PART I

# Introduction

# 1 Setting the Stage

## Introduction to the Study of Creativity

### IDEO's Deep Dive: Creation of a New Shopping Cart

It is Saturday morning, and the shopping list on the refrigerator door is too long to ignore: you have to go to the supermarket. You get out of the house early, to beat the crowds, but everyone else had the same idea, so the store is crowded. You wrestle a shopping cart out of the line of carts at the entrance and push it into the store, heading to the meat aisle for your first purchase. Halfway down the aisle, your way is blocked by two carts, whose owners are chatting. You try to reverse your way out of the aisle, but you must drag the heavy cart to get it to turn around in the narrow space. On your roundabout trip to the meat aisle, you maneuver around a father trying to calm his upset child, who has almost succeeded in squirming his way out of the uncomfortable child seat in the cart – the flimsy strap could not hold the child in – but whose foot is wedged in the hinged seatback.

When you have gotten your meat, you head for the diary aisle, to get yogurt, milk, cheese, and eggs. As you reach that area, your path is again blocked by several carts. You could leave the cart and make your way through the maze of carts to the dairy case, but you don't think you can carry everything back to your cart in one trip. Rather than making multiple trips, you wait until you can push the cart to the case and load it up. After similar experiences with bread, cereal, juice, fruits and vegetables, paper towels, toilet paper, toothpaste, and coffee and tea, you check your list and find that one item, olive oil, remains. You head for the aisle that you think the olive oil is located in, based on your memory. However, the olive oil is not there: either you misremembered or the location has been changed. You need to talk to one of the store's staff members, but no one is in the immediate vicinity, and the customer-service counter is on the other side of the crowded store. You decide that you can live without olive oil for now and head for check-out.

There are long lines of carts at all the registers. You get on the shortest line and spend the time catching up on email and reading a magazine about

the latest scandal involving a young star's endless battle with her former spouse. When you finally get to the register, you strain to reach deep into the cart's large basket to retrieve some small items at the bottom. Finally, your items are bagged and paid for and loaded back into your cart. You push it to your car, unload your bags, and head for home, relieved to be finished with shopping – for the time being.

## IDEO's Challenge: A New Shopping Cart

Such a frustrating experience of supermarket shopping is extremely common. That universality was what motivated the ABC show *Nightline* to invite IDEO (pronounced "eye-dee-oh"), the most well-known design-consulting firm in the world, to design a new shopping cart. IDEO is an *idea factory*: it sells its *creativity*, the process that it brings to the problems that its clients face. When IDEO began, over twenty-five years ago, its business was assisting in the development of new products for its clients, and it was very good at it. The company has received many design awards over the years, far more than any other design firm. More recently, IDEO has marketed its *process*. IDEO now offers to instill its creative process in the client's organization, changing the client, so that in the future the client can innovate on its own. IDEO has also developed a worldwide presence on the Internet, OpenIDEO (www.openideo.com), where their method is taught to anyone interested in participating and where large-scale problems are presented, with all members of the OpenIDEO community encouraged to participate in developing solutions.

*Nightline* asked IDEO to design a new shopping cart, while their cameras and reporter observed, and gave them a week to do it. The result is shown in Figure 1.1. IDEO's sleek creation makes the present-day shopping cart look like a dinosaur. It is built on a stainless-steel frame, in which are placed small, easily removable plastic baskets. Those baskets allow the shopper to leave the cart and make a series of trips to various locations to fill the baskets, which are then put back into the frame. The molded-plastic child seat, similar to a high chair – much more comfortable than the angular folding seat on the typical cart – has a safety bar that holds the child in place and also provides a play surface. The wheels, front and back, rotate 360 degrees, for ease of maneuvering. There is a microphone for direct communication with store personnel, as well as a scanner to permit self-checkout. When the baskets are removed at checkout, a series of hooks on the inside of the frame is exposed (they can be seen in Figure 1.1), from

