collaborative economy, exchange of ideas, shared trust, open frameworks, and creative environments are the norm (i.e., Silicon Valley).

This type of leaders is also mentioned by Collins [4] where he identified organization with higher performance than similar companies during 15 years in a row. These companies were led by 41 CEOs labeled by their employees as quiet, humble, modest, reserved, shy, gracious,

Tribal Stage	Collaboration	Communication	Structure
5	Community	"Life is great"	
4	Team	"We're great"	\Leftrightarrow
3	Personal	"I'm great"	*
2	Separate	"My life sucks"	
1	Alienated	"Life sucks"	0

Table 1. Collaboration stages and structures.

mild-mannered, self-effacing, understated, did not believe his own clippings, and so on. He mentions that these successful leaders put their ego away, focusing in the "we" more than in the "I."

Basically, leaders in stages 4 and 5 set up a tone in the organization where purpose, shared values, and rules allow to create the conditions for the right behaviors and thinking process to emerge. Those leaders are masters managing the inevitable tensions that arise between the individual and the group, and they do it by clearly setting purpose, defining clear values, setting example, and being able to manage the group behavior and psychology. Because of these leaders' life attitude, they are able to instill and motivate the group and take the performance of those groups or communities to the next level.

Amabile and Khaile [19] expand on the behaviors that innovative leaders reflect values of humility, openness, and pragmatism and are result driven. The behaviors are as follows:

- Tap ideas from everyone in the organization regardless of level and function, motivating, avoiding punishment for failure, valuing contributions, and providing recognition.
- Open the organization to diverse perspectives. Making sure that there is enough diversity and people are not afraid to show that diversity.
- Avoid bureaucracy and resistance to change by eliminating obstacles and clearing paths.
- Identify when to set up controls and when to avoid them. Understand if the group is in a confusing discovery phase and allow to nurture the ideas on that stage.
- Set up the right controls in the commercialization phase. This is a critical moment. Having teams from diverse disciplines and in separate spin off entities will help test and gauge the ideas.

In this context, the importance of leadership in innovation cannot be minimized since they set the tone and the attitude of the organizations as research concluded. Leaders must be able to understand the maturity of the group or the community, be able to pulse the emotional tone of the team and channel those emotions to energize the innovation effort. People are placed at the first line of the innovation process, and it explored the individual role, the capacity of teams, and the scalability of the model in the community of practice to accelerate the process. As mentioned before, the leader and the organization must manage the inevitable tensions of the paradoxes, constantly looking for a balance between conflict, improvisation, and chaos, and structure, performance, and direction.

So leadership is a personal growth journey that goes through the mentioned stages to reach a point where shared leadership allows positive interaction. Leaders here are social architects where often take an advisory role connecting "dots," communities, and ideas. They can create a vision and therefore set direction in a participatory way. These leaders also usually take the role of innovation brokers helping to consolidate the integration of knowledge and ideas in order to create synergetic value. They act as facilitators or systemic intermediaries of cooperation in innovation systems, and their activities usually cover different parts of the process taking even some years.

5. Scaling up the teamwork: the role of innovation brokers

When creating innovation communities, there is also the need of trust between different organizations and, therefore, from the different stakeholders' perspective, the neutrality and ethical approach of the brokers is a key factor, as it will determine the trust and credibility to develop their job. In this context, their reputation and a high degree of independency from the major stakeholders in the process and the innovation system have to be clearly identified. This is very sensitive, because if there is a conflict of interest due to stakeholders' pressure to position their particular interests, this does not help to build productive innovation networks [20].

Once the initial network consolidates and starts interacting, it is relevant to identify participatory needs and assess opportunities, reorganizing the network if necessary. Following steps in the innovation broker functions are to plan the actions, to facilitate or coordinate the network, to be prepare for problem solving and conflict resolution, and to have an exit strategy [21].

For all this, it is suggested from experts a fourth strand in the Triple Helix: the broker [20]. In this context, the innovation brokers, individuals, or entities (i.e., accelerators, knowledge transfer organizations, or economic development agencies) are key in an innovation economy due to the capacity to connect strengths and values from the regional ecosystem to facilitate the creation of new businesses, jobs, and wealth [22, 23]. These brokers are able to manage the mentioned tensions and paradoxes at community level between the different stakeholders, such as structure and improvisation, learning and performance, or conflict and support [24].

In this sense, it is worth highlighting that the innovation economy is not only limited to the creation or the support of start-ups. In addition, it covers the existing entities (i.e., SMEs), which can become more competitive thanks to the activity of the innovation broker [20]. Another element is that existing entities (i.e., Small Medium Enterprises, corporations) that started small and innovative often lose their ability to innovate as they focus on growth and not existence [2], and also focusing on performance rather than learning [1]. This also directly links with the key role of the innovation brokers for the successful commercialization of innovations [25] and their role in the regional innovation [26, 27] which is depicted in **Figure 1**.

Therefore, this role is key because if an existing organization cannot develop a successful innovation strategy relative to its core capabilities, other smaller entities will disrupt the market. These assets and capabilities required to the innovation brokers are shown in **Figure 2**.

Innovation brokers are crucial to be identified or to be trained (i.e., thanks to regional investments) and to be involved in the different stakeholder management levels to assure the efficient triangulation between all players in the open innovation system as depicted in **Figure 3** [27].

