

# AnthroQuest Newsletter no. 22 / Fall 2008

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# Remembering Louis Leakey and his Impact on Primatology

By Birute Mary Galdikas

One or two days ago I read an article in a local newspaper asking what fruit flies and people have in common. It turns out that recent research indicates that a primitive version of the human visual system first evolved about 500 million years ago in the common ancestor of both flies and humans. Humans and fruit flies look nothing alike but due to their distant kinship, even fruit flies and humans share commonalities that persist across 500 million years of evolutionary separation.



Our closest living relatives in the animal kingdom are the great apes, which includes: chimpanzees, bonobos, gorillas, and orangutans. Chimpanzees are so closely related to us that we share approximately 98.5% of our DNA with them. We share slightly less DNA with gorillas and perhaps 97% with orangutans. This precise genetic evidence was not available during Dr. Louis Leakey's lifetime, but he intuitively understood our close kinship with the great apes and he devoted much of his talents and reputation to seeing that they received the scientific attention they deserved.

Humans, great apes, monkeys, and prosimians are all members of the Family Primates. Unlike fruit flies, primates do look like us in many respects. The degree of separation between humans and primates is not deep in evolutionary time. The earliest primates appeared about at 55 million years but it was not until six million years ago that the ancestors of humans separated out from the other primates. Thus, compared to humans and fruit flies, humans and the rest of the primate order share a very long evolutionary history. It is not surprising that people turn to primates to ask what animals and humans have in common in order to understand our own place in nature.

Primatology is the study of primates, excluding humans. Although the ancient Greeks, Romans, Egyptians, and Chinese undoubtedly were aware of primates, the study of primates, as a discipline, is surprisingly new. In fact, the first scientific attempts to observe primates in the wild occurred in the 1930's while the term "primatology" itself was not defined until the early 1940's. Those early field studies can be counted on the fingers of one hand. Robert Yerkes initiated some of these studies by sending N. Nissen and H.C. Bingham to observe chimpanzees and gorillas respectively, but these studies yielded relatively little information. Yerkes also supported Clarence Ray Carpenter who studied monkeys on Barro Colorado Island in Panama and later gibbons as part of a Southeast Asian project. Sherwood Washburn, who later played a very important role in the development of American primatology, following World War II, also participated in this project.

After the war Washburn, working out of the University of California, Berkeley, recruited a number of anthropology graduate students to observe primates in the wild. Although Washburn was mainly interested in what the study of primates might inform us about human evolution, he wasn't particularly interested in the great apes. In fact, one of his pioneering students, the brilliant Irven DeVore, conducted a study of savannah baboons primarily because it was assumed that the nature of our early human ancestors had been significantly shaped by the African savannah.

Top Left Photo: Dr. Louis Leakey and Dr. Birute Mary Galdikas

Top Right Photo: Dian Fossey, Jane Goodall, Birute Mary Galdikas – the Leakey Tri-Mates

Louis Leakey was not a primatologist although he was a careful observer of animals and the natural world. When I visited him in Africa, he saw antelopes, zebras, and other animals far off on the savannah where others just saw small spots of dust. He once cautioned me that a male vervet monkey, who was so far away that I could barely see him, was going to approach and snatch a half-eaten sandwich from my hand if I didn't put it away. I was totally skeptical — until the vervet suddenly appeared, seemingly out of nowhere, and grabbed my sandwich.

Even more than Sherwood Washburn, Louis Leakey felt it was imperative to study our closest living relatives in the animal kingdom to flesh out understanding of early human evolution. Louis Leakey greatly wanted the Great apes to be studied and this is what he most supported. This was his first major contribution to primatology: Louis Leakey was instrumental in systematically sending researchers to study these primates. We recognize the names of the researchers who persevered, but there were others. For instance, before Dian Fossey began her iconic study of mountain gorillas, Leakey had sent two other researchers to conduct gorilla studies.

The second contribution to primatology was Louis Leakey's choice of researchers. He felt strongly that women were better observers - more sensitive to cues in their environment, more patient - and that they would not attract the aggressiveness of male great apes in the same way as male primatologists might. In 1960 when Jane Goodall first started her work at what was then Gombe Stream Reserve (now Gombe National Park) there were a few primatologists, but very few were women. With his selection of Jane Goodall and Dian Fossey to study great apes in the field, Louis Leakey ultimately changed the face of primatology. These two legendary women provided strong and powerful role models for other women, myself included. More than fifty percent of all field primatologists are now women. Primatology is one of the few scientific fields which displays gender equality. In this year of Hillary Clinton and Sarah Palin putting cracks in one of the mightiest glass ceilings, it should be noted that Louis Leakey was fighting for women's equality, in this field of science, almost fifty years ago. The Leakey Foundation has continued this tradition; for example in its early support and past funding of primatologists such as Shirley Strum and Barbara Smuts.

