Pan Africa News

The Newsletter of the Committee for the Care and Conservation of Chimpanzees, and the Mahale Wildlife Conservation Society

ISSN 1884-751X (print), 1884-7528 (online) mahale.main.jp/PAN/

JUNE 2016 *VOL. 23, NO. 1*

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Deadline of the next issue is October 2016!

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Mutual Genital Touch in the Mahale M-Group Chimpanzees

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INTRODUCTION

Mutual genital touch (MGT) is a type of greeting behavior, which was first documented in the chimpanzees of Bossou, Guinea (Nakamura & Nishida 2006). MGT occurs when two female chimpanzees meet after some time apart, they approach and closely pass by each other, pause with one's face close to the other's hip, and then they simultaneously and gently touch each other's genital area from underneath with the outer hand (*ibid.*; Figure 1). Nakamura and Nishida (2006) suggested that MGT is a type of greeting behavior between females as its context is similar to some other greeting behaviors, such as peering into the face, kissing, or extending a hand. They also stated that MGT had never been observed at Mahale. In addition, this behavior has not been reported from other

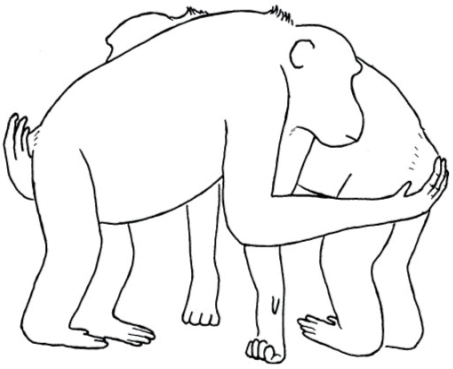

Figure 1. Mutual genital touch (reproduced with permission from Nakamura and Nishida (2006)).

study sites.

However, during 2015, I observed two instances of MGT in the M-group chimpanzees at Mahale, Tanzania, as reported here in detail (See Nakamura *et al.* (2015) for the details of the Mahale M-group chimpanzees).

OBSERVATIONS

Case 1 on December 9, 2015

At approximately 12:50 h, a large party of the M-group chimpanzees ranged northward along a trail. Some individuals wandered into nearby bush, whereas others exited from the bush and entered the trail. I followed the alpha male walking along the trail. After some time, the alpha male overtook some adult females walking in a line and disappeared from view, following which I slowly followed after the females. At 13:24 h, an adolescent female, GN, exited the bush, entered the trail, and approached an adult female, EF, walking at the end of the line, thereby coming directly in front of me. EF stamped on her right foot once, following which GN came close to EF from her right side, brought her face toward EF's hip, and touched EF's genital area with her left hand. EF also simultaneously touched GN's genital area with her left hand. Both EF and GN showed no genital swelling. Subsequently, EF and GN left together along the trail.

Case 2 on December 9, 2015

The party described in Case 1 ranged further north and encountered another party, including some adult females and their offspring, at 14:30 h. I continued following EF. When EF encountered the other party, a lactating female, ZL, showing no genital swelling, approached EF, and they simultaneously touched each other's genital area with their left hands. The infant of ZL, two years old at that time, was out of my sight at the moment. They soon left together without any subsequent interactions.

DISCUSSION

Although MGT at Mahale has not been previously reported, I observed two instances of MGT in a single day. The adult female, EF, was involved in both instances; however, I did not witness any more MGT while following EF. Although I carefully observed many subsequent encounters between females, no other instances of MGT occurred. In some instances, only one female of a pair touched the other's genital area, similar to instances of genital inspection customarily performed by adult males on females at Mahale (Nishida 1970, 1997; Nishida *et al.* 1999). The fact that these two instances of MGT occurred during an encounter between two females is consistent with the presumption by Nakamura and Nishida (2006) that MGT is a type of greeting behavior between females.

