

AnthroQuest

The Newsletter of The Leakey Foundation

A Return to Central Asia: Field Report from Sel'ungur

BENCE VIOLA, MAX PLANCK INSTITUTE FOR EVOLUTIONARY ANTHROPOLOGY

IN THE 1920s, the “Central Asiatic Expeditions,” led by Roy Chapman Andrews (the inspiration for the movie character Indiana Jones), explored the Gobi desert looking for evidence supporting the then popular “Out of Asia” theory of human origins. Even though they made spectacular paleontological discoveries, including the first dinosaur nests, they were not successful in finding early human remains. For the next half century the interest in Central Asia waned, both for political reasons and new discoveries in the Near East and Africa. Research by Soviet scholars was ongoing, but language barriers and differences in scientific culture resulted in them being underappreciated with the exception of a few exceptional discoveries such as the Teshik-Tash Neanderthal.

Central Asia returned to the focus of attention in the last years. The primary reason was political change facilitating exchange and collaboration between western and local researchers. Several collaborative research projects are ongoing, many of them supported by The Leakey Foundation.

The presence of Neanderthals in Central Asia has been known since the discovery of the Teshik-Tash child in Uzbekistan in 1938, but fieldwork since the 1990s led to the discovery of new material from Obi-Rakhmat, Uzbekistan, (one of the excavations supported by The Leakey Foundation) and several sites in the Altai mountains of Southern Siberia.



Altai Mountains, view from hillside above Denisova Cave. Photo: B. Viola

The identification of the fragmentary material from the Altai was mostly based on the analysis of ancient DNA. Since 1997, when mitochondrial DNA was extracted from the Feldhofer Grotte specimen (the Neanderthal holotype), we knew that they had mitochondrial DNA sequences distinct from modern humans. Similar sequences were found in the Teshik-Tash child and fragmentary postcranial remains from Okladnikov Cave in the Altai, extending the Neanderthal range eastward by almost 2000 kilometers.

Ancient DNA research also led to probably the most startling discovery from Central Asia. Another site in the Altai, Den-

isova Cave, which has been excavated since the 1980s, yielded some very fragmentary human remains. The mitochondrial DNA sequence from a finger bone was exceptional, as it was very different from both Neanderthals and modern humans. The differences between the sequences indicated that the divergence between us and this sequence was more than one million years ago, more than twice as long as the Neanderthal-modern human divergence. The exceptional DNA preservation in this fossil also allowed the study of its nuclear genome, which showed that this group (now known as Denisovans) was actually a sister group of Neanderthals, more closely related to them than to mod-

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The mission of The Leakey Foundation is to increase scientific knowledge, education, and public understanding of human origins, evolution, behavior, and survival.

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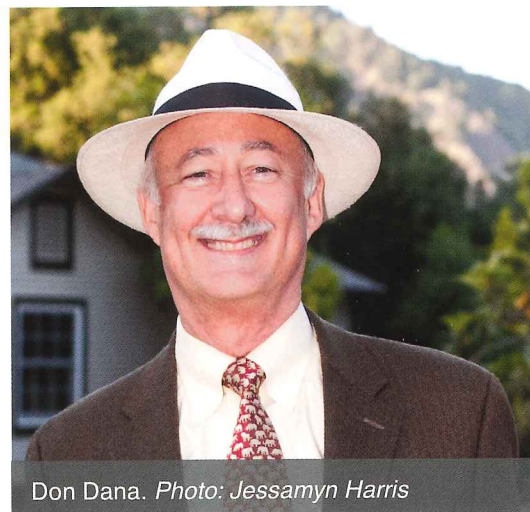
A Letter from the President...

THE LEAKEY FOUNDATION'S founding President was Allen O'Brien, who met Louis Leakey on an East African adventure in 1965. It was O'Brien who devoted his energy to establish The Leakey Foundation to honor the man he so admired. Since the Foundation's first board meeting in April 1968, it has had ten Presidents; I am deeply honored to have served as President since 2009.

During their tenure, each President has managed his or her share of challenges. Many times those challenges have been financial. For Edwin Munger it was the grave financial crisis in 1971 at which time the Foundation had \$3.00 in its spending account. Loans were obtained, and the Foundation survived the threat of closure. My financial test came in 2009, shortly after I was elected President, when the nation plunged into the worst economic downturn since the Great Depression.

With the steadfast support and guidance of our Chairman, Gordon Getty, and the backing of a strong Board, Scientific Executive Committee, and Staff, we made the hard decisions needed at the time. As we sadly watched other institutions cut back their grants for scientific research, we surprised everyone by increasing our grants to help meet that shortfall. In 2010, the first year after the start of the Great Recession, we increased our funding for scientific research and scholarships by 9.6%. In 2014 our funding was 24.9% higher than it was in 2009. In short, we not only survived, but thrived.

As a result of our efforts to increase funding when others were cutting back, The Leakey Foundation took on even greater importance to the science of human origins. Not only did The Leakey Foundation help precipitate the recent avalanche of scientific discoveries from the field and labs, but our targeted investment in social media greatly expanded the public's ability to learn about and understand those discoveries. Today, we host our legacy lecture program in major cities around the nation, enjoy thousands of regular subscribers to our online news, and engage with over 179,000 followers on Twitter and over 5,000 Facebook fans and friends.



