

IV

The LBF in Science and Innovation:

Developing personal relationships with scientific leaders to access their ideas for high impact grants that could cultivate local talent and build a collaborative infrastructure to foster entrepreneurship and a regional innovation economy.

How can a small foundation promote innovation in science and technology?

The LBF Governance Model After 2005

Operating Directors. The donor recruits directors that s/he knows and trusts to perform day-to-day administration, establish grant focus, make grants, and to act as operating directors.

Governing Directors. The operating directors recruit a small board of governing directors who have knowledge and expertise in the foundation's primary grant areas and are familiar with one another. They provide administrative oversight to operations, set compensation, and offer insight to the grants policy and the foundation's vision.

Spend Down. Establish a spend-down strategy and timeline to distribute the foundation's assets during the operating directors' lifetimes. Dissolve the foundation after making dispositive grants in each focus area.

The LBF Grantmaking Model After 2002

Focus and Relationships. Define specific focus areas and establish personal relationships with potential grantees working in each area. Use initial grants to determine the capacity and vision of grantee organizations.

Grantees as Partners. Listen to and learn from grantees. Recognize that the people working in context have the best ideas for addressing the issues in their field.

Collaboration. Work with grantees to refine their ideas and maximize impact. Treat all grantees with respect and admiration for their achievements. Grants recognize the work of the grantees, not the foundation.

Narrow the Focus. Work with grantees to narrow the grants focus over time. Use this process to identify grantees with the strongest records and greatest potential for making significant impact.

Dispositive Grants. Work with these partner grantees to make dispositive grants that will achieve the maximum impact with the resources available. Through this process, spend-down the assets and dissolve the foundation.

Note to Readers of the Print Edition

This document includes the case study and some, but not all, of the sidebars published on Benboughlegacy.org. Sidebars referenced in this printed document can be found at the end of the main narrative in a section titled Additional Insights - Case Study Sidebars.

Investing in Research, Investing in Talent

In addressing the foundation’s overarching purpose—to improve the quality of life for the people of San Diego—the LBF identified economic development as an area of critical importance. The foundation’s board could have approached this issue from a variety of strategies but decided to focus on one specific area: the cluster of research and innovation organizations around the University of California, San Diego (UCSD). This proved to be a worthwhile approach, especially since many stakeholders at the university believed it was “the most promising area” for addressing economic development in San Diego.

LBF’s approach built on a long pattern of philanthropic investment in basic science and research as a way to expand human knowledge. Prior to World War II, foundations played a key role in funding basic science research, hoping that their grants would lead to new knowledge that would benefit individuals and communities. In combination with corporate spending for industrial research, these dollars helped create a “national innovation system.” This system grew dramatically after World War II and encompassed governments, universities, private industries, nonprofits, and private foundations. Toward the end of the twentieth century, however, this university-based system increasingly focused on breaking down outmoded academic siloes and creating institutional arrangements that allowed for interdisciplinary and cross-sectoral work that included academics and practitioners in industry.

In San Diego, in the last quarter of the twentieth century, the University of California was at the heart of a **regional** innovation system, surrounded by a handful of independent research institutions. Government funding and policymaking by the state and the city played a key role in accelerating the growth and development of this system, as did investments by business and individuals. Meanwhile, various trade organizations, economic development groups, chambers of commerce, workforce training initiatives, and educational institutions provided social and human capital to the system, which was energized by a multi-billion dollar flow within the **region’s** economy.

In 2002, Peter Ellsworth recognized this **regional** innovation system as “a major national resource.” As the LBF’s chief program officer, however, he faced the daunting task of trying to understand where and how the foundation’s limited resources might have an impact or, in the words of the founder, “accomplish something.” (See sidebar The LBF Grantmaking Strategy in Science and Innovation.)

Cultivating an Interest in Science and Innovation

During his lifetime, Legler Benbough provided a number of gifts for science and research in San Diego. He funded various health research organizations, especially those seeking to discover cures or treatments for diseases including blindness, diabetes, cancer, Alzheimer's, and arthritis. He also made grants to Children's Hospital and Sharp Health Care. These gifts, however, provided only a thin basis for a more comprehensive grantmaking strategy.

After settling Benbough's estate, as the foundation's primary grantmaker, Ellsworth began an exploratory process of initiating conversations and building relationships with various science leaders in and around UCSD. "My goal was to understand who was doing what and who we could work with," he said. It was an ambitious undertaking for a foundation with approximately \$40 million in assets. A report released in 2000, for example, showed that in the biomedical field alone, industry investments in research and development in the San Diego region totaled more than \$800 million, while nonprofit and academic institutions received \$470 million in grants from the National Institutes of Health alone. On the UCSD campus and at the three major private research institutes on the Torrey Pines Mesa, nearly 7,500 people worked in biomedical research and development. Against the backdrop of this activity, the Legler Benbough Foundation's resources were hardly consequential.

By nature, Ellsworth was more like a venture philanthropist. Instead of going to the university's development office and writing a check, he began a search for opportunities to build relationships and make a difference. In 2001 and 2002, the LBF made grants totaling \$770,000 to a handful of institutions to test the waters and understand how the foundation's resources could have an impact. Each of these entities had a different history, and each gave the LBF different insights into the field.

The Burnham Institute, for example, was founded in 1976 as the La Jolla Cancer Research Foundation by former Tufts University Professor William H. Fishman and Lillian Waterman Fishman. This organization had become a leading national cancer research center and received grants from the LBF during Benbough's lifetime. In 1996, the facility was renamed to honor San Diego businessman and philanthropist Malin Burnham. (Later renamed the Sanford, Burnham, Prebys Medical Discovery Institute.) By 2000, the Burnham Institute was an anchor institution in what had become California's fastest-growing regional biomedical industry. To support this continued growth, the LBF awarded \$300,000 to the Burnham Institute between 2001 and 2003 for various research projects.



The Burnham Institute on the Torrey Pines Mesa was established in 1976 by William H. and Lillian Waterman Fishman as the La Jolla Cancer Research Foundation. Early LBF grants to the institute helped the foundation learn about the innovation system fueling the San Diego economy.

Leaders at the Burnham Institute connected the LBF to the Salk Institute for Biological Studies. The developer of the first safe and effective polio vaccine, Jonas Salk had established the institute in 1963 to provide a place where leading scientists could do cutting edge work free from the pressures of academe or industry. Salk received major philanthropic support to help build and launch the institute. For years it thrived on federal grants for basic research. But by the 1990s, as federal funding declined and research grants became more competitive, the institute struggled. As one writer noted in 1990, Salk had a limited endowment and had “never established strong money-raising ties with the local San Diego community.” When cell biologist Thomas Pollard became CEO in 1996, he turned to philanthropy, growing the endowment over the next three years to more than \$100 million, but this was still short of what the institution needed to fund its operations given its staff and ambitions. Between 2000 and 2001, the LBF provided \$140,000 to Salk as part of the foundation’s initial effort to build relationships in the innovation sector.



When Nobel Prize-winning scientist Gerald Edelman relocated his Neurosciences Institute to San Diego in the 1990s, Peter Ellsworth was recruited to help him raise money to attract other top scientists. This experience gave Ellsworth an early view of the challenges involved in high profile scientific research.

For different reasons, the Neurosciences Institute was also at a crossroads in 2001. In 1991, in a move that signaled San Diego’s “maturation as a heavyweight in scientific circles,” the *Los Angeles Times* wrote, the Neurosciences Institute (NSI) announced that it would relocate from Rockefeller University to the Scripps Research Institute campus. Led by Nobel Prize winning scientist Dr. Gerald Edelman, NSI was working on diagnostic tools and therapies to address brain diseases. Edelman wanted to create “a monastery for scientists” in San Diego funded primarily by philanthropy rather than government grants. While he was still CEO of Sharp Health Care, Ellsworth met Edelman and was asked to help introduce the institute to local San Diegans who could participate as board members, raise money, and support the institute. Ellsworth recognized that the institute could play a significant role in the ongoing development of biotechnology in the San Diego region, so he agreed to make some calls.