The reason why I managed to observe two instances of MGT in a single day remains unclear. I suggest some plausible but not mutually exclusive reasons as follows: 1) the Mahale M-group chimpanzees have recently adopted the MGT behavior, which is getting prevalent; 2) only a few individuals are accustomed to performing MGT in the M-group, and we rarely observe MGT because of its low frequency; 3) we researchers are not sufficiently attentive to notice any quick MGT as we have to assess all the individuals and monitor the surrounding situation when a social encounter occurs. The first proposed reason is plausible, and we have need to ascertain the manner in which MGT will be getting increasingly prevalent in the group. The second proposed reason is also plausible; however, further investigation on the presence/absence of MGT in the behavioral repertoire of the M-group members is required to derive any conclusions. From these two observed instances, I presumed that the chimpanzees performed MGT quite naturally as if it was a habitual behavior rather than an unusual one. This implies that at least some members have included MGT in their behavioral repertoires and that they perform it in a habitual manner. The third presumption is not likely as many expert researchers have conducted long-term, intensive observations on chimpanzee behaviors, and it is unlikely that the rarity of the observation of MGT can be attributed to the insufficient attention of the researchers. When I asked fellow researchers about MGT, some stated that they had observed MGT-like behaviors, one instance in 2011 and two instances in 2014 (Shunkichi Hanamura, Noriko Itoh, personal communication; Shimada 2014). In these previous instances observed by fellow researchers, at least one individual of a pair exhibiting MGT-like behavior was an adolescent female who had immigrated to the M-group a few years ago, as was the case with GN in Case 1 of the present study who had immigrated to the M-group in 2012. This implies that MGT is a relatively new behavioral pattern recently introduced to the M-group chimpanzees from another group. On the other hand, the fact that MGT was performed between two adult females, EF and ZL, who had immigrated to the M-group in 1997 and 1998, respectively, implies that MGT was already prevalent in the group. However, further investigation is required to derive any conclusions on MGT in the Mahale M-group chimpanzees.

ACKNOWLEDGMENTS

I thank COSTECH, TAWIRI, and TANAPA for permission to conduct the field research; MMNP and MGWRC for logistic support; Shunkichi Hanamura, Noriko Itoh, and Masaki Shimada for providing information on the observed instances of MGT-like behaviors; the researchers of the Mahale Mountains Chimpanzee Research Project for their cooperation at the field; Kazuhiko Hosaka and Michio Nakamura for helpful comments on the manuscript. This study was financially supported by Grant-in-Aid for JSPS Fellows (#14J00963).

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<NOTE>

An Infant Bonobo Mimicked a Handicapped Motor Action of a Disabled Individual at Wamba in the Luo Scientific Reserve, Democratic Republic of Congo

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INTRODUCTION

Imitative abilities to copy the behaviors of others are important for humans to acquire novel skills (Tomasello *et al.* 1993). Scientific research has focused on whether non-human primates have these abilities, and experimental imitation studies in our nearest primates have been carried out (reviewed by Whiten 2015). Based on cognitive experiments of captive great apes, their leaning processes were classified as "emulation" to reproduce desirable results of the actions of others, rather than "imitations" to reproduce the behavior itself (Whiten *et al.* 2004). Another experimental evidences indicated that chimpanzees imitate others' actions, whereas they are less sensitive to body movements than to manipulated objects involved in the demonstrated actions (Myowa-Yamakoshi & Matsuzawa 1999). However, it remained unclear whether great apes can learn to reproduce novel motor actions by bodily matching.

"Do-as-I-do" experiments of chimpanzees provided positive evidence that they can copy the form of human actions through a battery of training actions (Custance *et al.* 1995). Moreover, Fuhrmann *et al.* (2014) provided the first quantitative evidence for motor copying with synchrony between the movements of the observers and models in chimpanzees and orangutans. This learning behavior was referred to as "mimicking" rather than imitation in that copying motor actions did not have a physical goal to reproduce desirable results of the models' actions. Nevertheless, these experiments showed that great apes have the capacity to learn novel and simple motor actions by bodily matching.

