Designing for Collaboration

Tool Development For Small Group Organization

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Abstract

Collaboration plays a vital role in innovation and can be made easier through facilitation, frameworks and tools which direct the thinking process of the group. There is a gap in methods used to address the dynamics of small group formation and conflict mediation, presenting an opportunity space for a design process inquiry. Student experiences in collaborative learning environments scope the context of inquiry. Potential issues and layers of influence in small group dynamics are assessed and numerous theories for best collaborative practices are considered. The research insights culminate with the creation of a small group collaboration tool, "Sum of Its Parts." The tool enables a holistic structure of intentional inquiry and facilitates versatile conversations aimed to get to the roots of group dynamics issues. Tested against student organizational dynamics, it has proved useful in facilitating illuminating conversations between group members. Further research is required to understand the limits of the tool and the full effects of its aims.

Key Words: Collaboration, small group dynamics, forming, storming, norming, tool

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"For good ideas and true innovation, you need human interaction, conflict, argument and debate."

- Margaret Heffernan

1. Introduction

1.1 Collaborate to Innovate

The urgent need to create healthier and more appropriate solutions to the complex challenges that confront our world is the defining problem set of our time. The class of social problems facing humanity today has been depicted as 'wicked' - ill defined, unique, and involves many stakeholders with potentially very differing value sets and are almost always symptomatic of other problems (Rittel and Webber, 1960). The significance of developing new ways of approaching complex challenges cannot be understated. Innovation is imperative.

Innovation is "the creative application of knowledge"; it is the process which takes the raw material of knowledge and investigates it in new ways (Yusuf, 2007). The evolution of Design Thinking is a response to this directive. Described by Buchanan as the 'new liberal art of technological culture', design thinking makes use of diverse knowledge with creative thinking tools and facilitation processes which breed innovative thinking and inclusive problem solving (1992). Processes of facilitation involve the use of frameworks designed to incorporate the ideas of average stakeholders and subject matter experts' creativity, using visualization and design procedures to co-create new ways of thinking (Sanders, 2016). These innovative and provoking research and thinking tools are transforming antiquated ways of considering problems as segmented or in silos, into conversations which propagate inclusive and holistic thinking. These participatory and transdisciplinary approaches are the foundation of design thinking and have created the conditions for a new type of designer whose core capacities are built in the ability to facilitate and create collaboration (Hunt, 2012).

1.2 Opportunity Space

While the benefits of interdisciplinary and diverse stakeholder collaboration are known, the complexity of collaboration in the design thinking process cannot be downplayed. Design processes are continuously evolving with tools and methodologies in order to help bring greater ease to the complexity of collaboration. However, creating mechanisms for working effectively together and maximizing the effects of multiple perspectives is no small feat (Hunt, 2012). Integrating the voices of many people to create something new can be met with very real human emotions e.g. confusion, resistance and power struggles that can easily filter into the work. Becoming a design thinking expert who facilitates collaboration of this nature requires acquisition of skills which are founded in creativity, empathy, perspective taking, communication, active listening and even conflict management.

Having experienced a design education program which aims to teach design thinking and many tools for collaborative thinking, there has been time for deep reflection on the experience of collaboration at multiple scales. While the tools and methodologies known for collaborative research investigations and stakeholder engagement are plentiful, the tools needed to facilitate creative collaboration and conflict mediation at the level of a project team dynamic is itself, an opportunity space.

Project team dynamics are comprised of various layers: the self, the roles taken on, the relationship between members and the context or scenario they find themselves in. As project teams move through their work, these dynamics are all consciously '*tetra-arising';* each at the mercy of a multitude of influencing factors. Whether actively considered or not, effective collaboration

depends on these dynamics. If dysfunctional dynamics present or challenges are not managed effectively, teams could face compromised design plans, design outcomes and emotional struggle.

This inquiry looks to elaborate on the complexity of collaboration at the level of the project team and asks:

How can our understanding of collaborative ecosystems help us to build tools to enhance the effectiveness of small group collaboration?

Caveat: *This report only considers collaboration dynamics as they are playing out in team working face to face. While the consideration of virtual collaboration may be part of further research, the trends, issues and potential in that space are not part of the research consideration for this report.*

1.3 Research Process

The process for this research inquiry was typical of the double diamond design thinking framework. Divergent and convergent phases were directed by primary research and literature review and were used to draw themes and insights to address an opportunity space. Insights led to further research to define the specific problems which would then be addressed in the ideation and prototype phase.

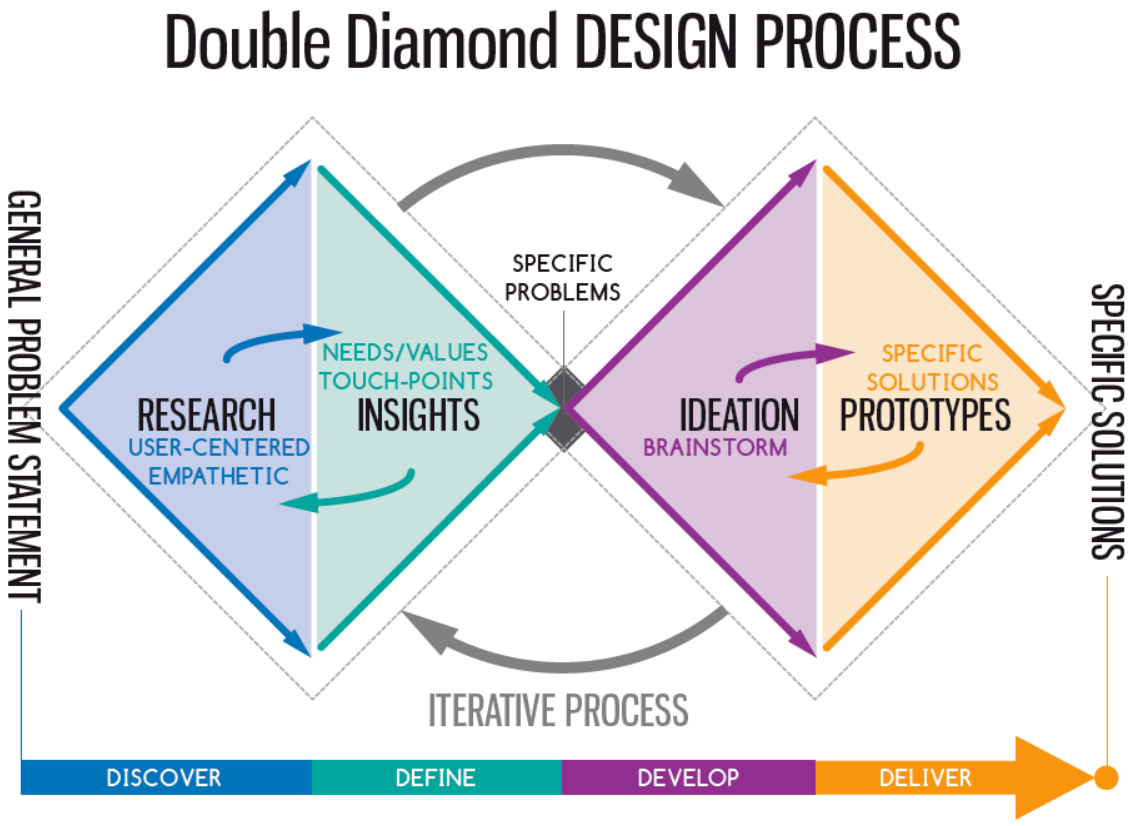

Figure 3. Double Diamond, Design process (Chu, n.d)

Discover and Define

In order to answer this research question, understanding the influences impacting the dynamics of small groups needs to be considered. A clear understanding of what groups struggle with, as well as what makes a group successful, is necessary to consider in order to formulate a research plan that adequately addresses the issues. My own experience in a collaborative learning environment, as well as a survey among Strategic Foresight and Innovation (SFI) students serve as basis for the formulation of the first round literature review research. Understanding the main ecosystem influencers of group dynamics, and what level of impact they have on group dynamics set the foundation. Through this research, the commons issues likely to present forwarded enabling condition needed for effective collaborative experiences.

Develop

Conditions for enabling effective collaborative dynamics found in the previous stages were used to establish the design goals for collaborative tool development. "Sum of Its Parts" was created to facilitate a constructive and creative conversations which project teams can use to better understand their team dynamics. The tool makes space to consider how organizational, group and individual dynamics are influencing group cohesion and builds out an integrated understanding of all member's perspectives in a holistic way. Through this method, individuals within the team are heard and valued as they move through a collaborative group process. With conscious and creative perspective sharing, teammates can integrate an understanding of one another and make space for feelings, processes or content issues that may come up and consequentially work through them in an intentional way. The tool elements and framework are explained and described.

Test and Reflect

The report culminates in a delivery of a model which has been tested for impact against project scenarios of forming and storming. Reflection on the process of use, the impacts and outcomes of those tests and insight from participants who used the tool are discussed. The tools usefulness, potential limits and plans for re-design are used to consider goals for further research and next steps for impact. This is so far, a conjectural effort within a specific context of an educational environment. Further research, prototyping and testing are necessary to deeply understand the effectiveness the tool aims to have and its potential positive impacts assuming its use.

1.4 Key Terms

Forming – The first stage of Tuckman's 5 Stages of Group Development Theory see teams coming together and arranging the dynamics of both what is expected of them, how they will work and who will be responsible for what. For more information on this theory see Figure 5.

Storming – The second stage of Tuckman's 5 Stages of Group Development Theory where groups deal with conflict between members. This may be marked with disagreement and hostility.

Norming – The third stage of Tuckman's 5 Stages of Group Development Theory. Teams have addressed the dynamic issues which present in the first two stages and have developed norms.

Individual Paradigms – Also known as worldview. The values, beliefs and experiences that an individual has which ultimately shapes their perception of the world.

Small Groups – Small groups can typically be understood to be groups of 8, however, for most project teams the ideal is between 4 and 5.

"Coming together is a beginning, staying together is progress, and working together is success."

- Henry Ford

2. Discover and Define

2.1 Primary Research: Learning in a Collaborative Environment

The Strategic Foresight and Innovation (SFI) program is built on the principles of collaboration and co-creation. Considered to be the engine of the program, collaboration was the curriculum of the 'invisible course' and the skill development objective tucked into all group projects. Collaborative skills such as awareness of learning styles, communication styles, group processing, discerning through many ideas, experiencing dissenting views, practicing role creation, non-hierarchical decision making, and conflict and mediation skills were development objectives present in all the design challenges. The process of learning these skills through the design challenges, however, were often a matter of experience – or more problematically, a matter of blind trial and error.

Organizationally, the stakes were high for SFI group work; groups were non-hierarchal, often on tight deadlines, activating new material, with new groups and with grade expectations. These conditions made project team formation days a consistent source of collective anxiety. Each class had a different methodology for choosing the team formation. Sometimes it was left up to the students, other times teams were chosen by professors. When lack of choice was protested by the class, the reasoning was to reflect the real world reality where organizations chose teams.