Grants to the Burnham, Salk, and Neurosciences Institutes helped the LBF understand how important it was to recruit and retain scientific talent, especially at the highest level. Initially, the foundation believed that it could make a major and systemic difference by helping to secure this talent. In 2002, for example, the Neurosciences Institute was hoping to recruit Dan Goldin, the former director of NASA,

to lead a research team. Goldin represented another leading expert who would be a magnet for funding and help to attract other scientists to the region. To help bring Goldin to San Diego, the LBF offered a three-year, \$450,000 commitment to NSI to aid Goldin as he worked to grow a program focused on robotics and artificial intelligence. The grant was conditioned on Goldin's success in obtaining financial support for the NOMAD (Neurally Organized Mobile Adaptive Device) project at the institute, an early experiment that aimed to build a machine that would learn and think. To strengthen the relationship with the grantee and deepen his own understanding of the work, Ellsworth agreed to serve on the board of NSI and to help recruit additional board members.

Almost immediately the grant ran into trouble when Goldin was recruited to serve as president of Boston University. Although Goldin said he would help with fundraising for NSI while he was in Boston, the LBF determined that the institute had not met the terms of the grant and no funds were allocated in 2003. Later that year, after Goldin's appointment in Boston fell through, he came back to San Diego, and fundraising for his project began to move forward, the LBF renewed its funding commitment. Over the next two years, Goldin played a key role in bringing in major grants from DARPA to support NOMAD and its development.

In 2003, the LBF again stepped in to help recruit superstar scientific talent to the San Diego community when it agreed to provide a \$50,000 grant to the Burnham Institute to convince Evan Y. Snyder, an assistant professor in neurology at Harvard Medical School and a pioneer in the field of stem cell research, to move to the region. With the LBF's support, Snyder joined the staff of the Burnham Institute and became the director of the stem cell and regeneration program.

Even as it supported scientific recruitment, the LBF also continued to learn about the research taking place on the Torrey Pines Mesa by continuing to work with key institutions. Between 2003 and 2005, for example, the LBF made grants to the Sidney Kimmel Cancer Center (\$125,000), the Neurosciences Institute (\$225,000), and the Salk Institute (\$150,000). The foundation also gave \$45,000 to Achievement Rewards for College Scientists (ARCS) to provide scholarships to graduate students and a grant to a project at UCSD dubbed SAGE (\$25,000), which was focused on environmental sustainability.

All of these early grants in the science and innovation sector gave the LBF the opportunity to talk to leaders in the field and participate in meetings that deepened Ellsworth's understanding of the institutional landscape. He relied on people who had extensive knowledge of the innovation system and who could help him identify opportunities and navigate institutional hurdles. Mary Walshok, for example, was the dean of UCSD's School of Extension and one of his key collaborators. Trained as a sociologist, Walshok had earned her Ph.D. at Indiana University

people.”

Supporting this search for talent at multiple levels became an early priority for the LBF’s grantmaking, but two other goals were also important. As the foundation learned more about the work of the various research institutions on the mesa and associated with UCSD, it came to see opportunities to leverage resources by promoting collaboration and systemic change. In many ways, Ellsworth’s experience as the CEO of a large healthcare organization conditioned his perspective. “Whether you are talking about physicians or scientists,” he said, “people tend to want to work within their narrow field. But that doesn’t work. You have to consider what’s going on with the system, and unless you are working together, you’re not going to get the right answer.”



Mary Walshok, the dean of UCSD’s School of Extension, became a key partner as the LBF explored opportunities to support the **regional** innovation economy.

“ In San Diego, we have a culture and a community that believes we are still writing our own history, and we’re sure what the story is going to be. UCSD has been playing that game, helping to invent the future, for decades. That attracts people who want a lot of freedom to experiment, and that is good for science.”

Mary Walshok, associate vice chancellor, UCSD

Another element of the LBF’s emerging strategy in science and innovation emerged in the context of public debate over stem cell research. In the early 2000s, California and the nation were embroiled in a tumultuous conversation over the ethics of using embryonic stem cells for the development of new treatments for disease and genetic disorders. The controversy caught many scientists by surprise, especially in 2001 when President George W. Bush limited the use of federal grant dollars for this kind of work. Bush believed that using embryonic stem cells donated by invitro fertilization clinics was equivalent to “the taking of innocent human life.” Opponents of this view argued that embryonic stem cells, still undifferentiated and without human form, were not the equivalent of sentient human beings and offered enormous potential to cure diseases and repair damaged organs. In support of this view and with an eye to the medical and economic potential of this line of research, the California Legislature passed a law in 2002 enabling the use of embryonic stem cells under certain conditions.

The debate over stem cells led the LBF to realize that research and development in many fields could be slowed by public concerns over the social and ethical impacts of new technologies. Ellsworth also observed that it was difficult for the public to learn and engage in constructive conversations about new developments in the fields most closely related to the LBF's program in Science and Innovation. In his mind, this systemic problem affected the entire innovation system, and he began to wonder whether the LBF's resources could be used to address this situation.

In 2003, the LBF reached out to Michael Kalichman, an engineer who had also trained in neuropharmacology and established UC San Diego's Research Ethics Program in 1997. Kalichman contacted Larry Hinman, a professor of philosophy at the University of San Diego. They formed an informal executive committee to look for ways to bring the region's three largest academic institutions (UCSD, University of San Diego, and San Diego State University) together to create a strategy to engage the public on issues relating to science and ethics.

“ After California decided to fund stem cell research to the level of \$3 billion, [we] became increasingly involved, not just locally, but also statewide, in talking about some of the ethical and regulatory issues that go with stem cell research.”

Michael Kalichman, founding director, UC San Diego Research Ethics Program

The group planned a kickoff symposium for the fall of 2003 titled “Meeting Ethical Challenges in Science and Technology From Tuskegee to Stem Cells.” They invited medical ethicist Dr. Thomas Murray, the president of the Hastings Center in New York, to be the featured speaker. The LBF provided a \$60,000 grant to support these efforts. The success of this initial forum convinced the organizers that they should establish an ongoing program, which was launched in 2004 and became the Center for Ethics in Science and Technology. The LBF made an additional \$50,000 grant that year with the hope that the Center would help mitigate situations where public concerns over science or technology might slow the pace of research and development in San Diego or force researchers to look for more hospitable communities to undertake their work.

All of these early grants helped Ellsworth and Tom Cisco, the LBF's other operating director, begin to see a potential a strategy for the LBF in science and innovation. In the summer of 2005, in line with advice they had received from Benbough before his death, Ellsworth and Cisco expanded the board of directors to bring on additional expertise as they focused on implementation. (See Governance case study.) To support the work in science and innovation, they invited Hugh Carter to serve as one of three new governing directors. A successful engineer, Carter had served on the board of the Charles

Lee Powell Foundation, a La Jolla-based entity founded in 1954 that focused on funding science and engineering programs at CalTech, Stanford, UCSD, and USC. Even before joining the board of the LBF, Carter, like Walshok, had helped Ellsworth understand the institutional landscape at UCSD and the general framework for technology development and transfer.

With Carter's input, Ellsworth and Cisco refined the strategy in Science and Innovation and shared it with the new board members in 2006. Ellsworth noted that he had talked to "a lot of potential grantees and others knowledgeable about science in San Diego." These conversations and the foundation's early grantmaking led him to conclude that a successful innovation system depended on three things: 1) talented and committed scientists, 2) structures that encouraged creativity, and 3) a supportive, collaborative community. These three components would become the pillars of the LBF's grantmaking program in science and innovation.

In many ways, the first two elements of the LBF's approach were not unusual. Foundations have invested in talented researchers and institutions at the cutting edge of science for decades. The third element of the strategy was very ambitious given the institutions involved and the resources the foundation had to work with, but the LBF believed this effort was critical to the overall development of the emerging innovation system in San Diego. Across the United States, he explained to the board, city planners were focused on the development of a "creative society" that included a well-developed academic and scientific base. San Diego's innovation economy was the envy of other regions across the country, but continued growth could not be taken for granted. Other regions were competing for San Diego's talent. The Scripps and Burnham Institutes had each received attractive offers to relocate to cities where there were more corporate headquarters and a larger philanthropic base. Meanwhile, international cities like Singapore were also looking at San Diego. Ellsworth believed that "what we have is fragile and it will take work to keep it." With the board's support for the strategy, the LBF set out to see what could be accomplished.