Louis Leakey's third notable contribution to primatology was his belief in longterm studies. He possessed a virtue that he attributed to women: patience. He himself waited 27 years for the first fossil, Zinjanthropus, to vindicate his belief

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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.

A Reflection with Dr. Jane Goodall, DBE

Research of Chimpanzee Cultures: A Brief History of Primatology's Pioneers Dr. Anthony Nsubuga, Zoological Society of San Diego and former Baldwin Grantee

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# **Dear Friends of the Leakey Foundation,**

On November 24, 1859, the Origin of Species was published. Charles Darwin carefully included only one reference to humans in the book: "light will be thrown on the origin of man and his history". With this prescient statement the Darwinian perspective began, which is central to all of modern biology whether you are investigating molecular DNA, or studying the behavior of apes and modern man. Almost 150 years later the journey to understanding our origins continues vigorously on a fascinating path of scientific discovery, with research contributions coming from many fields of study funded by the Leakey Foundation. Charles Darwin would have been truly impressed with the remarkable progress of science to date.

Over 40 years ago, encouraged and guided by the pioneering vision of our founder, Dr. Louis Leakey, two young scientists embarked upon an unprecedented adventure to explore the world of our closest living relatives, the chimpanzees. Since their journey began, Dr. Jane Goodall and Dr. Toshisada Nishida have defined the field of primatology and pioneered our understanding of the behavior, social structure and culture of chimpanzees. Louis believed that by observing common behavior traits shared by modern humans and modern apes, we would be able to provide insight as to how our common ancestors behaved some six million years ago. In 1960, Dr. Goodall established a research center in Gombe on the shores of Lake Tanganyika in what is now Tanzania. Equally important is the groundbreaking work of Dr. Nishida who first set out in 1965 to conduct fieldwork on the Chimpanzees of the Mahale Mountains, located in Tanzania. His work spanning over 41 years has had an important enduring impact on modern primatology.

It is truly fitting to commemorate our 40th anniversary by recognizing and honoring these two renowned scientists. They have fought to preserve the precious habitats of our primate cousins and they have taught new generations what they have discovered and how to be effective stewards of the environment. For their courage, perseverance, and achievement, the Leakey Foundation will award Dr. Goodall and Dr. Nishida the distinguished Leakey Prize.

The celebration of the Leakey Foundation's 40th anniversary is a time to reflect on the Foundation's special place in the world of science. During my 20 years as a Trustee, I have been privileged to observe important scientific discoveries, seminal research and emerging creative methodologies, all developed through the funding and encouragement of the Foundation. In an era of severe budget reductions for scientific study and field research, the Leakey Foundation stands out like a flowering oasis. Our role in advancing science becomes ever more critical.

Perhaps most importantly, the Foundation has been and will continue to be the launch pad for so many brilliant careers. Our Trustees, Fellows, scientists and staff are truly focused in earnestly maintaining this important mission and legacy.

The meaningful work of the Foundation continues with the generous support from all of our Trustees, Fellows, members and scientists. I deeply appreciate and thank each of you for continued interest and participation.

With thanks and best wishes,

William M. Wirthlin, Jr.

Presiden



Bill Wirthlin and Program Officer Patty Moore examine a fossil cast.



Photo courtesy of K. Langergraber

# On Behalf of the Leakey Foundation Board of Trustees,

I am pleased to announce the launch of an urgent new campaign to increase by more than one hundred percent the funds the Foundation now makes available to science. A special endowment-building initiative, in memory of Dr. F. Clark Howell, will work to raise \$15 million over the next two years, to benefit human origins research and learning.

Through the vision and generosity of the Board of Trustees, \$6 million has already been awarded to the F. Clark Howell Endowment Campaign to date. I am proud to report that 100% of our Trustees have pledged to the campaign, and am humbled by their commitment to pay for 100% of the costs of running the campaign. Thanks to their leadership, 100% of every dollar now dedicated to the campaign will go directly into the endowment for scientific research grants.

Our challenge is to raise the additional \$9 million to meet the \$15 million goal. When this is achieved, an additional \$750,000 will be granted to the study of human origins each year!

