

## THE ROLE CHINESE SCIENTISTS PLAY IN INFLUENCING PUBLIC ATTITUDES TOWARDS PANDA BEAR CONSERVATION

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### ABSTRACT

In China, panda bears are successfully set up as a conservation symbol on mass media agenda by science communities. This study briefly examines the public communication efforts of two major panda research institutes, Chengdu Research Base of Giant Panda Breeding and China Conservation and Research Center for Giant Panda at Wolong. The effectiveness of their institutional efforts on mass media are assessed through a content analysis of the past decade's panda bear coverage by *The People's Daily*. The agenda issues, source use, images and values of the newspaper coverage all reflect how the two institutes frame panda bear conservation. The study argues that although extensive panda bear conservation messages have reached the public, those messages contain biased images and attitudes, and have limited influence on forming the public's environmental value. It also suggests that the active participation of more scientists and research organizations is essential for spreading informative and balanced conservation messages to the public.

### INDEX TERMS

Panda bears conservation, Scientists, Science Communities, Conservation communication, Newspaper content analysis, Attitude towards wildlife

### INTRODUCTION

“Human History becomes more and more a race between education and catastrophe”.

--Wells, 1920

With the facilitation of powerful contemporary mass media conduits, scientists may have profound impact on a society's attitude towards environment. Numerous mass media research suggests substantial media influences on public attitude towards environmental issues (Mazur 1987, 1998; Ader, 1995, Keith etc., 2000; Holbert et al. 2003; Yin, 1999; Burgess, 1998). Scientists and science communities, as experts and “elite,” are one of the dominant sources for environmental communication, and they largely determine the content and images of environmental communication (Domfeh, 1999; Hansen, 1991; Einsiedel, 1988; Mazur, 1998; Corbett, 1992; Yin, 1999).

The Chinese attitude towards wildlife is widely believed to contain strong worldly, utilitarian and symbolic elements (Jenkins, 2002; Harris, 2004; Harris, 1991, 1996). Most Chinese traditionally view wildlife in terms of its usefulness to human life and livelihood, secondarily as objects of beauty under the control of man, or as moral symbols without careful scientific and ecological considerations about the animal itself (Harris, 1996; Sterkx, 2002). These traditional anthropocentric values have conspired with attractions of Western exploitative

lifestyle, resulting in an extremely pragmatic use of animals and natural resources which seriously degrades the environment in China (Harris, 2004; Jenkins, 2002). Therefore, it is important for China to enhance scientists' role for cultivating a natural-friendly social value.

Using panda bears as a conservation symbol has proved to be a powerful choice to raise Chinese wildlife conservation awareness. According to China's third national panda survey (1999-2002), there are about 1600 pandas surviving in the wild and 160 being raised in zoos and captive breeding programs worldwide. The Chinese government has set up over 40 panda reserves and research centers. Some of these academic organizations substantially help to set up the giant panda as a flagship of conservation, which attracts intensive international and domestic public attention.

This paper examines the institutional communication efforts of two major panda bear research communities, Chengdu Research Base of Giant Panda Breeding (simply Chengdu Breeding Base) and the China Conservation and Research Center for Giant Panda at Wolong (simply Wolong Research Center). In order to assess the influence of their efforts on mass media, and their potential for indirectly influencing social values, the study quantitatively analyzes the sources and themes of the media coverage made by *The People's Daily* about panda conservation from 1995 to 2004. Suggestions about how to enhance the effectiveness of scientists' participation in conservation communication in China are discussed.

## **THE SCIENCE COMMUNICATION PROCESS**

The Chengdu Breeding Base was established in 1987 by the Chinese State Ministry of Construction and the Chengdu Municipal Government Base, locating in the northern suburbs of Chengdu, Sichuan province in the southwest of China. As of 2002, it has 48 scientists and technicians. Its 50-hectare semi-natural enclosures are currently home to more than 40 captive panda bears. According to its new development plan, the Chengdu Breeding Base will expand to cover 200 hectares of green land. The Wolong Research Center was set up in 1982 as a joint effort between the World Wild Foundation (WWF) and the Chinese Ministry of Forestry. The center nestles at 6,500 feet in the lush mountains of Wolong Nature Reserve in Sichuan. The center has more than 50 researchers and technicians, and cares for over 70 pandas in its captive breeding program. It also takes responsibility for the conservation of the over 150 pandas that live in the 200,000-hectare Wolong Nature Reserve.