Key Insights:

Grantmaking that seeks to effect complex systemic change takes time, especially when there are many various kinds of institutions and it is not easy to discern the places where a grantmaker can make a difference. Listening, research, and consulting with experts prior to grantmaking is critical. To begin to understand the system, a grantmaker has to develop relationships that provide insight and develop social capital for the work ahead. Early grantmaking on a modest scale helps to develop these relationships. With thoughtful, honest communication, the grantee and the grantmaker can learn together. During this process, the priorities of the grantmaker will evolve as some paths appear to be blocked while other avenues emerge depending on leadership or other institutional factors. In the LBF's case, the decision to spend out the foundation's assets created a healthy pressure to distill the lessons learned from this early phase of grantmaking, narrow the focus of the strategy, and commit greater resources to move ahead.

Study Questions:

How can grantmaking be used to help a foundation understand a complex multi-institutional regional innovation system?

What approach should a small foundation take to maximize its opportunities to learn from early, experimental grants?

How can a foundation synthesize lessons learned from early grantmaking to shape an appropriate and effective strategy for grantmaking?

Moving Forward and Changing Course

With its strategy in place in 2006, the LBF began to expand its funding for science and innovation to nearly three-quarters of a million dollars a year. Some of its grants deepened existing institutional relationships. The Burnham Institute, for example, received \$251,943 between 2006 and 2008, including a \$75,000 grant to support stem cell research. The foundation also provided an additional \$80,000 to the Center for Ethics. Meanwhile, in 2007, the LBF awarded \$100,000 to the Sidney Kimmel Cancer Center to support the recruitment of a new scientist and another \$100,000 to the Salk Institute to help the Center for Chemical Biology and Proteomics acquire new instruments and tools to be shared by various research institutions on the Torrey Pines Mesa.

As the foundation moved forward, its directors soon recognized flaws in their approach, especially when it came to working with superstar scientists. With its limited resources, the LBF could not get the attention of these superstars who were often courting global investors and institutions with hundreds of millions to invest. Even more importantly, the LBF's resources were so small relative to these other investors that they could never affect systemic change.

From its work with the various institutions on the Torrey Pines Mesa, the LBF concluded that the regional innovation system was talent-constrained on many levels and needed to recruit and retain promising undergraduate and graduate students, as well as scientists early in their careers. In this arena, the LBF might be able to have a bigger impact. The foundation had already made grants to support scientists at earlier stages of their careers, including grants to Achievement Rewards for College Scientists (ARCS), a scholarship program. Between 2005 and 2006, the LBF gave \$250,000 to Scripps to allow the Oceanography program to recruit young scientists to each of its three divisions.

In 2007, the foundation also agreed to provide a



\$500,000 grant over four years to the newly created J. Craig Venter Institute at UCSD. Venter, a UCSD grad, was a world-famous researcher in the field of genomics and had founded several research institutes close to the National Institutes of Health in Rockville, Maryland. In 2006, he consolidated these entities to create the J. Craig Venter Institute, with branches in Maryland and San Diego. To support the development of the Institute, the LBF agreed to provide a grant on a matching basis to help fund scholarships for affiliated graduate students.

Grants for scholarships provided a way for the LBF to support talent development, but also continue to deepen its engagement with leaders in the university innovation system and learn more about navigating the complex network of institutional relationships. The Venter Institute, for example, was involved in a faculty initiative to develop an interdisciplinary Environmental Sustainability Institute at UCSD. The goal was to focus on practical applications of science to real world problems. In 2007, LBF agreed to provide \$100,000 to help the program get off the ground, with another \$50,000 to follow when the chancellor of the university formally approved the new program. Initially, the scale of the project seemed appropriate to the LBF's resources, but it soon became clear to the foundation's directors that the vision for this project was much larger than anything the LBF could hope to shape within the timeframe that the board was thinking about for the foundation's ultimate dissolution. "I was coming at this because I had been the CEO of a major organization and I thought I knew how to lead things," Ellsworth said, "but the decision-making process, the funding, the internal administrative stuff—and the time this would take—was just more than we could accommodate."

Working with Cal-IT2 (later known as the Qualcomm Institute) proved far more successful. In 1999, several leading San Diegans, including Richard Lerner, the head of the Scripps Research Institute, had enlisted UCSD Chancellor Richard Atkinson in an effort to convince the State of California to launch a series of research institutions (analogous to Bell Laboratories) that would promote scientific discoveries leading to new commercial products and services. Atkinson had persuaded Governor Gray Davis to support the effort with \$100 million in state money. Known as the California Institutes of Science and Innovation, the project was announced in December 2000.

The various institutions in the UC system were invited to compete with one another to house one or more of these four institutions. Each campus was asked to provide evidence of their research qualifications, but emblematic of the growing role for philanthropy in scientific research and development among elite universities, each campus was also challenged to demonstrate that they could raise money on a 2-for-1 matching basis. UCSD (in partnership with UC Irvine) was picked to be the home of the California Institute for Telecommunications and Information (soon known as Cal IT2) in part because of its fundraising.

Like its sister institutions, Cal IT2 was established as "an experiment in a new research paradigm," according to historian Patricia A. Pelfrey. It sought to focus on interdisciplinary work and bring students and faculty together from more than 24 departments in a collaborative environment. Cal IT2

also set up support systems to transfer new technologies from the research lab into the marketplace, and it aimed to cultivate scientists and engineers who were not only accomplished in their fields, but also capable of launching themselves as entrepreneurs. Physicist Larry Smarr, a professor of computer science and engineering at UCSD, was chosen to be the founding director of Cal IT2.

With major support from the San Diego-based telecommunications company Qualcomm, Cal IT2 was just getting underway as the LBF began exploring how it might contribute to the health of the innovation system at UCSD. When Ellsworth met Smarr for the first time, he was very impressed. By 2001, Cal IT2 was collaborating with various economic development entities to host a conference on “Evolving Markets in Telecommunications.” The conference was designed to showcase pioneering research taking place in San Diego and attract venture capitalists. It was exactly the kind of initiative that appealed to the LBF’s interests.



Cal-IT2, later named the Qualcomm Institute, was created to promote interdisciplinary work in engineering. LBF funding gave the Institute’s leaders flexible resources that could be used to prove concepts or secure human resources or equipment that the Institute needed to win major grants.

Through Larry Smarr, Ellsworth also met Ramesh Rao, a professor in the School of Engineering who specialized in wireless technologies and played a leading role, with Smarr, in launching Cal IT2. Rao had begun his career at a time when federal funding played a major role in his field and philanthropy was hardly a factor. The model for research and development was Bell Labs where scientists had tremendous freedom to think about theoretical issues in fields like information science, while engineers and others worked to translate theoretical insights into practical applications and products. As federal science spending flattened in the 1990s and Bell Labs suffered after the breakup of AT&T, university engineering schools took the lead in research and innovation, funded by a new generation of tech entrepreneurs who had come into great wealth with the revolution in digital technologies. In the San Diego area especially, the success of Qualcomm, which had pioneered the leading digital cellular transmission technologies, enriched its founder Irwin Jacobs, who invested philanthropically in programs like the Center for Wireless Communications and then Cal IT2.

In his early meetings with Rao, Ellsworth was impressed with Rao’s interdisciplinary approach and the pair soon developed an easy rapport. In 2006, the LBF made its first grant to Cal IT2, a \$150,000 contribution to the director’s Innovation Fund, which specifically aimed to catalyze interdisciplinary work. As Ellsworth put it, “I decided to just give him some money and then have him tell me what they did with it. When Ramesh reported back, I was really impressed. What I learned was that if you get the personal relationship right, then you can trust the grantee to solve the internal problems.”

In science, this approach had a long history. The Medicis were patrons of individual scientists, whom

they called “client-savants.” And when the Rockefeller Foundation launched a new era of science philanthropy at the beginning of the twentieth century, program officers cultivated relationships with principal investigators, like Rao, despite their limited understanding of the science, relying on peer referrals and personal relationships to develop a high degree of trust in their grantees. At Cal IT2, the LBF could witness first-hand the ways in which Rao, Smarr, and other faculty members helped students translate research into potential new products and services, but he also realized that if they were to become successful as entrepreneurs, they would need mentors.

As CEO of Sharp, Ellsworth had heard about an innovative program in technology and entrepreneurship at UC San Diego founded by William “Bill” Otterson and Mary Walshok. From 1985 through the 1990s, CONNECT had helped to incubate new start-up companies in the region and developed supportive services and systems that high-tech entrepreneurs needed. After the death of its charismatic leader, Bill Otterson, in 1999, however, CONNECT had been struggling to sustain the interest of business leaders in the community. In 2003, the group’s executive director resigned, and the board began looking for a successor.