Observations of social learning in great apes under natural conditions are valuable, because experience of cognitive experiments in captivity can affect and enhance the enculturated skills of these apes (Hirata *et al.* 2009). At Bossou in Guinea, infant chimpanzees acquired stone-nut manipulation through close observations of skilled manipulation by adult individuals (Inoue-Nakamura & Matsuzawa 1997). Hobaiter and Byrne (2010) reported that young chimpanzees copied a motor procedure with a liana-scratch technique from a disabled chimpanzee at the Budongo Forest Reserve in Uganda. However, no reports exist of motor mimicking based on visual information of the body movements of others in wild conditions. We observed an instance of an infant bonobo (*Pan paniscus*) mimicking a handicapped motor action spontaneously from a disabled individual at Wamba. This report could be the first evidence of motor mimicking in wild infant bonobos.

STUDY SITE & BACKGROUND

Observational study of bonobo behaviors was carried out at Wamba in the Luo Scientific Reserve, Democratic Republic of Congo. One main study group of bonobos (E1) was habituated fully and the all members were identified. At the time of the present observation, the E1 group consisted of 34 individuals: 8 adult males, 8 adult females, 4 adolescents, 6 juveniles, and 6 infants. Researchers and field assistants followed the largest party daily as far as possible from bed to bed (around 06:00 to 17:00 h), and recorded *ad libitum* behaviors of bonobos.

Snare injuries to wild chimpanzees are serious problems at some study sites (Quiatt *et al.* 2002). Although the use of traditional techniques is allowed at Wamba in the Luo Scientific Reserve, the use of metallic snares is prohibited to protect primates (Furuichi *et al.* 2012). However, Wamba bonobos are sometimes caught and injured by metallic snares.

An adolescent female (Pf) immigrated into the E1 group from the western adjacent group in October 15,

Figure 1. Adult females rescuing Pf from a metallic snare? Adult females surrounded Pf to peer at her hand ensnared by the metallic snare. One female were pulling the metallic snare in this picture taken by TF.

Figure 2. Pf's handicapped motor action. Pf were digging truffles in swamp forest with the handicapped motor action in this picture taken by RH. She had behaved without the use of her left hand ensnared by the metallic snare.

2013. Unfortunately, Pf was caught in a metallic spring-type snare made from an iron wire attached to an arched branch on July 22, 2014, when KT and TF followed a party of the E1 group. A field assistant used a machete to release Pf from the snare, after which Pf quickly climbed up the trees with the rest of the snare still attached. The following morning, some adult females and offspring peered at her ensnared hand and tried to pull and bite the snare (Figure 1). Although one female successfully removed the branch portion, the iron wire had ensnared the fingers. Since then, Pf had had a handicapped motor action, without the use of the left hand, so as to hold the fingers to the inside of the wrist (Figure 2, also see Video 1 available online at http://mahale.main.jp/PAN/23_1/23(1)_02.html).

OBSERVATION

On the morning of November 29, 2014, an infant male (SE) 2 years and 11 months old seemed to adopt a behavior similar to the handicapped motor action of Pf in two scenes, observed by KT and HR, who were following a party of the E1 group at a sleeping site from 05:31 h onwards. The party consisted of 10 individuals, including Pf and SE. We observed that SE walked and played without the use of his left hand from 08:12 h to 09:27 h, when most individuals had begun to take part in grooming in the group (Figure 3: also see Video 2 available online http://mahale.main.jp/PAN/23_1/23(1)_02.html).

Figure 3. SE's motor mimicking. SE were walking without the use of his left hand in this picture taken by RH. He behaved like Pf as to hold the fingers to the inside of the wrist.

In a scene from Video 2, he hanged the left hand powerlessly and held the left fingers to the inside of the wrist, while poking another individual in the face, walking on a fallen tree, and peering into grooming individuals. This unusual behavior by SE had been observed previously neither before nor after Pf's capture in the metallic snare. We could not confirm any external injuries to the finger of SE's hand. We did not observe this behavior in SE after this grooming session, when the party fed on grounds and in high trees.