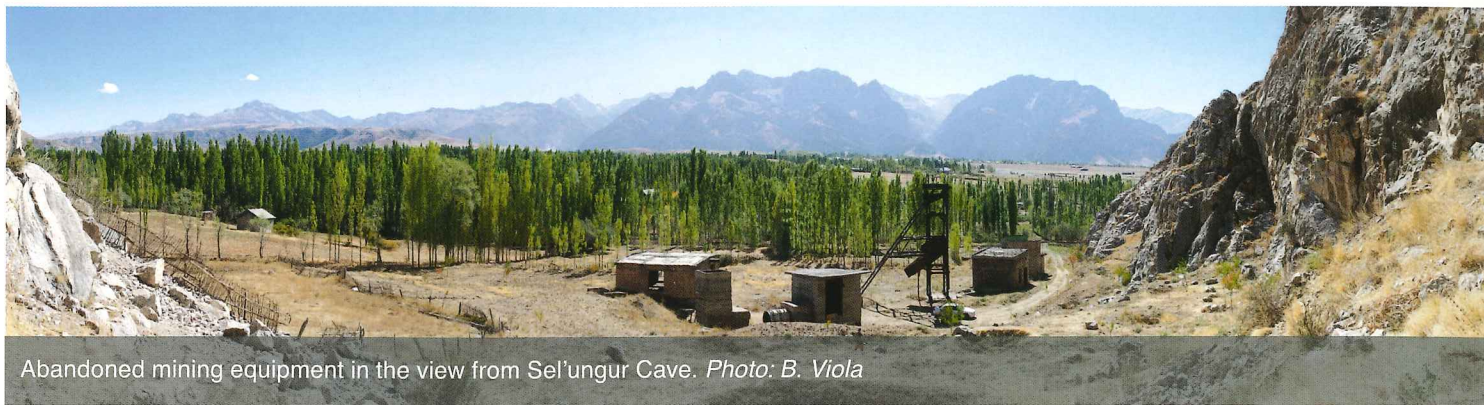
Don Dana. Photo: Jessamyn Harris

And all this has been done while holding our non-profit efficiency ratio between 78 and 82%, assuring our donors, scientists, and the public that The Leakey Foundation remains among the most efficient non-profits in the nation. Louis Leakey would have been proud.

This coming May, The Leakey Foundation will welcome a new President: Camilla Smith. She is a longstanding member of The Leakey Foundation Board and currently presides as the Chair of the Communications Committee. Many of you already know her. She is brilliant, enthusiastic, and dedicated. She has my full support, and I will continue to serve The Leakey Foundation in whatever capacity Camilla and the Board desire. Please join me in welcoming Camilla Smith in her new role as the eleventh President of The Leakey Foundation.

A handwritten signature in blue ink, appearing to read 'Don'.

Don Dana
President, The Leakey Foundation



Abandoned mining equipment in the view from Sel'ungur Cave. Photo: B. Viola

ern humans. The genomes also indicated that the Denisovans contributed DNA to recent Melanesian populations, but as it seems unlikely that the ancestors of Melanesians migrated through Siberia, the Denisovans were probably widespread in Asia. We only know the Denisovans from the finger bone and two teeth, and they are primarily defined genetically. This makes it hard to tell if any fossils from East or Southeast Asia belong to this group as well. It looks as if the Altai mountains were inhabited by both Neanderthals and Denisovans at around the same time, around 50,000 years ago. It is possible that modern humans were also present in the region then, as the earliest Initial Upper Palaeolithic sites date to about 48,000 years. This would make the region unique. We know no other area where three different hominin groups lived concurrently in the Late Pleistocene.


One of the big questions is the origin and timing of the appearance of Neanderthals and Denisovans in Central Asia. It was proposed that Neanderthals might have

migrated into the region from Europe or the Near East in the course of the last interglacial, as afterwards the high sea level of the Caspian sea made contact across the steppe belt difficult, but we have no idea when and from where the Denisovans came.

One of the most interesting sites in Central Asia is the cave of Sel'ungur in the Fergana Valley of Kyrgyzstan. The site was first excavated in the 1980s by U. Islamov, who found an up-to-8m thick sequence of Late and probably Middle Pleistocene deposits with a rich faunal and archaeological record, including several Middle and Upper Palaeolithic horizons. He also identified several teeth and postcranial remains that he thought were hominins. The teeth are probably not human, but a child humerus is likely a Neanderthal based on its morphology (or maybe even a Denisovan, we only know their dental morphology after all). Based on the fauna and an old U-series date, this specimen should date to the last interglacial (about 125,000 years ago) or even before and is the oldest human

fossil from Central Asia.