The LBF believed that CONNECT, as a major collaborative effort among San Diego institutions, could and should continue to play a vital role in San Diego’s innovation system. Ellsworth was delighted when Duane Roth agreed to take the job. Roth was a successful executive who had been CEO of Alliance Pharmaceutical Corp. prior to joining CONNECT. He served on the boards of various institutions in the innovation system, including the UCSD Cardiovascular Center, CAL-IT2, the Biotechnology Industry Organization, and other entities. He had also been a mentor to Ellsworth after he became CEO of Sharp, helping him to navigate the world of healthcare.

As Roth immersed himself in the challenges ahead, he and Ellsworth talked extensively about how the LBF could help. A key element of CONNECT’s mission was to facilitate the commercialization of ideas incubated in the university environment. In 2007, the LBF made its first grant to CONNECT, \$70,000 to support the Springboard program. Springboard was a multi-week technical assistance program for entrepreneurs to help them develop the pitch for their business case. The program then assisted these entrepreneurs by connecting them to potential investors. Over the next several years, the LBF continued to invest in this initiative to develop opportunities for local commercialization, and soon this effort became a critical fourth strand in the LBF’s science and innovation strategy.



The Jacobs School of Engineering at UCSD became one of the LBF’s key partners in Science and Innovation. Through its work with the school, the LBF recognized a critical opportunity to cultivate a culture of entrepreneurship in the school and, later, within the university.

Despite the modest contributions of many of these grants, the LBF continued to explore the potential for more catalytic grantmaking in science and innovation. The board considered investing in science education, which would allow the foundation to integrate some of its work in Balboa Park and the Diamond Neighborhoods, and made several grants to explore potential linkages between the community and the research institutions affiliated with UCSD. All of these efforts provided significant developmental opportunities for the students who participated, but none promised the direct impact on research and innovation that the foundation wanted to achieve. When the LBF's board met in May 2008 and heard presentations from leaders at CONNECT, Salk, and the Sidney Kimmel Cancer Center, they concluded that recruiting and retaining excellent scientists, along with training scientists that could bridge the gap between research and clinical application, remained a top priority for the nonprofit scientific research community and the foundation's funding.

Key Insights:

*In the early years of grantmaking, the LBF supported efforts to recruit research superstars who could attract capital and talent to the **region** to focus on emerging technologies that were likely to lead to the development of whole new industries. Although many of these grants contributed to important initiatives, the LBF's role was minimal given the scale of its resources and the overall cost of these very large projects. As a result, the foundation found itself in a very traditional grantmaking relationship with its grants diffused across too many institutions. Increasingly, the LBF board realized that it was looking for ways in which the LBF could engage in catalytic grantmaking that would lead to systemic changes that would strengthen the overall innovation system.*

Study Questions:

How should grantmakers choose among various grantees in an arena like science and innovation where concepts may be highly technical and require sophisticated expertise?

What elements contribute to a successful relationship between a scientist and a grantmaker?

What are the risks and rewards to philanthropy when foundations' invest in highly talented individuals?

What are the advantages and disadvantages for a small funder making grants in a field where much larger public and private dollars are in play?

Course Corrections

With the 2008 financial crisis, funding for many nonprofit initiatives suffered throughout the economy. The LBF experienced a 31 percent decline in the value of its assets between the middle of 2007 and February 2009. The foundation's directors quickly realized that institutions in science and innovation, which received a large percentage of their funding from government, were less likely to be affected by crisis. In the foundation's two other grantmaking areas—the Diamond and Balboa Park—the foundation's grants could play a critical role in helping struggling organizations and institutions cover any financial shortfalls. The board decided to cut back on funding for science and innovation in order to help organizations in the Diamond Neighborhoods weather the storm and support institutions in Balboa Park who might face severe cutbacks in revenues. As a result, LBF funding in science and innovation declined to \$343,000 in 2009. Most of this money (\$275,000) went to Cal-IT2 and the J. Craig Venter Institute. Over the next five years, the LBF's funding for science and innovation averaged less than \$350,000 a year, and the only institutions that received consistent support were CONNECT and Cal-IT2.

The board's decision, precipitated by the financial crisis, gave Ellsworth an opportunity to step back and reassess the foundation's grantmaking strategy in science and innovation. In 2008 and 2009, he continued to talk to people working in and around UCSD and to look for new opportunities to strengthen San Diego's economy by investing in new ideas. In a presentation to the board in the late summer of 2009, Ellsworth acknowledged that the foundation's grantmaking in Science and Innovation had made a difference, but he confessed that of the three program areas, "This has been the hardest area to develop." They had looked at education initiatives, financing projects, recruiting scientific leadership, supporting forums and collaborations, but none of these efforts led to something substantial that really fit Benbough's goal of "accomplishing something."

“It is the people that are important. The retention and recruitment of scientists in an atmosphere that is supportive of their creativity, innovation, and collaboration is critical.”

Peter Ellsworth, operating director, LBF

Ellsworth also noted that he was continuing to learn important lessons along the way. “First, it is the people that are important,” he told the board. “The retention and recruitment of scientists in an atmosphere that is supportive of their creativity, innovation, and collaboration is critical.” All of his conversations had deepened his conviction that UCSD was “the linchpin” in terms of the success of the regional innovation system on the Torrey Pines Mesa. But Ellsworth had also realized that “the money required to do anything significant is far beyond our capability and therefore looking for

projects in which we leverage our funds to be one of the players is probably the way to go.”

In line with its grantmaking in Balboa Park and the Diamond Neighborhoods, the LBF was increasingly interested in opportunities to promote collaboration related to its key strategies: talent development, commercialization, and the creation of a supportive environment for technology development. Intuitively, Ellsworth was still looking for an opportunity to make a systemic impact. In line with this thinking, in February 2010, the board resolved that the foundation would “no longer fund scientific organizations for institution-specific programs.” Instead, as Ellsworth wrote, “We will continue to fund collaborative projects that relate to the science community around UCSD as a group.”

One such opportunity materialized in 2011 when Mary Walshok came to the LBF with an idea. The Atlantic Monthly sponsored major forums around the country, including sessions focused on science and public policy. UCSD was interested in partnering with the Atlantic to host a forum in San Diego. This kind of event fit within the LBF’s strategic effort to educate the public on new developments in science, and the foundation agreed to support the effort with a \$28,000 grant to help the organizers capture all the talks on UCTV so they could be archived and broadcast on the web. The inaugural event, titled “The Atlantic Meets the Pacific” took place in October 2011. “It turned out to be a terrific opportunity for San Diego to get the word out about what was going on in our region,” Ellsworth said. Walshok felt it was a big success. But for the LBF it didn’t lead to any new insights on how to have a systemic effect on the regional innovation system.

In 2011, the LBF hit a low point for science and innovation funding, with only four grants awarded totaling \$255,500. Nearly all of these grants went to CONNECT and Cal-IT2, the two entities where the LBF had been able to forge significant relationships and have a real impact. By this time, however, the LBF board was putting increasing pressure on Ellsworth to develop a strategy for spend down and the allocation of the foundation’s final dispositive grants.

Ellsworth wrote a couple of memos in 2012 for the board assessing progress on the foundation’s strategy in each of its program areas and the potential for the development of dispositive grants. Despite his frustrations with the foundation’s ability to have a systemic impact, he noted that the foundation’s program in science and innovation had been relatively successful because the foundation had not been trying to change the culture of its grantees. Undoubtedly, this was because the innovation system, with UCSD at the heart of it, was already highly developed institutionally with a powerful bureaucratic and research-focused culture. Most of these organizations were well-funded, sustainable, well-led, and well-governed. Moreover, reduced spending by the state and the federal government had already pressed many of these institutions to become more entrepreneurial and efficient and to collaborate in ways that made it easier for a funder to participate.

