



Smithsonian Institution

## The Great Inka Road: Engineering an Empire

Thursday, June 25, 2015, 1:30 p.m.–5:30 p.m.

Friday, June 26, 2015, 9:00 a.m.–5:30 p.m.

Rasmuson Theater | National Museum of the American Indian  
4<sup>th</sup> Street and Independence Avenue, SW, Washington, DC



This special symposium celebrates the opening of the National Museum of the American Indian's landmark exhibition, *The Great Inka Road: Engineering an Empire*, with a fascinating look at the material, political, economic, and religious structures that integrated more than one hundred Native nations and millions of people in the powerful Andean Empire known as the Tawantinsuyu. Noted Inka scholars, anthropologists, and engineers will discuss how the Inka superbly organized the Andean world of the fifteenth and early sixteenth centuries, using the Qhapaq Ñan. The empire's 24,000-mile sacred roadway connected vast territories that covered most of six modern republics: Argentina, Bolivia, Chile, Colombia, Ecuador, and Perú. The Qhapaq Ñan, a monumental engineering achievement recently recognized by UNESCO as a World Heritage site, contributed to the rapid rise of Inka power. Engineering solutions to complex problems of topography, weather, and available resources varied across diverse regions and were essential to sustaining both the road network and the empire as a whole. Many parts of the road and Inka structures remain in use today as sacred spaces and symbols of cultural continuity.

Live webcast at: <http://nmai.si.edu/multimedia/webcasts>

*The National Museum of the American Indian appreciates the support and assistance to this symposium provided by: the Organization of American States, the U.S. Department of State, Cotsen Institute, Proyecto Anillo 50 C 1405 (Chile), and individual scholars and people of knowledge who gave freely of their time and experience so that North American and global audiences could better understand The Great Inka Road. Photos by Doug McMains/NMAI.*

# The Great Inka Road: Engineering an Empire

## PROGRAM

Day One — Thursday, June 25, 2015

- 1:30 pm **Blessing** by Walter Alvarez, Instituto Boliviano de Medicina Tradicional Kallawayá
- 1:35 pm **Welcome** by Kevin Gover, Director, National Museum of the American Indian
- 1:40 pm **Opening Remarks** by G. Wayne Clough, Secretary Emeritus, Smithsonian Institution
- 1:50 pm **Greetings from the Andes** by Luis Miguel Castilla, Peruvian Ambassador to the U.S.
- 1:55 pm **Introductory Remarks**  
Ramiro Matos, Exhibition Lead Curator, National Museum of the American Indian  
José Barreiro, Exhibition Co-curator and Symposium Moderator, National Museum of the American Indian
- 2:00 pm **Tawantinsuyu: Andean Empire**  
Tom Dillehay, Vanderbilt University
- 2:25 pm **The Inka Empire: Political Power and Economic Structure**  
Terence D'Altroy, Columbia University
- 2:50 pm **Inka Engineering: The Technology and Culture of Roads and Bridges**  
John Ochsendorf, Massachusetts Institute of Technology
- 3:15 pm **Break**
- 3:30 pm **Inka Roads: Water Use and Handling**  
Kenneth Wright, Wright Water Engineers, Inc.  
Ruth Wright, Wright Paleohydrological Institute
- 4:10 pm **Inka and Modern Engineering in the Andes**  
Christine Fiori, Virginia Tech University  
Clifford Schexnayder, Eminent Scholar, Emeritus, Arizona State University
- 4:50 pm **Cusco: A New Vision of the Ancient City**  
José Alejandro Beltrán-Caballero, Universitat Rovira i Virgili  
Ricardo Mar, Universitat Rovira i Virgili  
Crayla Alfaro, Architect, Cusco, Perú
- 5:30 pm **Closing Remarks** by Danielle Kurin, University of California, Santa Barbara  
***The Great Inka Road: Engineering an Empire* Exhibition Opening Reception begins**