With the support of The Leakey Foundation we restarted excavations at the site in 2014, in collaboration with Russian, Kyrgyz and Italian colleagues. In our first two week field season we managed to relocate the old excavations, map the cave and the deposits, and collect samples for dating, site formation, and palaeoenvironmental studies. In the next years we plan to collect a stratigraphically well constrained and documented lithic and faunal assemblage that we can compare to the finds of the old excavations. Our first results are very promising. Several of the Middle and Upper Palaeolithic layers seem to be in situ and quite rich—so there is definitely the hope of finding additional human remains.

The material from Sel'ungur cave gives us a unique opportunity to study the behaviour, environment and morphology of some of the first inhabitants of Central Asia and hopefully will also help us to understand when and how Neanderthals and Denisovans appeared in the area. 

The Gordon Getty Grant Donors*

(Donations made between February 2014 and February 1, 2015)

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Dr. Emma Mbua

Dr. J. Michael Plavcan

Drs. Denise Su and Yohannes Haile-Selassie

Mr. and Mrs. George D. Smith

Thank You!

**See issues 28 and 29 for previous donations*

Awarded Grants

Fall 2014



Behavioral

Alexander Georgiev, University of Chicago
Male oxidative stress and female mate choice in rhesus macaques

Amanda Lea, Duke University
Effects of social conditions on DNA methylation and immune function

Emily McLean, Duke University
Direct and indirect genetic effects on social behaviors in baboons

David Pappano, Princeton University
Dynamic network analysis of gelada herding and movement

Clara Scarry, University of Texas at Austin
Evolution and maintenance of male cooperation among tufted capuchin monkeys

Gabriele Schino, Istituto di Scienze e Tecnologie della Cognizione, C.N.R.
The emotional basis of primate reciprocity

Maura Tyrrell, University at Buffalo, State U. of New York
Effect of competition on male coalition patterns in crested macaques

Sarie Van Belle, University of Texas at Austin
Paternity and kinship in socially monogamous saki and titi monkeys

Brian Wood, Yale University
Stone tools as digging implements: Archaeological, energetic, and biomechanical implications

Paleoanthropology

Thure Cerling, University of Utah
Stable isotopes of fossil primates in Kenya

Naomi Cleghorn, University of Texas, Arlington
Investigating a rare Early Later Stone Age site at Knysna, SA

Constance Dubuc, New York University
Male-male competition, sexual dimorphism and alternative reproductive strategies in a non-human primate: A morphological approach

Michael Granatosky, Duke University
Gait mechanics of inverted walking: Implications for evolution of suspensory behavior

Alia Gurtov, University of Wisconsin-Madison
Dental microwear analysis of Early Pleistocene hominin foraging seasonality

Andrew Halley, University of California, Berkeley
Determining the embryonic origins of human and primate encephalization

Fredrick Manthi, National Museums of Kenya
Investigation of new Pleistocene sites in the Turkana Basin, Kenya

Armand Salvador Mijares, University of the Philippines
The 2015 archaeological excavation of Callao Cave, northern Luzon, Philippines

Elizabeth Moffett, University of Missouri
Birth and its effects on anthropoid pelvic shape and integration

Marta Pina, Institut Català de Paleontologia Miquel Crusafont
Hindlimb mechanical properties in Miocene apes: Origins of human locomotion

Samantha Porter, University of Minnesota, Twin Cities
Investigating cultural transmission across the MP-UP transition in western Europe

Shelby Putt, University of Iowa
Investigating the co-evolution of language and toolmaking: An fNIRS study

Rhonda Quinn, Seton Hall University
Refining paleosol isotopic evidence from Omo-Turkana hominin environments

Michael Rogers, Southern Connecticut State University
*The Oldowan-Acheulian transition at Gona, Ethiopia:
Archaeological and geological studies*

Nicole Squyres, Johns Hopkins University
*Morphological variation in the distal femur of modern
humans and fossil hominins*

Adam Sylvester, University of Glasgow
*Reconstructing walking kinematics from femoral condyle
curvature in fossil hominins*