Ellsworth highlighted what he felt were the most successful and promising collaborative initiatives the

foundation had been involved with to date. CONNECT was a key partner. He believed the organization played an important role in attracting new investment for biotech firms by hosting a major annual forum and publishing critical and timely information on the evolution of San Diego's science sector. CONNECT also worked to disseminate information to influencers around the country. They had a full-time lobbyist in Washington, DC. Through the Springboard program, they also provided key technical support to entrepreneurs and young tech companies in the region. Because of his relationships in the world of health care, pharmaceuticals, and biotechnology, CONNECT's CEO Duane Roth was a particularly effective leader. All of these factors made CONNECT a good bet for a final dispositive grant.

Ellsworth and his board were also impressed by what the LBF had been able to accomplish with CAL IT2, which had been established to break down academic barriers between departments. Ellsworth noted, for example, that CAL IT2 was using a grant from the LBF to pioneer a systems approach to medical school curriculum that would focus on “the way our bodies actually work, rather than the current approach which studies separate parts of the body and separate diseases as if they operate in a vacuum.” This approach seemed particularly important as engineers developed new diagnostic technology that allowed healthcare professionals to monitor these systems. Cal IT2 was also engaged in developing new pedagogical strategies that the LBF hoped would influence science teaching in K-12 education. These strategies were based on a fundamental shift in the role of the classroom teacher away from imparting information to helping students use the information they could find on their phones and other devices to solve real world problems.



In 2003, Duane Roth became CEO of CONNECT, an innovative nonprofit that aimed to support entrepreneurs in the San Diego region. The LBF worked closely with Roth to support tech transfer and commercialization.

Another promising collaboration the LBF helped fund was the Sanford Consortium for Regenerative Medicine. With state support, the Consortium brought scientists together from different disciplines to work on stem cell research. LBF money was used to help recruit key scientists. “The scientists love it,” Ellsworth said, “and it has already shown that this proximate location can do wonderful things.” But “the basic culture of separateness” among the institutions was still very strong, and the internal politics around collaboration bore an uncanny resemblance to the issues the foundation was facing in Balboa Park. (See Balboa Park case study.)

With all of these efforts, the foundation remained focused on the three core elements of its strategy in this program area: support the development of scientific leadership; promote collaborative institutional models that sparked creativity and innovation; and cultivate civic support for the

innovation system and public understanding of major trends in science.

Given the LBF's emphasis on relationship-based grantmaking, CONNECT and Cal-IT2 seemed like good bets for dispositive grants. Ellsworth continued to work closely with Duane Roth and Ramesh Rao and had tremendous confidence in both of these leaders. One week in the fall of 2013, Duane Roth sat with Ellsworth in his office and together they brainstormed a series of initiatives that the LBF believed would play a significant role in supporting the innovation system in San Diego. That weekend, however, Roth was killed in a bicycle accident. Ellsworth was devastated. Roth was more than a successful grantee; he was also a close personal friend.

Following Roth's death, Ellsworth worried that CONNECT would sink back into the doldrums it had suffered in the early 2000s. He was concerned that Roth's successor might not have the skills or the social network to succeed. Consistent with LBF's institutional commitment to relationships, however, the foundation granted CONNECT \$100,000 in 2013 to provide stability while the organization navigated its transition. The foundation continued to support CONNECT after it hired its new leader, Greg McKee.

Key Insights:

Using the financial crisis as an opportunity to regroup, the LBF took time to reflect on its grantmaking in science and innovation to try to understand why it wasn't getting the impact it wanted. The LBF increasingly realized that the problem related to working at an appropriate scale. Institutes led by superstar scientists were dealing with hundreds of millions of dollars, and it was impossible for the foundation to have a significant impact in this arena. The LBF also realized that it needed to work with fewer organizations and in arenas where it could leverage its relationships and influence, as well as its financial resources, to play a catalytic role. Increasingly, the LBF looked for projects that would affect the innovation system as a whole.

Study Questions:

When is it appropriate for a foundation to hit the pause button on a program in order to rethink its strategy?

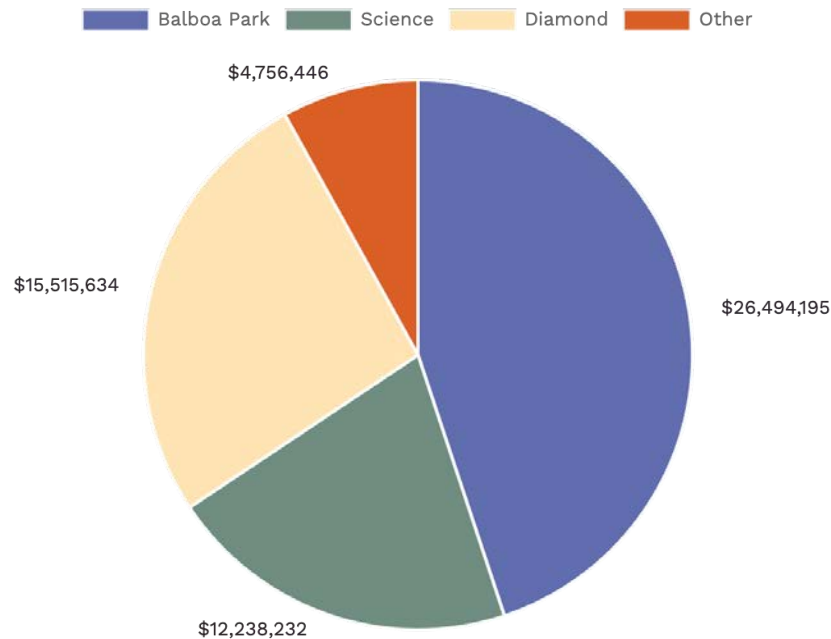
How can smaller foundations have an impact on a large, multi-layered, multi-institutional system?

If a foundation believes in a relationship-based approach to grantmaking, how should it anticipate the potential loss of a key grantee leader?

Strategy To Spend Down

Since the time of the founder's death in 1998, the Legler Benbough Foundation had operated with the understanding that all of its grantmaking had one end in mind: to identify high-potential organizations and projects to receive final dispositive grants before the foundation spent itself out of existence. By 2010, Ellsworth and Cisco had begun to develop strategies for the spend down including criteria for dispositive grants. These criteria focused on projects or operations that were sustainable, involved institutional collaboration as a way to leverage resources, engaged other funders, and reflected a new or innovative approach to problem-solving. In evaluating potential projects, the foundation was also interested in forward-thinking leadership and strong governance. Over the next several years, the foundation continued to use these criteria as it considered final dispositive grants totaling roughly \$25 million.

In the science and innovation arena, Ellsworth noted, identifying potential dispositive grants was particularly challenging. “[T]here is so much advanced thinking,” Ellsworth told the board, “and things are moving so fast that the opportunities for working with people who ‘get it’ are numerous.” On the other hand, most of the grantees in Science and Innovation were already oriented to collaboration and focused on innovation, values that aligned with the LBF’s goals.



LBF Grantmaking by Focus Area 2002-2021, Total: \$59,004,507

During Legler’s Benbough’s lifetime and while his estate was being settled between 1986 and 2001, the Legler Benbough Foundation gave \$7,321,394 to a variety of institutions and organizations. After his death, his trustees focused the foundation’s grantmaking in three major areas: arts and culture (Balboa Park), economic development (Science & Innovation), and health, education, and welfare (Diamond Neighborhoods). After this strategy was adopted and over the next two decades, 97 percent of the foundation’s total grants of \$59,004,507 were made in these three arenas.

Fortunately, the recovery of the stock market and the value of the foundation’s assets provided more room for grantmaking. In 2014, the LBF increased its allocation to science and innovation to \$402,500 and the following year grants totaled \$693,000. Some of this money went to long-time partners like CONNECT, the ARCS Foundation, the J. Craig Venter Institute, and the Sanford Consortium for Regenerative Medicine. Most of these grants were focused on collaborative initiatives. The LBF provided funds to the Venter Institute, for example, to coordinate with other research institutes to begin to develop a network that would highlight emerging public policy issues and debates that could affect the scientific work of researchers on the mesa. The development of CRISPR gene editing technology, for example, seemed to promise an opportunity to change the DNA of mosquitoes to eliminate malaria. But members of the science community and the public were concerned about possible unintended consequences that might result from this intervention. The new collaboration housed at the Venter Institute could explore these issues and help educate the public.

The LBF was also working with Mary Walshok and Jeff Light, the publisher of the San Diego Union-Tribune, on another project to enhance the public's understanding of emerging technologies in science. Walshok and Light had proposed a program to embed journalists from around the country in science institutions in San Diego. The goal was to strengthen science journalism and make journalists more aware of the innovation sector in San Diego.

