CHAPTER ONE

Organizing Genius: The Secrets of Creative Collaboration

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INTRODUCTION

This book was born forty years ago, in a conversation with Margaret Mead. Mead was already world renowned, as famous for her social activism as for her cultural anthropology. I was a newly minted assistant professor of economics at the Massachusetts Institute of Technology. One snowy night in Cambridge, I went to hear Mead lecture at Harvard. Afterward, I introduced myself, and we talked. I had become interested in extraordinary collaborations, the process whereby Great Groups are able to accomplish so much more than talented people working alone. I told Mead that I was interested in writing a book on how networks of gifted people have changed the world.

"That's a wonderful idea," Mead said, "especially since it's never been done before. You should call it Sapiential Circles."

It would be decades before I completed that book on creative collaboration. During the intervening years, I became fascinated with leadership in its many forms and styles. I interviewed hundreds of leaders in dozens of disciplines, trying to pinpoint the attitudes and behaviors that allow some leaders to succeed while others fail. At the same time I continued to study how organizations cope with change, never more important than in the tumultuous present. The more I learned, the more I realized that the usual way of looking at groups and leadership, as separate phenomena, was no longer adequate. The most exciting groups--the ones, like those chronicled in this book, that shook the world--resulted from a mutually respectful marriage between an able leader and an assemblage of extraordinary people. Groups become great only when everyone in them, leaders and members alike, is free to do his or her absolute best. This book is about organizing gifted people in ways that allow them both to achieve great things and to experience the joy and personal transformation that such accomplishment brings. In today's Darwinian economy, only organizations that find ways to tap the creativity of their members are likely to survive.

The book itself became a collaboration with Pat Ward Biederman, a gifted writer who has been my friend and sometime coauthor for many years. As you can see, we chose a title other than the one suggested by Dr. Mead. Organizing Genius: The Secrets of Creative Collaboration is part history, part how-to manual, part meditation on why a few groups rise to greatness, while most flounder.

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THE END OF THE GREAT MAN

"None of us is as smart as all of us."
The myth of the triumphant individual is deeply ingrained in the American psyche. Whether it is midnight rider Paul Revere or basketball's Michael Jordan in the 1990s, we are a nation enamored of heroes--rugged self-starters who meet challenges and overcome adversity. Our contemporary views of leadership are entwined with our notions of heroism, so much so that the distinction between "leader" and "hero" (or "celebrity," for that matter) often becomes blurred. In our society leadership is too often seen as an inherently individual phenomenon.

And yet we all know that cooperation and collaboration grow more important every day. A shrinking world in which technological and political complexity increase at an accelerating rate offers fewer and fewer arenas in which individual action suffices. Recognizing this, we talk more and more about the need for teamwork, citing the Japanese approach to management, for example, as a call for a new model of effective action. Yet despite the rhetoric of collaboration, we continue to advocate it in a culture in which people strive to distinguish themselves as individuals. We continue to live in a by-line culture where recognition and status are according to individuals, not groups.

But even as the lone hero continues to gallop through our imaginations, shattering obstacles with silver bullets, leaping tall buildings in a single bound, we know there is an alternate reality. Throughout history, groups of people, often without conscious design, have successfully blended individual and collective effort to create something new and wonderful. The Bauhaus school, the Manhattan Project, the Guaneri Quartet, the young filmmakers who coalesced around Francis Ford Coppola and George Lucas, the youthful scientists and hackers who invented a computer that was personal as well as powerful, the creators of the Internet--these are a few of the Great Groups that have reshaped the world in very different but enduring ways.

That should hardly surprise us. In a society as complex and technologically sophisticated as ours, the most urgent projects require the coordinated contributions of many talented people. Whether the task is building a global business or discovering the mysteries of the human brain, one person can't hope to accomplish it, however gifted or energetic he or she may be. There are simply too many problems to be identified and solved, too many connections to be made. And yet, even as we make the case for collaboration, we resist the idea of collective creativity. Our mythology refuses to catch up with our reality. We cling to the myth of the Lone Ranger, the romantic idea that great things are usually accomplished by a larger-than-life individual working alone. Despite the evidence to the contrary, we still tend to think of achievement in terms of the Great Man or Great Woman, instead of the Great Group.

But in a global society, in which timely information is the most important commodity, collaboration is not simply desirable, it is inevitable. In all but the rarest cases, one is too small a number to produce greatness. A recent study of senior executives of international firms published by Korn-Ferry, the world's largest executive search firm, and The Economist resoundingly confirms our thesis that tomorrow's organizations will be managed by teams of leaders. Asked who will have the most influence on their global organizations in the next ten years, 61 percent responded "teams of leaders"; 14 percent said "one leader." That does not mean, however, that we no longer need leaders. Instead, we have to recognize a new paradigm: not great leaders alone, but great leaders who exist in a fertile relationship with a Great Group. In these creative alliances, the leader and the team are able to achieve something together that neither could achieve alone. The leader finds greatness in the group. And he or she helps the members find it in themselves.