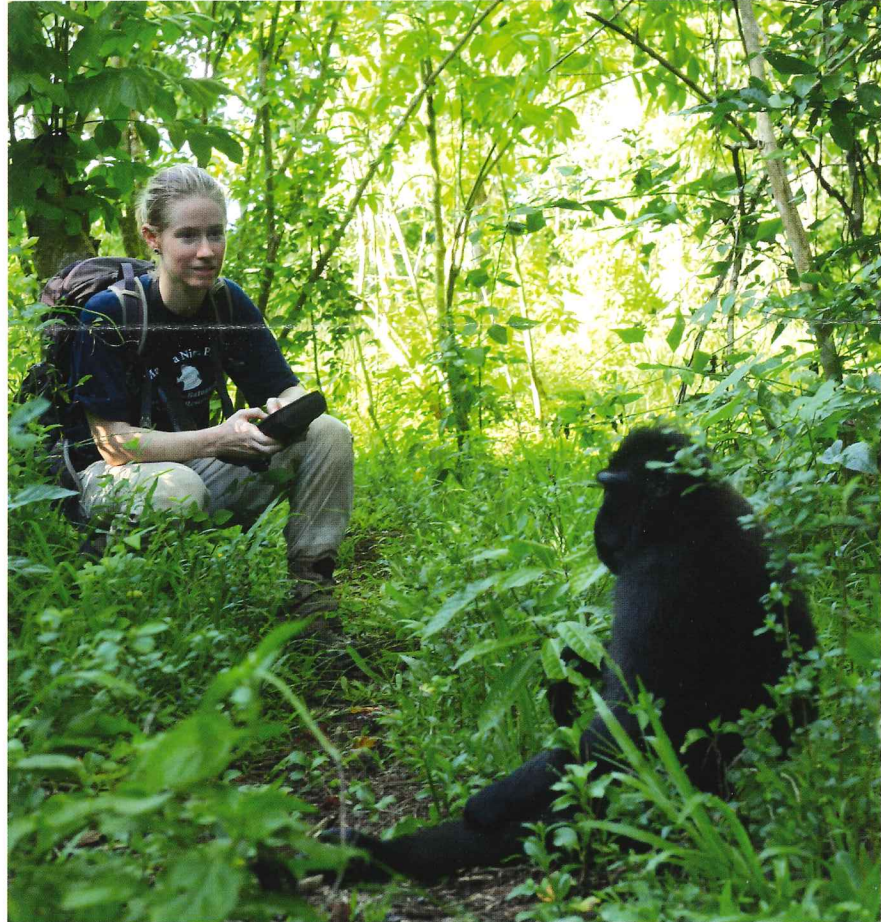
Brian Wood, Yale University
*Stone tools as digging implements: Archaeological, energetic,
and biomechanical implications*



Samantha Porter in the lithics lab at the University of Minnesota.

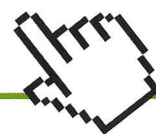


Naomi Cleghorn with her graduate student Christopher Shelton at Pinnacle Point site 5/6.



Maura Tyrrell and a crested macaque at the Tangkoko Nature Reserve, Indonesia.

Read more about these grantees at
leakeyfoundation.org/blog



Leakey Foundation Trustees Visit Duke University

THE LEAKEY FOUNDATION has a long history of funding science at Duke University in Durham, North Carolina. Since 1979, we've awarded over \$565,000 in grants to scientists working in both paleoanthropology and primatology. Thus, it was with great pleasure that attendees of The Leakey Foundation Annual Board Meeting, held in September 2014, had the opportunity to visit Duke University and witness the progress being made in the science of human origins.

The visit began with a warm welcome from Duke's president, Dr. Richard H. Brodhead, who encouraged his guests to enjoy the broad spectrum of work on display in the campus departments our Board would visit.

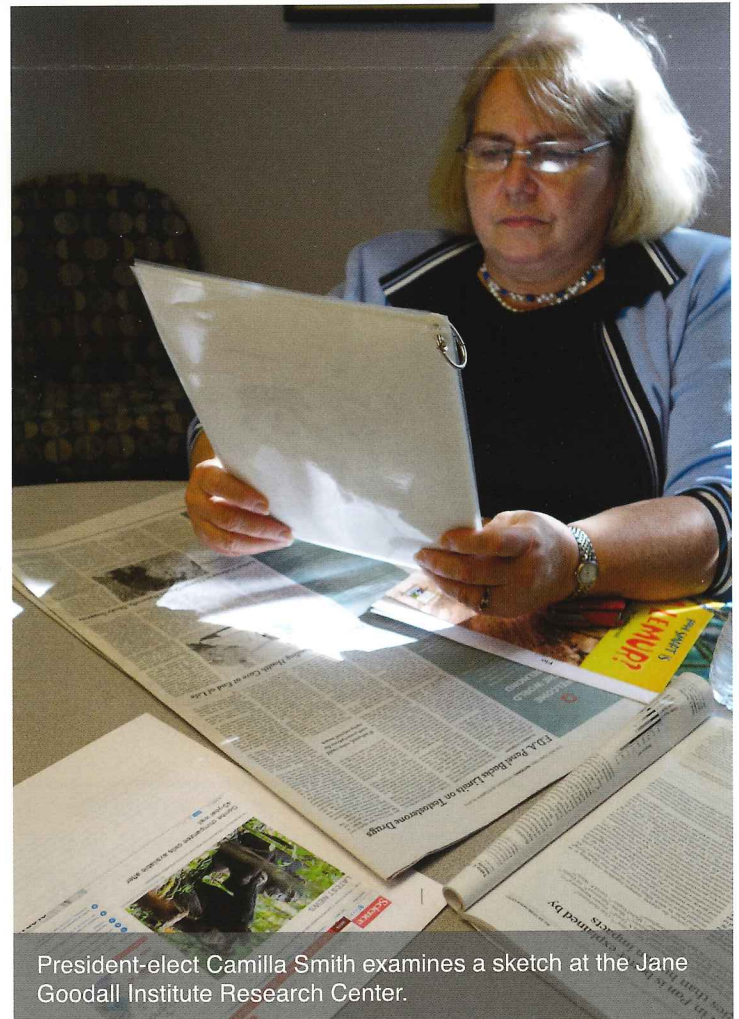


From left: Michael Platt, Joy Sterling, Bill Wirthlin, Bill Richards, Richard Brodhead, Don Dana, Camilla Smith, Diana McSherry, Alice Corning, Paddy Moore, Sharal Camisa.

