Chapter 2
Setting the Stage for Creativity: Upstream, Mid-stream, and Downstream

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Abstract The most common question we get as researchers and practitioners is: how to instigate creativity in teams and organizations? Some managers are focused downstream, on the development of a product; others are focused upstream—such as how to start thinking big. However, managers often forget about the mid-stream process. In this chapter, we combine insights from scientific research with actual examples and case studies to identify specific stage-setting processes that leaders and managers need to take in order to keep the raft moving through the mid-stream rapids and get downstream, and finally ashore. We point out the key challenges at each point in the creative river and how to leverage the talents of the team and organization.

2.1 Introduction

The most common question we get as researchers and practitioners in the area of creativity and innovation is: *how to instigate creativity in the team and organization*? Most people have a particular point of view when they ask that question. Some are focused downstream—such as how to quickly get a product to market. This is often the key to survival for many startups. Yet, others are focused upstream—such as how to even start a conversation or think big. This is particularly true for established organizations looking to appeal to new segments and evolve business models in the face of mounting competition. However, organizations often forget about the *mid-stream* process—this is where managers and teams can stall-out, get lazy, and operate on automatic pilot. As it turns out, there are specific stage-setting processes that leaders and managers need to take to keep the raft moving from upstream through the mid-stream rapids and get downstream, and finally ashore. In this chapter, we combine insights from scientific research with actual examples and

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case studies. We point out the key challenges at each point in the creative river and how to leverage the talents of the team and organization.

The upstream portion is usually referred to as ideation—the generation of ideas that are ultimately novel and useful. This is a two-part criterion that may not be obvious at the time. The downstream portion is usually referred to as innovation—the realization of actual ideas in the form of products and services (Thompson and Choi 2006). Often, much greater weight or emphasis is put on innovation. For example, how many times have you heard that "*in business, success is 5% strategy; 95% execution?*"

However, everything starts with an idea. For example at Ideo Design Firm, it is stated that "you start with your head in the clouds (ideation) and you end up with your feet on the ground (innovation)" (Kelley and Littman 2005). In David's experience as a Director of Business Design at IDEO, a global design and innovation consultancy headquartered in Palo Alto, teams must resist their natural temptation to tame a wild idea. It may not be the outrageous first idea that ultimately makes it to market, but these concepts often point teams in a novel direction that can lead to the commercialization of a product that is desirable, feasible, and viable. For example, one IDEO team aiming to develop a pain-free drug injection device began with the idea of inventing a "mechanical mosquito" that would quickly deliver medication when it bit the patient. Not a feasible idea unto itself, but it ultimately led to a device that looked like a mechanical mosquito. Had the mechanical mosquito idea been "tamed" too early, this device may never have been designed.

Upstream Creativity

By "upstream," we refer to the beginning of the creative process. At this point, the team is on shore, getting ready to embark. The key mistake that leaders and teams make here is that they often never get past the first idea. We refer to this as *idea myopia*. One of us observed a company brainstorming session, and observed that the group never got past the first idea. In this particular case, a pharmaceutical company was looking to develop a technology to drive greater patient adherence to a drug regimen. The initial idea offered during the group brainstorm was an app that provided the patient with reminders to take their medication at certain times. Once the group was anchored in thinking about "apps" each idea that followed as also app-based—significantly limiting the universe of opportunity to address the underlying problem (e.g., smart pill bottles, service-based innovations, time-release tablets, etc.)

There are several social-cognitive factors that conspire to produce idea myopia. In our previous research, we have referred to this as the "4 horsemen of the apocalypse" to try to make the dramatic point that if the group is only working with one or two ideas, then the chance of crafting an exciting end product is severely curtailed.