Both research institutes host the largest number of captive panda bears in the world and both of them put significant efforts on panda bear conservation communication. As entitled National Conservation Education Base, both of them include public education as their organizational mission: to advance the conservation of the giant pandas and other endangered wildlife, and to promote the awareness of environmental conservation among the general public. The Chengdu base has a special conservation education department and full time teachers and education managers. The communication strategies of these two institutions can be concluded in three ways:

### **1. Take in: host onsite tours and exhibits to attract the public.**

On one hand, both institutes aim to develop direct onsite experience for the public. Both host a large number of guided tours to visitors and school groups. Visitors are even able to touch, hold and feed the panda bears. On the other hand, exhibits, lectures and volunteer programs are developed on site. Both institutes have panda museums which basically use text and specimen display to explain background scientific information about panda bear. The

Chengdu Breeding Base delivers conservation lectures to college volunteers such as Sichuan University. Its “Young Zoologist Program” enables middle school students in Chengdu area to observe panda behavior and collect data at the base.

## **2. Bring out: develop education programs to reach local communities and schools.**

Based on the belief that it is more effective to teach young people at a critical time in their development, the “bring out” strategy has a focus on local elementary and primary school children (Sarah M. Bexell et al., 2004). The Chengdu Breeding Base conducts regular conservation lectures both in urban and remote area of Chengdu for teachers, parents, and grandparents, and produces educational videos and other materials to schools. Wolong Research Center concentrates its outreach program on local people who live in the reserve. On one hand, it conducts lectures, signs, personal meetings and special activities like “Month of Wildlife Protection” to disseminate reserve laws and regulations. On the other, it develops localized education programs to schools. Its “Living Classroom” combines Internet technology with hands-on activities. Teachers and students from Wolong Sha Wan and Geng Da central primary schools are able to use the Internet to interact and share their conservation experience with each other. Both institutes are currently collaborating with interest groups to develop curriculum for local schools.

## **3. Dissemination: use mass communication tools to reach broader public.**

Through partnership with mass media entities, magazines, books, broadcast and television are used in the institutes’ communication campaign. Notably, both institutes make use of the to the Internet to develop websites for a broader audience. Not only they develop their own organizational websites, but cooperate with professional educational website developers to for public education. Wolong Research Center recently redesigned its self-developed website (<http://www.pandaclub.net/index.jsp>). Partnering with *Virtual Museums of China* (<http://www.kepu.net.cn>), the center opens an online virtual China Giant Panda Museum both in English and Chinese: <http://www.kepu.net.cn/gb/lives/giantpanda/index.html>. Multi-media content like video clips, animations, interactive online tests are provided. It also newly sets up a real-time panda bear web-cam, which allows website users to remotely control cameras at the juvenile captive garden in Wolong. Observers can share their observation logs and initiate long-distance discussion on the online forum. The Chengdu Breeding Base also runs an informative website Panda Adventure (<http://www.panda.org.cn/>) which has Chinese, English and Japanese versions. Its public education website is also co-developed with the Virtual Science Museum of China: <http://www.kepu.net.cn/gb/lives/panda/index.html>.

## **ASSESSMENT**

The extensive efforts these two institutes put on public communication are rarely seen in any other conservation research communities in China. According to Gandy (1982)’s *information subsidies* theory, mass media journalists tend to take the available information provided by powerful organizations. If an organization makes the information “easier, quicker and cheaper” for journalists to access, this organization will effectively set its desired message to the media agenda (Gandy, 1982). Especially, environmental media is seen as an institutional product which reflects the interests and values of the dominant social institutions (Corbett, 1992; Domfeh, 1999). In order to assess the effectiveness of the two institutes’ communication effects on the mass media, this paper quantitatively analyzes the news coverage of *The People’s Daily*, from January 1995 to December 2004.

Three hypotheses are raised: the panda bear ranks highly on the newspaper's conservation agenda; the Chengdu Breeding Base and the Wolong Research Center are the most frequently cited science communities in panda bear coverage; the images of panda bear conservation in the newspaper coverage reflect the images and values carry out by these two science institutions. The frequency, sources, topics, themes, overall tones of panda bear stories are coded in to inclusive and mutually exclusive categories. The study uses a "grounded theory" approach to allow the themes and topics to emerge from the data (articles). Although it is impossible for this study to check various mass media forms, the study believes that *The People's Daily*, as China's largest and most influential newspaper (Zhao, 1998; Jin, 2002), reveals useful reference for understanding Chinese mass media.