This book examines Great Groups systematically in the hope of finding out how their collective magic is made. We could have chosen any number of creative collaborations, from the artists who made up the Harlem Renaissance to the scientists of the Human Genome Project, but we
decided to focus on seven that have had enduring impact. They are the Walt Disney studio, which invented the animated feature film in 1937 with Snow White and the Seven Dwarfs; the Great Groups at Xerox's Palo Alto Research Center (PARC) and Apple, which first made computers easy to use and accessible to nonexperts; the 1992 Clinton campaign, which put the first Democrat in the White House since Jimmy Carter; the elite corps of aeronautical engineers and fabricators who built radically new planes at Lockheed's top-secret Skunk Works; the influential arts school and experimental community known as Black Mountain College; and, finally, what may be the paradigmatic Great Group, the Manhattan Project.

Why these seven? We chose to emphasize twentieth-century groups based in the United States because this has been a golden age of collaborative achievement in America. (As French observer Alexis de Tocqueville noted more than 150 years ago, Americans seem to have a genius for collective action.) And we decided to focus only on groups that have altered our shared reality in some significant way. The Manhattan Project, which ushered in the nuclear age with all its benefits and horrors, obviously fits this criterion. But so does, less obviously, Disney Feature Animation. Guided by an unlikely visionary named Walt, the artists at Disney did more than create an enduring new art form. The studio that Walt and brother Roy built continues to set the standard, both creatively and economically, for the entertainment and leisure industries worldwide.

All seven groups are great in several senses. Each was or is made up of greatly gifted people. Each achieved or produced something spectacularly new, and each was widely influential, often sparking creative collaboration elsewhere. To echo Steve Jobs, whose Great Group at Apple created the Macintosh, each of these groups "put a dent in the universe." It is worth noting that all but one--Black Mountain College--were engaged in creating something substantive and external to the group: a film, a computer, the first stealth plane. Groups seem to be most successful when undertaking tangible projects, as Black Mountain was when building its second campus. The project brings them together and brings out their collective best. When the thing is finished, the group often spins apart.

Given our continuing obsession with solitary genius, reflected in everything from the worship of film directors to our fascination with Bill Gates and other high-profile entrepreneurs, it is no surprise that we tend to underestimate just how much creative work is accomplished by groups. Today, an important scientific paper may represent the best thinking and patient lab work of hundreds of people. Collaboration continually takes place in the arts as well, despite our conviction, as the great French physiologist Claude Bernard observed, that "art is I; science is we." A classic example is Michelangelo's masterpiece the ceiling of the Sistine Chapel. In our mind's eye, we see Michelangelo, looking remarkably like Charlton Heston, laboring alone on the scaffolding high above the chapel floor. In fact, thirteen people helped Michelangelo paint the work. Michelangelo was not only an artist, he was, as biographer William E. Wallace points out, the head of a good-sized entrepreneurial enterprise that collaboratively made art that bore his name (an opinion piece by Wallace in the New York Times was aptly headlined "Michelangelo, CEO").

Other painters have worked collaboratively as well. In a landmark article titled "Artists' Circles and the Development of Artists," published in 1982, sociologist Michael P. Farrell describes the synergistic circle of French artists, including Monet, Manet, Degas, and Renoir, who pioneered Impressionism. Monet and Renoir often painted next to each other in the Barbizon woods. For a time, their work was so similar that Monet had to look at the signature to tell whether a particular canvas for sale in a Parisian gallery was his or Renoir's. Braque and Picasso also had an intense creative collaboration, which gave birth to Cubism. For several years, they saw each other almost every day, talked constantly about their revolutionary new style, and painted as similarly as
possible. They even dressed alike, in mechanics' clothes, and playfully compared themselves to the equally pioneering Wright brothers (Picasso called Braque, Wilbour). Braque later described their creative interdependence as that of "two mountaineers roped together."

Creative collaboration occurs in other arts as well. Filmmaking is collaborative almost by definition. And Pilobolus, the marvelous dance troupe named after an unusually mobile fungus, began when a couple of Dartmouth jocks took a class from Alison Chase, a rare dance teacher who valued collective discovery over years of training. As one member of the pioneering group later recalled, most of them had zero dance technique to fall back on so they had to invent their own. "We definitely couldn't have done this alone," cofounder Jonathan Wolken told writer John Briggs. Writers, too, often reap the benefits of creative collaboration. The Bloomsbury Group is only one of dozens of such groups, albeit one whose antics have been chronicled at numbing length. Dorothy Parker and her vicious circle--the writers who exchanged barbs at Manhattan's Algonquin Hotel during the 1920s--is a home-grown example of a group whose whole seems to have been significantly greater than the sum of its acerbic parts.

Farrell's article on artists' circles begins with a quote from Henry James in praise of group creativity: "Every man works better when he has companions working in the same line, and yielding to the stimulus of suggestion, comparison, emulation. Great things have of course been done by solitary workers; but they have usually been done with double the pains they would have cost if they had been produced in more genial circumstances."

James's point is well taken. Gifted individuals working alone may waste years pursuing a sterile line of inquiry or become so enamored of the creative process that they produce little or nothing. A Great Group can be a goad, a check, a sounding board, and a source of inspiration, support, and even love. Songwriter Jules Styne said he had to have a collaborator: "In the theater you need someone to talk to. You can't sit by yourself in a room and write."

