Creating Smart Designing Questions

by Richard Kielbon and Gerald Nadler

Effective problem solving appropriately frames context and opportunities. Based on lessons from outstanding practitioners, Richard Kielbon and Gerald Nadler are convinced this happens in the flow from divergent to convergent perspectives. In this sequence, they also stress posing questions that embrace unique, purposeful information and systems thinking, that are future-oriented, that broaden options, and that empower and unite people.

Are you a design manager or a design leader? In which role do you feel most comfortable … or do you consider the distinction between manager and leader artificial?

Since the early 1980s, much literature has promoted this distinction. Yet the need for both is critical—we need managers to run stable organizations and leaders to set the stage for organizational change. The way design leaders foster changes and managers organize design is significantly affected by the way they think, and thus the questions they ask.

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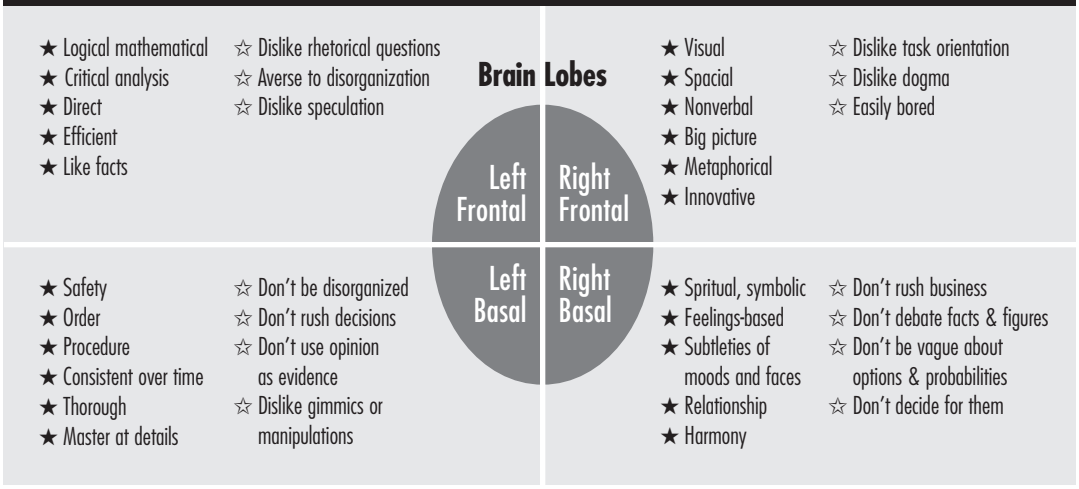
Changing your perspective

Numerous programs have been devised to identify and take advantage of differences in thinking styles and personalities to help place staff within organizations for maximum effectiveness (see Figure 1 on next page). This produces gains in effective performance, but these gains are insufficient. High-functioning organizations must also improve upon strategy and innovation. Therefore, the overarching question is: How can people of differing cognitive styles unite to discover excellent and innovative objectives and achieve them in unity?

Peter Drucker, a seminal thinker on leadership and management, believed that to achieve those objectives, it's crucial to "ask the right questions." But what are these questions? Are they always the same questions? When and how are they asked? Who should ask them?

To uncover the source of the right questions, we took a look at the practices of outstanding designers and creators of solutions. We wanted to preserve their way of thinking undiluted by all the other practitioners in their domains. Building on that research and

Figure 1. Different Thinking Styles. Individuals are usually born with a preference in one quadrant.