The population of this study is the *The People's Daily* online database <http://www.people.com.cn/GB/43063/43079/43084/index.html> (2000-2004) and <http://search.peopledaily.com.cn/was40/people/qtbzsearch.htm> (1995-1999). Study samples are selected through keywords research provided by the databases.

### Result: Story Frequency (table 1)

Search keyword used	Articles that has the keywords	Notes
大熊猫 Panda bear ( <i>Ailuropoda melanoleuca</i> )	341	Unique to China, Endangered, about 1600 wild pandas remaining, 160 in captivity
金丝猴 Snnb-nosed Golden Monkey ( <i>Rhinpitheius roxellanae</i> )	114	Unique to China, Endangered, a few thousands remaining in the wild
华南虎 Chinese Tiger ( <i>Panthera tigris amoyensis</i> )	69	Unique to China, only 20 found in the wild
朱鹮 Crested Ibis ( <i>Nipponia nippon</i> )	49	Endangered, bird of "national treasure", 400 remaining in the wild
普氏原羚 Przewalski's Gazelle ( <i>Procapra przewalskii</i> )	6	Unique to China, Endangered, 300 remaining in the wild

Among the 341 articles that have the keyword 大熊猫 "panda bear", 147 have giant panda and its conservation as the main topics of the article. These 147 articles are further analyzed.

### Result: Direct sources and indirect sources (Table 2)

Sources	Direct: Frequency/percentage	Indirect: Frequency/percentage
1 Wolong Research Center (Include Wolong Natural Reserve)	9/6.1	23/15.6
2 Chengdu Breeding Base	2/1.4	11/7.5
3.Foping Nature Reserve and the Qinling Wild Research Center for Giant Pandas	1/7	6/4.1
4 Other Chinese nature reserves, zoos and research centers	6/4.1	38/25.9
5 Chinese government administration agencies	20/13.6	17/11.6
6 Chinese educational institution, universities and academy conferences	0	0
7 Chinese interest groups, private individuals and business	4/2.8	8/5.4
8 Intentional sources	18/12.2	43/29.3
9 Other sources	1/7	9/6.1
10 Sources unknown	97/66	0

The directly quoted, or clearly identified sources are coded as direct sources. The affiliations of the article's subject matter are coded as indirect sources. The indirect source category is based on an assumption that when an article does not identify the collective or individual sources, the sources of that article are most likely to be whoever it reports about.

**Result: scientific background information produced or not (Table 3)**

	Articles /percentage of articles
Scientific explanation provided	22/15.0
Scientific explanation not provided	125/85.0
Total	147/100.0

**Result: Topics (Table 4)**

Topics	Articles /percentage of articles
Captive panda conservation and research	83/56.5
Wild panda conservation and research	43/29.3
Conservation-related public activities	17/11.6
Other topics	4/2.7
Total	147/100.0

**Result: Themes (Table 5)**

Themes	Articles /percentage of articles
1Being taken good care of in captivity	64/43.5
2Love people	5/3.4
3Difficult captive breeding and Physical attributes blamed	15/10.2
4Residents take good care of wild pandas/habitats	7/4.8
5Sound policies and management take good care of habitats	11/7.5
6Habitats damaged	12/8.2
7 Poaching punished	4/2.7
8 Research/researchers help conservation	17/11.6
9 Superstar abroad	33/22.4
10 National symbol	26/17.7
11 Generous donation and active engagement in conservation related activities	25/17
12 Other Themes	22/15.0

**Result: Overall Tone (Table 6)**

Over all Tones	Articles /percentage of articles	Notes
Positive	95/64.6	The overall or predominant tone here is the side that the article takes about panda bear conservation. This study borrows Wolch and colleagues' (2001) method to examine a combination of three indicators: attitudes presented, terminology used, and information bias (use data to highlight something).
Negative	4/2.7	
Neutral	48/32.7	
Total	147/100.0	