We chose our seven Great Groups to underscore the range of fields, including education, in which creative collaboration can take place. We also picked these seven because each makes a fascinating story. Vibrant with energy and ideas, full of colorful, talented people playing for high stakes and often racing against a deadline, Great Groups are organizations fully engaged in the thrilling process of discovery. It is our hope that everyone will be interested in some of these groups. (We have a nagging suspicion that we may have lost a few prospective readers by not chronicling a great sports team, such as the Boston Celtics of the 1980s, but we felt that was the one variety of Great Group that had been analyzed to death.) All such groups are engaged in creative problem solving, but the specific problems each of these seven faced and the solutions it found makes each distinctive. In the story of each Great Group, you will find the themes and ideas introduced in this chapter illustrated, illuminated, and expanded. But you will also find the brilliant answers to specific puzzles, such as how the Macintosh computer came to have icons that make us smile.

You might ask why we chose to focus exclusively on Great Groups when the majority of the institutions in which we work, teach, and otherwise participate are anything but. The reason is our conviction that excellence is a better teacher than is mediocrity. The lessons of the ordinary are everywhere. Truly profound and original insights are to be found only in studying the exemplary. We must turn to Great Groups if we hope to begin to understand how that rarest of precious resources--genius--can be successfully combined with great effort to achieve results that enhance all our lives.

The need to do so is urgent. The organizations of the future will increasingly depend on the creativity of their members to survive. And the leaders of those organizations will be those who
find ways both to retain their talented and independent-minded staffs and to set them free to do their best, most imaginative work. Conventional wisdom about leadership and teams continues to glorify the leader at the expense of the group. Great Groups offer a new model in which the leader is an equal among Titans. In a truly creative collaboration, work is pleasure, and the only rules and procedures are those that advance the common cause.

Psychologically and socially, Great Groups are very different from mundane ones. Great Groups rarely have morale problems. Intrinsically motivated, for the most part, the people in them are buoyed by the joy of problem solving. Focused on a fascinating project, they are oblivious to the nettles of working together in ordinary circumstances.

Obviously, there are lessons here for transforming our classrooms, our offices, even our communities. Traditionally, collaboration in the classroom, for instance, has been taboo, condemned as a form of cheating. Yet what we discover in Great Groups is that collaboration can only make our classrooms happier and more productive. What lessons do Great Groups have for our workplaces, where so many people feel stifled, not stimulated? Look how hard people in Great Groups work, without anyone hovering over them. Look how morale soars when intelligent people are asked to do a demanding but worthy task and given the freedom and tools to do it. Imagine how much richer and happier our organizations would be if, like Great Groups, they were filled with people working as hard and as intelligently as they can, too caught up for pettiness, their sense of self grounded in the bedrock of talent and achievement.

Every Great Group is extraordinary in its own way. Yet all of them have much in common. Imagine that it is twenty-five years ago and you are a fly on the wall at Xerox PARC where the first user-friendly computer is being invented. The offices themselves are nondescript. But the atmosphere is charged, electric with the sense that great things are being accomplished here. Most of the members of the group are young--in their twenties or thirties--and each knows that having been recruited for this project is a badge of honor. Although Xerox is a corporate behemoth, there is no sense at PARC of being part of a major corporation. No "suits" from headquarters are in evidence. Instead, the atmosphere is much like that of a graduate department at a first-rate university. People wear Birkenstocks and T-shirts. For the weekly meeting, everybody grabs a beanbag chair. Although the group is too busy working to philosophize much, any participant would tell you that he or she would rather be here than anywhere else. The money doesn't matter, career doesn't matter, the project is all. In some cases, personal relationships have been interrupted or deferred. It's hard to have a life when you're up half the night in the lab working on your part of a compelling problem, often with one of your equally obsessed colleagues at your side. This is not a job. This is a mission, carried out by people with fire in their eyes.

Great Groups have some odd things in common. For example, they tend to do their brilliant work in spartan, even shabby, surroundings. Someday someone will write a book explaining why so many pioneering enterprises, including the Walt Disney Company, Hewlett-Packard, and Apple, were born in garages. Disney's animators have often worked in cluttered temporary quarters. Black Mountain College managed with a leased campus during its exciting early years, despite the inconvenience of having to store all college property in the attic over the summer while the church organization that owned the buildings moved back in and conducted its programs. The Skunk Works did its clandestine work in a windowless building next to the airport in notoriously bland Burbank, California (the home of Disney Animation as well). According to late Skunk Works head Ben Rich, the place was "about as cheery as a bomb shelter."

We can speculate on why great things are often accomplished in dull or tacky surroundings. Perhaps a bland or unattractive environment spurs creativity, functioning as an aesthetic blank
slate that frees the mind to dream about what might be. Maybe a great view and chic decor are 
distractions and thus counterproductive when important work is being done. But the truth is that 
most people in Great Groups spend very little time thinking about their surroundings. They have 
wonderful tunnel vision. The project, whether it's building the bomb before the Germans do or 
creating a computer easy enough for a child to use, is what's important. The right tools are 
essential, but fancy digs aren't. As a result, the offices of Great Groups often look, as Tracy 
Kidder writes of the Eagle computer offices in The soul of a New Machine, "like something 
psychologists build for testing the fortitude of small animals."

All Great Groups have other commonalities. They all have extraordinary leaders, and, as a 
corollary, they tend to lose their way when they lose their leadership, just as Disney did after 
Walt's death in 1966. It's a paradox, really. Great Groups tend to be collegial and 
nonhierarchical, peopled by singularly competent individuals who often have an antiauthoritarian 
streak. Nonetheless, virtually every Great Group has a strong and visionary head. These leaders 
may be as patrician as J. Robert Oppenheimer of the Manhattan Project and the Kennedyesque 
Bob Taylor at PARC. They may be as seemingly simple, even cornball, as Walt Disney. They 
are sometimes outrageous in a juvenile kind of way, as Steve Jobs was at Apple and James 
Carville, the Ragin' Cajun, was during Clinton's 1992 campaign. But all these leaders share 
certain essential characteristics.