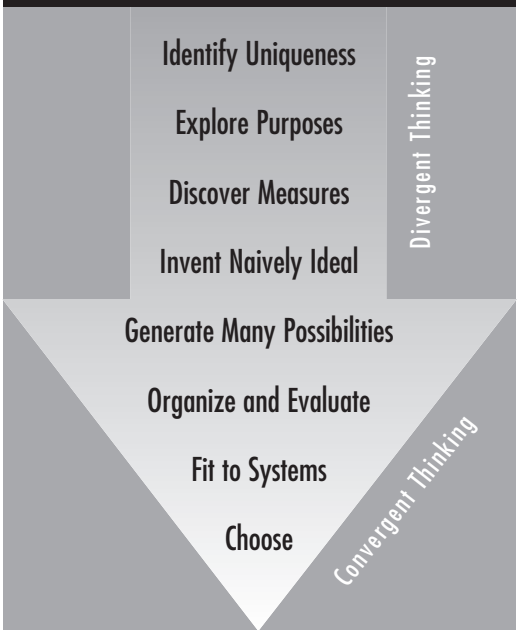


Adapted from Katherine Banziger, PhD, *Thriving In Mind*, KBA, LLC Publishing, 2003.

related work,[1] we arrived at what we call smart designing questions (SDQ).

Our basic discovery: *The best designers and solution creators practice their art differently from that which is traditionally taught and practiced in their domain.* In particular, they have a different mental model, a different general order of thinking. They ask questions in a different order than the conventional approach of beginning with known principles or brainstorming solutions for consideration.

Figure 2. Mometum When Thinking About Solutions



There is a certain pathway to productive thinking, a certain momentum. In fact, there are two types of thinking momentum involved when solutions are sought. One is divergent, the other convergent (see Figure 2). Both are useful; however, divergent questions *must* come first—and these cannot be asked at the same time as the convergent, critical-thinking variety. Divergent thinking broadens one's perception and flows from asking open-ended questions that seek to understand related frameworks and one's own perspective rather than data related to the problem at hand. Convergent thinking evaluates, organizes, and judges.

Divergent questions set a new foundational base for perception. They do not seek facts about the problem, but rather look for *qualitative* information about the uniqueness of the situation and the purposes of the individuals served by the solution. Such "purposeful information" always relates to the broadest perspectives rather than the minutiae. Asking questions about these issues opens perception and is expansive, or divergent, for the mind.

It is also crucial to realize that this kind of qualitative information is distributed among many parties and individuals. A critical question

1. See Gerald Nadler and Shozo Hibino, *Creative Solution Finding* (Rocklin, CA: Prima Publishing, 1999).

is: Who are the people to involve? Here's an example:

Knoxville, Tennessee, received a gift of $1,000,000 from Reggie White, the outstanding former defensive end of the Green Bay Packers football team, to create a community investment bank for inner-city economic development. The city added $250,000. One of us facilitated a one-day strategic planning session to organize the bank. About two weeks before the session was to take place, I began to investigate who were the stakeholders who needed to be present at the meeting—who would be affected by, contribute to, or carry out the plan. The resulting discussion produced a list of healthcare professionals, educators, transportation specialists, ministers, presidents of commercial banks, and recreation-park staff. One community leader I interviewed in the course of my research told me about an urban activist who was likely to object to the plans, based on his response to previous proposals. Not only that, but this man had filed lawsuits against the three presidents of the banks included in the session as stakeholders. The community leader suggested that we not invite him to the meeting. I had a different idea.

"What about getting him involved at the beginning of the planning?" I asked. "That way, his ideas could help shape the plan." Accordingly, we did invite the activist to the meeting, which produced an organization structure, a budget for developing the bank, and an action plan that envisioned everyone—including the activist—taking on certain responsibilities. Purposeful information from stakeholders resulted in a comprehensive strategy.

The fundamentals of SDQ: Uniqueness, purposeful information, and systems

Once the question of whom to involve has been answered, the next questions are intended to open up perception and thinking. For example, design professionals often start a project with a particular mind-set or notion about the solution *already in place*. Our research shows they often ask the following types of questions:

- "How is your problem like the one we solved last year?"
- "What are the facts that describe *current* issues?"
- "What do you think is wrong? What needs fixing?"
- "How does your current solution compare to 'best practices' [assumed solutions]?"
- "Did you know that what you are doing violates principle X [the assumed solution]?"