Even as Ellsworth was working with long-time partners, he was also talking to leaders at UCSD on various new initiatives that he hoped might give the LBF an opportunity to have a systemic impact. In 2014, the LBF provided \$175,000 to help UCSD's Office of Online & Technology Enhanced Education launch a major new project with three components: 1) free courses in basic skills to assist students hoping to matriculate to college, 2) business skill development classes to enhance human capital in the San Diego economy, and 3) an innovative series of courses using the "flipped classroom" model to allow graduate students to train faculty on emerging technologies. This effort was expected to address unmet needs in the region and develop a significant new revenue stream for the university.

All of this work was underway in 2017 when the LBF held its quarterly board meeting at the Jacobs School of Engineering to discuss the foundation's final grants. After fifteen years of grantmaking in the arena of science and innovation and working closely with several key grantees at UCSD, including the Jacobs School of Engineering and CONNECT, it had become apparent that the greatest opportunities for the LBF to have a systemic impact were tied to the university's efforts to strengthen systems that supported technology transfer, commercialization, and entrepreneurship. These efforts were almost by definition interdisciplinary and required collaboration between academic departments. Unlike high science, where large investments were needed to pay for labs, high-tech equipment, and personnel, new institutional arrangements to promote commercialization and entrepreneurship could be established with relatively modest investments that would facilitate interdisciplinary collaboration.



Albert P. Pisano, dean of the UC San Diego Jacobs School of Engineering, arrived in 2013 hoping to help students "develop into technology leaders and change makers." When the school partnered with the Rady School of Management to launch the Institute of the Global Entrepreneur, the LBF provided critical funding.

At UCSD, the LBF was engaged in an even more ambitious effort in collaboration with the Jacobs School of Engineering. At the February meeting, Dean Al Pisano; Dennis Abremski, the executive director of the Institute for the Global Entrepreneur; and Thomas Bewley, a professor of Mechanical and Aerospace Engineering, talked about the launch of a new initiative called the Technology Accelerator for the Digital Future. In conversations with the LBF, the Jacobs school had discussed the

need to develop education and training programs to help undergraduates, graduate students, and faculty commercialize new ideas and technology. They also wanted to help potential entrepreneurs from within the university community validate and translate their inventions for the marketplace. With a \$500,000 grant from the LBF, the Jacobs School of Engineering had created the Accelerator and planned to launch that spring with a cohort of 35 graduate students. These budding engineers would take courses in “Customer-Focused Value Creation” and “Operations Management,” and then engage in “Lab to Market” workshops in collaboration with MBA students at UCSD’s Rady School of Business. The LBF also liked this project because it included a mechanism for the Jacobs School of Engineering to reap financial benefits from companies that were successful, funds that would be used to sustain the Accelerator and invest in future entrepreneurs.

The foundation’s final dispositive grant to Cal IT2 (now renamed the Qualcomm Institute (QI)) also reflected the LBF’s continuing desire to support interdisciplinary work and commercialization. QI received a \$1 million grant, distributed over five years, to provide flexible funding to help innovative projects move from idea to implementation. The first installment of these funds helped launch two highly successful new ventures: the Center for Human Frontiers (CHF) and the Power Neurogaming Center (PoNG). CHF was the brainchild of Albert Lin who wanted to use technology to expand human potential. In its first two years, from 2017 to 2019, CHF created a flexible design and engineering process to make custom prosthetic limbs available to millions of unserved amputees in India and other countries. CHF also explored new biofeedback diagnostics that would help patients suffering from pain, depression, PTSD, or other disorders to better manage their emotional and physical responses to their condition. Meanwhile, PoNG created a specialized multimedia lab at the Qualcomm Institute that developed a suite of therapeutic video games that tracked a player’s eye movements to enhance diagnostics for children with attention challenges and help them improve their attention and information processing skills. Established with modest seed money from the LBF, PoNG later received grants from the National Institutes of Health’s Institute for Aging to develop similar programs for older adults and a \$2.5 million grant from the National Science Foundation to further the use of its technologies by individuals dealing with Autism.

For Ramesh Rao, the Qualcomm Institute, and UCSD, student involvement in the development of both the CHF and PoNG represented a new approach to experiential learning and a deeper commitment to the institute’s mission “to advance technology to solve global challenges in the areas of health, culture, energy, and the environment.” Together, the two projects engaged more than 200 students as interns in the first two years of operation. The students came from a variety of disciplines. Visual artists worked alongside computer engineers and students in health sciences on game development for PoNG and prosthesis design for CHF. As members of interdisciplinary teams, they arrived from various departments, learned real-world teamwork, and developed business skills. In fact, the student experience at the Qualcomm Institute was so successful that as UCSD began developing plans for a seventh college, focused on interdisciplinary and experiential learning, it looked to QI’s Experiential Learning Academy to play a major role in the new curriculum.

With the Qualcomm Institute, the LBF's sense of accomplishment came as the fruit of a rich and collaborative relationship between Peter Ellsworth, Larry Smarr, and Ramesh Rao that stretched back nearly fifteen years. Other dispositive grants, however, developed as a result of more recent partnerships. After the Invention Science Fund (ISF), an incubator associated with the Seattle-based venture capital firm Intellectual Ventures offered \$750,000 to sponsor the creation of the Institute for the Global Entrepreneur, for example, the LBF provided \$250,000 in matching funds. This initiative expanded the Jacobs School of Engineering's Technology Accelerator program and strengthened the partnership between engineering and business at UCSD. The foundation followed up on this gift in 2019 with a \$1 million grant to establish the IGE Founders Fund, an endowment to support "next-generation entrepreneurs." Dean Pisano wrote to Peter Ellsworth to say the grant was critical to Jacobs' ongoing efforts to help people "who have great ideas get them off the ground and further our role in contributing to the economic impact in the region."

Recognizing the leverage it had been able to achieve within the Jacobs School of Engineering by supporting commercialization initiatives, the foundation expanded its vision when it awarded a multi-year \$500,000 grant to the CONVERGE program at UCSD, which was sponsored by the Office of Innovation and Commercialization (OIC) at the university. The OIC had been relaunched in 2015 to grow beyond the traditional university technology transfer office model. Its new mission was to support the development of "a vibrant innovation ecosystem" throughout the university. This was the kind of culture shift and systems change that appealed to Ellsworth particularly. With support from the LBF, the OIC's CONVERGE program expanded entrepreneurial training and thinking beyond the nexus of engineering and business students to include students in the arts and humanities, social sciences, public policy, and health sciences. The funding supported program development, mentors and advisors, and outreach and engagement. It also helped finance an 8-week Converge Incubator program to develop early to mid-stage entrepreneurs as they sought to move their ideas from concept to execution.



With support from the LBF, UCSD created the CONVERGE program. It gave students from a variety of disciplines opportunities to work with cutting-edge technologies. CONVERGE encourages students to develop entrepreneurial services and products, like this virtual reality system, which was featured at a demo night event in 2017.

Ellsworth was delighted with the accomplishments of the CONVERGE program in its first year. In November 2018, he told the LBF board that the results were "spectacular" and that the program had been a significant "disruptive" force within the university, promoting multidisciplinary thinking and collaborative learning. Over time, he hoped, the program would catalyze other cross-cutting initiatives that would help the university become a vibrant innovation ecosystem. In fact, a year later, the

Basement program managed by CONVERGE touted the fact that it had served over 2,400 students in various cohorts during the prior academic year. Twenty-two companies had been formed that raised millions of dollars and offered employment to more than 30 people.

“ We were a new organization. When I first went to the LBF, I was looking for advice even more than money. After the LBF gave us our first grant, we soon realized we were on the wrong path and needed to readjust. Peter Ellsworth and the LBF board were totally supportive. We were far more effective as a result.”

Kevin Carroll, executive director, Tech San Diego

All of the LBF’s effort to help UCSD nurture a culture of innovation among students and faculty would mean nothing, however, if the university’s graduates were unable to find jobs locally. In 2017, Peter Ellsworth began talking to Kevin Carroll, the CEO of a new nonprofit called Tech San Diego, about ways to connect San Diego employers with talented graduates of UCSD. Carroll had served as the executive vice president of CONNECT before moving to Tech San Diego. Carroll wanted to recruit an ombudsperson, someone who would work on campus, “live and breathe” the campus environment, and help place students in internships with local companies. To bring this idea to fruition, the LBF provided an initial \$100,000 grant and later dispositive grants to establish a program that provided substantial engagement and employment of UCSD students in local tech companies.