# The Great Inka Road: Engineering an Empire

## Day Two — Friday, June 26, 2015

- 9:00 am **Blessing** by Walter Alvarez, Instituto Boliviano de Medicina Tradicional Kallawayá
- 9:05 am **Welcome and Brief Summary of Day One**  
Ramiro Matos, Exhibition Lead Curator, National Museum of the American Indian  
José Barreiro, Exhibition Co-curator and Symposium Moderator, National Museum of the American Indian
- 9:15 am **Opening Remarks**  
Richard Kurin, Under Secretary for History, Art, and Culture, Smithsonian Institution
- 9:25 am **Inka Religious Power: High Mountain Worship and Pilgrimages**  
Christian Vitry, Universidad Nacional de Salta, Argentina
- 9:55 am **Inka Road and the Andean Landscape**  
Victoria Castro, Emeritus de la Universidad de Chile  
Mauricio Uribe, Universidad de Chile
- 10:45 am **Break**
- 11:00 am **The Power of the Qhapaq Ñan for Integration, Transportation, and Communication**  
Donato Amado, Pontificia Universidad Católica del Perú  
José Pino, Andean Studies Program of the Pontificia Universidad Católica del Perú
- 11:30 am **The Inka Roads in the South-Central Bolivian Andes: Frontier, Expansion, and Political Organization**  
Sonia Alconini, University of Texas at San Antonio
- 12:00 pm **Lunch Break**
- 2:00 pm **Qhapaq Ñan in Chile: Management and Conservation of Atacama Desert Roads**  
Solange Diaz, Universidad Andrés Bello, Chile
- 2:30 pm **Inka Expansion: Archaeology and Ethnohistory in Southeastern Collasuyu**  
Roberto Bárcena, Universidad Nacional de Cuyo, Argentina
- 3:00 pm **The Inka Road from Titicaca Basin to Contisuyu**  
Edmundo de la Vega, Universidad Nacional del Altiplano, Perú
- 3:30 pm **Break**

- 3:45 pm **Inka Construction: Geometric Characteristics of the Inka Road**  
Leonardo Alcayhuaman, Universidad Ricardo Palma, Perú
- 4:15 pm **Inka Expansion: The Road Network in the Northern Highlands of Ecuador**  
José Echeverría, Independent professional in the museum sector
- 4:45 pm **Inka Expansion: The Road Network in Colombia**  
Celina Rincón, Ministry of Culture, Colombia
- 5:15 pm **Closing Remarks**  
Ramiro Matos, Exhibition Lead Curator, National Museum of the American Indian
- 5:30 pm **Symposium Concludes**

# The Great Inka Road: Engineering an Empire

## SPEAKER BIOGRAPHIES

**Leonardo Alcayhuaman** holds a PhD in engineering from National University Federico Villarreal, Lima, Perú. He served as Academic Vice Rector at Ricardo Palma University, Lima, Perú (2011-2015), where he was also former Elected Dean of the Faculty of Engineering (2002-2010). Alcayhuaman was president of the Latin American and Caribbean Association of Engineering Schools (2011-2012), and is president and founder of the American Society of Civil Engineers, Region Perú. Professor in the Civil Engineering Program at Ricardo Palma University, his research has focused on the engineering of the Inka Empire.

**Sonia Alconini** is an Associate Professor in the Department of Anthropology at the University of Texas at San Antonio. She earned a PhD in anthropology at the University of Pittsburgh, conducting her undergraduate studies at the Department of Anthropology/Archaeology at the Universidad Mayor de San Andres in La Paz-Bolivia. Originally from Bolivia, Alconini has more than two decades of research in the Southern Andes, where she studies the ancient Inka imperial frontiers by using archaeological and ethnohistoric data. Specifically, she explores the distinct forms of interaction established between the Inka and the myriad of polities from the eastern tropics. The author of numerous articles and books, this year she was awarded the President's Distinguished Achievement Award in Advancing Globalization Efforts at her research institution.

**Crayla Alfaro** is an architect, with a graduate degree in Management of Cultural Heritage. Her research focuses on the historical evolution of the city of Cusco. Professionally, she has served as Coordinator of the Master Plan for the Historic Center of Cusco in the National Institute of Culture and as Manager of Historical City Center of the Provincial Municipality of Cusco. Alfaro has promoted developing research projects and dissemination of cultural heritage of the historic city of Cusco. She has also participated in the management and renovation of public spaces and housing in the historical perimeter. She is the author and co-author of numerous publications and books related to the research and asset recovery space of Cusco.

**Walter Alvarez**, a leader of the Canlaya indigenous community, is a renowned Kallawayaya traditional healer and biomedical practitioner specializing in general surgery and gynecology. The Kallawayas are an itinerant group of traditional healers living in the Andes of Bolivia. Dr. Alvarez is also the Director of the Bolivian Institute of Kallawayaya Traditional Medicine in El Alto, which supports and organizes research activities on Kallawayaya medicinal plants and disseminates their knowledge of traditional medicine.

**Donato Amado** is a doctoral candidate in Andean studies at Pontificia Universidad Católica del Perú and a member of the National Academy of History. He earned a BA in history from the Universidad Nacional de San Antonio Abad del Cusco and an MA in history from the Pontificia Universidad Católica del Perú. Amado is a specialist in Andean rural history of the sixteenth through the nineteenth centuries. His research focuses on the Andean highway system, the Qhapaq Ñan Cusco Project, the *ceque* system, and land tenure in the Valley of Cusco and Machu Picchu.