**DISCUSSION**

**Setting the panda bear as a flagship animal for conservation communication**

The study validates the first hypothesis that the panda bear ranks highly on the newspaper's conservation agenda. All the other four counterpart wildlife of panda bears, the Snnb-nosed Golden Monkey, the Chinese Tiger, Crested Ibis and the Przewalski's Gazelle are all big mammals or birds that unique to China. Most of them are even under more serious extinction

threats. However, the panda bear is mentioned in 341 articles by *The People's Daily* in the past decades, which is three times more frequently to be referred than the Snnb-nosed Golden Monkey and 56 times more frequently than the Przewalski's Gazelle. The frequency of a subject matter that occurs in a stream of message has long been used to measure "importance, attention or emphasis" (Krippendorff, 1986). The use of the panda bear in communication is helpful to raise public awareness and support for sustainable development and conservation. This creature aroused emotions, sympathy and curiosity in the broadest of publics as a representative of an endangered species (Martin, 2002). Although many forces share the credit for consciously choosing the panda bear as the conservation symbol, including the Chinese government and international organizations, it is certain Chinese scientific communities that play a very most important role in efficiently getting this conservation symbol out to the public.

### **Involve scientists and science communities into environmental communication**

The content analysis also supports the second hypothesis: Chengdu Breeding Base and the Wolong Research Center are the most frequently cited science communities. However, the participation of scientists in public conservation communication in general is still low.

Both the direct and indirect sources show a predominance of the governmental, international and academic sources. Among the 50 articles that have directly quoted sources, 18 articles are from sources of research centers and reserves: 9 (50%) from Wolong Research Center, 2 (11%) from Chengdu Base. The other over 50 institutes, reserves and zoos share the rest 7 articles. Among the 78 articles which have indirect sources from research centers and reserves, 23 (30%) are from Wolong Research Center, 11 (14%) are from Chengdu Breeding Base.

Nevertheless, a majority of the articles, 97 (66%) do not cite sources. Especially only 18 (12.2%) out of the 147 articles cited scientists and personnel from panda bear research communities. Scientists from other major panda research communities, including the Beijing University Giant Panda Conservation Center and the Wild Panda Research Center of Foping Nature Reserve are seldom heard by *The People's Daily* audience. This overall lack of scientist sources may explain why 125 (85%) articles in this study do not provide careful scientific background information about panda bear conservation.

Science communication should be considered as an obligation, other than a secondary periphery of a science community, especially in regard to environmental issues which are oftentimes controversial. When there are only a few science communities that are active in public communication, the media will likely take the most available information. If more scientists in the field of conservation make their study and consultation accessible for the mass media, the journalists are more likely to be able to portray accurate, informative and balanced conservation stories on the mass media.

### **Conservation-communicating environmental value behind environmental facts**

Newspaper articles reflect moods, experiences and concerns, reveal the focus of attention and attitudes, interests and values of population groups (Krippendorff, 1986; Wolch et al. 2001). The content analysis of the topics, themes and overall tones supports the third hypotheses: the images of panda bear conservation in the newspaper coverage reflect the images and values carry out by the Wolong and Chengdu institutions. This study argues that although the panda

bear conservation has been give substantial attention by certain research institutes, the value of conservation is not being effectively communicated.

For the story topics, 83 articles (56%) are about captive pandas. The dominant themes for captive panda stories are “being taken good care of in captivity (62 articles)”, “Super star abroad” (31 articles), “national symbol” (18 articles), “researchers and research are helpful” (16 articles). In describing those themes, a noticeable amount of sentimental or personifying expressions are used: “Ling Ling (the panda) was all excited and happy...he could not wait to meet his new bride in Mexico. (陵陵好像按耐不住心头喜悦...前往墨西哥相亲)”, “(the staff) tend the panda bear with great carefulness, as if the pandas were their own children (精心护理, 悉心照料, 像自己的孩子)”; the panda bear’s enclosure is a “country mansion(乡间别墅)”, “garden of Eden (生活乐园)”; the Chengdu Breeding Center is “the place of making miracles (创造奇迹的地方)”; the panda bears in enclosures are “pressure-free(悠然自得)”, “leisurely and careless(悠闲生活)”, and “indulge in pleasure and forget their home (乐不思蜀)”; Panda bears are “national treasure (国宝)”, “rare treasure (稀世珍宝)”, “super star (明星)”, “ambassador for peace (和平大使)”, “friendship angel (友谊天使)”. Such terminology and expressions strongly indicate the success of artificial breeding, the worry-free life for panda bears under human care, the symbolic and political value of panda bear.