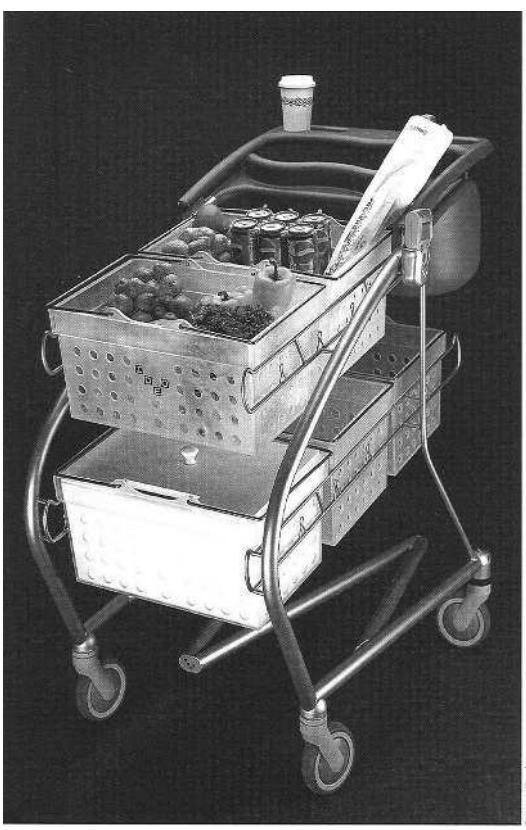

**Figure 1.1** IDEO's shopping cart

which one can hang filled bags, for transport to one's car. This cart, in an elegant manner, would alleviate many of the difficulties that we encounter when shopping. IDEO's creativity produced another winner.

## The Mystery of Creativity

We have just examined a case study of creativity in action, but this example is not an isolated case: creativity is everywhere. Creativity, the capacity to produce new things – new ideas and new objects – fills our lives, often, but not always, for the better. Everything in the world that is not part of nature has been touched by creativity, and much of the natural world has also been changed by creativity. Babies are born healthier, and we all live longer and fuller lives, because of advances in science and medicine resulting from creativity. Our workdays are filled with products of creativity, ranging from

the laptop on which I am writing this book to the word- and graphics-processing programs that I am using to put words and figures on pages. Our leisure time is filled with the results of creativity, many times over. The video-game platforms, televisions, music- and video-streaming devices, smartphones, tablets, and other systems that we use to acquire and display content have all been developed through creativity, as have the media themselves – social-media apps, music, games, books, art, and movies. Not every product of creativity has a positive effect, however: weapons of mass destruction also arise from creativity.

### *Humans, Gods, and Geniuses*

The creative capacity has been taken as evidence of a god-like aspect in humans. As God created the heavens and the earth out of the void, so we humans can create something out of nothing. A songwriter sits down in front of a piano, and after a while there is a new song. An idea-factory is given the task of creating a new shopping cart, and five days later there is one.

The possibility of a human–god connection has, over the centuries, shaped much thinking about creativity (McMahon, 2013). In modern times, some of those god-like qualities were assumed to reside in the exceptionally creative person, the *creative genius*. Variations on this view, which I will refer to as the "genius view" of creativity, still are very much a part of the modern discussion of creativity, both in society in general and in the scientific community. I saw a *Smithsonian* magazine a few years ago with a cover story titled "Genius Happens: 17 People Changing Your Universe," which celebrated outstanding innovators. Soon after that, there was a long article in *National Geographic* entitled "What Makes a Genius?" And there was a TV series on the National Geographic Channel about Einstein, with the title *Genius*.

Concerning more formal analyses of thinking, the historian and cultural critic Jacques Barzun (e.g., 1960, 1989), as one example, has argued that there is something basically different in the thought processes underlying the creative advances of geniuses – Leonardo, Picasso, Mozart – and neither the geniuses nor we mere mortals can understand that process. The creative process of the genius results in outcomes that are completely new: the genius makes sudden leaps into the unknown. (See also Bloom (2002) and chapters in Murray (1989b) and in Simonton (2014).)