First, each has a keen eye for talent. Sometimes Great Groups just seem to grow. Some places 
and individuals become so identified with excellence and excitement that they become magnets 
for the talented--think of the physics program at Gottingen that drew Oppenheimer and so many 
other great minds or the San Francisco scene that lured the writers of the Beat Generation. But 
Great Groups are made as well. Recruiting the right genius for the job is the first step in building 
many great collaborations. Great Groups are inevitably forged by people unafraid of hiring 
people better than themselves. Such recruiters look for two things: excellence and the ability to 
work with others. Computer pioneer Alan Kay recalls that Bob Taylor at PARC was a 
"connoisseur of talent" who recruited people both for their intellectual gifts and for their ability 
to work collaboratively. At Disney Feature Animation, head Peter Schneider also looks for both 
talent and the ability to work side by side, pursuing a common dream instead of a purely personal 
vision. Schneider doesn't want animators, however able, "who don't play well in the sandbox 
with others."

Being able to work with others does not necessarily mean fitting in in a conventional sense. Phil 
Jackson, coach of basketball's Chicago Bulls, treasures what Dennis Rodman brings to the 
championship team, despite--indeed, because of--his flamboyance. Says Jackson, who often uses 
Sioux and other Native American traditions to motivate the team, "Dennis has been a real 
blessing for us, because he's like a heyoka, the clown of the tribe. The heyoka was a cross-
dresser, a unique person who walked backwards. He was respected because he brought a reality 
change when you saw him."

How do you find people who are capable of extraordinary work? Some leaders talk about 
looking for people "with fire in their eyes." Others rely on tests. Inventor Thomas Alva Edison 
was both an intuitive recruiter and a systematic one. He liked to give job applicants timed tests 
containing 150 questions dealing with science, history, engineering, and other subjects. 
Believing that a good memory was the basis for good decision making, he asked everything born 
"How is leather tanned?" to "What is the price of twelve grains of gold?" J.C.R. Licklider, the 
psychologist who helped launch the Internet, trusted the Miller Analogies Test (the one that asks, 
"North is to South as blue is to ... ?" The correct answer is gray.) Licklider believed that someone 
who did well on the test had a promising combination of broad general knowledge and the ability
to see relationships. "I had a kind of rule," Licklider said. "Anybody who could do 85 or better on the Miller Analogies Test, hire him, because he's going to be very good at something."

The process of recruitment is often one of commitment building as well. At Data General, Tom West and his subordinates told prospective recruits to their secret computer project how good a person had to be to be chosen and how few were actually tapped. As a result, those who were brought on board saw themselves as an enviable elite, however overworked and underpaid. Kelly Johnson, the legendary founder of the Skunk Works, sought to recruit only the best person in each specialty the project required (Disney tried to do the same). As one of Johnson's lieutenants wrote to Tom Peters, "Each person was told why he had been chosen: He was the best one to be had. Whether it was absolutely true or not, each one believed it and did his darndest to live up to it."

Who becomes part of a Great Group? Participants are almost always young. In most of these groups, thirty-five was regarded as elderly. Historically, women have created some extraordinary groups. Consider the largely female coalition that mounted the New York City shirtwaist strikes of 1909-10. An alliance of woman labor organizers, teenage factory workers (most of them Italian and Jewish immigrants), college students, and a "mink brigade" of wealthy society women organized walkouts by nearly 30,000 workers from the sweat shops of the Lower East Side. Committed to collective action and social justice and dressed alike in white shirtwaists and long skirts, the women showed solidarity in the face of beatings, arrests, and, for some, economic ruin. Although their protest led to few long-term reforms and was overshadowed by the tragic fire in the Triangle Shirtwaist factory a year later, the action was a model of women working together to effect change. A number of participants were involved in other Great Groups. Strike leader Leonora O'Reilly, for example, was both a suffragist and a founding member of the NAACP.

Although women played roles in all seven of our groups, most of the participants were male, in large part, we can assume, because of lack of professional opportunities for women. Even when most members have been men, however, Great Groups are rarely stodgy Old Boys' Clubs. Typically, theirs is a playful, decidedly adolescent subculture.

We are deep in Peter Pan territory in many Great Groups, whether they include women or not (think of Black Mountain College under Charles Olson, who believed women made better mommies than poets, or the gifted but sophomoric engineers of the Skunk Works, who once had a contest to see who had the biggest rump). Although sexism surely kept women out of some Great Groups, there may be something in the group dynamic itself that has discouraged participation by women. (This is clearly an area for serious research, if only to find ways to tap the entire talent pool, not just the male portion.) Minorities have been underrepresented as well, even at Black Mountain, the first non-African American college in the South to enroll black students and hire black faculty. Great Groups often tend to attract mavericks, such as Black Mountain founder John Andrew Rice, who was fired from Florida's Rollins College for bucking its president, and the irrepressible physicist, prankster, and future Nobel laureate, Richard Feynman, at Los Alamos. If not out-and-out rebels, participants may lack traditional credentials or exist on the margins of their professions.