However, the emergence of these innovation brokers is not easy. It is usually a consequence of specific needs of an innovation network (i.e., physical distance among network members, lack of trust, or different objectives [28]). They can be formally or informally assigned. In any

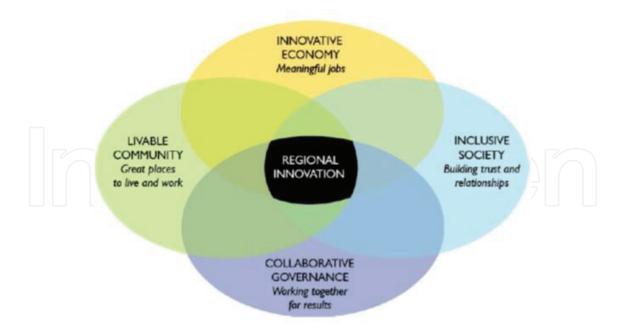


Figure 1. Regional innovation landscape. Source: Collaborative Economics [27].

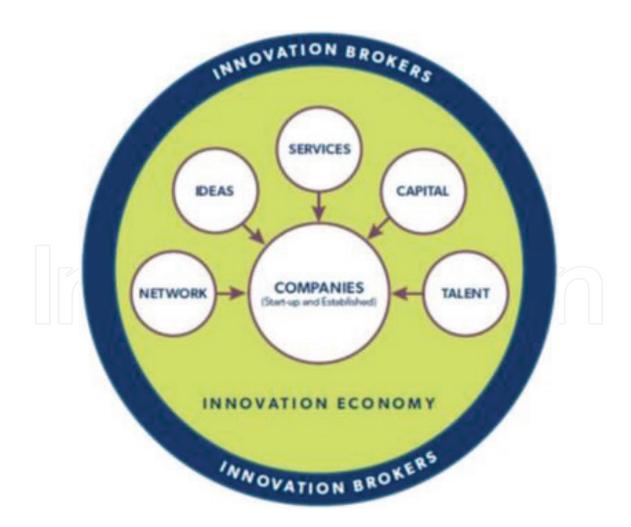


Figure 2. Brokers as the centripetal force that directs regional resources toward business. Source: Henton and Oettinger [20].

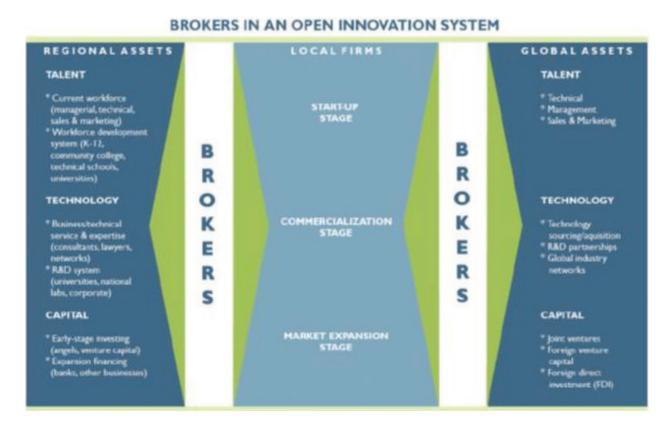


Figure 3. Brokers in an open innovation system. Source: Collaborative Economics [27].

case, innovation brokers are successfully identified in an innovation network based on bridging people and knowledge, personal reputation, and influence within the network and their relationships with other individuals in different levels of interaction.

Considering all this, one of the best broker profiles is that of a person from the business sector, with access to investors and the possibility to influence stock and capital owners to invest on the innovation network, start-ups, products, or services developed. This is why it is so important that the business schools and other education networks start educating the next generation of leaders but also the next generation of innovation brokers that are able to deal with the challenges of the innovation economy [29].

In any case, the brokers need to be internally legitimized, what will allow them to successfully perform their role [30]. Precisely, the Global Innovation Index 2014 focused that year's report on the "Human Factor in Innovation" [31]. The analysis of the human contribution to innovation is a complex challenge. It is relevant to place the people at the first line of the innovation process and explore the individual role and the capacity of teams to accelerate the process.

Only with practical analysis of strategic management in a particular innovation network or project with the recognition to the key role of individual innovation brokers, it is possible to learn more about what happens at the intersection of people, technology, services, business models, financing, policy, and institutions to design a strategic framework to scale up to the top stage of the collaboration structure [32].

6. Conclusion

In summary, research concludes that most innovative organizations and projects are those that are able to create a high-quality teamwork ability, fostering collaboration, discovery-driven learning, and integrative decision making. This is only possible with the appropriate leadership based on personal development process that allows to developing a positive attitude with very strong human values such as humility, solidarity, and generosity. Research shows not only that these types of leaders are far more innovative, but also that their sense of purpose, their share values, their ability to manage organizational psychology, and their example are key to manage the inevitable tensions of the group. Leading innovative organizations have behaviors and thinking processes funded in balancing key paradoxes and tensions like individual and collective, support of ideas and constructive confrontation, learning and performance, structure and improvisation, and patience and urgency. Leaders have to act as brokers in these organizations to ensure balance between these elements, but they have to do it during all lifecycle since inception and group gathering, to team, to organization, to finally scale up their roles to the community level to maximize impact in innovation ecosystems. In addition, since innovation happens when high-quality interaction arises, communities need to proactively appoint innovation brokers to be able to ensure that high quality interaction that balances the aforementioned tensions to successfully drive innovation and performance to our society. This is a far less intuitive role in our current ecosystems, although the rewards of such structure are very significant. The selection process of these roles should be extremely careful to be able to meet all the requirements mentioned in this chapter. The key conclusion is that innovation always depends on the human factor and the quality of the interaction between people and, therefore, human values are key for the successful implementation of innovation social architectures at project, organization, and network levels.

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