Meanwhile, to help feed the development of an ecosystem of organizations that would nurture budding entrepreneurs, the LBF built on its long partnership with CONNECT and awarded a two-year dispositive grant of \$526,097 to provide critical capital to startup companies and assist their efforts to attract venture capital. In line with this pattern of grants to organizations working to support the growing tech startup community in San Diego, the LBF also committed \$160,000 to the San Diego Venture Group, led by Mike Krenn. In the late 1980s, Krenn had worked for the San Diego Business Journal where he became intrigued with the region’s start-up community. Around 1994, after earning a Master’s degree in mass communications and marketing, Krenn went to work for Cooley Godward, a national law firm with a significant footprint in San Diego. Responsible for business development, Krenn organized a group of venture capitalists known as Tech Coast Angels. This group and other budding venture capital projects flourished in the late 1990s, but after the dot.com bust in the early 2000s, the venture capitalists in San Diego all disappeared. Krenn continued to do business development in the legal community, but over time, he realized that he missed working with early startups. Krenn also had a history with CONNECT, where he had served on numerous committees for both Bill Otterson and Duane Roth. In 2014, he joined the San Diego Venture Group (SDVG),

a nonprofit established in 1986 to promote entrepreneurs in the region.

Krenn understood that nearly half of all venture capital in the United States flowed to Silicon Valley companies. At SDVG he began talking to Ellsworth and noted that if the region's budding entrepreneurs wanted to tap the main pipeline for venture capital, they needed a presence in the Bay Area. The LBF agreed to help the San Diego Venture Group raise funds to open and staff a small office in San Francisco called "the Beachhead" where budding San Diego companies could meet potential backers. The foundation provided \$100,000 while SDVG raised another \$100,000 from the community. "This helped engage the community in the effort," Mike Krenn remembered. "The Beachhead was a first. While countries like New Zealand, the Czech Republic, Ireland, and others had opened offices in Silicon Valley, San Diego was the first city to do so."



Mike Krenn had worked to help entrepreneurs in the tech sector for decades before he became head of the San Diego Venture Group in 2014. When SDVG merged with CONNECT in 2019, the deal brought together two of the LBF's key partners.

The LBF appreciated SDVG's work, in part, because it was closely aligned with other entities working to promote entrepreneurs and new technologies in the San Diego region. In 2017, for example, SDVG partnered with CONNECT, Tech Coast Angels, and Qualcomm Ventures, the investment arm of San Diego's leading wireless technology company, to host a competition for startup companies. The winner, Guru, had developed a phone app to help visitors navigate museums. The LBF was delighted because Guru had been involved in work that the LBF had funded through the Balboa Park Online Collaborative. (See Balboa Park case study.)

The startup competition highlighted venture capital's growing interest in the San Diego area. With SDVG's San Francisco office concept up and running in 2018, the region's startups raised nearly \$2.8 billion compared to \$1.3 billion in 2017. In 2019, the region brought in another \$2 billion in venture funds and celebrated its first two "unicorns" — startups that grew to billion-dollar valuations.

By all accounts, San Diego's tech sector had moved into take-off mode by 2021 with new companies being formed and billions of dollars of venture capital flowing into the innovation system.

Given the LBF's ongoing efforts to promote collaboration among its grantees, the foundation was delighted in 2019 when CONNECT and the San Diego Venture Group announced that they would merge. Both entities were focused on elevating entrepreneurs. Both had loyal backers. "Our goal is to serve entrepreneurs throughout their growth journey," wrote Mike Krenn. The combined organization

intended to work with startups as they moved through all of the stages to success.

With these major grants and a handful of smaller awards, the Legler Benbough Foundation was on track to spend its remaining assets and legally dissolve by 2021. These final grants reflected the core strategy first developed in 2002—narrow the focus, build relationships with grantees, learn from them by listening and investing in their ideas, reinvest in success, and look for opportunities to catalyze systemic change that encourages collaboration, promotes greater efficiency, and opens the door to new opportunities. In Science and Innovation, particularly, this strategy reflected an eighteen-year evolution of relationships that sought to enhance the pool of talent and promote institutional development that would support the translation of ideas and discoveries into products and services that would enhance the quality of life and strengthen the economy in San Diego.

Key Insights:

As the Legler Benbough Foundation focused and expanded its grantmaking with particular organizations in science and innovation over the last five years of its existence, it deepened its relationships. New projects raised new challenges, led to new insights and strategic readjustments. For grantmakers with relatively fewer resources, trust plays a critical role in strategic grantmaking, allowing the grantmaker to avoid expensive overhead for due diligence and rely on the talent of the visionary researcher. Strong personal relationships with administrative leaders also provide opportunities to cut through bureaucratic layers and promote institutional innovation. This relationship-based approach proved to be the key to the LBF's success within the complex, multi-institutional environment surrounding UCSD. In striving for systemic change, the LBF recognized that measuring impact would be a challenge, but evidence of success was apparent, particularly in the arena of commercialization where the number of entrepreneurs and new entities launched testified to the efficacy of the programs supported by the foundation. The LBF also discovered that insights and learning gained in the well-developed institutional environment surrounding UCSD could be transferred to other areas of grantmaking.

Study Questions:

In a highly complex, multi-institutional ecosystem, how can a small funder identify systems that it can impact with its available resources?

When a funder works with a large organization like a research university, how can it develop a mutually accountable relationship with a grantee?

How does a plan to spend down assets help to sharpen the grantor and the grantee's focus on a proposed project's impact and sustainability?

Additional Insights - Case Study Sidebars

The LBF Grantmaking Strategy in Science and Innovation

To promote economic development, the LBF sought to support the regional innovation system linked to UCSD. The foundation’s strategy had three elements initially, but over time, a fourth focus area emerged:

Learn and Develop Relationships

Early on, the foundation partnered with institutions in the sector to work on their projects. The foundation helped recruit research superstars who could attract resources and other scientists to tackle major initiatives. Working with institutions, the LBF developed relationships that shaped its grantmaking to maximize impact.

Support Projects with Individual Institutions

The LBF believed that many problems could only be solved by bringing together skills and perspectives from multiple disciplines. The foundation’s grants supported research initiatives that cut through traditional administrative siloes in multiple programs on the UCSD campus.

Develop Collaborative Efforts

The LBF’s grants supported collaborative projects like CONNECT, The Ethics Center, and TECH SD to address issues and promote the sector as a whole.

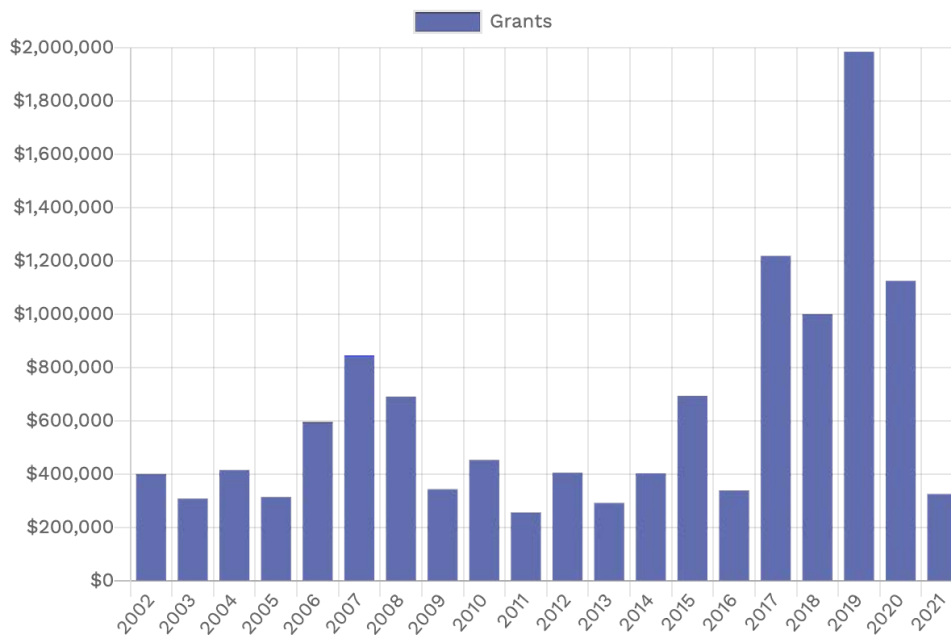
Fund Innovation and Entrepreneurship and Support Startups

The LBF realized that it could have a major impact on the economic development of San Diego by supporting initiatives that focused on creation, development, and support of startups. This led to support of various programs to assist entrepreneurs in launching new businesses as they sought the resources and talent they needed to grow.