The first project I completed in the SFI program, the group were chosen for us by professors. New to the organization, the process of design thinking in teams, and new to each other, the influences were dynamic. With no particular framework to understand the skills expected of the group or specific instructions for team dynamic success, the end result was a level of extreme team dysfunction that felt beyond resolve. Normal human complications such as assumptions,

miscommunications, unawareness to differing value sets, different knowledge bases and clique behaviour, ultimately led to deep group divisions, fierce fights, wasted emotions and outcomes that not everyone was proud of. Despite involving the professor responsible for the class, no tangible methodology for conflict mediation was presented or expected to be considered. It was suggested that this was a normal part of group work.

Resolve never came of the issues experienced in that dynamic and although the lessons we may have learned from each other through that experience were potentially invaluable, there was no effort or method for investigation made to understand what went wrong. The group projects that followed as the academic year went on personally did not hold the same weight of emotional burden, but in all groups and in all classes, there were experiences of conflict and a sense of struggle felt at some point by every team.

The experience of struggle in team dynamics is not unique to my cohort; it is a constant issue that will be reported as part of any student's experience. Current SFI students were surveyed on this matter as part of a design output workshop (data collection and protocol details to be discussed in in Section 4.1). While inadmissible stories and specific instances of struggle were left out, the range of issues they considered to be 'the hardest parts of working in groups' were captured. Their answers were nuanced and specific, spanning a host of issues to do with collaborative learning objectives (Figure 2).

Question: "What is the hardest part of working in groups?"

"Getting to know everyone's boundaries and expectations."
"Managing the different learning/working styles."
"Understanding the needs or values of the group: some people need macro or micro perspectives, some people need to jump to writing, some people need to figure things out first."
"Being appreciative of the different things and ways people contribute."
"Understanding the real expectations and mindsets of other members."
"Not feeling like I can be myself, or say things I want to for fear that I need to seen as 'nice'."
"Communication and honesty."
"Understanding my own feelings, then having the capacity to explain that to others."

Figure 2. Participants reflection on question 1 of survey (Appendix A)

The hardest parts raised here are related to skill development needed for effective group collaboration as well as personal struggle. There is a sense of 'not knowing' or 'trying to figure things out' both personally and collectively which presents as a source of stress for students.

The learning objectives for collaborative skill development intended by the program are of great value. However, the process of learning these objectives falls into what education theorists refer to as incidental learning. Incidental Learning is the process by which learning occurs through the day to day, often provoked by an unplanned or unexpected event and realized through the inductive reflection process taken on by the individual (Watkins and Marsick, 2001). The issues with an incidental method in organizational learning come with its unstructured nature; it is implicitly up to the individual to acquire the knowledge, thereby making the acquisition of this knowledge potentially limited. The implications of this are suggested by education theorists to effect learning that is of value to developing empathic understanding towards others in the organization.

"Because informal and incidental learning are unstructured, it is easy to become trapped by blind spots about one's own needs, assumptions, and values that influence the way people frame a situation, and by misperceptions about one's own responsibility when errors occur...people often do not deeply question their own or others' views. Power dynamics may distort the way in which they understand events." (Watkins and Marsick, 33, 2001).

Steps to alter the implications of incidental learning begin with understanding the interface of learning that occurs at an individual, team and organizational level (Watkins and Marsick, 2001). In designing more conscientious reflection on the tacit knowledge that is arising at an individual level, within the broader context of both the team and the organizational dynamics, the knowledge which is constructed here could be tapped for group use. In creating a space of shared knowledge to align group needs, values, goals, understandings of limits, facilitators, etc., perhaps the 'figuring out' that is occurring separately in each members' mind would be eased.

"Once we see the relationship between structure and behaviour, we can begin to understand how systems work, what makes them produce poor results, and how to shift them into better behaviour patterns."

(Donella Meadows, 1, 2008)

2.2 Ecosystems Influencers

Systems are a set of things – in the case of small groups or teams, people that are interconnected in ways that effect behavior overtime (Meadows, 2008). Small groups are influenced by a variety of ecosystem elements which effect the overall dynamics: the organization they are formed within, the individuals in the group and their unique paradigms and the team development that occurs overtime (Figure 2). If we begin to consider the ecosystem elements of small group dynamics and how they are inspiring, driving or limiting effective collaboration, insight into how to create collaborative process which have more awareness of conditions which enable effective dynamics may be found (Meadows, 2008).

Figure 3. Ecosystem Influencers of team dynamics

2.3 Organizational Influence

Organizations are becoming increasingly aware of their potential to influence both the quality of work and life an employee reports, just by the cultural container they create (Bauer and Erdogen, 2012). While not always relevant to how well a group or an individual might preform, the ripple affects the norms or expectations created by an organizations culture creates is a very important point of influence.

Organizations are often the drivers or main influencers of the content required for small group inquiry. In an education context - the types of projects, expectations, deadlines, attitude towards failure, methods of organizing considered valid, hierarchy structure, leadership attitudes and so on. These points of influence can affect not only the development of the small group dynamics – but also the individual within the group. The organization's potential to influence how a team member shows up in a group is also often related to the culture norms, expectations and values forwarded by the organization.

The field of study used to better understand the dynamics created by institutions and organizations is referred to Organizational Behavior (OB). OB is defined as "the systematic study and application of knowledge about how individuals and groups act within the organizations where they work" (Bauer and Erdogen, 17, 2012). As the impact organizational culture ripples to productivity and innovation, high preforming systems or organizations are using their own organizational data to draw insights as to how best to create welfare within their own organizational structure.

One of the most revealing OB projects, was Project Aristotle, a massive multi-year study undertaken by an organizational behavior team at Google. They were looking to understand, apart from skill

set, what dynamics made teams more effective. When it began, the research hypothesized that the types of personalities present in the group would make it perform better. Group creation based on personalities is an understanding forwarded by many organizational theories. Basadur profiles are often used in the SFI program to generate the perfect mix of personal thinking styles in one team. Harvard Business Review also suggests that teams comprised of more level-headed people, "higher levels of interpersonal sensitivity, curiosity, and emotional stability resulted in more-cohesive teams" (Chamorro-Premuzic et all, 2017).

Ultimately, the idea of 'the perfect mix of personalities', ran counter to what Project Aristotle found out. After studying hundreds of the teams operating in their office, they could not find a specific set of personalities that were better suited to work together for team success. Instead they found that the teams that had the highest success where teams that, as a whole, had a high degree of communication and a high expression of emotional intelligence, which in turn created a sense of psychological safety for all members of the group (Chamorro-Premuzic et al, 2017).

These elements of interpersonal safety were translated from a set of behaviours that presented themselves in the successful group dynamics studied. On average in these teams, each person got approximately the same amount of airtime to voice ideas. These teams expressed an above average overall expression of social sensitivity to each other and were skilled as sensing how others felt. There was a sense of confidence that teammates had in speaking up, and a sense that nothing bad would come to them if they shared what they were thinking or feeling (Duhigg, 2016). While these qualities were often expressed by individuals within the group, the main insight that Google concluded was that great teamwork could be found in any group if the right enabling conditions created an overall high degree of psychological safety (Duhigg, 2016).

Psychological safety is the number one ingredient that Google research concluded to create high preforming teams, followed by dependability, structure and clarity, meaning, and impact (re:work, 2018). Google's re:Work Division uses this framework to focus their teams all over the world to ensure that all members of the team can say, yes to all of the ingredients listed in Figure 4, when asked to think about their work team dynamics (re:Work, 2018). They have used their organizational influence to create a framework for flourishing.

Figure 4. The five keys to successful Google team (re:Work, 2018)

Google is creating what leading organizational behaviorist Richard Hackman calls 'enabling conditions.' They have created the organizational culture which enables and "supports a compelling direction, a strong structure and a supportive context for group development" (Mortensen, 2016). The potential impact an organization can make to ensure the team thrives can look many ways, but as Google has shown, having a structure they can point to and reflect on allows individuals, teams and organizations to come into alignment about what is expected and what should feel right in the dynamics of a team.

While it might be enough for small groups to build behavior from these directives, the nuance of physiological safety is worth noting. The behavior required for psychological safety occurs within the team dynamics, e.g. equal speaking time, awareness of others, comfort to share feelings without worry. While these are meaningful overarching behavioral goals for organization, the dynamics of what is occurring within the small groups over time need to be explored.

2.4 Team Development

When small group dynamics become challenging, psychologist, Bruce Tuckman's '5 Stages of Group Development' is often used as a method of awareness as to how common issues in team development are (Figure 5). His 5 Stage Theory of Group Development was advanced after an extensive review of the literature on group development and many years of experience working with and observing small groups in action (Tuckman and Jensen, 2010). According to Tuckman, 5 distinct stages or phases were visible and repeatedly witnessed follow a similar pattern of self-organization from group formation to project completion. The stages are sequenced as forming, norming, storming, performing, adjourning (Figure 5) (Tuckman and Jensen 2010). In Tuckman's observation, it was the group's ability to move through the challenges likely to occur in each stage with resilience that would lead to a team's ability to perform. The commons issues he observed were generally due to content (what a team does), process (the team's movement toward objectives) and feelings (how a team relates). Each stage is built sequentially over time as challenges of the project or personal relations in each stage are met. If challenges are not met, the progression to the next stage would not be done with success (Tuckman and Jensen, 2010). Examining the issues cited in Figure 5, there is a sense that the issues are related to both how group members are talking to each other, but also what group members are talking to each other about. Effective group development according to Tuckman, is not only about psychological safety, but also about the type of information the group members are sharing with the group. The importance of discussing certain points of information for the benefit of the group dynamic helps to increase effectiveness overtime.