The general assumption of the genius view, that the creative individual is in some critical way different than ordinary – noncreative – people, is also

pervasive in modern scientific analyses of creativity. Sometimes the emphasis is on differences in thinking and sometimes on differences in psychological characteristics – differences in personality structure. In this chapter, I focus on the thought processes assumed in the genius view to underlie creativity. The basic idea, familiar to and accepted by nearly all of us, is that creativity depends on *thinking outside the box*. Thinking creatively demands that we break away from the past, rejecting what we know, to make a leap into the unknown. The genius can do that, and thereby produce something truly new, while the rest of us remain mired in the quicksand of the past.

The general perspective of the genius view is seen also in the method that IDEO uses to deal with its clients' problems, a method designed to facilitate thinking outside the box. The domain of the problem does not matter: IDEO has produced innovations in a wide range of areas, from toothbrushes to electronic devices to ski goggles to an all-in-one fishing rod for children. IDEO's innovation process is called, for reasons that will become obvious, *The Deep Dive*.

## IDEO's Deep Dive

The first step in IDEO's innovative process is the formation of a team, made up of individuals with a wide range of backgrounds, none of which is necessarily in the specific area of the client's problem. The shopping-cart team consisted of some twenty people, ranging from engineers to an MBA to a linguist. Since none of them was an expert on shopping carts, the team first broke into groups, each of which carried out a different type of research, which allowed them to delve into the area (the first component of the *Deep Dive*). They talked to supermarket employees, including the shopping-cart buyer for a supermarket chain, and observed and talked to shoppers using carts "in the wild." IDEO's team quickly became expert on difficulties faced by people who work with and use shopping carts daily.

### *Problems with Shopping Carts*

Several problem areas immediately surfaced from the first round of research: user safety; difficulty of use during shopping; inefficiency at checkout; problems locating items in the store; and shopping cart loss due to pilferage. Concerning user safety, there are, among children aged five and under, thousands of injuries a year involving shopping carts, many

of which are serious. Those accidents typically result from a child falling out of the child seat or out of the basket: as the parents and older siblings among us know, many young children will not sit in the uncomfortable fold-out seats in typical shopping carts, so some parents allow their children to sit – or stand – in the basket.

As a result of talking with the shopping-cart buyer, the IDEO staffers discovered that shopping-cart theft is a major problem for supermarkets. Shopping carts are used as mobile storage facilities, and the metal baskets are used as barbecues. Groups of IDEO team members also observed people using shopping carts. The team paid particular attention to professional shoppers, who buy items for online shopping-delivery services. Those professionals, working under heavy time pressure, provided extreme examples of the problems that shoppers face in using shopping carts. The professionals tended to leave the cart in one place, using it as a home base while making trips to the areas of the store that they needed to get to.

In this way, the team became a "super-expert" on the important issues concerning shopping carts, and it did so much more quickly than if the members had had to experience all the difficulties for themselves.

### *Brainstorming: Generating Ideas*

On the next day, the team members began to *brainstorm* ideas to deal with the problems uncovered in their research. Brainstorming, the second step in the *Deep Dive*, is a technique for generating creative ideas in a group setting, developed in the 1960s by Alex Osborne, a well-known advertising executive (Osborne, 1963). Osborne's basic assumption was that creative thinking was fragile and could be stifled by negative judgment. Many ideas that we produce in response to a problem, especially those ideas that seem – to us as well as others – wild and crazy, might, if given a chance, turn out to be useful. Therefore, every idea, no matter how absurd, must be given consideration. Judgment comes later.