The party being followed by researchers moved in the direction of the voices of another party at 11:58 h, and they fused into this party, which consisted of 17 individuals at 12:08 h. From 12:11 h to 12:45 h, most adults rested and four offspring played socially, engaging in behaviors such as wrestling and chasing. The social plays involved active motions on the ground and in low trees, such as kicking on others' backs, butting each other with play pants, and trying to grab legs or trunk of others hanging from branches with their arms. SE again showed successively the handicapped motor action during the period of social plays. SE occasionally used his left hand to grab others' body and walk on trees: therefore, he did not seem to have a physical problem using this hand. The party then moved on and fed on piths on the grounds. We did not observe this unusual motor action again.

DISCUSSION

We observed that SE seemed to pretend not being able to use his able left hand. His behavior may be considered a "handicap play" similar to a report of a captive bonobo who covered her eyes with her hands until she lost her balance (de Waal 1995). In the present case, SE's handicap play was likely to stem from the Pf's handicapped motor actions. He seemed to acquire the similar motor action from visual information of her body movements. The physical copying of a non-functional motor act can be considered motor mimicking. This report may provide evidence that bonobos can reproduce the form of novel motor actions by spontaneous bodily matching in the wild.

Field studies of Bossou chimpanzees have suggested a critical period ranging from 3 to 5 years old to learn nut-cracking (Biro *et al.* 2003). Also, the field study of Budongo Forest Reserve reported that younger chimpanzees at 4–13 years old acquired the liana-scratch technique (Hobaiter & Byrne 2010). This motor mimicking case by an infant bonobo is consistent with these studies in that immature individuals tend to reproduce others' behavior from the visual information. Further study is needed to explore how this playful mimicking is widespread among immature great apes and related to the development of their social learning skills.

ACKNOWLEDGMENTS

We sincerely thank the Research Center for Ecology and Forestry and Ministry of Scientific Research, DRC for helping our field research. We are also grateful to field assistants and others at Wamba for their support during our study. This research was financially supported by the Leading Graduate Program in Primatology and Wildlife Science of Kyoto University, and Grant in Aid for Scientific Research to TF and

Asia-Africa Science Platform Program to TF from the Japan Society for the Promotion of Science.

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<NOTE>
How was the Mahale 50 Exhibition and Symposium Assessed by the General Participants? A Questionnaire Survey

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INTRODUCTION

The year 2015 marked the 50th anniversary of wild chimpanzee studies at Mahale Mountains National Park, Tanzania. During this half-century, a number of scientific findings have been published by no less than 80 researchers from Japan, North America, Europe, and Tanzania, and those contributions to the scientific community are recognized worldwide (Nishida 2012; Nakamura *et al.* 2015). The pivotal team involved in these studies, now called the Mahale Mountains Chimpanzee Research Project (MMCRP), organizes researchers studying chimpanzees and other wildlife at Mahale. MMCRP obligates its researchers to contribute to the activities of the Mahale Wildlife Conservation Society (MWCS), which was established in 1994 (Nishida & Nakamura 2008; Hosaka & Nakamura 2015). One of the aims of MWCS is to raise public awareness of the importance of wildlife research and conservation at Mahale, because researchers' work is supported by public and private funding. Despite their long history of achievements, researchers have faced the reality that their efforts are little known to the public, even in Japan, which is self-evident when their renown is compraed with the fame of another long-term wild chimpanzee research at Gombe National Park, Tanzania.

In 2015, a rare outreach event commemorating the 50th anniversary of chimpanzee research at Mahale was conducted in Tokyo. Through various channels, e.g., the distribution of flyers and posters; announcements in MWCS newsletters; coverage in Japan's two largest newspapers; pre-events at Tama Zoological Park; and notices on the websites of MWCS, the World Wildlife Fund (WWF), and Tokyo Zoological Park Society; the executive committee issued a call to the general public to encourage their participation in the event. Active researchers prepared poster exhibitions featuring 21 topics relating to research and conservation at Mahale, while in the symposium young and old researchers, ranging in age from twenties to seventies, gave talks about history, ongoing studies, and the future of Mahale (Hosaka 2015). This report aims to investigate the reactions of general participants in the event in order to obtain some useful information concerning wildlife research projects' planned public outreach programs.