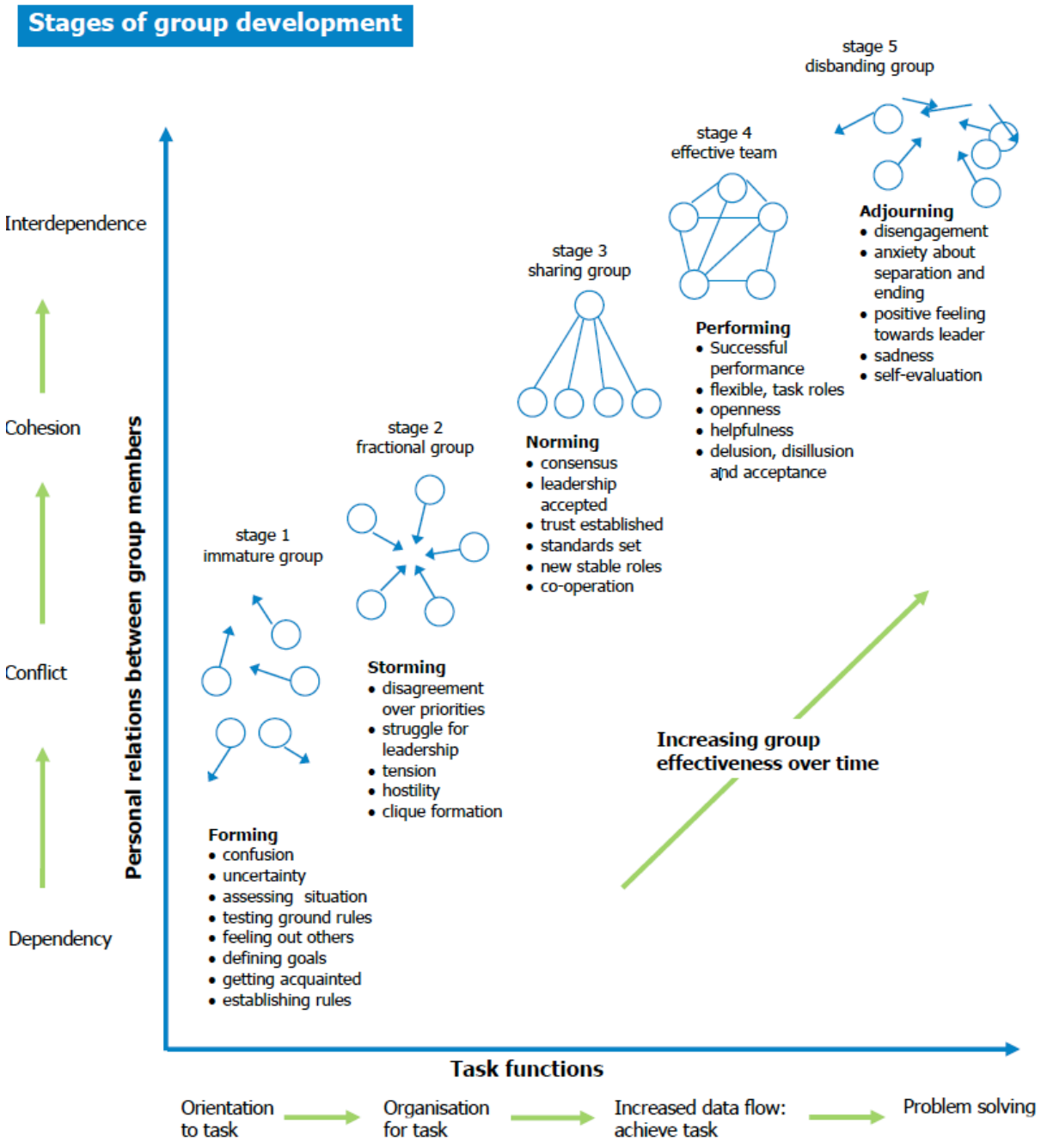

Figure 5. Tuckman's 5 Stages of Group Development (Nestor, 2013)

The method often suggested in the SFI program to help teams discuss points of information relevant to performance was a team contract. Contract frameworks were used to outline responsibilities and duties, ways of working, timelines and roles. Inevitable issues related to how people are reacting to what they want, need or expect of the team and the team mates, as individuals are not always accounted for. A team contract also does not have an engaging mechanism to address storming, or conflict, once it occurs. Another method is required. Understanding what type of information best serves group formation also needs to be considered.

As teams develop over time, a sense of shared culture and respect becomes a necessary reference that can bring them into cohesion. Digging deeper into understanding the layers of team dynamics, the famous Peter Drucker adage "culture eats strategy for breakfast" focuses a level of nuance on the team dynamics worthy of consideration (Parr, 2016). Driven by the individuals within the group, the group cultures will develop overtime, and can be visualized as two layers of an iceberg: the visible and the invisible (Figure 6). The top layer is often what teams tend to focus on in team formation. However, as issues present, it is the bottom layer below the water line, which is likely to cause or drive issues between members of the group.

For example, confusion or uncertainty with the process due to organizational challenges (visible), could be made worse if one group-mate assumes that the group should be further along in the process (invisible). Or perhaps there is hostility towards a team member who wants to take the process outside the box (visible), because others are fearful for their grades (invisible). Or maybe, there is discomfort felt by one member who traditionally prefers processing analysis alone (invisible), but the rest of the team thinks that working together would save time and energy for the whole group (visible)

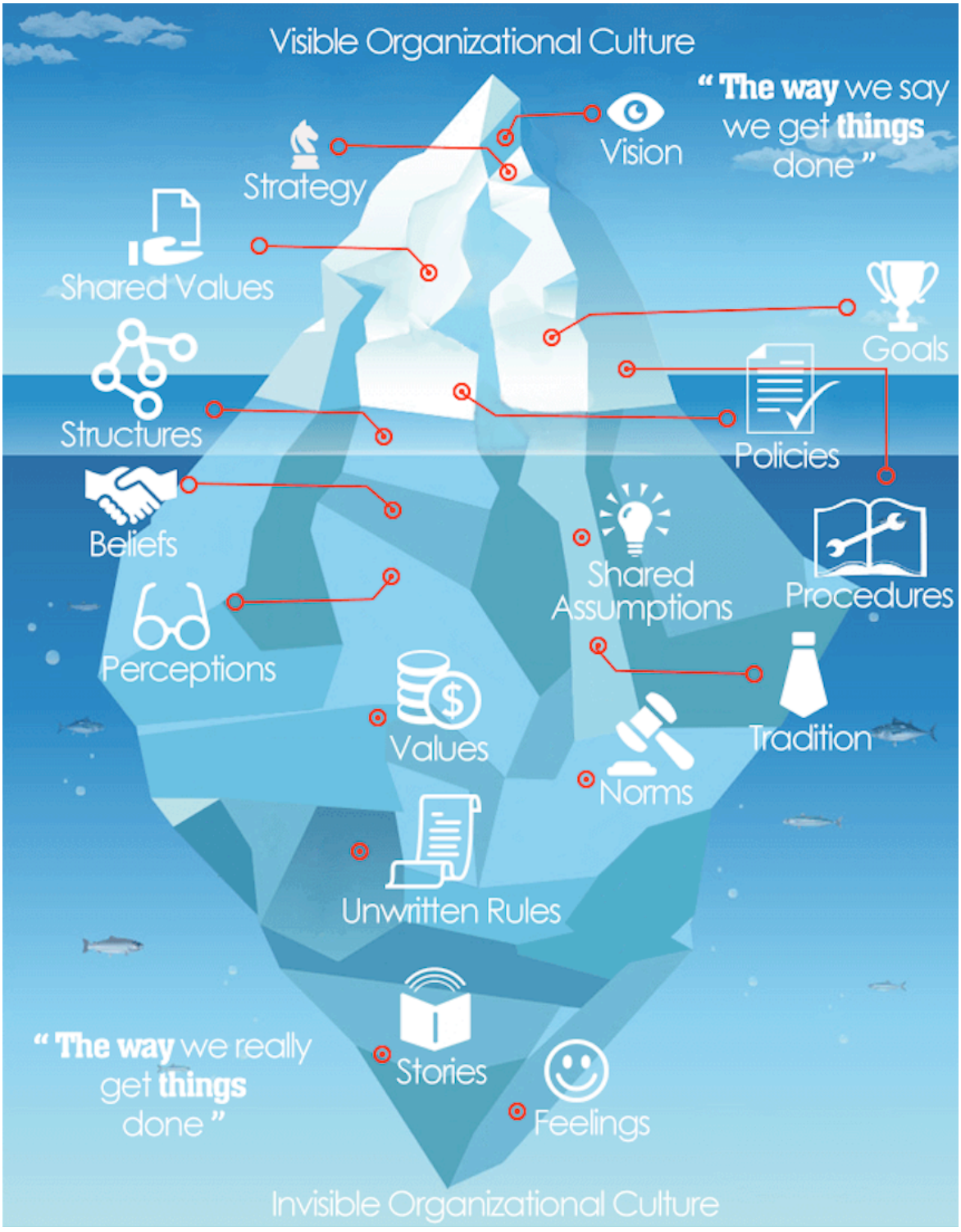

Figure 6. Layers of organizational culture (Rick, 2017)

Individuals can have vastly different opinions, needs, working styles, values, and feeling states that can vary wildly depending on context. The organizing process of a team culture is founded in the deeper layers and can take time, trust, and willingness to understand and be interested in the individuals within the team and what they need in a team culture. Not knowing the deeper levels of the individual members, norms, assumptions, beliefs and how they might relate to the collective culture can be a source of great stress. Generating mechanisms of feedback which surface individual positions can illuminate how a team might build resilience based on shared values. Ironically, knowing how to communicate needs and values can also be challenging.

The ability to communicate latent needs, values and beliefs in order for build out a unified group can be particularly difficult if conflict or discomfort is occurring. The potential for discomfort or heightened emotions may make communication challenging or processing emotions confusing. However, even in these situations, solving struggles together is possible and particularly fruitful when a high degree of assertiveness and cooperativeness is supported. The Thomas and Killman model describes assertiveness as actively moving towards what we identified as our own concerns, and cooperativeness as our attempts to hear out and understand others (2008). In order to have successful collaboration, willing to speak for self and willingness to listen to others are highly fundamental to keep the information about what teammates need and value clear.

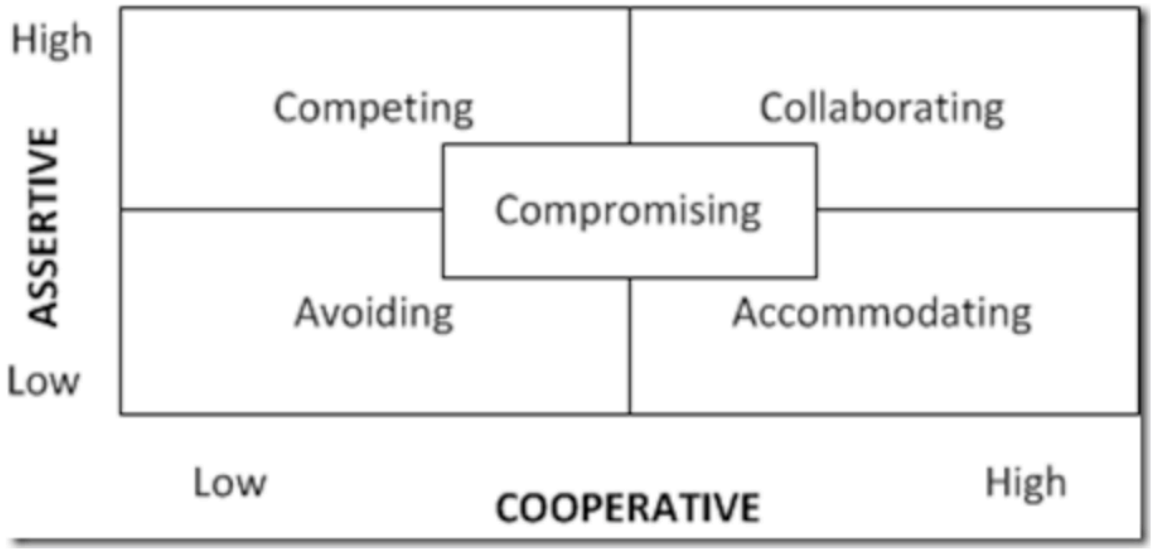

Figure 7. Thomas-Kilmann conflict mode instrument (2008)

This dynamic gets to the heart of the interpersonal relationships that exist within teams. The feeling of physiological safety and the resulting will to share our own understandings as well as listen to others, without the influence of hierarchy, are ultimately skills that are solely up to the individual to express. Beyond suggesting a framework to breed physiological safety, assertion and cooperation, it is important to consider what is happening with the individual's experience, which might bring them closer to, or further away, from these goals. In identifying these dynamics at an individual level, perhaps strategies will be illuminated in order to better understand how to facilitate this process of resilience in a tool for collaboration.