The initiative is an ambitious one, yet the Leakey Foundation is uniquely positioned to respond. No other organization has as singular a track record of research success. No other organization has the energetic volunteer blend of pre-eminent scientists and business leaders. No other organization is prepared to invest in promising young students of human origins – as Louis Leakey once was.

Over the next year, the Board of Trustees and Foundation staff will be reaching out to everyone in the community to participate in the F. Clark Howell Endowment Campaign. This is the opportunity for each of us to create a lasting legacy to the understanding human origins, and to ensure the next generation of scientific discoveries on what makes us human, and why we as humans do what we do.

I look forward to sharing this thrilling endeavor with each of you.

Very truly yours,

Paul Johnson, Chair F. Clark Howell Endowment Campaign

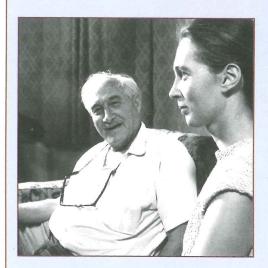


C. Paul Johnson holding a cast of a skull.

# A Reflection with Dr. Jane Goodall, DBE

By Claire Jones, The Jane Goodall Insitute

Quite simply, Dr. Jane Goodall's research changed our very definition of what it means to be human. Starting with her arrival in East Africa in 1960, Dr. Goodall shattered scientific understandings of chimpanzees and their evolutionary relationship to humans.



When she landed in Tanzania, humans were thought to be the only animals capable of making and using tools until she documented chimpanzees doing just that. On learning of Dr. Goodall's observation, her mentor, Dr. Louis Leakey, said: "Now we must redefine tool, redefine man, or accept chimpanzees as humans." Dr. Goodall went on to show that chimpanzees have personalities and complex social lives, hunt for game and even engage in warfare.

With the Leakey Prize celebration fast approaching, we asked Dr. Goodall to share some thoughts about Dr. Leakey and what receiving the Leakey Prize means to her. Here's what she had to say:

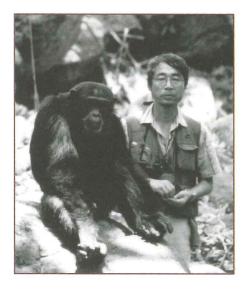
"I was in my twenties when Dr. Leakey gave me the opportunity to achieve my dream. He had been looking for someone to go to Tanzania and study the chimpanzees, hoping that such research might give us clues about human evolution. He asked me if I was willing to go to Gombe in Tanzania and find out how chimpanzees lived in the wild. He gave me the opportunity of a lifetime!

Receiving the Leakey Prize has particular significance to me. If Dr. Leakey had not taken a chance on a young woman without a university diploma and no formal training, I might not be where I am today. He helped me begin my research and has inspired me throughout my career. It is my hope that this award and the great work of the Leakey Foundation will bring well-deserved attention to the fragile state of the world, as well as all those – human and non-human – who call this planet home."

# Research of Chimpanzee Cultures: A Brief History of Primatology's Pioneers

By Toshisada Nishida Professor Emeritus, Kyoto University

What is culture? More than 150 definitions of culture were already proposed 60 years ago.¹ Most of these definitions covered only human behavior and excluded the behavior of nonhuman animals. In 1958, when Kinji Imanishi², my mentor, proposed that "behavior that is socially adjustable after birth" can be called culture even if it is performed by animals," he extended the definition of culture beyond human beings. He also pointed out that this field he called "Cultural Biology" would offer great possibilities in the future. This concept was objected to, or more often neglected, in academic circles of Japan at that time. However, the attention of western primatologists was captured by the publications in English of real data on cultural transmission among Japanese macaques by Imanishi's students, particularly Shunzo Kawamura³ and Masao Kawai⁴. Hans Kummer⁵ was the first western primatologist to add new insight to the concept of culture after Imanishi's application of this concept to animals. He discussed the costs and benefits of cultural transmission in depth.