Such questions, however, by their assumptive nature often breed negative reactions and fail to explore larger contextual issues because they miss the uniqueness of the situation. They lead the client and the designer in the wrong direction via hidden assumptions. Even beginning the design efforts with the slogans "Start with a clean slate" or "Let's all be creative" can be embedded within a deceptively presumptuous thinking model.

In contrast to the conventional questions, SDQ suggests the designer approach a new engagement with three basic question sets. Consider these guidelines:

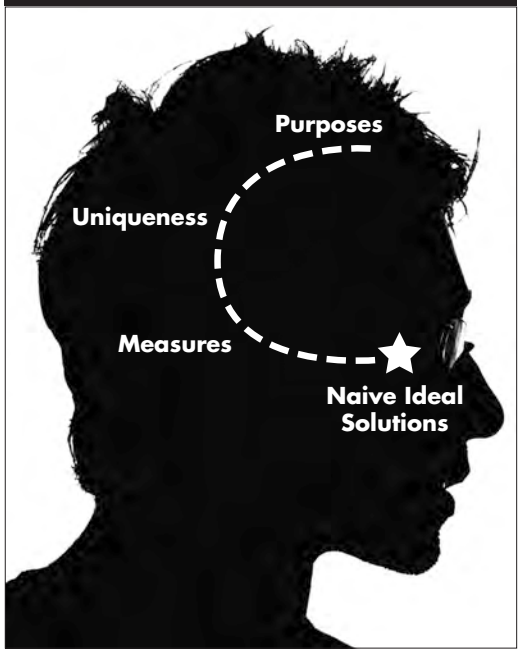
1. How do we make certain the issue or situation is considered unique?

The temptation to copy solutions from similar situations is universal. New clients frequently ask, "You recently designed an X just like the one I want—can you do that here?" But we have to point out that the new situation will always be different—new people, new purposes to achieve, new available technology. Even if their X is 90 percent like your Y, then it is crucial that the 10 percent difference is approached initially as unique.

2. What purposeful information do we need to create solutions?

Leading designers start the design process by collecting information that prepares the mind to imagine solutions in novel ways. This "preparing of the mind" (see Figure 3 on next page) can be thought of as planting seeds in anticipation of

Figure 3. Positive Mometum



the new shoots that someday will emerge from the soil. There is a preparation period and a gestation period, but the planting must take place with some faith in the outcome.

Two kinds of preparation are very productive in generating good results. The first involves the understanding that humans are purpose-driven creatures. This is crucial, because the kinds of problems we engage in solving are almost always human problems—there are virtually never problems that are purely technical or logistic. Exploring and thinking about purposes is the first and most powerful step in preparing the mind to find novel solutions. Think of this as planting the seeds of creative thinking.

Exploring human values and measures is the second important factor in preparing the mind for thinking in creative ways. This is like the fertilizer in the planting analogy. Values attach themselves to purposes and combine with them to tell us whether the solution will be satisfying. They tell us how vigorously the seed will grow.

Our research has shown that those most successful at creating excellent solutions playfully investigate and think about purposes and measures rather than "research" the current problem. This activity builds the thinking momentum that allows the mind to leap to new insights. Consider the following example:

An SDQ-trained architect was working for a Native American health services organization designing a facility in an urban area. The organization served many tribal members disassociated from their communities. Besides designing a normal medical facility, another part of the program was to create a community center for the organizational staff, as well as for the clientele. The client envisioned a community center that would function as a multipurpose gymnasium, and this is what was requested of the architect.

However, the architect decided to first conduct an SDQ workshop for the design committee and stakeholders. The discussion uncovered two broad purposes for this urban community center. The focus purpose was to form social networks that would connect staff, program participants, and local organizations. This would aid the individuals in achieving goals related to personal growth, self-esteem, and employment opportunities. The second purpose was to help this private, nonprofit organization to make network-building and fund-raising connections with the local community. Once the participants of the design meeting identified the nature of their broader purposes and the design values attached to them, they quickly changed their notion of which design solutions would best serve them. The resulting solution was a facility of meeting rooms of various sizes and accommodations that had an esthetic character specifically expressing their values. The artistically inspired meeting space was a better fit for public relations and community networking purposes. Its effectiveness at achieving these purposes was made evident by the large amount of community support it garnered, which was followed by successful funding and construction.