2.1.1 *Social Loafing*

When people loaf, they are not contributing as much as they can or working as hard as they could. Social loafing leads to the fact that in groups, the whole is often less than the sum of the parts (Karau and Williams 1993). In business situations, this is referred to the 80–20 rule, which means that 20% of the people do 80% of the work. To be sure, most of the time, people are not consciously aware that they are not working as hard (as they could); rather they have a self-serving bias to view their own contributions as more impactful (than they actually are). Psychologists and management scientists have identified some strategies to reduce social loafing and increase social striving—which is essentially the polar opposite phenomenon—people work harder in a team than they do individually because they are identified with the team (Ferguson 1989). Unfortunately, social loafing is much more common than social striving. In our research, for example, when we tell people that their individual contributions to a group effort will be monitored, we greatly increase creative output. Thus, accountability is a key factor (Bouchard 1972).

2.1.2 Conformity

This occurs when people bring their behavior in line with what they feel will win them acceptance in a group. There are some cultural issues here. Most western people do not want to describe themselves as conformist because they take great pride in their individuality as a cultural value. However, several research studies have revealed astounding degrees of conformity in individuals and groups. For example, in the now-famous Solomon Asch line studies, people were presented with three stimulus lines of (wildly) differing lengths and asked which one best matched a "test" line (Asch 1956). To be sure, the answer was painfully obvious. Anybody with even 20–60 vision could choose the right line. However, when the group participants heard other group members choosing the "wrong line," they conformed. Why? According to the theory of normative influence, people conform because they *want to be liked* and they *want to be right*. What this means is that people are smart enough to know that when they agree with others, they gain immediate social approval. And it also means that sometimes, we think we have gone, well insane in our own thinking, and so the best course of action is to simply do what others are doing. This may be a good instinct in a fire emergency or even taking a math test, but it is a catastrophic course of action to take in a creative enterprise.

2.1.3 Production Blocking

It is very difficult for people to multitask. In fact, cognitively speaking, there is no such thing as multitasking; rather there is a *rapid switching of attention* that hinders creative idea generation. In a group situation, production blocking occurs in two key ways: first, people must take turns speaking, and this conversational turn-taking means that people must engage in the politeness ritual—and essentially lose their own train of thought while listening to others (Mikula and Schwinger 1978). A second way it occurs is that sometimes, one person in the group is taking notes or recording the group's ideas—the self-appointed scribe—and this person is essentially taking dictation, which means that they cannot fully engage in the creative idea generation process. The advent of brainwriting was developed as an antidote to the production-blocking process.

2.1.4 Performance Matching

People's level of productivity in groups quickly converges toward an average. Consider the following pejorative expressions: *tyranny of the average, lowest-common denominator, regression toward the mean, and the like*. Essentially, these

processes all describe the tendency for high performers to dumb themselves down in groups and for the group to descend into mediocrity. Again, this is not something that people are necessarily aware of at a conscious level, but preconsciously, it is happening.

We have described a rather depressing litany of factors that can dramatically curtail the group's best upstream effort, so the question is can the manager or leader take any proactive steps? The answer is yes. The question is how.

2.1.5 Set Norms

It is a fact that groups who are left to their own devices end up with the most dysfunctional norms. In the absence of clear norms, two things happen: First, the least socially aware people set bad norms (e.g., coming late to meetings, interrupting people, etc.) and the most socially aware people constrain themselves—in an effort to try to determine the norms of behavior. Nearly any norm or rule can enhance the performance of creative groups. For example, Paulus and his colleagues found that by introducing the following rules, there was a marked increase in creative idea generation: "stay focused," "don't tell stories," "encourage others to contribute," "keep people talking," and "remember not to criticize" (Paulus et al. 2006).

2.1.6 Enforce Rules

Though it seems contrary to the idea of free-spirited creativity, constraints and rules are important (in fact desired) by designers and innovators. Rules can be as basic as "one conversation at a time," or can guide creative constraint, such as focusing a brainstorm on generating ideas that can likely get to market in the next 12 weeks. In either case, it is up to the leader to keep sessions and conversations focused, making sure social contacts and design constraints are respected.