Drs. Michael Platt and Elizabeth Johnson, from the Duke Institute for Brain Sciences, organized an interactive program with colleagues from a variety of disciplines. They offered insights into their cutting edge research in three fascinating sessions. In the session titled "Music and the Brain," Duke faculty led an interactive session on how the brain detects and represents music and how individuals learn to perform, create and appreciate music. In "Reading the Past: The Ancient and Modern Mind," they explored the intersection of the brain sciences, humanities, archeology and anthropology in order to provide insight on what it is to be human. The final session, "Risk, Temptation and the Human Brain: The New Science of Neuroeconomics," looked at how the brain balances risk and reward, how we make decisions, and how this knowledge is transforming business and public policy.

During their stay in Durham, Foundation Trustees met the next generation of scientific leaders. They visited the Jane Goodall Institute Research Center, where early career grantees shared their projects with the group. This visit was especially significant as it was the Foundation's namesake Louis Leakey who first sent a young Jane Goodall to study the chimps at Gombe 55 years ago. It was thrilling to see the results of such a long term project and to learn what our grantees are accomplishing at Gombe today.

Dr. Anne Pusey, director of the Jane Goodall Institute Research Center, opened the Gombe archives for Trustees to see historical documents, including a small drawing by Jane showing the hand of chimpanzee David Greybeard fishing for termites and a hand drawn guide for recognizing individual chimps!

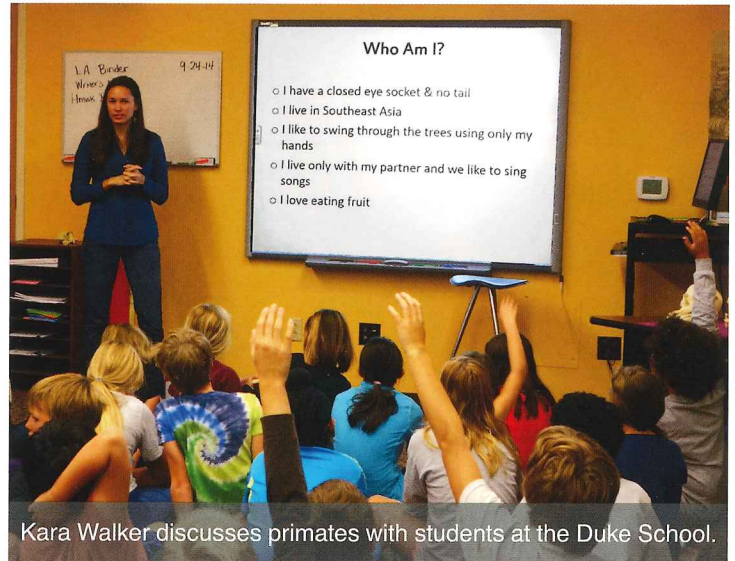


President-elect Camilla Smith examines a sketch at the Jane Goodall Institute Research Center.

SHARAL CAMISA, EXECUTIVE DIRECTOR



Coquerel's sifaka at Duke Lemur Center.



Kara Walker discusses primates with students at the Duke School.

Duke University is a powerhouse in the world of primate studies, and no place is this more evident than at the Duke Lemur Center, home to the largest living collection of lemurs outside of Madagascar. Hosted by the center's director, Dr. Anne Yoder, guests enjoyed a private tour of the facilities, encountering some of the most endangered animals on the planet, including the wildly popular ring-tailed lemurs, the prancing Coquerel's sifaka, and the extraordinarily rare and unusual aye-aye.

Another component of the Duke Lemur Center (DLC) is the Division of Fossil Primates. This collection is the life work of Leakey grantee (and recently retired DLC Director) Elwyn Simons. The Division of Fossil Primates houses over 27,000 rare vertebrate fossils from around the world that document the complexity, diversity and evolutionary history of life over the past 55-million years. Our host was Dr. Gregg Gunnell, the new Director of the center, who allowed Trustees to see the fossils up close, including those of the extinct Giant Lemur.