Lessons Learned

Funding Big Institutions: The LBF learned that large, well-organized institutions in the science and innovation sector presented a unique grantmaking challenge. They have well-organized fundraising departments and a strong network of successful entrepreneurs willing to support the many attractive, worthwhile opportunities in the sector. Due to the exciting and innovative work underway in San Diego, philanthropic support within the science and innovation sector increased dramatically over the last two decades. For a small foundation like the LBF, this presented an interesting problem. Wanting to make an impact, yet facing a complex system and having a limited asset base, it became clear that the LBF would be unlikely to make the kind of impact initially envisioned. Instead, the types of projects the LBF could afford to fund would not lead to a new model or make a transformative impact. So the foundation got creative and targeted its giving to provide support for projects introduced to them by their grantees.



LBF Grants for Science & Innovation 2002-2021, Total: \$12,238,232

Rethinking Opportunity: By having a narrow grantmaking focus, developing personal relationships with grantees, and taking risks with bright, creative people in San Diego’s science and innovation sector, the LBF was able to fund some truly innovative projects. In many cases, these initiatives were

not the kind that received funding from other sources. Over time, the LBF came to see that many potential grantees were under funded not because their work lacked merit, but because it didn't quite fit within the parameters of work that other funders or their institutions had chosen to support. The LBF saw this gap as a strategic opportunity and chose to support projects that were creative and often time-sensitive. To do so, the LBF had to be flexible, and it helped that Peter Ellsworth could make grants on-the-spot without further authorization. This was also true because, in many cases, the grantees' projects were technologically complicated and beyond the expertise of the LBF's directors. Being able to support innovative ideas based on trust and instinct allowed the LBF to support relatively inexpensive projects that nonetheless brought high-value, systemic change to the sector.

Spend-Down was the Right Fit. One risk that spend-down foundations face is the potential for grantee organizations to struggle to sustain themselves after the funder completes its sunset. The LBF, however, was able to circumvent this issue by partnering with larger organizations and making grants based on strong recommendations rather than investing in small, innovative projects on its own. Working with smart people in established organizations, the LBF was able to identify and support grantees it could help jumpstart, then complete its work with the confidence that supporting organizations would be able to locate additional, ongoing funding for grantees well after the LBF ceased to exist.

Personal Perspective: Peter Ellsworth

“To a large extent, what I learned from him was, if you get the personal relationship right in grantmaking, then you can trust the grantee to deal with the details. It’s a model that has worked very well for us.”

Peter Ellsworth, president and operating director of the LBF

“In 2001, when Tom Cisco and I decided to focus on the research and innovation sector around UCSD as a means of providing economic opportunity for San Diegans, we really did not have a plan. All we knew was that, following Legler Benbough’s direction, we wanted to make an impact and “accomplish something.” We soon learned that working in the sector meant entering into a large and complex system full of well-funded institutions staffed by very smart people. It was initially very difficult to see any way that, given our limited resources, the LBF could have the impact we desired.

I spent a lot of time talking to people at various institutions. In these discussions, we quickly came to see that recruiting and retaining scientific talent was important to these institutions. We funded a number of early recruitment efforts that were successful and, in many cases, brought people who made enduring and significant contributions to the institutions they joined. Yet it still didn’t feel like we were having the kind of systemic impact we envisioned.

As we continued working in science and innovation, we discovered some brilliant, dedicated, and visionary people. We realized that by listening to them and enabling them to use our funds however they saw fit, we could watch our funds provide maximum benefits and have new kinds of impact that we would have never even considered. Building strong partnerships and allowing our grantees to direct the use of our funds became critical to our grantmaking strategy in this arena.

During my careers in the law and in healthcare, I had learned the importance of thinking collaboratively and across disciplines to develop new and more effective means of accomplishing objectives. This approach enables you to work with others and follow new ideas and trends as you



develop solutions to challenging problems. Collaboration and interdisciplinary thinking attracted the LBF to work with the QUALCOMM Institute. They were partnering engineers with artists, musicians, biologists, and social scientists. These teams addressed pressing, real-world problems in astounding ways. They had a clearly innovative approach, and I understood that I could never understand the technology and work with the level of sophistication required to evaluate these projects in the traditional sense. So, rather than setting the terms of our grants, I met with Ramesh Rao and told him: “Why don’t we just give you some money and then you can get back to us and tell us what you did with it?”

When he came back, explained how they had used our funding, and described all they had accomplished, we were simply amazed. We quickly decided that this was the correct way to go. This style of giving became our primary strategy in the science and innovation sector. In addition to QUALCOMM, we followed it with Al Pisano at the Jacobs School, Paul Roben at CONVERGE, Mike Krenn at CONNECT, and with other grantees. Doing so allowed us to participate in programs that would not have been possible had we remained within the traditional funding mechanisms at the university. Rather, we were able to accomplish the kind of systemic change and impact we had always desired by taking advantage of the vision and creativity of grantees we knew and trusted. And, in the process, the LBF had the opportunity to learn and take pride in these amazing people’s accomplishments. Our funding truly did make a difference.”

Personal Perspective: Ramesh Rao

“I could tell you how many staff we have, how many machines, and how many dollars, but I will also tell you the deepest thing we do is change the culture of research and development. The LBF understood this.”

Ramesh Rao, director, Qualcomm Institute

“When I arrived at the University of California San Diego in 1984, funding for research in science and technology came primarily from the federal government. Philanthropic support in science and technology was not significant at all, or at least it wasn’t something that we were focusing on. That started to change in the 1990s. That was partly the story of a new generation of billionaires, people who had been pioneers in technology. Many of them saw the connections between academic institutions and the creation of new breakthrough solutions that could add value for society. People like Irwin Jacobs and Andrew Viterbi, the founders of Qualcomm, also understood the benefit of nurturing a larger ecosystem of research and development.



When the State of California launched the competition that led to the creation of Cal-IT2 in the early 2000s, the two-for-one matching requirement made philanthropy much more important to the system. We had to raise \$200 million in four years. About \$55 million came from industry partners. Another large chunk came from various federal research grants. Then a significant percentage of the total reflected grants from foundations. The Gordon and Betty Moore Foundation, for example, provided \$25 million for a large cyber infrastructure study of microbial datasets from around the world.

After we secured the matching money and were awarded the state grant, I was chosen to be the director of Cal-IT2 in 2004. We spent the first six years or so setting up shop. It was around that time that I got a call from Peter Ellsworth. As I learned quickly, there is this tight network of people in San Diego who are scoping out institutions, trying to understand what a place is good for. Peter is a part of that network, and he and the LBF had learned about us from people who had worked with us at the Neurosciences Institute. The LBF was very interested in interdisciplinary research, which fit perfectly for us because we are fundamentally set up to evangelize people to the benefits of doing this work.

As I got to know Peter and the LBF, I realized that his experience as CEO of Sharp had shaped his perspective on problem solving. In medicine, you often have various specialists focusing on a patient, but if they don't talk together, they don't see the whole problem. At Sharp, Peter had worked to break down the siloes and promote greater collaboration to achieve better outcomes for patients. In many ways, what he was doing was a lot like what we have been trying to do at the Qualcomm Institute. He had a keen sense of the importance of changing culture.

The Legler Benbough Foundation's grants are small by comparison with the \$1.2 billion we receive from various sources for research. But most of this money is nailed down. The LBF trusted us and gave us a great deal of flexibility. Peter gave us grants and said, "Use the money as you see fit." This allowed us to be strategic. We could buy an important instrument or hire the right talent at a critical moment when we were seeking to demonstrate capacity or prove a concept. These funds allowed us to move quickly to seize an opportunity. All of these grants could be leveraged to receive much greater support from others. This flexibility depended on the personal quality of our relationship with Peter and the LBF and the trust that we developed."

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