2.1.7 Keep the Group Small

In our research, we find that groups are too big. And they are growing in size. Unfortunately, there is a steady, linear decline in the number of per-person ideas generated as group size increases. For example, in our own research we found that teams of size three generated over 50% more ideas in a brainstorming task than did teams of size six or more.

2.1.8 Select a Diverse Team

We are mentally programmed to work with people who are, well, too much like ourselves. Cognitive diversity increases creativity. For example, Kevin Dunbar found that laboratories in US and UK that had diverse hiring practices generated more patents (Dunbar 1997). And one study found that diversity in cognitive styles (ready-fire-aim versus analysis-paralysis) make a good combination (even though it feels maddening) (Mauro et al. 2009).

At IDEO, project teams, are in large part, assembled based on diversity. The firm employs "designers" from a variety of disciplines and backgrounds (anthologists, psychologists, engineers, business people, visual artists etc.), and on each project, teams are curated to make sure that a variety of points of view are brought to bear beyond just design discipline.

2.1.9 Don't Waste Your Time Trying to Recruit "Creative" People

There is no such thing as a 'creative" person. Rather, some people are extremely talented in their chosen domain—speaking, marketing, engineering, etc. Find people who love what they do and make them work with different kinds of people.

2.1.10 Start with the Right Question

Oftentimes brainstorms and other ideation formats yield uninspiring results because they begin with asking the wrong question. This usually takes the form of something too narrow with limited degrees of creative freedom, or too broad resulting in ideators being paralyzed by possibility. At IDEO, teams begin the generative processes by starting questions that are broad enough to inspire lots of ideas, but narrow enough to keep participants focused on the problem at hand. An example of a bad question on which to brainstorm might be: "how can we create a better tasting toothpaste for kids?" The answer is: create a better tasting toothpaste! A better question on which to start ideation is "How might we inspire kids to be more excited about brushing their teeth?". This question is narrow enough to keep a team on target, but broad enough to inspire a range of potential solutions (some of which may not be toothpaste at all!).

2.1.11 Look at the Calendar

Don't schedule long meetings with a lot of down time in between, rather, schedule frequent, short meetings. Groups work to fill the time allotted; if you have a 2-h meeting scheduled, you will accomplish no more than if you have a 1-h meeting scheduled. Indeed one investigation found that teams are more productive when they have two, 15-min brainstorming sessions versus one 30-min session; indeed about 75% of ideas emerge in the first 15 min of a 30 min brainstorming session (Howard et al. 2010).

2.2 Mid-stream Creativity

If you have come this far, you are mid-stream in the creative process. You have pulled the small, diverse group together, set some norms and are ready to enforce the rules. Mid-stream is where leaders and managers can get lazy; they often feel that they've put in their time, recruiting the ideal team and then they want to take their seat in the stands and watch the magic show. For example, in one large company we worked with the leader of a business unit hired an outside design consultancy to create a "game changing new product offer" for her core customer. Once she had signed the contract, she assumed that she had "ticked the box" on innovation. As a result, she was absent from key moments in the innovation process (user research, synthesis, ideation) and relied on the consultants and her team to manage the process to success. What she failed to realize was that though she may have invested in the *project*, she was not invested in the *process*—and as a result never felt ownership responsibility for driving the new ideas forward within the organization. The outcome of the project was a couple of novel product solutions that sat on a shelf in prototype form waiting for someone at a senior level to feel passionate and invested enough to make them real. We find that feeling "ownership" for new ideas is something that only truly comes from full participation in the innovation process. It's very hard to develop entrepreneurial passion for a solution one has no part in creating.