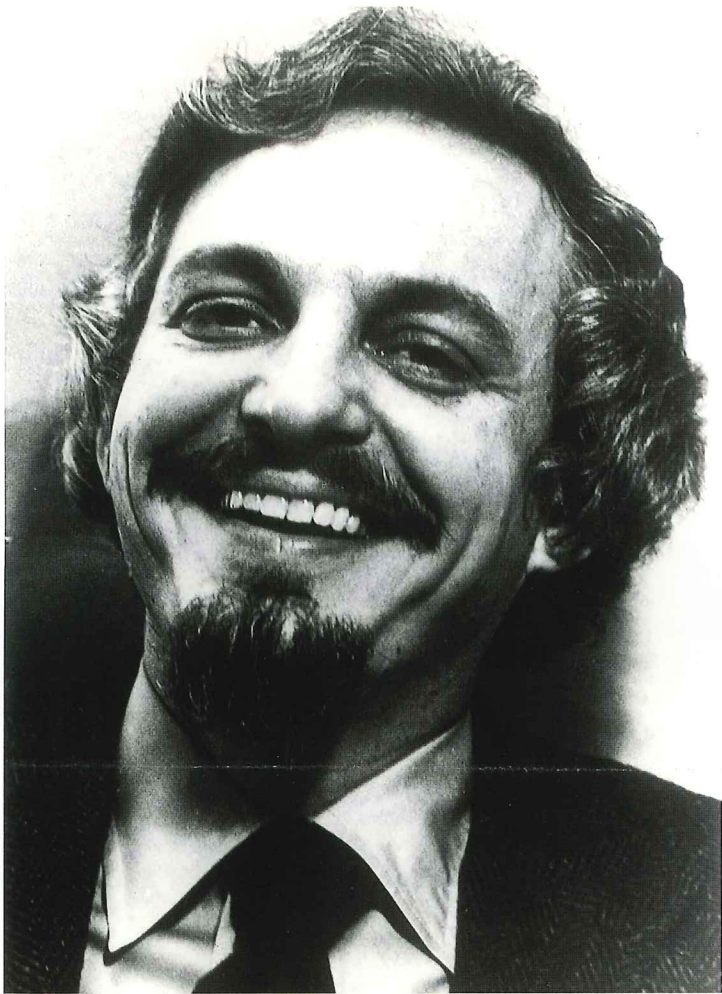
With the help of grantees from Duke University, we visited three groups of students with our "Leakey Learning Expeditions" school outreach program. Kara Walker spoke about primates to a 5th grade class at the Duke School, and Lauren Gonzales spoke with 6th graders about human evolution. They also gave a joint presentation called "Anthropology in Action" to a group of high school students at the North Carolina School of Science and Mathematics.

No Leakey Foundation program would be complete without a celebration to mark such a special week. Leakey Foundation Trustee Joy Sterling hosted Duke University directors at the famed Angus Barn. Guests toasted their time together with Iron Horse wine while enjoying a slice of the chess pie. It was a full week of learning and exploring the wonders and complexities of the ancient human story. 🚶🚶🚶



From left: Anne Pusey, Noah Snyder-Mackler, Lauren Gonzales, Paddy Moore, Blythe Williams, Andrea Taylor, Kara Walker, Richard Kay.

Irven DeVore: In Memoriam



I MET IRVEN DEVORE ON THE SHORES of Lake Tanganyika in August 1972, and loved him ever after.

He and Robert Trivers had come to see Jane Goodall and the chimpanzees of Gombe National Park. By the time the two of them arrived I had been studying chimpanzee behavior for almost two years. There were some ten other students there, but visits by Goodall or other experts were rare. So we anticipated DeVore's arrival with excitement: he was already legendary for his pioneering contributions to primate behavior and hunter-gatherer studies. We had no idea just how enthralling his stay would be. By day, while we tramped the mountains, DeVore relaxed and taught Jane's son to fish. In the evenings he regaled us with tales of animal behavior from around the world, the lives of Bushmen, intrigue and scandals at the great universities, and above all, the overwhelming excitement of the new evolutionary theory. Around the campfire we discovered what generations of students and lay admirers would come to know. DeVore was a brilliant academic ringmaster whose sparkling insights and easy bonhomie fostered the emergence of a new science of human behavioral biology.

Irven DeVore died of heart failure in Cambridge, Massachusetts, on September 23, 2014, after a decade-long retirement from Harvard.

He started life in 1934 in Joy, a tiny east Texas town where his father was a Methodist preacher riding horseback around a circuit of four small churches. DeVore's love of the unspoiled land led to lifelong interests in fishing, collecting arrowheads and taking home a variety of live animals. He attended the University of Texas, where he met Nancy Skiles: they married in 1956. He majored in social anthropology and entered graduate school at the University of Chicago to continue as a social anthropologist under Sol Tax. Disconcerted by his first summer of fieldwork in the Mesquakie Indian Settlement, he told Tax that he might have to change disciplines. Tax asked him if he liked animals. When DeVore said yes, Tax walked him down the corridor and literally pushed him into the office of the charismatic physical anthropologist Sherwood Washburn. Washburn was looking for a student versed in complex social organization and willing to study baboons. DeVore was thrilled to accept, and the two became very close. Reflecting in his 70s, DeVore thought it the best thing that ever happened to him.

In 1959 the DeVores went to Kenya for a year. With his wife Nancy's help he studied baboon troops in Nairobi National Park and the Amboseli Game Reserve. There was little known at the time about the behavior of any wild primate. Even the simple observation that baboons maintained their groups through social rather than sexual attraction was a challenge to conventional wisdom. DeVore returned replete with detailed accounts of baboon society and became an eloquent spokesman for the nascent science of primatology. He edited an iconic academic volume (*Primate Behavior: Field Studies of Monkeys and Apes*, 1965), wrote a best-selling popular book (*The Primates*, with S. Eimerl, 1965), and produced movies from the 16 mm film he had shot in Africa, including the prize-winning *Baboon Behavior* (1963).