2.5 Individual Paradigms

Individual human beings are unique complex systems; we are open, chaotic, nonlinear and self-organizing and are living representations of the conditions in which we emerge from (Siegel, 2016). Individual paradigms refer to the worldview, belief and value systems and the ways individuals perceive and interact with others as a result of the experiences they have faced throughout their life.

The expression of empathy, active listening, self-regulation and awareness are deeply personal skill sets which are created as we move through life. The expression of any of them can be explained considering an infinite number of casualties – genes, hormones, childhood experience, what we ate for dinner, how much we slept last night. The expression of human behaviour is a mash of interdisciplinary casualties (Saplosky, 2018). Neurological, genetic, environmental and developmental all come to influence how we show up in a group.

Considering ourselves and others as complex systems in this way is unfortunately something that humans are not particularly well-versed at doing. Our sense of system blindness can create problems when it comes to our interactions with others. The propensity to vilify, be confused or not bother to try and understand behaviour or thinking pervades our culture and psychology. It is seen not only in how we think about others, but also how we think about ourselves. Humberto Maturana elaborates on this idea in his article 'Cognitive Strategies', where he explores how the roots of our individual paradigms act as the framework for our subjective knowing. He suggests that in order to live in ethical unity, this subjectivity knowing must be checked against objective complexity to avoid interpersonal suffering (Appendix C) (n.d).

The tendency to move throughout our experience in an unreflective manner occurs relatively unconsciously, or rather as an "automatically unfolding subpersonal process" caused by our experience of consciousness (Appendix B) (Metzinger, 2016). Metzinger defines the unawareness of cognitive self-control, loss, and lack of reflection on subjectivity as 'introspective neglect.' The susceptibility of our brain to ignore conditions of others or ourselves further illuminates the importance of a practice-based approach of reflection.

The process of meta-cognitive has been studied to impact our relationship in small group dynamics in a positive way. It is only through reflecting on our own thinking and feelings that we can critically engage with how our thinking relates to another's (Iiskala, et al, 2011). The process of self-regulation is a natural by-product that occurs with the practice of meta-cognition and is of great value when experiencing interpersonal conflict. With practice, reflecting and being mindful of our emotional experience creates space to alter typical reaction patterns experienced from an emotional trigger (Appendix D). The more awareness we can bring to how we are feeling through the process of meta-cognition, a greater sense of presence as to who, how and where we are at any given moment is possible. 'Presencing', as described by Scharmer, Senge, Jaworski and Flowers, affects not only personal experience, but also the output of how we are in the world. They suggest that the practice of 'presencing' is explored by deep listening, checking in on preconceptions and discerning our habits of sense-making. This creates the conditions to let go of old identities which keep us in old paradigms, thereby allowing us to make choices which serve the evolution of process (2004).

Professional training programs rarely focus on this level of interiority of an individual experience, yet our internal paradigms concretely impact the experience of our work and our experience of each other. Perhaps it is assumed that effective reflective skills have been instilled before arriving

to an academic context, but as discussed here, the habits of subjectivity are patterns so engrained in our neurological structure that we must actively reflect to truly keep ourselves in check. This level of inquiry is vital and could be more actively explored with tools that encourage critical reflexivity on our own thoughts within a group design process, as well as in our broader experience of the world.

2.6 Key Insights

To summarize the learnings so far, the influencers of group dynamics can be understood as an ecosystem of elements which mesh, mold and inevitably impact the overall small group dynamic. Organizations can create the container which group dynamics function in and have a high degree of influence on the enabling conditions. These enabling conditions filter down to create the structure of support for team development as teams will inevitably face challenges when building cohesion through the 5 Stages of Group Development. The likelihood that those challenges will be met with success is predicated on groups having a strong practice of psychological safety and a flow of information which helps to surface invisible or unknown aspects of culture and points of difference in individual paradigms. Creating an enabling structure which considers these aspects of collaborative ecosystems dynamics and the common issues which present themselves in group dynamics forwards the development stage of this process.

3. Develop

3.1 Tool for Collaboration

Creating a tool for co-creation, can generate a process, the rules and generally create the permissions to consider certain ways of thinking perhaps not traditionally not seen as important. Tools construct intention and act as the means to draw out necessary insights. Tools allow for creativity and exploration and support skill development during a co-creation process (Sanders, E.b., and Stappers, 2016). From the literature reviewed, 5 key conditions for a structure which enables effective group dynamics have been drawn out and considered as design goals for the development phase.

Figure 8. Enabling structure for effective group dynamics; design goals

1. Facilitates communication - Generates an information flow between group members to create opportunity for assertiveness in individuals, but also makes space for others to listen and cooperate.

2. Collaborative – Encourages groups to work together to address issues and generate opportunity for consensuality.

3. Addresses invisible culture – Considers individual positions on feelings, beliefs, norms, values and additional aspects of culture which may not traditionally be considered as necessary, but come to impact small group dynamics.

4. Considers self and others – Creates a structure for individual paradigms to be considered and reflected to the group in order for subjective viewpoints to be illuminated and clarified.

5. Versatile – Can be adapted for use in any part of the group development process to build a more nuanced collective understanding of all members' positions.

3.2 Building the Structure of Intentional Conversation

The ultimate aim for this tool is to facilitate intention conversation to drive intelligence and process. Existing communication structures such as non-violent communication and compassionate inquiry, which guide communication and consensuality were extensively considered to guide inspiration for the tools design (Appendix E). The use of questions to provoke and inspire was illuminated as a mechanism to guide challenging conversations within interpersonal dynamics. However, as discussed, the nature of team dynamics as being influenced by many layers required a type of scaffolding which not only made space for self-inquiry, but also collective inquiry, organizational influences and individual behaviour. Such a scaffolding was found with the incorporation of Integral Theory.

Integral Theory is a meta-methodology of inquiry which breaks down reality into categories that can be used to investigate aspects of a problem set in a way that is holistic and inclusive. Represented as a four-quadrant model, this two-by-two matrix makes space to categorize all of realities perspectives (Wilber, 2008).

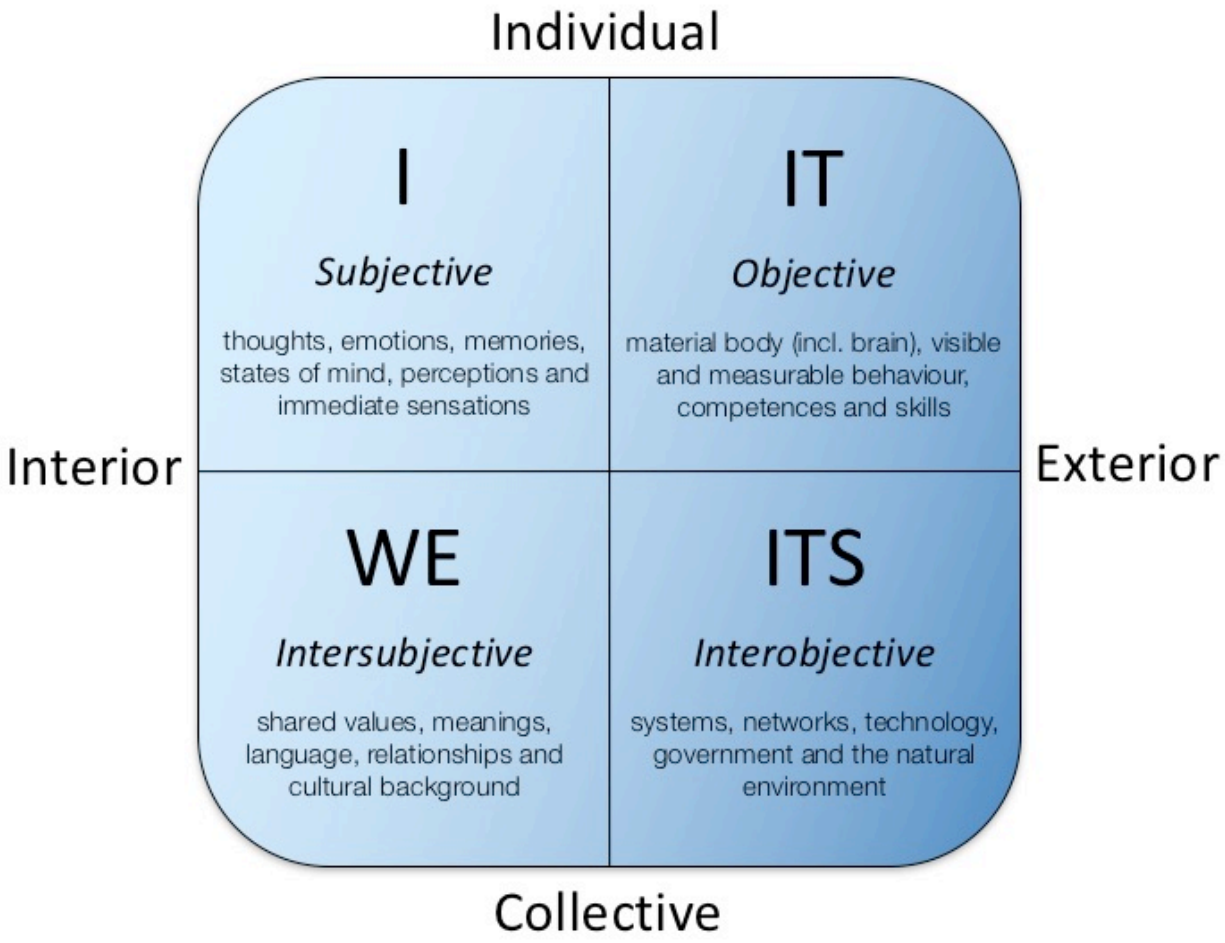

Figure 9. Integral Theory (Integral Theory (n.d))

Individual Interior represents the interior of a conscious individual. This can also be understood as one's sense of 'self' – a person's subjective viewpoint. *Collective Interior* represents the interiority of a collective – the relationships we have with others, the shared sense of meaning and value. The *individual exterior* is the sense of 'thingness' that we ascribe to what we can observe. Our feeling

states, sensations and behaviours. *Collective Exterior* represents the systems we have access to as a collective. The systems which impact our experience of the world are endless in scale and scope; networks, organizations, government, technology and environments (Wilber, 2008). A more extensive discussion of each quadrant can be found in Appendix F.

