

A portrait of Melissa Dell, a woman with long blonde hair and blue-rimmed glasses, wearing a black blazer over a blue top. She is smiling and looking upwards and to the right. The background is a light blue wall with a subtle grid pattern.

# GOING THE DISTANCE

*Chris Wellisz profiles Harvard's **Melissa Dell**, who pioneers new ways of unmasking legacies of the past*



**M**elissa Dell needed a break from the archives in Cusco, Peru. So she climbed onto a bus to visit the remote mountainous area she was studying and spent a few weeks talking to the descendants of the people who had toiled in the silver mines under Spanish rule. They wore traditional Quechua garb and lived in wooden dwellings with dirt floors and no windows.

“I would ask people, ‘Are these places here different than those places over there?’” Dell recalled, indicating some villages a few miles away. “They would say, ‘Those places over there, they have a road. And because they have a road, when they grow corn, they can take it to the market. If I try to take my corn to the market, it’s going to be destroyed en route because there aren’t any paved roads.’”

Those conversations confirmed Dell’s thesis that a colonial-era system of forced labor, known as the “mita,” had left an imprint on the indigenous population that could still be felt two centuries later. When Dell visited, the mita area had few paved roads, and its inhabitants tended to be poorer, and more likely to be subsistence farmers, than those who lived beyond its boundaries.

Dell’s research was published in *Econometrica*, a prestigious scholarly journal, in 2010, when she was still a graduate student at the Massachusetts Institute of Technology (MIT). One of her most cited articles, “The Persistent Effects of Peru’s Mining Mita,” continues to be taught in undergraduate economics courses at her alma mater, Harvard College, and it figured prominently in the American Economic Association’s decision in 2020 to give her the John Bates Clark Medal, awarded each year to an outstanding economist under the age of 40.

## Secrets of success

Scholars have long wondered why some places prosper, while others do not. How do societies climb the development ladder to greater prosperity? What is the secret sauce of economic success? Why is GDP per capita in South Korea so much higher today than it is in Cambodia, which had a similar standard of living in 1960?

Questions like that have inspired sweeping, almost epic books that span centuries and continents, like *Guns, Germs, and Steel*, by Jared Diamond, which looks at environmental factors, and *Why Nations Fail*, by Daron Acemoglu and James A. Robinson, which focuses on the role of institutions.

These questions fascinated Dell, but she wanted to follow a different path. She took a microscope to the subject, looking not at the diverging fortunes of continents and nations but of neighboring towns and villages.

“To be able to really delve into things, it helps to have that kind of local perspective,” Dell says in an interview with F&D. “By focusing on the micro level, you can get a lot more detail and granularity about what’s going on.”

One of Dell’s big contributions to the literature of development economics—and the advantage of her micro approach—has been to identify what she calls channels of persistence. In the case of the mita, the channel was the lack of infrastructure in the catchment area from which Spanish colonists drew forced labor.

Outside the mita, owners of haciendas, or big farming estates, used their political clout to have roads built to carry their produce to market. Within the mita, there were fewer haciendas, because the Spanish colonial administration didn’t want competition for labor, and so there were fewer roads.

Another major contribution was Dell’s refinement of an econometric tool known as a discontinuity regression. In its classic application, it is used to study the effects of a social service, such as the American health insurance program Medicare, on its recipients. The discontinuity occurs when people turn 65. Before that age, you aren’t eligible; at 65, you become eligible. Scholars exploit this discontinuity to compare people who are just older and just younger than 65 to draw conclusions about the impact of Medicare.

Dell took the approach a step further, applying it to geographic spaces, like the villages on either side of the border of the mining mita. This involves many more variables and more complicated calculations. While Dell wasn’t the first to deploy geographic regression analysis, she refined it and helped popularize its use among academic economists, her colleagues say.

“Her mita paper introduced for many people the geographic regression discontinuity design that then allowed other people to go and write dozens of papers” using the tool, says Pablo Querubin, an associate professor of politics and economics at New York University.

For the mita study, Dell taught herself how to use geographic information systems (GIS) mapping software to precisely locate the villages she studied in relation to each other and to the boundary of the mita. She ended up teaching classes on the use of the software.



Mastering GIS is an example of what Dell's admirers call her thoroughness and persistence. Those qualities can also be seen in her diligent archival work and her command of the literature on an array of subjects, from the Spanish colonies to the operations of drug gangs in modern Mexico.

"One thing you recognize with Melissa, she never cuts corners," says Acemoglu, a professor at MIT who was one of her PhD thesis advisors.

### Enidite to economist

Dell grew up in Enid, Oklahoma, a city of about 50,000 on the edge of the Great Plains known as "Queen Wheat City" for its immense grain storage capacity. Her mother taught preschool, and her father worked as a civilian contractor in the auto parts shop at an air force base.

At Harvard, she ran long distance competitively, majored in economics, and initially figured she might attend law school. She studied Spanish and spent a summer as an intern for a women's micro-finance organization in Peru. It was her first trip outside the United States.

"It was pretty eye-opening in terms of being able to see that kind of developing economy context for myself and have a chance to talk to the people there and learn about their perspectives," she says.

She didn't decide to pursue a PhD in economics until her senior year, when she read papers including "The Colonial Origins of Comparative Development," cowritten by Acemoglu, Simon Johnson, and Robinson. It argues that "extractive" colonial regimes that exploited primarily natural resources left a legacy of underdevelopment across the modern world.

"That made me think of the mita and think, you know, well, this is the quintessential example of an extractive institution," Dell says.