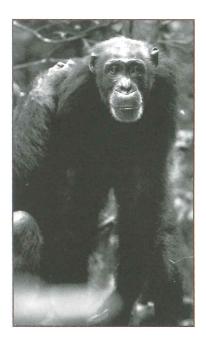
In 1973, Jane Goodall<sup>6</sup> reported the occurrence of a new type of behavior among juvenile chimpanzees at Gombe, and she compared social behaviors between Gombe and Mahale for the first time. In 1974, Bill McGrew and Caroline Tutin visited Mahale after they studied the chimpanzees of Gombe, and after a few weeks of observation they reported that "the grooming-hand-clasp" seen at Mahale had never been observed at Gombe. I had observed this pattern every day, so I could not imagine then that such a common behavior had not been performed at Gombe. Their seminal paper<sup>7</sup> of 1976 stimulated me to search for other behavior patterns that had not been described before. Jane Goodall had already published her great monograph on behavior patterns of Gombe chimpanzees<sup>8</sup> in 1968. Thus, I could check whether there were patterns observed only at either site. As a result of my investigations, I realized that "leaf-clipping behavior" for courtship did not occur at Gombe<sup>9</sup> and that water contact behavior was slightly different between the two sites<sup>10</sup>, <sup>11</sup>. This convinced me that cooperation between researchers at the two sites was necessary for a more thorough comparison of behavior. Consequently, three coauthors and I compared the plant food repertoire between Gombe and Mahale, and we found 15 food items that were available at both sites but only eaten at one or the other of the site<sup>12</sup>.

In the late 1970s, new research began at two sites in Western Africa, Bossou and Tai. In the 1980s and 1990s, several more field work projects began in equatorial Africa, including Kanyawara and Ngogo of Kibale Forest, Uganda. This made it possible for us to compare behavior patterns among many local populations. The seminal paper published as a result of the cooperative study raised a new curtain on concrete comparisons aimed at elucidating the diffusion, or independent invention, of cultures<sup>13</sup>. At the same time, four coauthors and I published the detailed ethnography and ethogram of Mahale chimpanzees<sup>14</sup>.

As was evident from McGrew and Tutin's study, a researcher who knows the behavior patterns of one population enough to make new discoveries of culture may very well benefit from the opportunity to observe other populations. Consequently, we started to conduct "culture hunting" in other study sites. In 2001, for example, I visited John Mitani's site at Ngogo, and within a few days I found that the social scratch pattern and grooming sounds at Ngogo differed from those at Mahale, including "poking" versus "stroking" or the presence versus the absence of "sputtering." 15

Like human beings, it seems that nearly all aspects of chimpanzee behavior are modified by local culture to some extent after birth. The study of chimpanzee cultures has played a great role in blurring the human /animal distinction. The best use of this realization would be in efforts toward the conservation of nonhuman animals.

This study was funded by the Leakey Foundation and the JSPS fund for Scientific Research.



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### Dr. Anthony Nsubuga

## Zoological Society of San Diego and former Baldwin Grantee

Support towards understanding the evolution of social behavior in great apes is not simply an add-on to the role of Leakey Foundation, but it is an essential part of the Foundation's mission of supporting scientific research into evolution of humans and their close relatives. As we reflect on the achievements of the Leakey Foundation over the last 40 years, and of accomplishments and perseverance of Dr. Jane Goodall and Dr. Toshisada Nishida in the field of primatology; I realize how much I have benefited from them. My first interest in primates was indirectly sown by Dr. Goodall and later nurtured by the Leakey Foundation (through the Baldwin Award) together with the Max Plank Institute for Evolutionary Anthropology (MPI-EVA), Leipzig, Germany.

Growing up in Uganda in the 1970s, the first chimpanzee I saw was on a television series Daktari that featured Dr. Tracy and his chimpanzee pet called Judy. Later, in 1980, for the first time I saw a live chimpanzee named Zakayo (now ~44 years old) at the Entebbe Zoo. Many Ugandans at the time wrongly regarded chimpanzees and gorillas as dangerous wild beasts, and monkeys as pests that occasionally raided people's crops. My keen interest in primates came in 1991 when I was a 2nd year undergraduate student at Makerere University and an executive member of the Makerere University Wildlife club; I met Jane Dr. Jane Goodall for the first time at Kampala Sheraton Hotel where she was giving a public lecture. Before then I had never considered studying non-human primates, but everything changed after listening to her and watching her movie on Gombe chimpanzees. Nevertheless, even though I was fascinated by chimpanzees and later gorillas (after watching Dian Fossey's movie "Gorillas in the Mist"); obviously my chances of studying primates were very remote because of my Masters of Science degree project; for which I chose to study mosquito vectors of viruses. My turning point came in September 1999, when Dr. Martha Robbins invited me to spend a month with her research team tracking and studying mountain gorillas in Bwindi Impenetrable National Park, Uganda. In January 2000, I joined the MPI-EVA to conduct my Ph.D. study entitled "Genetic Analysis of the Social Structure in Wild Mountain Gorillas of Bwindi". But soon after the continuation of my research project was in doubt. I was required by the MPI-EVA to look for additional funds to continue with research project.