**Roberto Bárcena** has a doctorate in geography and history with a specialization in prehistoric studies. He was a senior researcher at the National Scientific and Technical Research Council (CONICET) in Argentina and an associate professor at Universidad Nacional de Cuyo, in Mendoza, Argentina. Between 2010 and 2014, he served as the director of the Institute of Humanities, Social and Environmental Sciences (INCIHUSA).

Recognized as an honorary member of Argentina's National Commission for Museums, Monuments, and Historical Sites, Bárcena is currently the director of the Archaeological and Ethnological Institute at the Universidad Nacional de Cuyo.

**José Barreiro** (Taíno), PhD, is the assistant director for culture and history research and the director of the Office for Latin America at the National Museum of the American Indian. Author of several books, Barreiro's research focuses on indigeneity revitalization processes and self-determined community development. Barreiro was active in foundational Native American journalism and publishing in the 1970s, and was an early organizer in the founding conferences of American Indigenous peoples' dialogue at the United Nations. He is co-curator of *The Great Inka Road: Engineering an Empire* exhibition at the National Museum of the American Indian.

**José Alejandro Beltrán-Caballero** is an architect and an associate researcher at the Seminary of Ancient Topography at Universitat Rovira i Virgili in Tarragona, Spain. He received his PhD in architecture from Universitat Politècnica de Catalunya–Escola Tècnica Superior d'Arquitectura, Barcelona. His work focuses on the study of ancient settlements in relation to water management and the interpretation of the landscape in ancient cities. He has also worked on virtual reconstruction projects in Europe and South America.

**Victoria Castro** is professor emeritus at the University of Chile. She is an activist in the struggle for recognition of indigenous communities and in the pursuit of Chile's identity as a multiethnic and multicultural country. Castro was a consultant to the UNESCO panel that designated the Inka Road a World Heritage site and an advisor to the team that created the National Museum of the American Indian's exhibition *The Great Inka Road: Engineering an Empire*.

**G. Wayne Clough** served as the 12th Secretary of the Smithsonian Institution from July 2008 to December 2014. Clough launched a new era at the Institution, expanding the Smithsonian's global relevance and helping the nation shape its future through research, education, and scientific discovery on major topics of the day. One of his first initiatives led to a new strategic plan that speaks to four grand challenges that will bring together the diverse resources of the Smithsonian's museums and science centers through interdisciplinary approaches. Ensuring that the Institution's vast collection is accessible and available to everyone was a priority for Clough and the new strategic plan. Efforts are underway to digitize millions of objects in the collection. Before his appointment to the Smithsonian, Clough was president of the Georgia Institute of Technology for 14 years. He received his bachelor's and master's degrees in civil engineering from Georgia Tech in 1964 and 1965 and a doctorate in 1969 in civil engineering from the University of California, Berkeley.

**Terence D'Altroy** is the Loubat Professor of American Archaeology in the Department of Anthropology and Director of the Center for Archaeology at Columbia University in the City of New York. His research interests lie in the study of empires, especially the Inkas of Andean South America, with a topical focus on both the organizational and the intellectual foundations of imperial rule. Since 1969, he has conducted fieldwork in Perú, Argentina, the United States, and Mexico. Among his (co-)authored and (co-)edited books are *The Incas* (2d ed., 2014), *The Incas: Inside an American Empire* (2004), *Empire and Domestic Economy* (2002), *Empires* (2002), and *Provincial Power in the Inka Empire* (1992).

**Edmundo de la Vega** is an archaeologist from Universidad Católica Santa María de Arequipa, in Perú. He has participated in various archaeological research projects in Arequipa, Cusco, Moquegua, and Puno. His research interests have focused mainly on the late and intermediate periods of the Bolivian site Tiwanaku.

He has authored and coauthored several publications in Perú, the United States, and South Korea. He currently teaches at the Professional School of Anthropology at the National University of the Altiplano, Puno, Perú.

**Solange Diaz** is an architect at the Universidad Andrés Bello. She holds a master's degree in Restoration of Heritage Sites and Monuments from the Escuela Nacional de Conservación, Restauración y Museografía Manuel del Castillo Negrete. She worked for the National Council of Monuments in Chile from September 2006 to January 2015, where she was in charge of the Technical Secretariat of the Qhapaq Ñan. During her time there, she nominated the Chilean portion of the Inka Road network to be included in the list of World Heritage Sites. Now a private consultant, Diaz plans to continue her work on the Qhapaq Ñan through collaboration with government, national and local institutions, and with private partnerships and indigenous communities.