The mita became the subject of her senior thesis, and she continued to work on it during a two-year fellowship at the University of Oxford. By the time she enrolled in MIT, she had another summer of research in Peru behind her and a foundation for her PhD dissertation.

Her work on the drivers of economic development led her to pursue a long-standing interest in the divergent paths of Asia and Latin America. Reading about Asian economies led her to think about the divergence between northeast Asian economies, like South Korea and Taiwan Province of China, and those of Southeast Asia, like Indonesia and the Philippines.

### Vietnam indictment

Vietnam, she realized, lay at the intersection of these two regions. In "The Historical State, Local Collective Action, and Economic Development in Vietnam," Dell and her coauthors, Nathan Lane and Querubin, used a geographic regression discontinuity to study the persistent effects of two administrative models: in the North, Dai Viet, a strong, centralized state in the Chinese mold, in which the village was the basic administrative unit, and in the southern former-Khmer region, a patron-client model, with landlords exacting tribute from peasants and offering protection in return.

Dell and her coauthors found that centuries later, household consumption in the former Dai Viet lands was about one-third higher than in the former Khmer region. Citizens of former Dai Viet villages were twice as likely to participate in local civic institutions, were better educated, and had better access to health care.

Through their research on contemporary living standards in Vietnam, Dell and Querubin stumbled on a remarkable set of documents: results of surveys of 18,000 hamlets conducted by US and South Vietnamese authorities from 1969 to 1973. These monthly and quarterly surveys gathered responses to 169 questions on local politics, economics, and security. It was a gold mine of information on attitudes and living standards.

The people who conducted the study used an algorithm to aggregate the answers and generate a security score for each village. Villages with lower security scores were significantly more likely to be bombed, on the theory that overwhelming firepower would reduce insurgent forces, disrupt their operations, and crush morale.

The scores ranged continuously from 1 to 5, but because computing power at the time was limited, they were rounded to the nearest integer. This meant that two villages with very similar results—say, 2.49 and 2.51—would generate different scores, creating a discontinuity at the dividing line.

"When I started digging into the data, I realized that it was a regression discontinuity," Dell recalls.

Before Dell and Querubin could proceed, they needed the unrounded security scores, which no longer existed. But there was a workaround: if they could get their hands on the so-called conditional probability matrices used to compute the unrounded scores, they could rerun the calculations and recreate the raw data.



So they sifted through thousands of boxes of documents at the US National Archives in College Park, Maryland, in search of the matrices but came up empty-handed. A search of the online Vietnam War archives at Texas Tech University also proved fruitless.

Dell decided to travel from Cambridge, Massachusetts, to Washington, DC, to scour the archives of the US Army Center of Military History at Fort McNair. At first she found nothing. Then a historian working nearby said he had seen some boxes in the basement. After checking there, Dell went outside to send Querubin a two-word text message: “Found them.”

“I probably would have given up much earlier, but she was so incredibly committed that she went all the way to hunt those conditional probability matrices,” Querubin recalls.

After recreating the raw scores and applying discontinuity regressions, Dell and Querubin concluded that the US strategy of overwhelming force had backfired: Bombing made it more, not less, likely that villagers would support the communist insurgency, and it weakened noncommunist civic activities.

Parts of their paper read like an indictment of US military strategy in Vietnam, which was guided largely by Ivy League whiz kids under Presidents John F. Kennedy and Lyndon B. Johnson. Among them were McGeorge Bundy, a Harvard political scientist, and Walt Rostow, author of *The Stages of Economic Growth*, an influential work that claimed to identify the conditions countries had to meet to climb the development ladder.

Dell criticized advisors like Bundy and Rostow for proposing flashy theories that weren’t grounded in data, and she said they had given social science a bad name. Their failures “really illustrate the importance of bringing a range of perspectives to policy questions, which are just incredibly complex, and really testing things with data.”

Acemoglu says Dell succeeds in bridging the gap between theory and empirical work. “She is a perfect specimen of the excellent way of combining academic rigor and a nose for really first-order questions for humanity,” he says.

Benjamin Olken, another of Dell’s thesis advisors, says her work on Vietnam shows how “Melissa is willing to make very big investments that have these long-run payoffs.”

Lately, Dell has been researching how the Japanese colonial administration in Taiwan Province of China

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influenced the island’s development. In the course of her research, she found a treasure trove of early 20th century Japanese company records. They were hard to digitize because they used thousands of characters that are no longer in use and had unusual layouts.

So, using her self-taught programming skills, she developed a package called Layout Parser based on open-source software that allows scholars to scan documents with unusual formats. She’s also working on an alternative to commercially available optical character recognition software that would be simpler, more accurate, and better suited to reading the kinds of documents historians use.

“It opens the door to so much rich information,” Dell said. “I felt it was a good pandemic project as well, because the archives are closed.”

Querubin is less reticent, noting that a year after starting work on the project, Dell was teaching a course on deep learning methods for data curation.

“The breakthrough in methods that she is developing, they are going to unlock many other projects by other economic historians, economists, political scientists—you name it,” he says. “This is going to become very important.”

### Life lessons

Querubin and others see a parallel between Dell’s persistence in research and her experience as a long-distance runner. Querubin recalls seeing Dell at a discussion group for MIT graduate students and thinking she looked tired. It turned out she was in the midst of training for an ultramarathon.

Dell has given up ultramarathons for now. She is married to Austin Huang, who works at Fidelity Investments, and they have three children ranging in age from four months to four years.

“I do enjoy recreational running but currently have the challenge that not all of my kids will fit into a double jogger,” she says.

“Hopefully once the oldest is big enough to join on a bicycle I can get back into it. I do think distance running reinforces valuable life lessons about persistence.” **FD**

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