Stanford SOCIAL INNOVATION Review

MacArthur Foundation Supplement

An Open-Data Approach to Transform Grantmaking

By Bradford K. Smith

Stanford Social Innovation Review
Winter 2019

An Open-Data Approach to Transform Grantmaking

Proposals for grants can offer a wealth of ideas and information to the nonprofit community, if foundations take the right steps.

BY BRADFORD K. SMITH

Traditional grantmaking, whereby individual groups or people apply for pools of funding through a linear, all-or-nothing process, is inefficient, wasteful, and opaque to applicants and other outsiders. What if nonprofit proposals could come from a wider pool of candidates and be easily screened, mined for ideas, linked to related information, and shared with the world? In MacArthur's 100&Change competition, Foundation Center saw an opportunity to explore how philanthropy's grantmaking process could be transformed in a way that would focus the field on generating and sharing knowledge, rather than simply getting and giving grants.

GRANTMAKING TODAY

In the United States, foundations receive a tax exemption on their investment income in exchange for contributing to the public good. Some fulfill that role by maintaining one or more program areas and inviting the public—in the form of nonprofits—to apply for grants. The rationale for that open approach is that no matter how knowledgeable a donor, staff, and consultants may be, the best ideas may come in over the transom.

Nevertheless, of the more than 87,000 active independent, community, and corporate foundations in the United States, 70 percent do not accept unsolicited proposals. Together they represent 41 percent of total assets and 38 percent of annual giving in the nation. More than $27 billion of the $71 billion distributed every year by foundations is not up for grabs—you need an invitation.

Many donors keep their doors closed for fear they will be overwhelmed with proposals, which would require a costly infrastructure to evaluate. Proposal review is indeed labor-intensive, and tens of thousands of small foundations have little or no staff and limited budgets. But this argument makes less sense for larger foundations with highly qualified professional staff and significant operating budgets. Despite that, 41 percent of the roughly 1,200 largest US foundations, accounting for more than $600 billion in assets, do not accept unsolicited proposals.

Other grantmakers say that they don't want to waste the valuable time of nonprofits, who might invest in preparing proposals that have little chance of approval. It is true that the majority of all proposals fail to get funded. When I worked at the Ford Foundation in the 1990s, I remember counting more than 144,000 requests in a year in which we made fewer than 2,000 grants. That pattern is repeated throughout the sector: Nonprofits and foundations invest enormous effort in preparing and reviewing proposals through time-consuming processes in which most of the data, analysis, and insights generated in the process are simply discarded.

In fact, this counterproductive process is actually becoming worse as foundations increasingly turn to prize philanthropy to spur innovation and emphasize branding. The best thing about prize competitions is that they are open to all; the pitfall is that the funnel is even narrower, producing only one or a handful of awards at the end.

Foundation Center, the leading source of information about philanthropy worldwide, is at the crossroads of foundations and their nonprofit partners. We maintain years of in-depth data about grantmaking and provide tools and training to help the grant seekers find funding. From nonprofits, we frequently hear such questions as: "How do I get a grant from a foundation that doesn't accept unsolicited proposals?" "Why do foundations request so much information?" "What do foundations *do* with all that information?" Questions like these have a way of focusing the mind. It is increasingly difficult to provide suitable answers in an age when technology has transformed the ways in which we find, consume, supply, and process information in most every other realm of our lives. For several years, Foundation Center has worked to improve knowledge-sharing practices of foundations. But a recent collaboration with the MacArthur Foundation gave us the opportunity to experiment with opening up the grantmaking process itself.

> We turned a team of 25 data scientists, coders, and designers loose on the entire set of 1,871 proposals and 1,700 videos that were submitted to the competition.

"THE SOLUTIONS BANK"

Grants of the size of the 100&Change project —$100 million—are extremely rare in philanthropy. Only four of this size were made in all of 2016. It is rarer still to make such a gift through a competitive process. Because 100&Change was designed by the MacArthur Foundation as a competition and as an open-application process, the foundation decided to share all the proposals with other foundations, nonprofits, researchers, and the public at large.