Luckily, in 2001 the Leakey Foundation came to my rescue and awarded me a two year Franklin Mosher Baldwin Research Fellowship that enabled me to complete my study at the MPI-EVA. In January of 2005, I received my Ph.D. from the University of Leipzig, and therafter I became a visiting Scholar in the Department of Biological Sciences at Duke University until July 2006, when I started a post-doctoral research fellowship in the Genetics Division at San Diego Zoo. My current projects include assessment of population genetic structuring in gorilla populations, and inferring the geographical origins of North American captive gorillas. In addition, as part of San Diego Zoo's capacity building for gorilla conservation project in range countries, we are collaborating with African institutions (such as Makerere University) to train young African scientists.

I will forever be grateful to the Leakey Foundation for the Baldwin Fellowship Award.

# Remembering Louis Leakey continued from page 1

that Olduvai Gorge was important for the study of human evolution. Before I began my orangutan study, 37 years ago, he told me that he would give me ten years to "contact the orangutans." I took it to mean that he would give me ten years to encounter the first wild orangutan. Sherwood Washburn had firmly told Leakey that a wild orangutan study couldn't be done so Leakey was giving me plenty of time to get started. As it turned out, I encountered my first wild orangutan within days of arriving in the forests of Kalimantan (Indonesian Borneo).

When I first began my study in 1971, the average primatological field study lasted 15-18 months, if that. Today, there are dozens of field studies exceeding ten years. Part of the credit must go to Louis Leakey and the studies of Goodall and Fossey which he encouraged and which served as models for other primatologists. Long-term field studies have allowed the compilation of primate life-histories in the wild, leading to a better understanding of how selection shapes adaptation and behavior and allowing primatologists to examine sophisticated sociobiological hypotheses.

Finally, Leakey helped expand the role of science in the public domain. His critics called him the "abominable showman". He had a talent for public relations and for the quip, now also known as the "sound bite." Leakey was important in making it respectable for distinguished scientists and primatologists to "popularize" their work. Even before I began my study Louis instructed me to write "popular" articles and books at the same time as I wrote the "scientific" ones. He was very clear that while the academic articles were the important ones, the popular ones should not be neglected.

He was called the "Darwin of Human Evolution" for bringing the reality of human evolution home to the general public, as well as the amazing fossil discoveries that he and his family made and continue to make to this day. But it should not be forgotten that Louis Leakey, in his own indomitable way, also played an important role in the development of modern primatology. The trends he helped establish continue to on as primatology moves into the future. Women are among the most eminent researchers in field primatology; field studies are much longer than in the past; numerous field studies have been conducted on the great apes and the latest discoveries of field primatologists are now cited in the daily newspapers of large cities.

It could be argued that there is nothing particularly scientific about these trends. The counter argument is that these trends basically determine the kind of science that is done. Women primatologists observed the less visible and less known females (as opposed to males) while longer studies allowed for greater and more important sets of hypotheses to be tested in the field. Popular books on the results of primate studies increased public support for primatology and thus brought greater funding from the government and private sources.

The impact of Louis Leakey on primatology may seem simple but, in fact, is quite profound and should not, in any way, be underestimated. Louis Leakey lives on, more than a hundred years after his birth. His legacy includes not only the continuing work of his beloved family, the impact of his own fossil discoveries at Olduvai and elsewhere, and the presence of the L.S.B. Leakey Foundation, but also his continuing influence on science, not least of all in the field of primatology.

### Become a member today and have a hand in the next discovery!

**NEW** – We encourage past and current Leakey Foundation Grantees to become a member of the Leakey Foundation Alumni Society. The goal of the Leakey Foundation Alumni Society is to reach, serve and engage all Leakey Foundation grantees and to foster a lifelong intellectual and emotional connection between the Foundation and its grantees. The Alumni Society allows us to honor our grantees, while providing grantees with a way to help support their colleagues.

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(\$500 and up) For a limited time, from now through the end of 2007, you are invited to join the Alumni Society as a Founding Member. As a Founding Member of this distinguished group, your name will be engraved on the Leakey Foundation Alumni Society plaque that will be displayed at the Foundation headquarters. All Alumni Society member names will be highlighted in a special section of the Leakey Foundation Newsletter, AnthroQuest, to which they will also receive a subscription. All members will receive advance notice of special events, including lectures and symposia, priority reservations for ticketed events, ticket and merchandise discounts and a one-year subscription to Evolutionary Anthropology. Upon joining, we will send you a Leakey Foundation Alumni Society lapel pin.

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