METHODS

A questionnaire survey was conducted at the University of Tokyo's Yayoi Auditorium Ichijo Hall on September 19, 2015 where the Mahale 50 Exhibition and Symposium was held. At the reception, questionnaire sheets were distributed to 320 participants. After the symposium, in order to assure voluntary submission, the participants were asked to post completed sheets into a collection box.

This survey was approved by the Research Ethics Committee of Kamakura Women's University (#15109).

Questionnaire

The sheet contained informed consent, 16 questions concerning respondents' attributes, and comments about the event. The respondents were asked to write answers (q1–2, 16), select from multiple choices (q3–5, 15), and to rank questions on a six-point scale: "1" (strongly disagree) to "6" (strongly agree) (q6–14).

(q1) Sex
(q2) Prefecture
(q3) Age class (10's, 20's, 30's, 40's, 50's, 60's, 70 or over)
(q4) Occupation (office worker, student, homemaker, self-

employed, other)
(q5) How did you receive information about the event (websites, SNS, flyers, friends, noticed as I was passing by, newspaper, other)
(q6) Q1: When you received the information, did you become interested in the content?
(q7) Q2: When you received the information, did you understand the aims of the symposium?
(q8) Q3: Was the information about the symposium easy to understand?
(q9) Q4: Did you enjoy the symposium?
(q10) Q5: Did the symposium meet your expectations?
(q11) Q6: Has the symposium deepened your interest in chimpanzees?
(q12) Q7: Has the symposium deepened your interest in Africa?
(q13) Q8: Has the symposium deepened your interest in "research" or "study"?
(q14) Q9: Would you like to participate in a similar event?
(q15) What kind of programs would you like us to plan, if you were to participate again? (exhibitions, symposia, science cafés, extension lectures, on-demand lectures, other)
(q16) What impressed you most in the symposium as a whole?

RESULTS

196 sheets were collected and the number of valid responses was 170.

Respondents' attributes

The sex ratio of respondents was balanced, while age class distribution was biased towards the 50's and 60's age groups, which accounted for approximately 52% (Table 1). Most respondents (87%) were from the Kanto region, including Tokyo, but some came from distant regions, north and south, such as Hokkaido and Kyushu. There were 28 students in the respondents.

Information sources

The information sources through which participants learned of the event differed between age classes (Figure 1). Flyers were quite common for the 40's group, while less so for those in their 60's (χ^2 (6) = 12.92, $p < 0.05$). Friends acted as the most common sources for the 20's group, while less so for the 60's group (χ^2 (6) = 17.69, $p < 0.01$). Newspaper coverage acted as an important source for the 60's group, while less so for either the 20's, 30's, or 50's groups (χ^2 (6) = 50.35, $p < 0.01$). There was no statistical difference in the importance of either websites (χ^2 (6) = 5.15, n.s.) or SNS (χ^2 (6) = 7.59, n.s.).

Table 1. Sex and age composition

	AGE CLASS							
	10's	20's	30's	40's	50's	60's	70's+	Sum
Male	3	16	4	4	13	31	15	86
Female	4	12	6	11	27	18	6	84
Sum	7	28	10	15	40	49	21	170

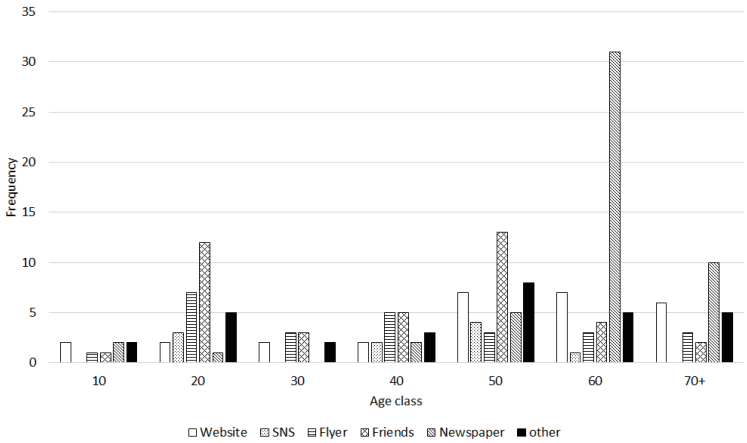

Figure 1. Age class distribution of information sources about the event.