Certainly youth can bring enormous energy to these enterprises, and not being a mainstream success can liberate an individual from too much respect for orthodoxy. But probably the most important thing that young members bring to a Great Group is their often delusional confidence. Kidder cites the recruiting strategy Tom West picked up from Seymour Cray, the legendary designer of high-speed computers. Cray liked to hire talented but newly minted engineers. He believed lack of experience was an asset, not a liability, because, as Kidder writes, these
unseasoned recruits "do not usually know what's supposed to be impossible." The French composer Berlioz made a similar observation about fellow composer Saint-Saëns. "Saint-Saëns knows everything," Berlioz said. "All he lacks is inexperience."

Thus many Great Groups are fueled by an invigorating, completely unrealistic view of what they can accomplish. Not knowing what they can't do puts everything in the realm of the possible. In a radio interview, director John Frankenheimer, whose work includes the unforgettable film The Manchurian Candidate, said that the Golden Age of television resulted, at least in part, from his naiveté and that of his fellow video pioneers. "We didn't know we couldn't do it, so we did it," said Frankenheimer of making such classic dramas as "Marty" in a demanding new medium, live TV. Time teaches many things, including limitations. Time forces people, however brilliant, to taste their own mortality. In short, experience tends to make people more realistic, and that's not necessarily a good thing. As psychologist Martin Seligman has shown, realism is a risk factor for depression and its attendant ills, including an inability to act and the loss of self-trust. Great Groups often show evidence of collective denial. And "Denial ain't just a river in Egypt," as twelve-steppers like to say. Denial can obscure obstacles and stiffen resolve. It can liberate. Great Groups are not realistic places. They are exuberant, irrationally optimistic ones.

Many of the people in our Great Groups are tinkerers--the kind of people who, as children, took the family television apart and tried to put it together again. They are people willing to spend thousands of hours finding out how things work, including things that don't yet exist. There's a joke about engineers that captures the spirit of many participants in creative collaborations. An engineer meets a frog who offers the engineer anything he wants if he will kiss the frog. "No," says the engineer. "Come on," says the frog. "Kiss me, and I'll turn into a beautiful woman." "Nah," says the engineer. "I don't have time for a girlfriend ...but a talking frog, that's really neat. " Members of Great Groups don't fear technology, they embrace it. And they all think that creating the future is really neat.

Curiosity fuels every Great Group. The members don't simply solve problems. They are engaged in a process of discovery that is its own reward. Many of the individuals in these groups have dazzling individual skills--mathematical genius is often one. But they also have another quality that allows them both to identify significant problems and to find creative, boundary-busting solutions rather than simplistic ones. They have hungry, urgent minds. They want to get to the bottom of everything they see. Many have expansive interests and encyclopedic knowledge. Alan Kay, for instance, one of the wizards of PARC and now an Apple fellow, is a polymath accomplished in math, biology, music, developmental psychology, philosophy, and several other disciplines. During an interview with us, he talked insightfully about political discourse, economic theory, and the optimal size of a town before turning to his memories of PARC. Kay is the kind of person who says, with authority, "Computer science is a bit like a Gregorian chant--a one-line melody changing state within larger scale sections. Parallel programming is more like polyphony." Kay takes his insights wherever he finds them. What he knew about how children learn helped him imagine a computer that would teach them how to use it. A technique that Stewart Brand used in The Whole Earth Catalog to force readers to make a serendipitous journey through the book instead of a preplanned one influenced Kay and his colleagues in designing PARC's revolutionary network browser. People like Kay are able to make connections that others don't see, in part because they have command of more data in the first place. It is one of the unique qualities of Great Groups that they are able to attract people of Kay's stature, then provide an atmosphere in which both individual and collective achievements result from the interplay of distinguished minds.

The truism that people don't want to be managed, that they want to be led, is never more true than when orchestrating a group of Alan Kays. ("Knowledge workers" can't be managed,
according to Peter Drucker, who coined the term. For that reason alone, Great Groups warrant close study by anyone interested in running an information-based enterprise.) The leaders who can do so must first of all command unusual respect. Such a leader has to be someone a greatly gifted person thinks is worth listening to, since genius almost always has other options. Such a leader must be someone who inspires trust, and deserves it. And though civility is not always the emblematic characteristic of Great Groups, it should be a trait of anyone who hopes to lead one. It was the quality that Maestro Carlo Maria Giulini thought most important in allowing the gifted individuals of the Los Angeles Philharmonic to achieve their collective goal of making truly beautiful music. "Even in delicate situations," he recalls, "I explained my views to the orchestra. I did not impose them. The right response, if forced, is not the same as the right response when it comes out of conviction." Those leaders of Great Groups who don't behave civilly (as Jobs sometimes failed to do, and Disney) put their very dreams at risk.

Members of Great Groups don't have to be told what to do, although they may need to be nudged back on task, as educators like to say. Indeed, they typically can't be told what to do: Being able to determine what needs to be done and how to do it is why they are in the group in the first place. In the collaborative meritocracy, people who are talented enough and committed enough are rightly seen as indispensable. The late Jerry Garcia, the great, gray presence of the Grateful Dead, once observed, "You do not merely want to be considered just the best of the best. You want to be considered the only ones who do what you do." Such people need to be freed to do what only they can do. Great Groups are coordinated teams of original thinkers. Kidder has a wonderful term to describe the structures that result in creative collaboration. They are, he writes, "webs of voluntary, mutual responsibility." Such groups are obsessionally focused on their goal. They could not care less about the organizational chart (which often becomes a dartboard in such a group), unless there is something on there that might get in the way of the project.