IDEO's rules for innovation are written around the walls in the rooms that the teams work in (ABC News, 1999, p. 9): (1) encourage wild ideas; (2) defer judgment; (3) build on the ideas of others. Rules (1) and (2) represent the core of Osborne's belief concerning the best way to find new ideas: *first* produce as many crazy ideas as you can, and *then* consider the potential usefulness of each. David Kelley, IDEO cofounder and CEO, described the process in an interview as follows:

> Yeah, see, you have to have some wild ideas. Then you build on those wild ideas and they end up being better ideas than if you said, if you, if everybody only came up with sane things, you know, kind of appropriate things you'd never, like, have any points to take off to build a really innovative idea. So you really encourage that kind of craziness 'cause sometimes it leads to the right things. (ABC News, 1999, p. 5)

IDEO's emphasis on wild ideas is based on the assumption that creativity depends on the free expression of the imagination. It is the job of the team leader to ensure that judgment does not get in the way of idea production. The leader even has a little bell, worn on the wrist.

> That's the hardest thing for people to do is to restrain themselves from criticizing an idea. So if anybody starts to nail an idea, they get the bell. (ABC News, 1999, p. 5)

The broader culture at IDEO is designed to play a role in the *Deep Dive* process. There is little in the way of hierarchical structure at the company, because, according to IDEO's philosophy, hierarchical structure gets in the way of the freedom needed for idea generation. As Kelley describes:

> I'll give you status. I'll give you a big red ball on a post and that says you're a big guy. If you've got a ball you're a senior vice president. You know, what do I care? . . . In a very innovative culture you can't have a kind of hierarchy of here's the boss and the next person down and the next person down and the next person down because it's impossible that the boss is the one who's had the insightful experience with shopping carts. It's just not possible. (ABC News, 1999, p. 3)

To foster the lack of corporate hierarchy, Kelley specifically sets out to hire people who he hopes will not listen to his orders.

The IDEO team generated hundreds of ideas in response to the problems presented by the shopping cart. Many of those ideas were put on sticky notes and attached to the walls of the room, where they could be organized by area – shopping efficiency, safety, ease of checkout, and locating items – and considered and voted on by all the team members.

### *Prototyping*

Once the ideas in each problem area had been voted on, the team moved to realize those ideas in a concrete product – a prototype. An important component of IDEO's creative process is to produce prototypes as early as possible. That way one can see if there are any deficiencies in the ideas that

might not be obvious when one is considering them in the imagination or as written on a note stuck to the wall. This use of prototyping exemplified a motto at IDEO: "Fail often to succeed sooner." It is better to try to make things as concrete as possible as early as possible, so mistakes can be discovered before too much time and resources are invested in a project. For the shopping-cart project, four early prototypes were constructed, with the help of IDEO's machine shop, each dealing with one of the areas of concern. The prototype dealing with problems locating items had a transmitter and microphone that enabled the shopper to communicate directly with customer service in the store. To facilitate checking out, one prototype had a scanner that allowed the shopper to keep an electronic record of the items in the cart, which could be used for quick self-checkout. The best features of those prototypes were combined into the final product that so impressed the people at *Nightline* and, to judge from comments online, many others as well.

### *IDEO's Deep Dive: Conclusions*

There is no doubt that IDEO's accomplishments are impressive, and they provide support for the claim that the company has harnessed the creative process. IDEO's teams work under an elaborated set of Osborne's rules, designed to ensure that the wildest possible set of ideas is generated in response to any problem. This type of idea generation maximizes the chances that out-of-the-box ideas will be produced. A first glance at IDEO's shopping cart seems to indicate that they succeeded in moving far outside the box, essentially breaking the mold. However, if we examine the shopping cart in a more analytic frame of mind, it is less groundbreaking than it seemed to be. We will see that, contrary to the claims made by IDEO, out-of-the-box thinking did *not* play a major role in its creation.

## IDEO's Creative Process: Outside the Box – or Inside?

### *Logic and Creative Thinking*

Table 1.1 presents an analysis of the novel components in IDEO's shopping cart (left-hand column). For each, I have indicated the difficulty or problem that was being addressed (middle column) and how the solution might have arisen (right-hand column). Consider first items 1 and 2, centering on the plastic baskets. Those baskets serve several purposes. *Plastic* baskets