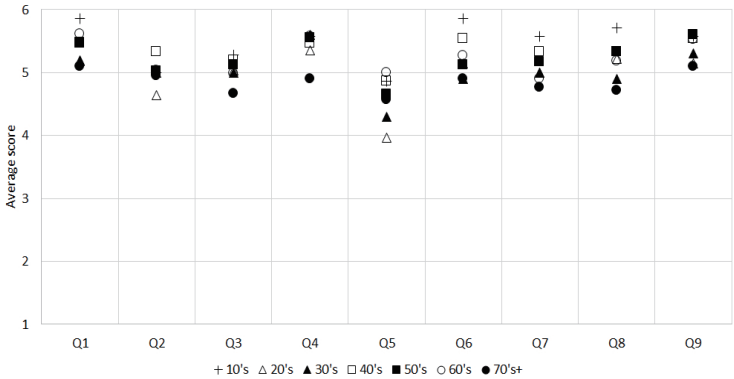

Figure 2. Scores for nine questions averaged for respondents of each age class.

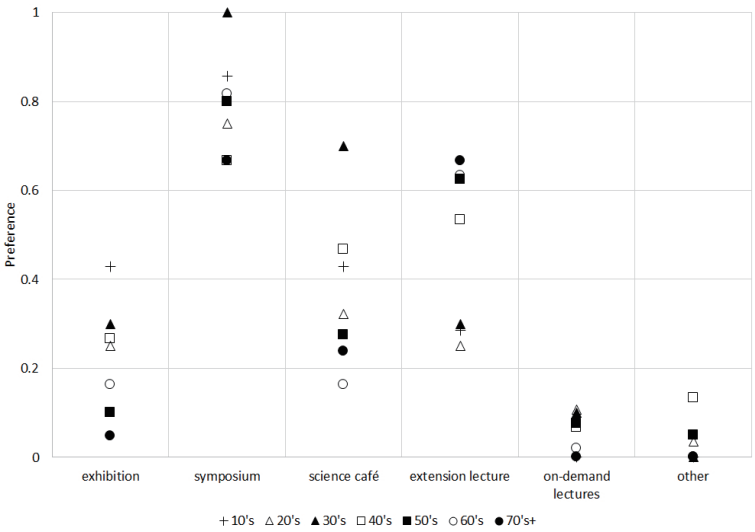

Figure 3. Variation of preferences for various kinds of outreach programs across age classes.

Assessment of the symposium

Overall, the responses of the participants were positive, irrespective of the questions (Figure 2). Their expec-

tations before the event were high (Q1, 5.42 ± 0.89; Q2, 4.98 ± 1.02; Q3, 5.02 ± 0.96), and so was their level of satisfaction after the event (Q4, 5.44 ± 0.78; Q5, 4.64 ± 1.17; Q6, 5.19 ± 0.87; Q7, 5.04 ± 0.93; Q8, 5.18 ± 0.89; Q9, 5.42 ± 0.77). Examining the relationships between the scores for nine answers each respondent gave showed that they were positively correlated with each other (r = 0.30 to 0.67, $p < 0.01$) except for Q2–Q7and Q2–Q8 (r = 0.19, 0.26, n.s.).

What kind of outreach programs were preferred?