**Tom Dillehay** is Rebecca Webb Wilson University Distinguished Professor of Anthropology, Religion, and Culture and Professor of Anthropology and Latin American Studies at Vanderbilt University. Dillehay has carried out numerous archaeological and anthropological projects in Perú, Chile, Argentina, and other South American countries, and in the United States. The recipient of numerous international and national awards for his research, books, and teaching, Dillehay currently directs several interdisciplinary projects focused on long-term human and environmental interaction on the north coast of Perú and on the political and cultural identity of the Mapuche people in Chile.

**José Echeverría** is a historian and geographer with a master's degree in Andean Anthropology and a PhD in Education. He is a professor and a researcher at the Pontificia Universidad Católica in Ibarra. Echeverría has many publications, including *The Prehispanic Societies in the North Mountain Range of Ecuador* (2004), and he has served as a researcher for the Qhapaq Ñan. Echeverría has been a consultant for the National Institute of Cultural Heritage and works with the Ministry of Tourism. Echeverría is a member of the American Society of Archaeology and the National Academy of History. He holds the Academic Merit of the University of Otavalo (2004), and has received an award from La Casa de la Cultura Ecuatoriana, Benjamin Carrion, in 2007, for his contributions in archaeology and anthropology.

**Christine M. Fiori** is the associate director of the Myers-Lawson School of Construction at Virginia Tech. She received her PhD in civil engineering, with a concentration in geotechnical engineering, from Drexel University. Her interest in ancient construction led to a National Science Foundation grant to explore the construction techniques of the Inka, specifically the Inka Road in Perú. She has also led student teams to Vietnam, Kenya, Belize, and Haiti to complete community engagement programs.

**Kevin Gover** (Pawnee) is director of the Smithsonian's National Museum of the American Indian. A former professor of law at the Sandra Day O'Connor College of Law at Arizona State University in Tempe, affiliate professor in the university's American Indian Studies Program, and co-executive director of its American Indian Policy Institute, Gover received his bachelor's degree in public and international affairs from Princeton University and his law degree from the University of New Mexico. Before joining the university faculty, Gover served as assistant secretary for Indian Affairs in the U.S. Department of the Interior from 1997 to 2000. A presidential appointee, he was responsible for policy and operational oversight of the Bureau of Indian Affairs, where he oversaw programs in Indian education, law enforcement, social services, treaty rights, and trust asset management.

**Danielle Kurin** is assistant professor at the University of California, Santa Barbara, and Director of the PL Walker Bioarchaeology and Biogeochemistry Laboratory. She is an anthropological bioarchaeologist who

investigates how natural disasters impact human bodies and populations over time. She directs an international field research program in the south-central highland region of Andahuaylas, Perú. While her recent articles and books have focused on issues of inequality, health, violence, migration, and ethnic identity in the pre-Columbian Andes, she also consults in contemporary forensic cases in both the United States and in South America. Dr. Kurin is the Founding Director of the Andahuaylas Museum and Lab; she designed and taught curricula for at provincial universities for several years, and has produced dozens of conferences, workshops, exhibits, and publications specifically geared towards indigenous communities—a means by which Andeans can connect to their heritage and also learn methods of critical inquiry.

**Richard Kurin** is the Smithsonian's Under Secretary for History, Art, and Culture, responsible for most of the Institution's national museums, and cultural and educational programs. Formerly the Director of the Center for Folklife and Cultural Heritage, he served on the U.S. Commission for UNESCO and helped draft a treaty on safeguarding the world's living cultural heritage. He led the rescue of Haiti's cultural heritage following the devastating 2010 earthquake and oversees similar efforts in other nations. A former Fulbright Fellow, Kurin earned his doctorate in anthropology from the University of Chicago. He has been honored by the International Council of Museums, Harvard, the American Anthropological Association, the American Folklore Society, the Smithsonian, and the American Academy of Arts and Sciences and serves as Smithsonian liaison to the President's Committee on the Arts and the Humanities. His latest book is the best-selling *The Smithsonian's History of America in 101 Objects*.

**Ricardo Mar** is a professor of archaeology at Universitat Rovira i Virgili, Tarragona, Spain. He is an archaeological architect with a PhD from Universitat Politècnica de Catalunya, Barcelona. He has been a guest professor at universities in England, Italy, the United States, Colombia, and Perú. Mar has worked and managed projects in Spain, Portugal, Italy, France, Morocco, Tunisia, Colombia, and Perú.