Our suspicion is that one of the reasons so many members of Great Groups are young is that, given a choice, more mature and confident talent opts for more autonomy, choosing to work collectively only when the project is irresistible. Disney Animation, for instance, is currently losing some of its best and most seasoned animators in part, Peter Schneider believes, because midlife priorities make creative collaboration less attractive.

Who succeeds in forming and leading a Great Group? He or she is almost always a pragmatic dreamer. They are people who get things done, but they are people with immortal longings. Often, they are scientifically minded people with poetry in their souls, people like Oppenheimer, who turned to the Bhagavad Gita to express his ambivalence about the atom and its uses. They are always people with an original vision. A dream is at the heart of every Great Group. It is always a dream of greatness, not simply an ambition to succeed. The dream is the engine that drives the group, the vision that inspires the team to work as if the fate of civilization rested on getting its revolutionary new computer out the door. The dream--a new kind of entertainment, a new political era, a radical new take on what learning is all about--is a kind of contract, a mutual understanding that the product, and even the process itself, will be worth the effort to create it. The dream is also a promise on the visionary's part that the goal is attainable. Each time Disney asked his artists to push the envelope of animation, he told them, "If you can dream it, you can do it." He believed that, and, as a result, they did too.

Truly great leaders such as Oppenheimer seem to incarnate the dream and become one with it. They do other crucial things as well. Psychologist Teresa M. Amabile and others have established that the way an environment is structured can have an enormous impact on creativity, for good or for ill. The atmosphere most conducive to creativity is one in which individuals have a sense of autonomy and yet are focused on the collective goal. Constraint (perceived as well as
real) is a major killer of creativity, Amabile has found. Freedom or autonomy is its major enhancer.

Effective leaders are willing to make decisions, but they typically allow members of the group to work as they see fit. It was the director's skill at moving the project forward while letting each participant do his or her best work that art director Robert Boyle so valued in Alfred Hitchcock. Boyle recalls working with Hitchcock on North by Northwest (1959). From an art director's point of view, it was an especially challenging film because Boyle was forced to find ways around such obstacles as the Department of the Interior's refusal to allow Cary Grant and the other actors to be filmed in front of the presidential faces on the real Mount Rushmore. Having tough problems to solve was one of the pleasures of making the movie, Boyle recalls. (He was lowered down the face of the mountain and took photos of the sculptures that were then rear-projected when the climactic scene was shot back in the studio.) "Hitchcock was very demanding, but he was also the most collaborative of any director I ever worked with," Boyle said. "Since you were professional, he expected you to do your job. He made the unity possible."

Leaders also encourage creativity when they take the sting out of failure. In creative groups, failure is regarded as a learning experience, not a pretext for punishment. Creativity inevitably involves taking risks, and, in Great Groups, it is understood that the risk taker will sometimes stumble. CEO Michael Eisner says that Disney aspires to be a place "in which people feel safe to fail." An atmosphere in which people dread failure or fear that they will be ridiculed for offbeat ideas stifles creativity, Eisner believes. He often quotes hockey great Wayne Gretzky's observation that "You miss 100 percent of the shots you don't take." At Disney, Eisner says, adding an important caveat, "Failing is good, as long as it doesn't become a habit."

Although strong leadership is typical of Great Groups, its form may vary. The innovative and highly collaborative Orpheus Chamber Orchestra has no maestro as such. Instead it has different member-leaders for different concerts.

Many Great Groups have a dual administration. They have a visionary leader, and they have someone who protects them from the outside world, the "suits," Great Groups tend to be island societies. They are often physically isolated, as were the Manhattan Project in the New Mexico desert and Black Mountain College in the foothills of western North Carolina. While Oppenheimer was the creative head of Los Alamos, General Leslie R. Groves was its protector. Unloved by the scientists he served so well, Groves patrolled the border between the creative group and the exterior forces, notably the military bureaucracy that controlled the group's resources and could interfere at any time. Great Groups tend to be nonconformist. Their members sometimes dress haphazardly (Black Mountaineers dismayed the local townsfolk by wearing sandals or going barefoot). But whatever their appearance, they are always rule busters. People in Great Groups are never insiders or corporate types on the fast track: They are always on their own track.

As a result, they often need someone to deflect not just the criticism, but even the attention of the bureaucrats and conventional thinkers elsewhere in the organization. According to Kay, Bob Taylor did that superbly well at PARC. "Taylor put his body between Xerox and us," Kay recalled two decades later. The protectors typically lack the glamour of the visionary leaders, but they are no less essential, particularly in enterprises that require official sanction or that cannot realize their dream without institutional consent. This was the fate of the group at PARC. Taylor was able to protect his group from interference at Xerox, but he wasn't able to convince Xerox to actually put the revolutionary PARC computer into commercial production. In the Manhattan Project, Groves freed Oppenheimer to deal with the science and his independent-minded staff.
Oppenheimer was able to get what he needed from the scientists, and Groves could get the scientists what they needed from the brass. Both men made the project a success.