Sharing presents practical problems, since merely posting thousands of PDFs on a website is not an effective way to transmit knowledge. Moreover, the application process requested some confidential information.

Bradford K. Smith *is president of the Foundation Center.*

ILLUSTRATION BY TIM COOK

In 2017, with MacArthur support, we turned a team of 25 data scientists, coders, and designers loose on the entire set of 1,871 proposals and 1,700 accompanying videos that were submitted to the 100&Change competition. The result was the Solutions Bank, a free online resource allowing users to explore proposals by subject, population served, strategy, and relationship to one or more of the United Nations' 17 Sustainable Development Goals.

The bank's largest volume of proposals are in categories such as economic opportunity, energy and environment, and health, but subjects range from agriculture to transportation. The "population served" field includes age groups, ethnic and racial groups, social and economic status, and other categories. "Geographic area served" includes regions, subregions, countries, and cities, and also broad domains such as oceans and space. Users can search with keywords or maps, or by choosing criteria from drop-down menus.

For example, searching "oceans" generates a list of 57 proposals, including Northeastern University's mariculture project to grow sustainable, healthy animal protein. The system displays the core elements of the application along with accompanying videos, links to related proposals (such as Kepley BioSystems Inc.'s synthetic bait project), relevant research (such as a study on the depletion of forage fish stocks), and links to foundations that have funded the university in the past.

Linking information in this way turns the entire body of proposals and videos into knowledge that can be used by other foundations looking for "shovel ready" grant proposals to expand a current program area or launch a new one, or to create another prize competition. By including information about who currently funds 100&Change applicants, the site is also intended to be useful for nonprofits and other organizations seeking their own funding.

BUILDING THE BANK

Foundation Center has a long history of collecting, cleaning, and coding data about philanthropy and applying data science to make sense of raw information. In 1960, it published its first print directory, including information on some 5,200 American foundations. In the following years, Foundation Center developed a grant classification system that evolved into the Philanthropy Classification System, a taxonomy of more than 1,300 terms to categorize a grant's subject, population served, approach strategy, transaction type, and organization type. These entries are coded by location using GeoNames, an open database of more than 11 million geographic place names.

In 2016, Foundation Center began using a database of more than one million hand-coded foundation grants to train computers to do the coding process on their own through machine learning, an approach that uses statistical techniques to give computer systems the ability to "learn" by progressively improving performance on a specific data-driven task such as classification, without being explicitly programmed. Once the system was able to classify grants at 90 percent accuracy—the target we had established—we applied it to

Foundation Center's entire store of content, including some five million grants, blogs, research reports, and news digests. These were all coded according to the Philanthropy Classification System, and their content was indexed to search engines utilized in different Foundation Center products and services. Further refinements permitted auto-coding to multiple classification systems, including the Sustainable Development Goals and the Organisation for Economic Co-operation and Development (OECD) system that categorizes global foreign aid expenditures. Through this effort, Foundation Center makes it possible to show how foundations and governments are mobilizing to conserve oceans, support human rights, or address virtually any other global challenge.

We applied this technology to the 100&Change proposals so that users could search them in the ways described above. But the diversity of the proposals meant that the process was not as easy as we had anticipated. Approximately 800 met all of the application criteria and could be easily machine-coded. The remainder did not adhere closely to the format, had missing information, or were otherwise difficult to classify or assess. After the automated system did the initial pass, we had to review all of the coding the old-fashioned way—by hand. Still, correcting the coding of thousands of pages of text is faster and more efficient than reading and coding every page.

As an experiment, we also coded some 1,700 videos that accompanied the proposals. After dividing each video into one-second slices, we used image recognition software to identify every object in each frame ("person," "books," "desk," "plant," "bird," "mountain," etc.). Audio transcription software translated spoken dialogue from each video into text. We then applied the same coding technology that we'd used on the written proposals to this text derived from the images and audio tracks. To our surprise, we found that this video analysis added little new information. We included only some video features in the final version of the Solutions Bank site, such as thumbnails showing images and terms such as "sea life," "earth," or "grass."