Leaders need to be very proactive and hands on during the mid-stream. There are a few rules of thumb that are useful here:

Don't run the "control group" meeting

The control group meeting is just like it sounds. It is the meeting in which no steps are taken to direct or guide people. It is a placebo meeting. The data are in: Brainstorming is better than control group; and brainwriting beats brainstorming. Let's consider the research. In one investigation, the performance of brainstorming groups was compared to control groups—who were not given specific instructions. The quantity and quality of each groups' output was compared. Hands down, the groups who followed brainstorming rules were more creative (Parnes and Meadow

1959). The rules for brainstorming are fourfold: expressiveness, quantity, no judgment or evaluation, and building and leveraging.

Brainwriting

This is a technique in which group members individually scribe ideas for a fixed amount of time. During this time, there is no cross talk between group members. We like to enforce two rules during this time: *no guessing* and *no confessions*. No guessing means that group members should not attempt to judge who-said-what. Instead, it is meritocracy of ideas, not a popularity context. No confessions means that no group members should not reveal what their ideas were. After the group members individually generate ideas (for say, 5–10 min), we like to post the ideas. Group members should vote for the ideas they find the most exciting.

One process that works well for merit-based idea selection is "dot-voting". All ideas are posted on a wall, and participants are given three colored dot stickers with which to vote on their favorite ideas. Criteria for selection are clearly articulated (e.g., desirability, feasibility and viability) and then each person will use their dots to select their favorites. To add some additional weight, participants may use all three dots on one idea if they feel like it is the standout favorite, or distribute their dots more evenly across several ideas if they feel there is more parity. This type of clustering can help tease out clear first-round "winners" from the broader field far more efficiently than some other voting methods.

Draw, don't write

Writing is great for a Ph.D. thesis, but drawing quickly gets a point across. This is a golden rule at IDEO. When participants think visually they inspire other team members to build on their ideas. It's pretty awkward to rewrite someone else's sentence during a brainstorm, but it's easy to add a twist to someone else's drawing. For example, I may think a good idea for getting kids to brush their teeth an automatic brush that reminds kids when it's time to brush their teeth. Somebody else may think that a cool build on that idea is to connect the toothbrush to the internet so that parents can be notified when their kids are brushing. To expand on the idea, the team member can add a "little" Wi-Fi icon to the drawing. Imagine how much time (and space on a post-it) it would take to describe the combined idea through prose!? Pictures are truly worth a thousand words.

Focus on quantity not quality

The data are in. Groups that focus on quantity outperform groups that focus only on quality; they outperform groups that focus on quantity and quality and groups who don't have a focus (Paulus et al. 2011). And it is far better to have a specific, difficult quantity goal than an amorphous or vague quantity goal. As Nobel Prize winner Linus Pauling is famous for saying, "The way to get good ideas is to get lots of ideas and throw the bad ones away. You aren't going to have good ideas unless you have lots of ideas and some sort of principle selection" (as quoted in Barnett 2002).

Engage in short sprints, not long-distance endurance
Creative muscles, like physical muscles, can become fatigued. As a result design firms and other creative organizations use "sprints" and "charrettes" to get the most of our of creative teams before idea lethargy sets in.

Standup (vs. sit down)
They say that sitting is the new smoking. Sitting hurts creative energy as well. It is for this reason, that many managers are scheduling walking meetings, as opposed to sitting meetings. For example, evolutionary biologist Andrew Parker applied designs from his walks through the Australian outback to solve problems in engineering, materials science, and medicine. In one investigation, the iridescence in butterflies and antireflective coatings in moth eyes led to the development of brighter cellular phone screens and an anticounterfeiting technique (Mueller 2009).

Debate versus Demoralize
For years (make that decades) people have been strictly cautioned to not challenge or criticize others ideas. However, by eliminating all debate, then all deviance is eliminated too. Teams in which a single member proposes an unusual or even incorrect solution outperform teams in which no such "deviance" occurs. And, teams instructed to "debate" are more creative than teams instructed to "brainstorm" (Nemeth and Ormiston 2007)! Furthermore, these performance advantages generalize to subsequent, unrelated tasks, even when the vocal, cognitively deviant member is not present (Smith et al. 1996). A study of 71 IT project teams revealed that task conflict had curvilinear effect on creativity, with creativity highest at moderate levels of task conflict (Farh et al. 2010).