Respondents of all age classes preferred symposia over six alternatives, while on-demand lectures and exhibitions were less preferred (Figure 3). The preference for "science cafés," which involve face-to-face presentations and conversations in casual settings, varied according to age: it was strong in the 30's group (0.70), while weak in the 60's group (0.18) (χ^2 (6) = 15.23, $p < 0.05$). In contrast, the preference for "extension lectures," special courses usually offered by universities as social contributions, was strong in older generations (40's–70's+), while weak in younger generations (10's–30's) (χ^2 (6) = 17.71, $p < 0.01$).

DISCUSSION

The event was successful in terms of the number of participants, which exceeded expectations (Hosaka 2015). Most participants not only seemed satisfied with the symposium but also shared intellectual curiosity with the host researchers (Q4–8, Figure 2). In the comments for q16, many respondents noted that they admired the ambitions of the pioneers who explored Western Tanzania in the 1960s and also mentioned that they had great expectations for young scientists present at the symposium, who were full of abiding enthusiasm and brand-new methodology. This showed that the event had also been successful in terms of aims of the symposium (Hosaka 2015).

According to the results for Q9 (Figure 2), most respondents expected to attend similar outreach events in the future. In order for these events to fulfill expectations, it would be fruitful to use the results of this questionnaire to derive some suggestions for improvements, which may also be useful for other research organizations.

The first suggestion is to target a specific audience. It should be noted that the average score for Q5 (Figure 2) was slightly lower than scores for Q4 and Q6–Q8, which implies that the symposium had not met the expectations of some participants. The audience for this event was not restricted to a certain generation and it is difficult to satisfy audiences across generations. For instance, some younger participants may have expected an array of recent advancements, while some older participants may have been simply interested in accounts of the earliest days of research.

The second suggestion is to determine what kind of outreach program would fit the target audience. It seems that symposia were the most preferred format across generations (Figure 3); hence, it is important to organize symposia on a regular basis. It also seems evident that younger generations enjoy science cafés, while older generations prefer extension lectures. Considering that symposia cannot be held very often, researchers ought to exploit such alternative opportunities.

The third suggestion is to optimize public relations strategy depending on the target audience. In this study (q5, Figure 1), the effect of "websites" and "SNS" was present across generations but these were merely complementary as public relations tools. "Flyers," distributed at zoos in Tokyo and Yokohama, seemed effective for the middle-aged, implying that zoos are attracting middle-aged visitors curious about wild animals. "Newspaper" was the strongest tool for over-sixties, while it had the least effect on younger generations, possibly due to the decline in newspaper readership. "Friends" seemed to be an important source for people ranging in age from twenties to fifties. In marketing, word of mouth communication is believed to have a major impact on consumer purchasing behavior (e.g., Chevalier & Mayzlin 2006).

ACKNOWLEDGMENTS

We would like to express our sincere gratitude to the executive committee of Mahale 50 Tokyo and the student staff from Teikyo University of Science for their cooperation in this survey, and also to the participants who kindly completed the questionnaire.

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<BOOK REVIEW>
The Chimp and the River: How AIDS Emerged from an African Forest

By David Quammen
New York: W.W. Norton, 174 pp,
ISBN: 978-0-393-35084-5, 2015. $13.95 (USA), paperback

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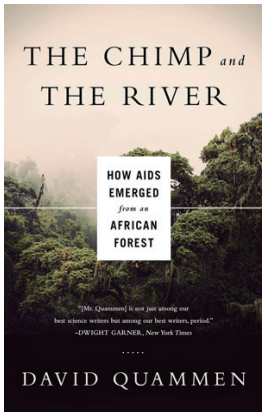
Most of us who study chimpanzees probably will pick up a book that has our subject species in its title, out of curiosity. (Even if the demeaning abbreviation, "chimp", is used!) I did so in a Borders bookshop, having never



heard of this book before then. I HAD heard of its predecessor, *Spillover. Animal Infections and the Next Human Pandemic*, by the same author, published in 2012. As it turns out, Quammen extracted a chapter from the first book and then adapted it for publication as another book on its own.