As discussed, the problems that are tackled in group projects are chaotic and interconnected. They can be ill-formed, ill-defined and multi-dimensional. It is unlikely that group issues are singularly explained, and are often rather complex problems related to multiple influences. The Integral Theory framework was used to develop questions to forward communication between group members. The questions were derived first by specifying how each quadrant relates to issues of group dynamics and the potential issues which might arise.

I – Self and Consciousness: The individual's interior can be used to draw out invisible aspects of a persons understanding. Beliefs, worldviews, values, motivations, conscious or unconscious thoughts can be considered in questions which align to this quadrant.

WE – Culture: In group dynamics determining a shared understanding of group culture can be considered with questions aligned to this quadrant. It is only through investigating individual understandings of group culture can the cultural norms be firmly established.

IT – Behaviour: Our ability to reflect on behaviour or personal physical sensations is an import point of awareness this quadrant allows for. Using questions to draw out a group member's awareness as to what they feel and observe can give great value to understanding the experiences of a group dynamic.

ITS – Systems: The systems which groups find themselves in remains an important component of group dynamics. The systems which can help facilitate, enable or limit a group effectiveness are considered with question in this quadrant.

By choosing a question from each category, the framework provides a method of thinking which builds out an understanding in a holistic way. It allows team members to investigate many facets of a collaborative ecosystem. Through illuminating conversation in this way, we come to see how the context, self and other are intertwined.

3.3 Choosing the Form

Cards were chosen as the format through which most the tool would be explored. Inspiration was drawn from the co-creative generative card game, "Thing from the Future" by Stuart Candy, as well standard Playing Cards. Both provide an example of how categories could be structured according to thoughtful frameworks which give room for versatility, choice, as well as randomness. After many hours of prototyping and playing around with the quadrant frameworks, the process options and the questions asked eventually led to the first version of "Sum of Its Parts."

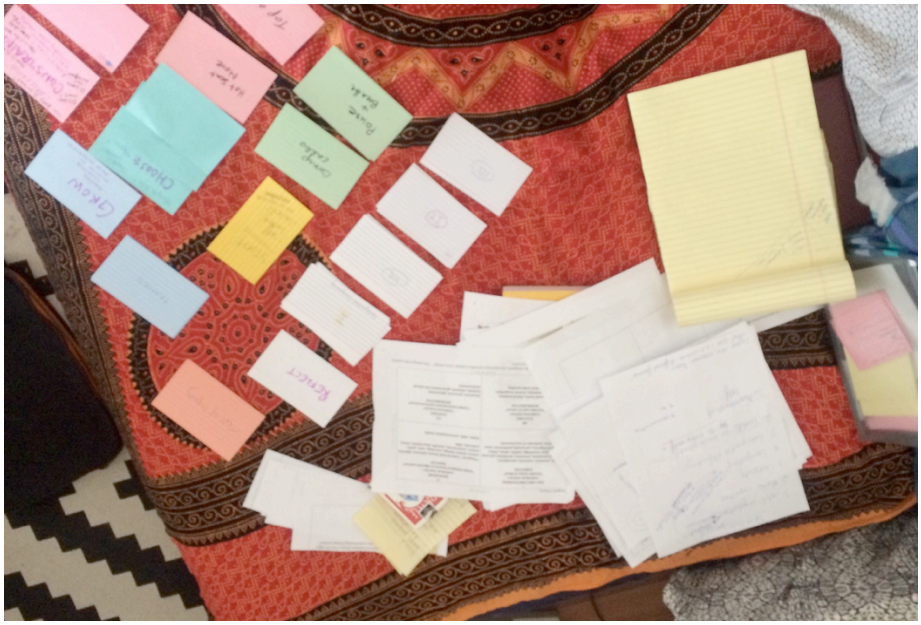

Figure 10. Prototype process session

3.4 Introducing: "Sum of Its Parts - A Tool for Small Group Organization"

Sum of Its Parts is a tool for facilitating intentional conversations required for authentic and well-functioning group dynamics. Groups choose the point of inquiry or case they want to talk about and the questions most well-suited to illuminate what is needed to be understood collectively. Questions are categorized according to the 4 quadrants in Integral Theory and are designed to address both visible and invisible points of individual and group culture.

Space is given for each person to explore the questions from their own perspective first, followed with space for each person to explicitly share what they have considered at their own discretion. In completing one round of questioning, the groups' collective interpretation of the system or project they find themselves in, as well as each member's individual perspective, their needs, hopes, values or skill sets, go from implicit to explicit.

A play on words, "Sum of Its Parts" collects the pieces of each group members' thinking to create a holistic interpretation of the group dynamics at play. Together, all perceptive make a whole picture, as the whole is more than the sum of its parts.

Figure 11. Toolbox, Sum of Its Parts

3.5 Elements, Theory, Guides

3.5.1 Instructions

The official instructions for the tools use are simple and straight forward. An instruction card comes with the box to explain the basic steps: set up, decide, choose, answer, share, ask, reflect, apply. The process is aligned with the design goals discussed. It facilitates communication, instills a collaborative process, makes spaces for reflection on self and others, address aspects of group development, all in a holistic way that is versatile depending on the needs of the group. The instructions are as follows:

SET UP / *Sort the cards in the box according to the colour categories and align each set to the board. Affirm principles of engagement.*

DECIDE / *As a group, choose a case you'd like to investigate or understand each group members position on. Are you forming, storming, trying to develop norms? Frame it as a question.*

CHOOSE / *As a group choose 1- 3 question cards per square to answer. Choose cards which will best help you address your question.*

ANSWER / *Individually consider all questions chosen. Consider writing down your personal insights.*

SHARE / *Take turns sharing the personal insights with the group.*

ASK / *Ask clarifying questions, but be mindful of others. Stuck? Use the cues lining the board.*

REFLECT / *Together summarize what new norms, ideas, ways of thinking have emerged.*

APPLY / *Develop a plan for how to apply or implement.*

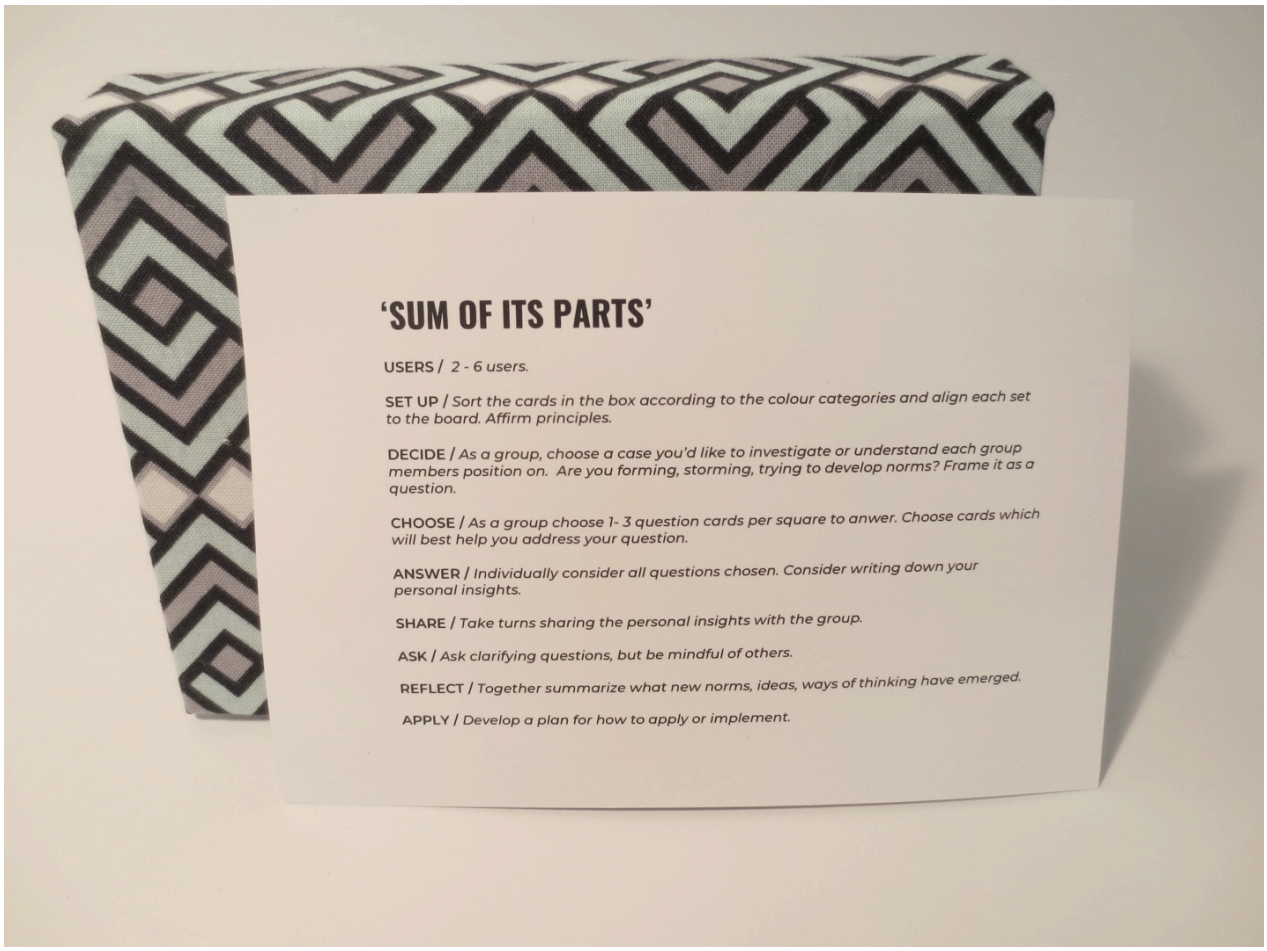

Figure 12. Instruction Card, Sum of Its Parts

3.5.2 Principles of Engagement

There are 6 principles of engagement that group members must affirm together before starting the process of communication. These principles have been developed to instill the behaviour required to develop psychological safety between group members and set the president for behavioural norms which can create more positive conversations.

1. Decide Together

2. Take turns

3. Listen actively

4. Show patience

5. Be compassionate

6. Approach honestly

3.5.3 Integral Board

As discussed, Integral Theory's holistic nature makes space for considering a range of potential factors and influences which could be affecting the dynamics of a group. Key terms and phrases were used to facilitate understanding. The quadrants are also colour coded to the corresponding set of question cards developed from each quadrant.

In an effort to instigate sustained conversation based on compassionate inquiry, questions cues and communication strategies line the board for the participants to draw from if stuck. It can be hard to know the right question to ask or how to ask it. These cues can be used to prompt users to ask meaningful follow-up questions.

Can you explore the difference?

How does that make you feel?

Where does that come from?

How is that the same?

Can you compare that?

Can you identify your assumptions?

Can you elaborate on that?

What does that look like?

What can I do differently?

What is that connected to?

Can you summarize that?

In an effort to build in skill development around self-regulation and empathic inquiry, cues for mindfulness also line the board to help participants consider engagement which foster positive group dynamics and healthy self regulation techniques.