Recent research indicates that you can mobilize the creative process by engaging in debate, rather than by self-censoring all doubts. Debate is depersonalized criticism and is fact-based. In contrast, demoralizing others, also called "jeer pressure," is personalized and hinders creativity. In one study, groups who debated one another were more creative than did those who did not debate (Personnaz et al. 2004). At IDEO, a method often used to give feedback in a non-demoralizing way is to offer critique with the phrases "I like" and "I wish." This reminds us that we are evaluating the idea, not the ideator.

Encourage outlandish ideas
Deliberately encourage outlandish, politically incorrect, outrageous ideas; these can often be the seeds for workable ideas (recall the mechanical mosquito!). It is not enough to simply encourage the group to "not be timid," rather must behaviorally engage in this. One thing we do is pre-brainstorming warm up in which group members each share the most embarrassing thing that has happened to them in the last month (Wilson et al. 2016).

Downstream Creativity
An excellent sign of a creative trip down the river is the presence of a lot of ideas. Groups often feel a need to select one or two of those ideas for further development. One issue that groups face is how to select among a plethora of ideas. If groups are successful in generating a lot of ideas, how do they best select among those ideas?

As it turns out, idea selection is best done individually, not within groups. For the simple reason of groupthink, which is defined as "excessive like-mindedness." Idea selection is also another great time to introduce constraints. Asking questions such as "which of these ideas feel like the best fit with our core competence?" and "which ideas feel like they are the most inexpensive to test?" are excellent ways to focus attention and keep participants thinking about the business goal behind the creative process.

Groups may select "safe" ideas that represent the tyranny of the average; least offensive to everyone. The research is pretty clear on idea selection: groups are not as good at recognizing creative ideas as are individuals. So, a better practice is to allow individuals to choose the idea. The second mistake groups make is that they choose ideas prematurely, in the absence of evidence. A far better practice is to conduct an evidence-driven experiment to test ideas.

One of the scenes that breaks our hearts is looking at a conference or meeting room after a day-long brainstorming session and seeing the flipcharts, post-its, party horns, and all the paraphernalia and then realizing that all the ideas have stayed in the room to die a quiet death. To prevent this quiet death, we advise that teams and organizations create a boneyard (place where ideas are archived for future use). Note: Mattel Media got an idea for an application of hotwheel toys by digging through the boneyard (Thompson 2003). In addition, a 1-2-3-4 plan should be put in place: what will take place in next week (1)? In two weeks? In 3 weeks and a month out, all members need to conference with one another.

Going Ashore

It is not practical to always be "on" when it comes to the creative enterprise. Just like the athlete, who trains for an event, and then has some recovery period and some training time, leaders and managers need to do similar when in the creative performance mode. Indeed groups who take a short break (2–5 min in length) halfway through a 20- or 30-min brainstorming session increase their productivity following the break compared to teams that brainstorm continuously without a break (Mitchell 1998). Breaks also allow brainstorming groups to overcome mental blocks through the process of incubation. Breaks can stimulate a different approach to a problem. In one investigation, individuals and three person groups attempted to solve sets of rebus puzzles; following incubation (taking a break from the problem), groups improved (Smith et al. 2010).

2.3 Conclusion

We have examined creativity at the upstream, mid-stream, and downstream points. Too often well-meaning leaders and organizations become preoccupied with innovation and outcomes and they sabotage the ideation process. We have made the

argument that ideation, or the generation of a high volume of ideas without concern for utility or even uniqueness, opens the door for the generation of truly creative ideas that are novel and useful. We have deliberately set aside the allure of quality and put our bet on quantity. There are several steps that managers and leaders can take to encourage idea generation in their groups and teams.

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