Quammen is an award-winning science writer, probably best known for an earlier book, *The Song of the Dodo*. He has written before about non-human primates, notably for *National Geographic*, about Gombe and Jane Goodall, but in this book, he travels to central Africa to seek first-hand information about his topic. In a nutshell, the chimpanzee in the title is the hypothetical individual *Pan t. troglodytes* who passed on to a hunter the virus that became HIV-1. The river is the Sangha River, the hypothetical avenue down which the virus travelled to reach Brazzaville and Leopoldville (now Kinshasha), from whence it spread out to infect the globe.

Quammen makes clear his aim in the introduction: To trace backward from the current pandemic of HIV-AIDS to its origin, then to follow its progress via history, epidemiology and accident to its "spillover." Thus, according to him, it is a saga with three main characters: chimpanzee, human and virus. This attempt at reconstruction is a real challenge, for by the time HIV-AIDS was identified, its origins were lost in the past, to be elucidated only by retrospective inference, from limited, piece-meal, and non-random evidence. His thesis is simple: Just over a century ago, a single SIV-infected chimpanzee was killed or butchered by a single African hunter from southeastern Cameroon. That event of *zoonoses* (transmission from animal to human) was the trigger, from whence all else proceeded.

Technically, the book is admirable. It is written in elegant and intelligible English, all lean and no fat. It has 25 chapters, short and punchy, often with cliff-hanging final sentences, to keep the reader moving on. The good news is that there are 139 endnotes that allow the reader to follow up any point, and there are about 100 references in which to do so. The 10-page index is detailed and useful. The less-good news is that there are no illustrations, not even a map of the key places of the journeys made by the virus, or the author.

The argument is by plausibility, based on the first recovered evidence of the virus (dating back to 1908), then on later medical evidence collected sporadically and serendipitously in the ensuing decades, until modern studies, principally by Beatrice Hahn and colleagues, have sought and obtained new data, in proactive, hypothesis-testing mode. These latter field studies have utilised non-invasive methods, by extracting antibodies from urine or virus fractions from faeces, thus allowing cooperation with ongoing projects done by field primatologists. However, the timing of the key events can be inferred only by the molecular clock, via comparison of variants in nucleotide substitutions, as no actual chronology is possible.

So, what are its limits? First, it is out of date. Basically it is the story up to Keele *et al.* (2009), which revealed that wild chimpanzees do suffer from their own version of AIDS. Second, as presented here, the evidence from wild chimpanzees comes only from Gombe, which is notable, given that *P. t. t.* in Cameroon is a different subspecies from *P. t. schweinfurthii* in Tanzania. Since then, SIV_{cpz} has been found in other populations of *P. t. s.* and *P. t. t.* (Rudicell *et al.* 2011) but not (yet) in *P. t. v.* (Leendertz *et al.* 2011). Third, Quammen is clearly committed to a narrative (Cut Hunter Hypothesis), to which the evidence is made to fit. To give a simple example, the possibility of human to animal transmission (*anthroponoses*?) as an alternative explanation is never mentioned. Presumably this is ruled out because SIV is said to be older and more diverse than HIV (to put it simplistically). Certainly, humans preying on apes is more common than apes preying on humans, but the latter does occur (Frodo's consumption at Gombe of a human infant, while its mother and others could only watch in horror, being a graphic example). And, it turns out that SIV_{cpz} may be no more varied that HIV-1, M lineage, with its nine subtypes. So, perhaps it is not so clear who infected whom?

So, why should a chimpologist read this book? First, field primatologists (e.g., Jane Goodall, Richard Wrangham) play prominent roles in the story. Second, it provides a succinct and readable account of the SIV-HIV origins story, to which students and others can be referred for background reading. Thus, it offers a basis for answering testing questions about the relationship between chimpanzees and HIV-AIDS. Third, on a completely different level, it reminds us that physical contact with both human and chimpanzee blood is a risky business, wherever and however it may occur.

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Pan Africa News, Vol. 23, No.1
Published in June, 2016
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URL: http://mahale.main.jp/PAN/
ISSN: 1884-751X (Print), 1884-7528 (Online)