Listen actively

Communicate visually

Show patience

Take a break

Listen for tone

Express gratitude

Be mindful

Revisit another day

Approach honestly

Show compassion

Figure 13. Board, Sum of its Parts

3.5.4 Point of Inquiry or Case

In an effort to keep the tool versatile and democratic, the point of inquiry or case investigated is left completely up to the group. Leaving space for the group to generate the purpose of inquiry on their own begins the conversation in a place of reflection as to what information is needed for an effective functioning dynamic, and asks the groups to consider proactively what they would like to get out of their experience. As discussed, the issues that arise in group dynamics are complex and dependent on the context of the moment. Whether the point of inquiry was specific or more general is also not dictated. Whether it is an examination of past, present or future, is also left open in an effort to broaden versatility.

3.5.5 The Questions

There are 8 questions associated with each quadrant. Each quadrant has a different colour of card, and each card has one question on it (Figure 14). The questions are designed to extract an understanding of the user in relation to the perspective relevant to each quadrant. A question from each category needs to be considered in order to flesh out a holistic understanding. Choosing 1-3 questions from each quadrant is recommended and principles of respect and negotiation are paramount during this selection process. Ensuring groups are working together and listening actively are fundamental to the tools use. Through constructing intent around behavioural norms, Sum of Its Parts acts as an organizational framework to cultivate the positive behaviours required for interpersonal safety.

The questions are designed to draw out a deeper level of awareness into what a person knows and feels from their own perspective. Each question need to be considered by all members of the group in order to create a complete understanding of where ideas overlap or where perspectives differ. The questions are perhaps the most important part of this tool. In generating meaningful questions,

the more opportunity for clear, authentic and helpful insights about self and groups would be found.

I	***Invisible States of Mind (Self and Consciousness)***	IT	***Visible Behaviour (Behaviour)***
	What purpose do I have? What are my values? What are my motivations? What preferences do I have? What do I wonder? What can I recall? What do I desire? What beliefs do I bring?		What is reacting? What do I notice happening? What have I heard? What skills do I bring? How does my body physically feel? What creates stress? What creates positivity? What behaviours encourage?
WE	***Invisible Webs of Culture (Culture)***	**ITS**	***Visible Systems (Systems)***
	What are our known shared values? What is expected? What is acceptable? What is typically valued? What has been stated as needed? What are the goals? What has changed? What are our standards?		What systems are facilitating? What structures are needed to support? What systems are limiting? What is required? What are the constraints? What tools will we use? How will we organize? What resources are available?

Figure 14. Questions according to quadrant category

All participants are expected to be invited to share something in regards to each question by the group. If a participant does not want to share, they have a right to honestly share so without judgment or error. Again, these norms create the conditions for psychological safety and awareness and respect for one's own needs.

3.5.6 'Create 2 Communicate' Toolkit

The 'Create 2 Communicate' was an additional element that could be used in facilitation format for groups to further explore ideas creatively. The toolkit was a bag of creative elements which were left on the table and encouraged to be used in whatever way did service to the conversation or the

participant interacting with the tools. Participants were encouraged to embody, build, model, visualize, etc. the ideas they were hearing.

Exploring ideas in a creative way gives opportunity for multiple forms of intelligence to be explored and illuminated. Exploring the essence of an idea through modelling or visualizing allowed participants to show their understanding of one another. The use of these tools were also encouraged to release 'fidget' energy. The benefits of doodling or fidgeting while thinking or listening have been considered directly connected to both creativity and wellbeing. In allowing the brain and body to to be activated in different ways, Rebecka Nyqvist suggests that physical and mental benefits of both opening and expanding, focusing and relaxing, may be found with fidgeting (2016). When sitting through long or awkward conversations, outlets for expression and energy release are necessary to keep the mind engaged and the atmosphere light. Bringing an element of play and creativity into the conversation created laughs and lightheartedness in groups and allowed for personality to show through.

- Animals were chosen to be included instead of people in an effort to remove biases and make space for representation of qualities rather than specific identify identifiers.
- Blocks in various shapes and colors for stacking and building
- Pipe cleaners which can be manipulated and bent
- Googled eye and pompoms
- Elastics and paper clips for connecting
- Color pencils and paper for drawing
- Kinetics for building and connection
- "Wheel of Emotions" to build vocabulary of feelings and perception of feelings
- Letter blocks
- Dice
- Sign boards
- Stickers

Figure 15. Items in 'Create to Communicate' toolkit

4. Testing the Tool

4.1 Workshop sample

Sample Selection: Given the nature of the topic inquiry into group dynamics, the research was tested with SFI students. A workshop was set up and announced to classes currently in process via email a week in advance (see email invitation email, Appendix G). An email was also sent to the SFI Google group to invite faculty or alumni who may have been interested. Ultimately, those who wanted to come self-selected to do so. As a result, the sample was relatively narrow, with a small age range and similar education level.

In total: 7 members of SFI tested the tool.

Sample Bias: Voluntary participation in the sessions should be considered as a potential influencer of overall findings. The sample was self-selected and interested in exploring group dynamics in an intentional way as described by the email or in my description of the tool.

Participants had worked with each other previously, were all within similar age range, similar education level, and of course, shared similar experiences working in groups in SFI. The experience of working together in SFI presents a unique working conditions that includes attachment to academic success, faculty expectations, previously established working relationships and tight timelines.

***Sample Privacy*:** All participants of the workshop where asked to fill out an Acknowledgement and Consent form (Appendix H) which clearly stated the goals of the workshop, the expectations for

participating, and the clear acknowledgement that all participation was voluntary and that they could leave at anytime. In addition, it was made clear that all data and feedback gathered from the experience would be anonymous. A survey was sent to the email provided on the consent form after the completion of the workshop, but the survey contained no identifiers and was not linked to the email used.

4.2 Justification of Discussion Format

Section 4.3 is a deep dive into the dynamics each test of the tool facilitated. The nuances seen in each case are important to note in order to understand the capabilities, versatility and possibilities this tool has. Each test has been detailed according to the process decisions, the dynamics, and the outcomes experienced with the tools use.

4.3 Workshop

At the beginning of the workshop, participants were reminded that intentional conversations of this nature require a level of mindfulness in behaviour towards self and others. The two groups were then focused on different points of inquiry. One was focused on *forming* and one on *storming*. Neither were a true form or true storm scenario. While groups and scenarios were closely linked to real life experiences and real group relationship, the timeline and exact grouping of people involved did not match the reality of their group work.

Figure 16. Form Table: Workshop

TEST 1: FORM

Point of Inquiry/Case: "What more can be known about how to work better together?"

Question Selection: This group chose to investigate one quadrant at a time at first, choosing questions as they went. Beginning in the I quadrant and making their way counter clockwise, the questions were then chosen in relationship with the conversation that arose in the previous quadrant. It was noticed after everyone contributed their feelings on each question in that

quadrant, the conversation inevitably began hinting towards the need for further questions in other quadrants. As a facilitator sitting in on the conversation, when I noticed this, I nudged the group to consider how what they were discussing was now in another quadrant and encouraged them to choose another question related to what was arising to strcuture the perspectives.

Questions Chosen:

I – What beliefs do I bring? What are my worries?

WE – What is typically valued? What is expected?

IT – How does my body physically feel?

ITS – What systems are limiting? What are the structures which support?

Process of Answering: This group did not record their insights silently, but rather chose to dive in to exploring their feeling verbally right away. While there was space made for all members to share, the speaking time was unequal in distribution. This group recorded their insights together on one sheet that one member recorded. While many insights were captured, the conversation was much richer in details and elements of storytelling than what was transcribed (Figure 15).

Facilitator Observations: Overall, this group had a very winding yet in-depth conversation that only ended once I called a halt to it. The group acknowledged that they learned new things about each other, even though they had worked together previously. While the conversation illuminated things which may be useful to know about each other when forming, the conversation turned into a much broader look at each individual's feelings about group work in general, the coursework, the program, professional and social dynamics, norms and the use for this tool.

Outcome: Listening to the group speak, many insights were shared in an open and trusting manner. The group seemed very comfortable and as a result, the level of personal details that were shared were very illuminating. At times, it felt like I, as a facilitator sitting in, was infringing on the personal privacy of what they were sharing. Stories and details about past events, and deep personal feelings about how working in certain groups have made them feel were shared. Overall, the group reported learning a lot more about each other, as was originally intended with the point of inquiry.

I	**IT**
What beliefs do I bring? - Try not to stick to beliefs (ideologies) - if everyone participates, shows effort, people become committed to the outcome - being friends with group members is good dynamic - keep self sane - 'being a people pleaser" *What are my worries?* - not feeling heard, being misunderstood - fear of project progress - mental divides between team mates - "are we even on the same page?" - personal basis - how do we resolve tensions? - what 'self' do I bring?	*How does my body feel?* - "When wanting to be something for other" - anxiety, headaches, body pains, heavy heart *What feels right?* - fun and laughter
WE	**ITS**
*What shared values we have? *this was considered from the perspective of society at large* - society values extroverts - being empathic, might get in the way of productivity - collective needs valued over individual needs *What is expected?* - honest and open communication - progress is good - being polite or a 'nice' person to work with - above done to maintain a good reputation - we care about how we're perceived - we care about how we impress others - we are defined by our professional experience - success depends on exterior self	*What are the systems limiting?* - Age and experience - lack of facilitation - lack of proper process to get to know each other beyond surface orientation - academic system – deadline and grades - time *What structures could support?* - professors - advisors

Figure 17. Form tables group feedback

TEST 2: STORM

Point of Inquiry/Case: "We need to resolve a division in selecting a systems project topic: should we use a process-based approach or content-driven approach?"

Question Selection: This group chose the questions together diplomatically. They deliberated and determined what were the best questions which might help to illuminate why one approach would be better than another and the deep-seated personal reasons why one might think that so.

Questions Chosen:

I – What are my motivations? What are my fears?

WE – What are are our known shared values? What is expected?

IT – What are my goals? What feels right?

ITS – What systems are limiting? What systems are facilitating?

Process of Answering: Groups took the time silently to explore their own feelings for each question on blank paper. In some cases, quite a lot was written, while others in the group only had a few key points. If a group member was sat waiting for others to finish, they were encouraged to move their body, or choose an aspect of their reflection they may want to explore creatively. The group systemically explored each question in each box, in a clockwise fashion ensuring that everyone had a chance to speak. Many points of clarification were asked, but were done so in a respectful and mindful way.

Facilitator Observations: The discussion in this group was full of very insightful questions asking to dig deeper into the nature of each position. The space was used to really come to understand each other and the self. A few big moments of illumination occurred in this groups' discussion about the

nature of their own experience and how they might work together better. While previous tensions had run high, the tool helped illuminate what matters to each of them in a detailed way. They found opportunity for compromise. The phrase, 'its hard to be aware of what you don't know' came up a few times.