The zeal with which people in Great Groups work is directly related to how effectively the leader articulates the vision that unites them. When heading up the team that made the Macintosh, Steve Jobs inspired his staff with the promise that they were creating something not just great, but "insanely great." He was able to urge them on not with a detailed plan for the Mac (which they were creating as they went along), but with slogans that reflected and reinforced the spirit of the project. "It's better to be a pirate than join the navy!" Jobs exhorted, and they raised a skull and crossbones over their offices. Leaders find ways to say or do whatever it takes to galvanize the group. When Frank Dale was managing editor of the now defunct Herald-Examiner in Los Angeles, he rallied his underdog journalists to struggle against the dominant Los Angeles Times by equipping his office chair with an airplane seatbelt. The message: The Herald-Examiner was taking off in its battle against the establishment paper.

Such leaders understand very basic truths about human beings. They know that we long for meaning. Without meaning, labor is time stolen from us. We become, like Milton's fallen Samson, "a slave at the wheel." Jobs and the others also understand that thought is play. Problem solving is the task we evolved for. It gives us as much pleasure as does sex. Leaders of Great Groups grasp this intuitively. They know that work done for its own sake becomes a wonderful game. No matter what our kindergarten teachers tell us, we are all Darwin's children. We love to compete. And so virtually every Great Group defines itself in terms of an enemy. Sometimes the enemy is real, as the Axis powers were for the Manhattan Project. But, more often, the chief function of the enemy is to solidify and define the group itself, showing it what it is by mocking what it is not. At Apple, IBM functioned as the Great Satan, IBM's best-selling computers as big, inelegant symbols of a reactionary corporate culture Apple despised. Jobs and his pirates took IBM on as single-mindedly and gleefully as a cell of teenage Resistance fighters going up against the Nazis. In Great Groups the engagement of the enemy is both dead serious and a lark. Thus in the landmark ad that announced the Mac during the 1984 Super Bowl, Apple tweaked IBM by suggesting that people who used its computers were Orwellian zombies, slaves to number-crunching conventionality. In a video reel shown to Apple shareholders the same day, a playful talking computer, obviously not an IBM behemoth, teased, "Never trust a computer you can't lift."

In the scramble to discover the structure of DNA, James Watson and Francis Crick cast scientific rival Linus Pauling as the villain. But nobody demonized the opposition to greater effect than did Clinton strategist James Carville during the 1992 presidential campaign. A master of memorable vilification, Carville heaped the kind of scorn on Bush and other Republicans usually reserved for people who do unnatural things to farm animals. Carville insists that every campaign needs an enemy in order to keep its energy high and focused. Leaders in other fields agree. In a dialogue with General Electric CEO Jack Welch published in Fortune magazine, Coca-Cola chairman Roberto Goizueta said that organizations that don't have an enemy need to create one. When asked why, he explained, "That's the only way you can have a war." In public, Coca-Cola may want to teach the world to sing, but in its corridors the motto is "Destroy Pepsi!" For the group, the bigger the enemy, the better. Great Groups always see themselves as winning underdogs, wily Davids toppling the bloated Goliaths of tradition and convention.

All leaders of Great Groups find ways to imbue the effort with meaning. Sometimes the goal is such a lofty one that the meaning is self-evident. Oppenheimer's group knew that its mission was the preservation of democracy. The scientists of PARC knew they were creating a radically new technology. But inspirational leaders can transform even mundane projects, turning them, too, into missions from God. It can be argued that the sale of Craftsman tools is not an intrinsically
noble cause. But when Arthur Martinez took over Sears's retail unit in 1992, he recruited executives by promising them a challenge worthy of a Crusader. "I felt I had to be an evangelist," he told a reporter from Fortune. "I really was enrolling people in a mission." Turning Sears around, Martinez told prospective staffers, "would be one of the greatest adventures in business history.... There's no model for what we're gonna do. It's very risky. You have to be courageous, filled with self-confidence. If we do it, we'll be wealthier, yes. But more than that, we'll have incredible psychic gratification. How can you not do it?" Leaders are people who believe so passionately that they can seduce other people into sharing their dream.

People in Great Groups often seem to have struck a Faustian bargain, giving up their normal lives, if not their souls, in exchange for greatness. Because they are mission maniacs, obsessed with the project at hand, relationships outside the group often suffer. The wife of one of the engineers involved in Data General's Eagle project had no trouble believing her husband when he teasingly told her that the company offered alimony benefits as well as health-care ones. Inside the group, the intensity often has a sexual edge. Prosecutors Marcia Clark and Chris Darden had a romance, if not an affair, during the seemingly endless course of the first O. J. Simpson trial. As Darden subsequently explained, "We were working together fifteen or sixteen hours a day, watching each other's backs in court and commiserating over the media and other things no one else understood." At Black Mountain College, the passionate exchange of views sometimes became simple passion. Two of the school's three charismatic leaders, John Andrew Rice and Charles Olson, had affairs with students (Olson left his common-law wife and moved in with his lover, with whom he had a child). As Robert Cringely notes of Apple in its heyday, Great Groups are sexy places.

In almost all creative collaborations roles and relationships change according to the dictates of the project. In less distinguished groups, the leader would have a fair amount of managing to do. But Great Groups require a more flexible kind of leadership that has more to do with facilitating than with asserting control. Like cats, the talented can't be herded. The military model of leadership, with its emphasis on command and control, squelches creativity. Great Groups need leaders who encourage and enable. Jack Welch once said of his role at General Electric, "Look, I only have three things to do. I have to choose the right people, allocate the right number of dollars, and transmit ideas from one division to another with the speed of light." Those three tasks are familiar to almost everyone involved in creative collaboration. Many leaders of Great Groups spend a lot of time making sure that the right information gets to the right people--this was a primary purpose of the mandatory weekly meetings at PARC. Members of Great Groups may be so attuned to each other and to the nature of the task that they hardly have to speak at all, but they do have to have access to relevant data.