3. How will a systems perspective ensure that our solution will work?

Considering how an imagined solution might actually occur in the real world happens from a "systems perspective" way of thinking. Many clients we meet allude to the fear that dreaming about ideal solutions is likely to be costly or impractical. We explain that imagining possible solutions is just one step in a process that ends with affordable and practical solutions. The use

of a systems approach is what converts possibility into reality.

A systems perspective approaches the solution from a matrix point of view: What are all the reality factors from an input and output perspective and how do these factors all interrelate? A systems context of thinking helps to adjust ideal solutions to the real world and to open avenues of understanding about the context in which the solution must fit to be successful. The leading designers we studied developed frameworks that incorporated purposes; inputs and outputs; inputs-to-outputs conversion processes; the environment; and the human, physical, and information-driven enablers that are needed to make the system work. In other words, once a design target was established, they "fit" the ideas to reality.

To repeat a point we made earlier, though: Divergent and convergent thinking do not mix. First, engage in divergent, or possibility, thinking; later, conduct convergent critical thinking. Do them separately.

Our discussions so far outline three basic fundamentals and the divergent-convergent basis of creativity in smart designing questions.

Strategies for framing smart designing questions

Our discussions so far outline three basic fundamentals and the divergent-convergent basis of creativity in smart designing questions. Our research produced seven criteria for translating these basics into developing the smart designing questions needed for a specific situation.

1. Does the question align with uniqueness, purposeful information, and systems perspectives?

A project for one of our clients, a hospital, sought to improve its utilization of nurses. It expected to begin with a review of its previous utilization studies and other hospital studies to see if there were any useful ideas. An SDQ consultant inquired first about the validity of the study data and continued by asking how current circumstances were unique. It was soon realized that current nurses and related professionals did not have the same motivation or training as those involved in the early studies and certainly did not work within the same organizational procedures as those in the studies at other hospitals. The technologies used had also changed. The other studies were essentially useless: new stakeholders, purposes, and realities governed the solution.

2. Does the question expand purposes and look to the future?

Smart designing questions encourage forward thinking and a future-based focus by asking "what" questions: "What is the purpose of doing that?" or "What could principle X accomplish here?" rather than "Why do you do that?" or "Why not use principle X here?" Research shows that "why" questions are likely to form defensive reactions and evoke constricted thinking.

During the hospital project, the SDQ consultant asked the team what purposes it hoped to achieve. This spurred a healthy discussion of goals rather than an argument about the causes of poor nurse utilization. The group decided that the larger and more focused context was to "return patients to a functional status." This was a broader perspective than to "improve the hospital's utilization of nurses" and led to many ideas that were forward-thinking and long-term in outlook. The new patient care system, in addition to improving the quality of services, actually improved nurse utilization by an astounding 38 percent.

3. Does the question use metaphors that broaden thinking (rather than constrain it?)

Restrictive metaphors halt thinking. Broadening metaphors lead to smart questions and open thinking. Consider the following examples of traditional metaphors and matching smart questions. (OT=Old Thinking, SDQ= Smart Designing Questions)

OT: Don't reinvent the wheel.
SDQ: Do we need a wheel at all?

OT: Solve the right problem.
SDQ: What is our purpose? What are the broader purposes of that purpose?

OT: Knowledge is power.
SDQ: How can we use knowledge to gain power?

OT: Think out of the box.
SDQ: What hidden assumptions may be limiting creative thinking? What complementary products or services could boost demand for what we offer?

OT: If it ain't broke, don't fix it.
SDQ: Could it be done more creatively and effectively? If you could do it all over again, what would you do differently?