THE GREAT POTENTIAL

This process demonstrated that using machine learning to rapidly digest large volumes of proposals has enormous potential. The Solutions Bank allows users to fully explore all the knowledge contained in the entire body of proposals, not just the $100 million winner and finalists.

Foundation Center also had access to the MacArthur Foundation's scores for the 800 proposals that met all the application criteria. We used this confidential information to try to relate proposal features to the judges' scores. However, this set was far too small; machine learning requires very large data sets to achieve acceptable levels of accuracy (regarding classification) and mitigate against bias. Nevertheless, the group of 800 complete proposals provided us glimpses of topics and beneficiary groups (such as children) that were more likely to garner higher scores. These findings, though far from conclusive, were encouraging enough to convince us that, with a larger training set of 4,000 or more complete proposals, it would be possible to make far more accurate predictions.

> Today, America's foundations are like black holes, absorbing enormous quantities of knowledge while reflecting back almost none. This situation could change.

Our results were similar with video content—and somewhat predictable. The main images identified by the software were "person" and "desk," and those tended to receive lower scores than others featuring, for example, "wildlife." In part, this was due to the MacArthur Foundation's guidance to applicants, which recommended a low-cost, simple approach to video production. One could argue that you don't need machine learning to prove that videos showing what a project will actually accomplish are more effective than those featuring a talking head. However, despite the widespread availability of technology for shooting and editing video, many applicants still find video production a challenge.

In the short term, we see immediate ways to improve future iterations of MacArthur's 100&Change competition. Auto-coding all proposals at the outset, for example, could make it far easier to assign the right proposal to the right reviewer by subject, geography, or other criteria. This more careful targeting would use the valuable time of those outside readers more efficiently and could also improve the accuracy (and reliability) of their scoring. Similarly, the analysis of 1,817 proposals contained in the Solutions Bank could help future recruitment of outside readers by ensuring that their expertise is appropriate to the likely content of proposals.

But the greatest potential of these experiments lies in finding new ways to encourage foundations to accept unsolicited grant proposals, whether in the form of prize competitions, as requests for proposals (RFPs), or via the usual grantmaking process. With larger numbers of quality grant proposals in text or video form, it should be possible to construct statistically reliable training sets that could in turn make it possible to automate the first wave of eligibility screening. This would enable smaller foundations to process and review more applications, by making it quicker, easier, and less expensive to reject the larger number of proposals that do not fit priorities or criteria. Precious staff time could instead be reserved for analyzing the far smaller number of those that do meet those basic requirements.

Furthermore, to the extent that foundations are willing to accept unsolicited proposals and do so in open processes like 100&Change, the proposals themselves will become a valuable outcome of the grant process. These can be made available to funders wishing to benefit from the ideas, organizations, insights, and creativity—or who might want to provide support. Grant proposals need not be treated as unique works of art: There is no reason why one funder shouldn't accept or even fund a proposal originally submitted to another.

The MacArthur Foundation has heard from numerous government, foundation, and nonprofit users that are among the more than 1,300 users that explore the Solutions Bank each month. Further research will show whether funders will identify promising proposals and potential grantee partners through such an open platform. As the number of open grant competitions grows, multiple Solutions Banks could be built by subject area, geography, beneficiary group, or other criteria, as long as the privacy and intellectual property of the applicants were properly protected. The proposals within each could be treated as living documents that organizations could continually update with new information, retaining the spirit of openness that lies at the heart of 100&Change.

Today, America's foundations are like black holes, absorbing enormous quantities of knowledge while reflecting back almost none. The laboratory created by MacArthur's 100&Change suggests that this situation could change. Armed with abundant resources, fueled by the hope and creativity of millions of nonprofits, and powered by technology, foundations can become sources rather than sinks of information, radiating knowledge and valuable insights to the entire nonprofit community.