In 1960 DeVore followed Washburn to Berkeley, and shortly afterwards Richard Lee applied to their department to do a PhD on hunter-gatherers. Lee's application coincided happily with DeVore looking for a way to return to his original interest in humans and led to the two of them jointly founding what would become the Harvard Kalahari Project (1963-1980). The Kalahari Project exemplified DeVore's organizational ambitions by being a new kind of anthropology. Instead of research conducted by a single ethnographer, Lee and DeVore welcomed multiple perspectives in their studies of the Ju/'Hoansi people (then called the !Kung San), including work on children (Melvin Konner), women (Marjorie Shostak), demography (Nancy Howell), ethnoarchaeology (John Yellen, Alison Brooks) and many others. The project was unusually empirical and became hugely influential for research on the past as well as the present. Lee and DeVore hosted a pivotal symposium in Chicago, culminating in their famous *Man the Hunter* (1968), an edited volume that set the agenda for hunter-gatherer studies for decades.

In 1969 DeVore became professor of anthropology and biology at Harvard, a joint appointment that signaled his final direction: for the rest of his career his main activity was promoting the value of a resurgent biology for the study of humans. He rapidly developed an

1934–2014

RICHARD WRANGHAM, HARVARD UNIVERSITY

important friendship with Robert Trivers, a recent convert to socio-biology then at the peak of his early creative powers. From 1971 to 1974 Triver produced enormously innovative papers for which he credited DeVore more than anyone else. On their global tour in 1972, when I encountered them in Gombe, they had traveled together to numerous field-sites including studies of baboons, lions and chimpanzees: everywhere they went, they relished reinterpreting behavior in terms of inclusive fitness theory. DeVore and Trivers also taught undergraduates together in a course that eventually morphed into the famous Science B-29, or 'Sex' as it was fondly known: DeVore continued to teach it every year until his retirement, usually to several hundred drawn by the combination of startling ideas and racy comedy paired with serious scholarship.

The DeVore–Trivers partnership provided a base for a growing cadre of graduate students, the core of a scientific coterie that centered on the DeVore home in the form of a regular 'Simian Seminar.' Crowded into an untidy sitting room week after week, new ways of thinking were tried out by people such as Sarah Hrdy, John Tooby, Barbara Smuts, Peter Rodman, Leda Cosmides, Peter Ellison, Karen Strier, Martin Daly, Margo Wilson, and many others. Much that was worked out there came to be part of the new behavioral biology, including the first elements of evolutionary psychology. The atmosphere was of unwavering concern for the science, but if intensity became excessive DeVore's charm was always at the ready.

DeVore's interests in behavioral biology were clearly evangelistic, a tendency he attributed to his father's influence. Not content with inspiring university students, from 1972 to 1975 he produced 'Exploring Human Nature,' a course for high schools and community colleges based on the life cycle from infancy to adulthood. He also worked on an elementary school course called 'Man: A Course of Study' (1964–1968), which was taught in at least 16 countries.


He loved all opportunities for outreach, none more so than his long association with The Leakey Foundation. As a trustee since 1974 and co-chair of The Leakey Foundation's Science and Grants Committee for more than two decades, DeVore turned arid scholarship into fascination for the general public. His relaxed, persuasive, playful talks attracted lay audiences and professionals alike.

His last big initiative was helping Robert Bailey and Nadine Peacock launch the Ituri Project to study Efe foragers in the Ituri Forest, Zaire. Elizabeth Ross and I were there when he and Nancy arrived in 1981. They came unannounced for a month, courtesy of an immense taxi ride along a wildly pot-holed road. He embraced the sheer fun of fieldwork, constantly flirting with trouble. He was attacked at different times by a ravenous avocado-eating cat and ferocious *Pachysima* ants living inside hollow stems. He and Nancy celebrated their 25th anniversary there, eating goat he had slaughtered after chasing it for what seemed like hours. DeVore thrived on stories of crazy behavior in remote places, but his travels had a point. He always returned with fresh ideas.

Irven DeVore was a key player during a time when behavioral biology

was carving out major insights, and he enlivened his scholarly understanding with a wide knowledge of foreign and animal ways of life. His Cambridge home came to recall a 19th c. museum of anthropology. Cultural memorabilia and unusual objects were crammed into every room not occupied by a rescued squirrel. Something similar could be said about his mind. He was a mine of exotic tales and fascinating observations of a disappearing world. His books, papers and movies were path-breaking contributions for a genera-

tion of scholars and general public at the dawn of the new behavioral biology. His multi-disciplinary teams led the way in ushering more scientific approaches to anthropology. And most importantly, his students and their students have gone on to elaborate the project that kept him engaged until the day he died.

From 1969 onwards, he was enthralled by the conviction that for the first time in history, our species is gaining an unimpeachable explanation of who we are and where we come from. Being a part of that adventure, and exciting others about it, was his pride and joy. He was a wonderful guide who encouraged and supported an extraordinary number of fellow travelers during an eye-popping period of scientific discovery to which he contributed very importantly. 

Read more about the life and work of
Irven DeVore in the *Journal of Evolutionary Anthropology*.