**Ramiro Matos** (Quechua), lead curator for *The Great Inka Road: Engineering an Empire* exhibition at the National Museum of the American Indian, holds a doctorate in archaeology and ethnology from Universidad Nacional Mayor de San Marcos in Lima. A leading archaeologist of Andean cultures, Matos has served as a visiting professor at the University of Texas; University of California, Los Angeles; George Mason University; University of Maryland at College Park; University of Bonn; and University of Copenhagen. An emeritus professor at the Universidad Nacional Mayor de San Marcos, he has received post-doctoral and research grants from the John Simon Guggenheim Foundation, the Smithsonian Institution, Dumbarton Oaks, the National Geographic Society, and the Mellon Foundation. He is the author of numerous articles and books.

**John Ochsendorf** is the Class of 1942 Professor of Architecture and Engineering at the Massachusetts Institute of Technology. He has been researching the history and technology of Inka suspension bridges since his undergraduate thesis on the topic at Cornell, where he majored in structural engineering and minored in archaeology. He is a founding partner of Ochsendorf DeJong and Block LLC, a consulting firm specializing in historical structures. He has won numerous awards for research in structural engineering and architecture, including a Rome Prize from the American Academy in Rome, and a MacArthur Fellowship from the John D. and Catherine T. MacArthur Foundation.

**José Pino** has an archaeology degree from Universidad Nacional Mayor de San Marcos, and earned a master's degree in the Andean Studies Program of the Pontificia Universidad Católica del Perú in Lima, the university where he currently is a doctoral candidate. His specialization is in Inka archaeoastronomy and memorial routes, with a focus on ancient roads and ceremonial sites within Cusco, Tamburco, Curamba, Huánuco Pampa, Pumpu, Huarochiri and Tarmatambo. Pino also served as one of the coordinators and Technical Secretaries of the National Commission of the Qhapaq Ñan Project Perú via the Ministry of Culture.

**Celina Rincón** is an architect, from the National University of Colombia. She specialized in Urban and Regional Planning in Venice, Italy. In addition, she earned a Masters in Restoration and Rehabilitation of Heritage, in Alcalá de Henares, Spain, with 20 years of experience in cultural heritage and urban planning. She is an advisor to the Director of Heritage, Colombian Ministry of Culture, for managing World Heritage issues.

**Clifford Schexnayder** is the Emeritus Eminent Scholar at Arizona State University's Del E. Webb School of Construction. He holds degrees from the Georgia Institute of Technology and Purdue University and has taught construction engineering at Universidad de Piura and Ricardo Palma Universidad in Perú. Before entering academia he worked with major heavy/highway construction contractors. Schexnayder is a member of the National Academy of Construction, the Academia Panamericana de Ingeniería, and is a Distinguished Member of the American Society of Civil Engineers (ASCE).

**Mauricio Uribe** is an associate professor at the University of Chile, where he received his BA in anthropology and his MA in archaeology, and where he has been working since 1998. He is currently completing his PhD at the University of Buenos Aires, and he serves on the advisory committee of Argentina's Archaeological Heritage National Monuments Council. His research focus is the Andean cultures of the Atacama Desert in northern Chile.

**Christian Vitry** is an archaeologist, a professor of geography and biological sciences, and a professional mountain guide. For two decades he has been investigating high-mountain archaeological sites in the Andes and on Inka roads. He is a professor and researcher at National University of Salta, Argentina, an instructor in the Mountain Guides Association, and is the director of the Qhapaq Ñan Program-Andean Vial System (UNESCO) in the Province of Salta.

**Kenneth R. Wright**, a consulting engineer, is the founder of Wright Water Engineers of Denver, Colorado. His company has been involved in paleohydrological research in Perú, Mesa Verde, southern France, Pompeii, Olympia, Thailand, Cambodia, and China. In Perú he and his wife, Ruth, have focused on the hydrology and hydraulics of Machu Picchu, Típon, Moray, and currently, Ollantaytambo. Wright has been awarded four honorary degrees from universities in Lima and Cusco, including an honorary doctorate from Universidad Nacional de Ingeniería.

**Ruth M. Wright** is the vice president of Wright Paleohydrological Institute and is active in water resources policy and field research. As a former member of the Colorado House of Representatives, including six years as the House minority leader, she supported the wise use of natural resources. She is a graduate of Marquette University and earned her JD from the University of Colorado Law School. She was awarded honorary professorships in 2008 from Universidad Nacional San Antonio de Abad and in 2009 from Universidad Nacional de Ingeniería.