Leaders of Great Groups perform less obvious functions as well. Actor George Clooney, one of the stars of NBC's fast-paced medical drama, ER, says that one of the most important contributions its creator, Michael Crichton, makes to the show is his clout. As the author of one of the most lucrative entertainments of all time, Jurassic Park, Crichton is one of the entertainment industry's 800-pound gorillas. He gets whatever he wants. Clooney says he can name other projects that looked almost as promising and innovative as the highly acclaimed hospital show, but their creators had less juice than Crichton and their projects were eventually second-guessed and fatally compromised.

The best thing a leader can do for a Great Group is allow its members to discover their own greatness. But creative collaboration is a two-way street. Either because they lack the requisite skills or because the dream itself is so complex, leaders often find themselves driven by an aching powerlessness to realize their vision in any other way but collaboratively. Disney could dream it, but, in truth, he couldn't do it unless he got hundreds of other talented people to go
along. The leader may be the person who needs the group the most. Luciano De Crescenzo's observation that "we are all angels with only one wing, we can only fly while embracing each other" is just as true for the leader as for any of the others.

Although Great Groups experience their moments of near despair, they are more often raucous with laughter. In the midst of the Clinton campaign, Carville took time out to crack eggs over the head of one of his colleagues, letting accumulated tensions drain away in an absurd but effective way. Epic company-wide water fights have become a fixture of life in Silicon Valley. Creative collaborators become members of their own tribe, with their own language, in-jokes, dress, and traditions. Apple became famous for its team T-shirts. Question: "How many Apple staffers does it take to screw in a lightbulb?" Answer: "Six. One to turn the lightbulb and five to design the T-shirt." Generations of Disney animators have seen how many pushpins they can throw at one time, the sort of mildly dangerous competitive play that the young have engaged in for millennia.

In a true creative collaboration, almost everyone emerges with a sense of ownership. In the early 1940s, students and faculty at Black Mountain built their main college building with their own hands (each student got to finish his or her room, with the predictable variations in workmanship). The Mac team expressed that sense of ownership by having all their signatures displayed inside each machine. It was a way of leaving their mark, of laying claim to a tiny piece of the new world they had created.

What keeps extraordinary groups from becoming cults? The fact that many are engaged in scientific enterprises may be one reason, since science, with its constant testing and habitual skepticism, is less likely than some other disciplines to breed fanaticism. Great Groups also tend to be places where dissent is encouraged, if only because it serves the spirit of discovery that is at the heart of these enterprises. These collaborations also tend to be collegial, with the leader perceived as one among equals, rather than as one in possession of unique skills or knowledge. Egos in Great Groups are often fully developed. Such individuals are unlikely to regard the person they report to as the Messiah.

Great Groups often fall apart when the project is finished. They are like animals that die soon after they breed. Why do these often short-lived associations burn so brightly in the memories of former members? Why does George Stephanopoulos look back on months of campaign drudgery and tell the president elect, "It was the best thing I ever did"? There are a host of reasons. Life in the group is often the most fun members ever have. They revel in the pleasure that comes from exercising all their wits in the company of people, as Kay said of his colleagues at PARC, "used to dealing lightning with both hands." Communities based on merit and passion are rare, and people who have been in them never forget them. And then there is the sheer exhilaration of performing greatly. Talent wants to exercise itself, needs to.

People pay a price for their membership in Great Groups. Postpartum depression is often fierce, and the intensity of collaboration is a potent drug that may make everything else, including everything after, seem drab and ordinary. But no one who has participated in one of these adventures in creativity and community seems to have any real regrets. How much better to be with other worthy people, doing worthy things, than to labor alone ("When I am alone," writer Carlos Fuentes says, "I am poverty-stricken."). In a Great Group you are liberated for a time from the prison of self. As part of the team, you are on leave from the mundane--no questions asked--with its meager rewards and sometimes onerous obligations. Nobody who was at PARC or involved in the making of Snow White and the Seven Dwarfs ever talks about the long days or who got credit for what. All they remember is the excitement of pushing back the boundaries, of doing something superbly well that no one had ever done before. Genius is rare, and the chance to exercise it in a dance with others is rarer still. Karl Wallenda, the legendary tightrope walker,
once said, "Being on the tightrope is living; everything else is waiting." Most of us wait. In Great Groups, talent comes alive.

In writing this book, we depended heavily on existing histories and other secondary sources, augmented by interviews with participants in many Great Groups. This book could not exist without such superlative histories as Martin Duberman's Black Mountain: An Exploration in Community; Richard Rhodes's The Making of the Atomic Bomb; Douglas K. Smith and Robert C. Alexander's book on Xerox and the personal computer, Fumbling the Future; Steven Levy's story of the Macintosh, Insanely Great; Robert X. Cringely's Silicon Valley saga, Accidental Empires; Ben Rich and Leo Janos's Skunk Works; and the encyclopedic account of Clinton's first campaign, Quest for the Presidency 1992, written by a team from Newsweek." Tracy Kidder's classic study of a nearly Great Group, The Soul of a New Machine, was also invaluable.

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