Outcome: In discussing the outcome with the group, the original case inquired against was reported as solved. Through the process of inquiry, the deeper level of understanding concerning some members who wanted a process-based over a content-based was revealed. It came down to a matter of personal stress. In aligning the content to an area of expertise, the pressure of research was alleviated. The advocate for process-based approach realized that the acquisition of the system knowledge tool set was driving the motivation, as there was a sense of frustration that they were not acquiring enough fresh and new experience in the program. In both cases, the feelings were driving the rift. The fact that it was feelings that were driving the rift was actually only realized through the inquiry. Once the feelings on both sides were aired, there was a sense that the issues were less about the group, and more about the influencing factors each person faced. This space of openness allowed for a level-headed negotiation which played in to their shared values for team-oriented success, and a resolve for a compromise considering these new understandings was found.

5. Reflect

5.1 Participant Feedback

Oral and written sentiments expressed during feedback session and on an anonymous feedback survey form were used to further data analysis. Three categories of analysis emerged for reflection: confirmation the tools need, usefulness of the tool for structured inquiry and potential limitations of the tool. Participant feedback is indicated in bold print.

Need for tool:

The need for the tool to begin and/or manage a design process was echoed by participants. Understanding boundaries, expectations, different working and learning styles, valuing different perspectives, mindset and skill sets of others were all cited as issues by participants in group learning. The 'norming' of these challenges may be worked out in time, but the reality is that a lot of unnecessary time is wasted assuming, fuming or wading through conflict in the storming phase.

"This tool creates an opportunity space to bring things up."

"Awareness builds understanding."

"Sharing ideas and seeing what others think helps to build solidarity."

Understanding self within a group is a hard process. There are always new dynamics to consider, or new personalities to mesh with. In creating the space to verbalize your own needs and wants, we can become more in tune with our selves and more present within the dynamic. This process of self discovery might also build the methodology of inquiry for users to use the questions in alternative

scenarios; whether to investigate personal feeling states, or help those around them to do so, the knowledge of questions considered for self-inquiry may be helpful in future states.

"I learned something really important about myself."

"The tool helped to dig into the nuances of people's positions."

We all have unexplored or unmet needs which can be hard to vocalize. All participants survey suggested they had some level of discomfort explaining their needs, and approaching conflict in teams, even when necessary.

"Unexpressed needs are impossible to read but sometimes people need to be asked the right questions in order to think about it."

"We simply have to make time for these conversations and get good at asking the right questions. We have to make space for people to be people."

<u>*Usefulness of the tool as a structure for inquiry:*</u>

Those who tested the tool all provided some expression of positive feedback for its usefulness. Its design intention to facilitate intentional conversation was a reality. It did not just provide space and time for personal reflection and inquiry, but also the opportunity to bounce those insights off of each other helped to achieve clarity about what was occurring.

"I was impressed by how helpful it was."

"The tool helped to go deeper intrinsically."

"The question framework helped to structure thoughts."

"The questions provoked very meaningful insights."

SFI participants considered its primary place in the design process in the design team formation phase. Its role in group contract creation and project selection were indicated as potential sites of use. Its potential for conflict resolution was also considered a possible use in feedback – however, it was noted that this would depend on the intensity of conflict and open-heartedness of people involved.

Potential limitations of tool:

Ultimately, the context and the users determine the tool's level or degree of usefulness. Comfort level, intensity of conflict and its use within a hierarchical dynamic have been considered to pose limits, but have yet to be tested to confirm. However, people must be willing to have an open dialogue in order for this tool to work. If people are not comfortable or if they do not have pre-existing relationships or shared values of openness or trust, they may feel more limited in what they can share. Groups of people facing challenges or plagued by intense conflicts or those who tend to be defensive may also render the tool less useful as the wiliness to share or work through the feelings may be inhibited by intense feelings.

"At times, in intense conflict, people are struggling so deeply with other factors they are almost blinded, or not open to opportunities for change."

"People need to be open to the experience, give it an open hearted chance, to be honest, but also to listen."

Groups with strong hierarchy may be less comfortable to share. Honesty can be decisively harder for both people in positions of power and people who rank lower in a hierarchal structure. Fear of showing true feeling states or perception as to how honesty could come to impact future

interactions are potential considerations. Again, this is a speculated limit, as the tool have only been tested in non-hierarchical scenarios.

5.2 Adherence to Design Goals

1. Facilitates communication – One participant suggested that, "*the tool builds conversation naturally"* and that the *"tool helps to structure thought"*, to illuminate patterns and determine related influences in a truly useful way.

2. Collaborative – The use of the tool brought people together and gave them an opportunity to work together to develop an understanding of each others positionality.

3. Addresses invisible culture – In examining the world through an integral framework, the impact of individual behaviour is set within a context of influences which may not be considered but for a holistic thinking framework. The tool helped people to better understand that which they didn't know, as one participant explained, *"You can't be aware of what you don't know."*

4. Considers self and others – Understanding the relationship between internal and external feelings and values and their inter-relatedness to individual and collective beliefs is an important point of illumination this tool offers. Not only does it build understanding of self, but it also creates space to build empathy and understanding others. One participant suggested that this was the type of platform empathy is built from as, *"understanding and relating to the feelings of others is the first stage to true empathy."*

5. Versatile – While its limits have been discussed, the tools use in both storming and forming scenarios proved useful. The open ended directive to approach the tool with any question they wanted to investigate, also suggested versatility.

5.3 Further Research

While the tests proved effective, further research is required to understand the limits of its potential and the full effects of its aims. Understand the tools use without a facilitator is an important next step to ensure the current prototype is clear in its directions. Understanding the necessity of a facilitator and in what context should also be considered. In more heated scenarios, perhaps a facilitator would take on a role more closely related to a moderator. These are potential scenarios which could be considered with further research.

Understand the tools use to iterate a single group, through the group development stages process is also a question for of further research. Using it repeatedly overtime creates the possibility for skill building, which could again, be tested for effectiveness. I am interested in working with SFI professors or other university professors coaching small groups who might be interested in exploring this method in true moments of team development with their classes during team formation, group development or in moments of conflict mediation.

Understanding how this tool would translate into other settings would require further research and user testing. Its use in corporate setting may or may not be seen as valid. Interviews to understand the dynamics, the most appropriate types of user experiences and the needs of those settings would undoubtable need to be discovered before suggesting effectiveness of this tools use in the corporate setting.

Investigating the tools outside an organization, at a purely interpersonal level is also of great interest for further study. Finding people who are willing to broaden their scope of understanding from the invisible, or unsaid elements and considering how that may be impacting the relationship

is already in the works. Understand the tools usability in more intimate or personal dynamics is worth understanding.

Testing the dynamics against more politically charged issues, is also a point that warrens more investigating. Understanding how the tool might be used, shaped or formed to scale to build a broader network understanding is also something worth considering for future next steps.

6. Conclusion

Communication and collaboration are complicated processes which are dependent on a variety of factors, points of influence and conditions. “Sum of Its Parts” is a holistic framework of inquiry which fills an opportunity space for facilitated and co-created collaborative self-organization techniques. Through the use of a deliberate structure, principles of engagement and flexible goal orientation, intentional conversations between groups are facilitated with ease.

The structures of communication helps to address an understanding of both personal and collective needs, as well as group systems and behavior. In illuminating and aggregating these insights, the concepts and learnings found in the multiple interpretations between people are made visible to aid in process of group sensemaking. The shared space for conscious reflection helps groups to navigate self-organization in ways that moved collaborative organizational learning from incidental to intentional, all the while building resilience and strength.

The use of intentional conversation to build out a dynamic understanding helps small groups to gain clarity and develop awareness of self and others. Understanding this tools effects in a variety of contexts will come in time, but will undoubtedly remain an important way to consider the enabling structure of collaborative ecosystem management.

To anyone interested in advancement of collaborative communication structures, please consider this an open invitation to seek community with me. The imperative of learning how to better engage with each other and understand self is a fundamental issue of our time.

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Appendix

Appendix A: Survey Distributed to Workshop Participants

Intentional Conversation Workshop

Thanks for participating! Further feedback through this survey would be greatly appreciated to beef up my conclusions. Answers as much or as little as you like. All feedback is anonymous.

What do you consider to be the hardest part of working in a group?
Your answer

What is your general comfort level towards approaching conflict in group dynamics?
Your answer

Do you imagine this tool being useful to address conflict in group dynamics? What conditions would limit or make it so.
Your answer

How comfortable are you at explaining your needs in group dynamics?
Your answer

Would this tool be helpful to illuminate and make space for exploring your needs? When in the design process do you see it being the most useful?
Your answer

What insights about communication and group dynamics did the tool illuminate for you?
Your answer

What do you suspect the limits of this tool to be?
Your answer

Did anything surprise you in this process?
Your answer

What other contexts or applications could you see this tool being useful in?
Your answer

What is your understanding of Integral Theory?
Your answer

What question cards did you find most provoking?
Your answer

Did you feel your voice was heard in this workshop process?
Yes
No

Anything you would change to make it more user friendly?
Your answer

Can you offer any further thoughts on the design, your experience of the workshop or the tool?
Your answer

Appendix B: The Experience of Consciousness as explained by S.N. Goenka (Goenka, S.N., & Hart, 2000).

Consciousness is the act of awareness and cognition; it receives undifferentiated objective input of raw data (either mental or physical). Perception takes this data and recognizes, labels, categorizes, evaluates and judges the data received. Sensation arises when consciousness of a phenomenon has registered, and when value or subjective judgment is attached to the data received. Depending on that judgment, sensation becomes pleasant or unpleasant, feelings or emotions are generated and resulting reaction ensues**.**

Through Meta-cognition, data can being observed through our five senses in order to determine the physical presence of bodies and the physical environment around us. Through the scientific inquiry of observation, it can be discovered that matter is nothing more than "incessant biochemical reactions environment – composed of subatomic particles and empty space" which "exhibit in endless variation the basic qualities of matter: mass, cohesion, temperature and movement" (Goenka, S.N., & Hart, 11, 2000). The mind-led processes that attach and assign value to these constantly changing phenomena can thereby generate true suffering if too closely identified with.

Appendix C: Humberto Maturana, Cognitive Strategies (Maturana, n.d)

The major sources of differentiation which end up creating the subjectivity of human thought are derived from (1) the physical experiences we have and (2) how we interpret those experiences. These aspects are the consequence of our unique experience in the world. Things such as cultural upbringing, the way our parents raised us, the type of school we went to, the relations we saw between our family members, what we watched on T.V., all contribute to the basis of our individual uniqueness. Humberto Maturana states this as our human ontogeny**.**

While human ontogeny is an important component of how we understand a person's reality within the world, there are some founding epistemological notions about the nature of knowledge which must be addressed. Maturana lays out some important notions in his article, Cognitive Strategies, which help us understand the nature of knowledge according to observed and verified scientific methods:

1. The objective world is independent from the reality of observers.
2. The observable world holds information that can be characterized with actual physical magnitude, and can be measured objectively through analysis.
3. The observer's reality is always only an interpretation of objective reality; it is transmitted through our sense organs and interpreted within our cognitive domain. These act as filters which have been affected by our ontology, therefore, any statement made about the observed world is subjective, a contextual relation of an individual's unique cognition.