1. DeVore interview with Peter Ellison, Annual Review of Anthropology, 2012. doi 10.1146/annurev-conversations-010913-100006

The 2014 Gordon Getty Grant Recipients

H. GREGORY, GRANTS ASSOCIATE

THE GORDON P. GETTY GRANT was established in 2013 to commemorate Chairman Gordon Getty's forty years of generosity and commitment to The Leakey Foundation and to the science of human origins. The grant is awarded once a year to a researcher or researchers who show extraordinary originality and dedication in their intellectual and professional pursuits while exemplifying a multidisciplinary approach to human origins research. In December 2014 the second Gordon P. Getty Grant was awarded to two distinguished scientists, Clara Scarry and Thure Cerling.

Two time Leakey Foundation grantee Clara Scarry is a postdoctoral associate at the University of Texas at Austin. Her project is entitled "Evolution and maintenance of male cooperation among tufted capuchin monkeys."

Dr. Scarry is studying Argentine tufted capuchin monkeys (*Sapajus nigritus*) as a model for understanding the evolution of male-female social relationships as well as the origins of large-scale cooperation in humans. Her recent work has shown that these monkeys exhibit a suite of unusual characteristics. For example, within-group males will cooperate to defend high-quality food resources. This cooperation includes the participation by subordinate males. Also, as groups grow in size with respect to the number of males, there is an increased access to food resources. Cooperation might seem the obvious choice, especially to us humans, but there are many factors that make this type of cooperation difficult to maintain. There are energy costs to cooperating. There is risk of injury. The reproductive benefits are indirect as opposed to the more alluring direct benefits. Plus, subordinate males may find it easier to simply engage in free-riding.

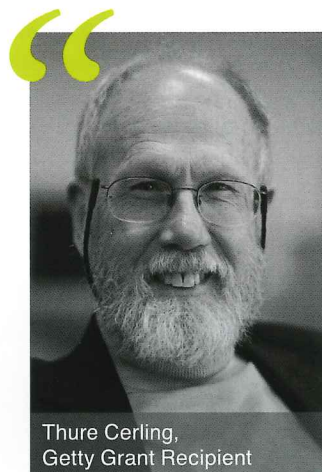
Scarry aims to test several non-exclusive hypotheses that would explain how this cooperative defense is maintained. In other words, what keeps the subordinate males cooperating? Is short term reciprocity involved? Is there increased tolerance or grooming, or perhaps coercion is involved? Does reproductive queueing or delayed reciprocity play a part? To answer these questions she will combine field observations with molecular analyses to measure the reproductive, social, and energy benefits that subordinate males obtain by participating in resource defense cooperation.

Thure Cerling is a three-time Leakey Foundation research grant recipient from the University of Utah. His current project is entitled "Stable isotopes of fossil primates in Kenya."

Due to differences in the photosynthesis of C₃ plants (the earth's most common plant) and C₄ plants (tropical grasses and sedges), there are different levels of the carbon isotope ¹³C in their cells. When animals eat these plants this ¹³C is incorporated into their bodies, and so by measuring the ¹³C/¹²C ratios in animals, it is possible to determine the relative amounts of these types of plants that contributed to their diets. By applying this analysis to the tooth enamel of fossil primates, Dr. Cerling will help us better understand the diets of our early ancestors and relatives, and in-kind we also gain a better understanding of the environments in which they lived. Why do our modern primate relatives have a mostly C₃ diet while us humans are mostly C₄-based?

What environmental changes occurred that caused some primates to shift from C₃ to C₄ and then back to C₃ plants? Cerling will access samples from the National Museums of Kenya as well as the Turkana Basin Institute in order better understand the context of primate evolution during the critical period of hominin evolution.

We congratulate our two Gordon P. Getty grant recipients for 2014, and we wish them the best of luck in their endeavours. 🚶🚶🚶



Thure Cerling,
Getty Grant Recipient

THANK YOU!

It's a terrific privilege to receive the Gordon Getty Grant from The Leakey Foundation.

I am pleased to be writing to you today from Kenya, where I'm working in the field with research colleagues at the Turkana Basin Institute and the National Museums of Kenya.

Together, we are working on innovative, interdisciplinary ways of comparing fossil primate diets using stable isotopes and viewing our results through the lens of geological time. Understanding this diet story is important to broadening our understanding of human evolution. Being in the field offers unparalleled opportunities for extended conversations with an international community of scientists and students. These conversations are what plant the seeds for future research directions. By supporting these kinds of interdisciplinary conversations in the field, your funding of my project has perhaps already created the germ of an idea in another researcher's mind, widening the impact of the Gordon Getty Grant in ways none of us can yet imagine.

– Thure Cerling
2014 Gordon Getty Grant Recipient

To learn more about stable isotopes and C₃ / C₄ plants, visit leakeyfoundation.org/blog



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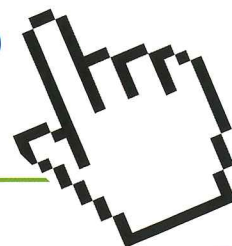
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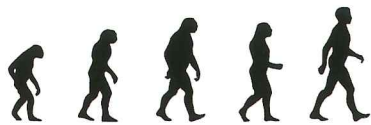
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