OT: Yes, but…..
SDQ: Yes. Now how can we make it work?

4. Does the question embody a systems approach?
A large advertising company had a three-day retreat to develop a strategic plan. The outcome was a list of 23 beliefs and values the participants thought was a plan. After six months, the CEO called an SDQ consultant to find out why the strategic plan wasn't working. The consultant, instead of trying to analyze its faults, asked the CEO questions based on a systems approach:

- What are the purposes of the company?
- What are the inputs (customer needs, contracts, and so on) the company should be working on to achieve its purposes?
- Which systems should the company use to effectively convert the inputs to outputs?
- Which human resources can creatively use the process?

The CEO discovered that none of these questions was addressed previously. He set up a workshop with the people who had been at the retreat to answer these questions and develop an actionable plan that was successful.

5. Will the question encourage options?
An example of encouraging options is to convert principles into questions. After developing a common understanding of what the principle means, one can ask, "How many options can you think of that result from applying principle X?" This produces alternative solutions.

The president of a 600-employee manufacturing company called an SDQ consultant to help design a new facility that would double the company's capacity. Even though the task seemed straightforward, the consultant asked the team to consider alternatives that would achieve the same end. Twenty-one options resulted—a surprise to several in the meeting—and after just two hours, the team decided to work to develop management control systems rather than expand the factory. The output of the revamped, current facility nearly doubled. A new facility would have been a brilliant answer for the wrong problem.

6. Does the question empower people?
Asking purpose-based questions frees people to think on their own.

The director of 2,500 engineers called an SDQ consultant for coaching on how to get his staff to take more initiative in their work and in customer service because he felt the engineers referred too many decisions to their supervisors and managers. There was also a high frequency of follow-up questions managers received after making "simple" assignments.

The consultant asked the director how simple assignments were given to an engineer. "Well," replied the director, "we tell them to use their software programs to make the calculations." The consultant made him aware that even the most thorough computer programs require the user to make many small decisions. Not knowing the larger context for making these decisions led the engineers to create results the managers did not want.

The SDQ consultant showed the director and his managers how to talk about larger purposes, as well as the context for projects. At the same time, the consultant showed the managers how to teach the engineers to ask about the purposes associated with an assignment. Six months later, the director reported the number of unwanted outcomes had shrunk to essentially zero.

7. Does the question bring people together?
A manufacturer of equipment for the disabled was preparing to produce a line of new modular aids for wheelchairs. The aids would allow changes in particular components and thus avoid replacing whole units as the needs of the patient changed.

A two-day workshop to design the manufacturing system to produce the product included designers, engineers, R&D people, and representatives of the university-based center. The group was far from cohesive. The designers stuck to their specifications. The engineers were upset because they believed the manufacturing system would be too difficult. The university representatives expressed dismay that the design did not go far enough. The company's R&D people felt there should be more testing.

An SDQ facilitator started the meeting by asking the group to list the purposes of the manufacturing system. The group struggled, but then they started to settle upon a purpose they could agree upon. The light bulb went on for most of the participants. It wasn't the manufacturing that was the problem; it was the product!

The remaining day and a half involved designing a new product. At the end of the second day, the enthusiasm level was high, with general agreement that the new design was much better than the original, and that the manufacturing system would also be simpler.

Work with the brain power you've got—not against it

Organizations are a confluence of many individuals. Each individual differs in background, personality, thinking style, education, and personal experience. The job of the organization is to be unified in knowledge, purpose, and operation directed toward creating a product or service.

We believe smart questions are essential to accomplish the complex task of bringing clients, customers, stakeholders, advisors, and organization members together in the work of creating outcomes that satisfy everyone—solutions that are excellent, forward-thinking, and fit well with reality.

This article is adapted from Gerald Nadler and William Chandon, *Smart Questions: Learn to Ask the Right Questions for Powerful Results* (San Francisco: Jossey-Bass, 2004). ■

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