While this can be objectively known, human beings are stuck processing information in ways that are first derived from four subjectively experienced mental operations: consciousness, perception, sensation and reactions. This creates habitualized patterns of thinking that if not properly reflected on can be the cause of personal and interpersonal suffering.

Oftentimes these rapidly occurring reaction patterns go unchecked. Maturana considers this to be an ethical problem which distances people and centers our own perspective as the 'right' way of knowing. "The attainment of cultural (ethical) unity in man, then, is not a problem for science as we usually understand it, but is a problem in the art of living".

Appendix D: Paul Ekman's, Timeline of Emotions, (The Ekmans' Atlas of Emotion. (n.d))

Emotions are the conscious experience of a person, and the resulting behaviour that is produced within the body in reaction to a triggering event. According to leading emotional researcher, Paul Ekman, all emotional states can be observed sequentially, from a trigger experience, leading to responses or emotional effects. This emotional response timeline provides great insight into how emotional states are housed within an active set of mental and physical responses.

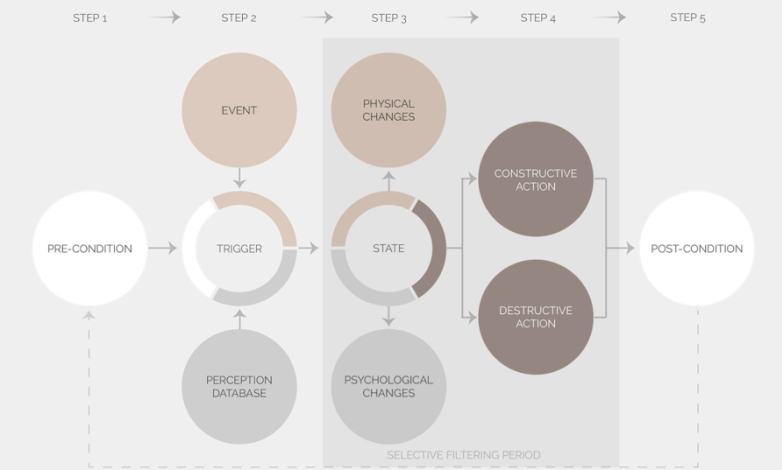

Figure 18. Timeline of Emotions (The Ekmans' Atlas of Emotion. (n.d))

Precondition here refers to the contextual circumstance or condition which the person is in; the current emotional state in which a sequential emotional response is occurring from. The **event** is the circumstantial, and relatively uncontrollable act which can be seen to forward the emotional response. The **perceptual database** is the subjective worldview which is unique to the person feeling the response and is caused by prior experience, personal history and inherited universal scripts.

Emotional states can be observed through **both mental and physical changes** to a body exhibited through specific psychological and mental responses or observable behaviours. An example might be, exhibiting the emotional state of fear because one *feels* afraid; mentally one feel threatened and anxious and physically, one's heart might race and palms begin to sweat, a look of fear might be observed

This emotional state then leads to a response or action, the culmination of the sequence. This is the choice that the actor experiencing the emotional state then makes in response to what they are experiencing. According to Ekman and observed in most human interaction, it can be hard to control the response. The response can be either a **constructive response or a destructive response.** A constructive response takes into account the triggering circumstances and the actor acts with more ***awareness***. This type of response, works to settle the physical and mental responses to alter the intensity of the emotional state. The response is often associated with a more collaborative approach if a reaction in occurring interpersonally. In a destructive response, the actor reacts in accordance to the emotional state they are in, which in turn can prolong both the length and intensity of an emotional state. This type of response if occurring interpersonally often

leads to difficulty in interpersonal processing. The **post-condition** is the result of the action or response which often lead to the next episode of emotion.

Below is an example of trigger, experience and response sequence from Ekman's Atlas of Emotions. Although not everyone experiencing anger may react in this way, it provides an understanding of how a specific emotion might play out in the timeline.

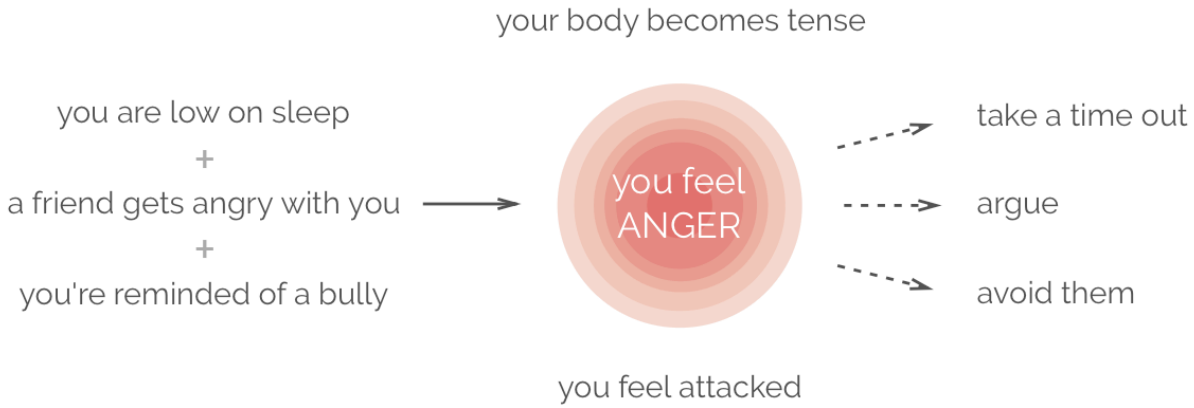

Figure 19. Timeline of Emotion, Anger (The Ekmans' Atlas of Emotion. (n.d))

Appendix E: Known Intentional Inquiry Structures

Gabor Mate has developed a simple model of *being with* another he calls Compassionate Inquiry. Through being intensely present for someone and guiding their inquiry into a space of self-reflection, the speakers innate wisdom takes over to better understand what the problem is and how it might be fixed. It is not about solving another person's issue, but rather making space for them to feel heard and supported in order for them to begin to work it through (Mate, 2016).

Nonviolent communication, developed by Marshall Rosenberg, provides a structure to support the resolution conflict or confusion which is related to interpersonal dynamics. He suggests that at the heart of communication and interpersonal dysfunction, there is often an unmet need. By following a simple language structure, action, feeling, need, request, we can begin to communicate to another with confidence and clarity.
"When _____ (describe action) I feel _____ (share feeling) because I have a need or _____ (state need). Would you consider _____? (make request) (Rosenberg, 2012).

Appendix F: Further Explanation of Integral Theory (Wilber, 2008)

I: Subjective

Individual Interior represents the interior of a conscious individual. This can also be understood as one's sense of 'self', a person's subjective viewpoint. This is invisible to others - it is only through expression, or behaviour can others begin to have a sense of this space. Experiences of values and motivations, experiences of emotions and feelings, experiences of one's own inner voice, all arise subjectively. "Thoughts, ideas, opinions, intentions, motivations, purpose, vision, values, dreams, worldview and life philosophy all exist within the individual interior" (Wilber, 2008).

WE: Intersubjective

Collective Interior represents the interiority of a collective. The relationships we have with others, the shared sense of meaning, value. The space of communication and mutual understanding existing within the intersubjective. This is visible through our interactions and the relationships we make and create with others. The visions we share for the future, the desires we have in common, all can be discovered by investigating the intersubjectivity of a group.

IT: Objective

The *individual exterior* is the sense of 'thingness' we ascribe to what we can observe. Our feeling states and sensations can be of tremendous value to us, if we pay close enough attention. Our ability to interact with the world through sense, touch, hearing or seeing gives us clues into the nature of reality and the dynamics at play that are unspoken (Wilber, 2008).

ITS: Interobjective

Collective Exterior represents the systems we have access to as a collective. The systems which impact our experience of the world are endless in scale and scope. Networks, organizations, government, technology and environments.

Appendix G. Email sent to SFI Students Requesting Participation in workshop

Participants Needed!
Workshop: Thursday, March 22, 5-6:30pm, SLab

Design tool feedback session for MRP conclusion.

Topic: Addressing our inner dimensions: supporting individuals within design team dynamics

Designing in teams is a complex task with many layers.

Getting a grip on the tools and the process of design is one thing, but the dynamics of what is happening within the group really is, a whole other challenge.

Team dynamics are comprised of various layers: the self we bring, the roles we take on, the relationship between each other and the context or scenario we find ourselves in. Depending on the dynamic, these factors are all '*tetra-arising'* and are being influenced by many factors, whether considered or not.

The tool being tested looks to illuminate through constructive and creative communication, what is arising, and consider influences in an integrated and holistic way, to build awareness of both the individual and collective experiences of a group.

Research Questions:

- How might we use an integrated framework to move through 'forming, storming, norming' with more awareness of each other?

- Might opening a design process with a tool for building meta-cognitive skills sets of self-awareness, integrated thinking and empathy for one another help to illuminate and support the interior dimensions we inevitably carry to team dynamics and our design practice outputs?

The session will be held ***Thursday March 22nd, 5:00pm -6:30pm in the SLab studio.*** An open and curious mind is all that is required.

As SFI designers with so much teamwork under your belt, your participation would be *greatly* appreciated in the testing of this tool.

Please confirm with me if you can make it so I have a firm grasp of the numbers: [redacted]

Thanks in advance for your consideration.

Appendix H. Acknowledgement and Consent Form

Date: Thursday, March 22
Time: 5-6:30pm
Location: 205 Richmond Street, OCAD, SLab

Acknowledgement and Consent Form

Purpose of Workshop:

This workshop is a design feedback session designed to draw concluding implications for a Major Research Project completed by Jennifer Whyte (MDes, Strategic Foresight and Innovation, 2018).

Topic:

Addressing our inner dimensions: facilitating intentional conversations to support individual perspectives within design team dynamics

The ultimate aims of this tool:

- to explore and make explicit each person's holistic *understanding of* and *needs in* a team dynamic
- prompt and make known, explicit, latent or 'implicit' values, motivations, shared desires, limiting or facilitating behaviors and systems
- create the opportunity for sharing ideas and perspectives in an equal way
- create a space for creatively communicating needs and understandings of self and others

Process:

The workshop will be 1.5 hrs. You could be using simulated scenarios and role play to imagine the use of this tool in a 'forming' or 'storming' context of a group dynamic. In this case, you will take on a role that will allow the potential usefulness of the tool to emerge according to the dynamics of the scene. You may also choose to bring a problem set of your own and/or participate from your own perspective.

Acknowledgement:

1. Your participation is voluntary; you may change your mind about your willingness to participate at anytime.
2. Nothing that you say in this session will be voice recorded.
3. Some pictures may be taken during this session, but no faces or identity indictors will be captured.
4. A survey will be provided in print in studio or by email as a method of collecting feedback.
5. Feedback will be encouraged to better understand your experience with the tool, but will remain anonymous.
6. All data will be used and aggregated anonymously.
7. This consent form will be kept in a locked box and will be destroyed upon confirmation of the degree.

Agreement:

If you understand and agree to the acknowledgement above, please sign to consent your understanding.

_____ _____ _____

(Name) (Signature) (Email)