Compare to this, only 43 (29.3%) out of the 147 articles are about wild panda. The main themes of those articles are “ residents, sound policies and management take good care of habitat ( 13 articles)”, “habitat damaged (8 articles)”, “poaching punished theme (4 articles)”, “ (wild panda) love people theme (3 articles), “super star abroad (3 articles)” and “panda’s physical attributes blamed (3 articles)”. It is clear that there are far less articles about wild panda bears than captive panda bear. And when talking about wild panda bears, *The People’s Daily* takes on a fairly optimistic attitude While human activity-caused habitat degradation is wildly identified to be the major causation of the loss of panda bears, there are all together only 12 articles (8 about wild panda, 4 about captive panda) in the 10 year period that have talked about this problem..

The overall tone of the articles agrees with the themes, a majority of 95 (64%) articles use strong attitude-indicating expressions to show a positive tone about panda bear conservation. Only 4 (2.7%) articles are negative about the current conservation practice or the future of panda bears.

To sum up, *The People’s Daily* pays more attention to the “successful” captive breeding and the symbolic use of panda bear. Little report space is given to the protection of habitats, the relationship between habitats and human life, the value, biology and welfare of the wildlife itself. Other than a wild animal living in the forest, the panda bear is portrayed as a lovable, fragile, precious and politically symbolic animals raised under human care. This picture reflects the images and values that the two major research institutes frame panda bear conservation. The Wolong Research Base and Chengdu Breeding Center both have a current research focus on artificial breeding. They are both dedicated in fundraising from government agencies, individuals and international sources. Thus their websites, pamphlets, magazines are characterized by a promotion of their institutional success in captive breeding. The number of new panda bears born by artificial breeding and the health care of captive pandas, as a more tangible measurement of their work, are naturally placed high on their communication agenda. Pictures of scientists holding panda bears or keepers feeding a group of panda bears flourish

with stories about the “happy” life of panda raised by the institutes. Onsite activities such as holding or feeding panda bears are promoted as attractions to donors and visitors. In addition, both institutes are government sponsored, which also dye their communication products with a touch of polical color. All those reflect the dominant mass media images found in this study. Media images are resonances of the social culture and attitude, while it also reinforce and activate the existing attitude (Yin, 1999; Hansen, 1991).

This study suggests that it is not only a matter of how extensive and frequent the conservation signals reach to the public, more importantly, but of what signals and images reach the public. Therefore the study argues that the panda bear conservation in China has limited influence in cultivating the Chinese’s respect to nature and wildlife, and in promoting environmental-friendly attitude and behavior.

## CONCLUSION

Chinese environmental communication cries for active participation of scientists from different research fields. And it also requires a shift of focus from the communicating of conservation facts to the communicating of conservation values. The significant increase of China’s Internet users provides an unprecedented opportunity for the communication of conservation. Multi-media information and interactive programs are allowed to be communicated in a multi-directional cyber space. Video, audio, web-cam brings the nature to the audience’s home. Online forum and chat rooms present the scientists in person to the public. Educators, mass media practitioners and conservation organizations are eager and open to involve scientists into their endeavor. Policy makers and research sponsors are developing policies to cultivate public-oriented science communities. Scientists and science communities should seize these opportunities and spread their words to the broadest public.

## REFERENCES

- Bexell, S., Luo, L., Hu, Y., Maple, T, McManamon, R., Zhang, A., Zhang, Z., Fei, L., & Tian, Y. 2004. Conservation Education Initiatives in China. In Linburg, D. & Baragona K. (Eds.) *Giant Panda Biology and Conservation*. Berkeley: University of California Press.
- Ader C.R. 1995. A longitudinal study of agenda-setting for the issue of environmental pollution, *Journalism & Mass Communication Quarterly*, 72: 300-311.
- Burgess J. 1998. The production and consumption of environmental meanings in the mass media: a research agenda for the 1990s. *Transactions of the Institute of British Geographers*, 15: 139-161.
- Corbett, J. 1992. Rural and urban newspaper coverage of wildlife: conflict, community and bureaucracy. *Journalism Quarterly*, 69: 929-937.
- Domfeh, K. A. 1999. Evaluation of environmental News Coverage in Ghana. *Environmental Health*, October: 27-32.
- Einsiedel, E. 1988. The Canadian press and the environment, paper presented at the SVIth Conference of the International Association for Mass Communication Research, Barcelona, Spain, 24-29 July.
- Gandy H. O. 1982. *Beyond Agenda Setting: Information Subsidies and Public Policy*. Norwood, New Jersey: ABLEX Publishing Company.
- Hansen, A.1991. The media and the social construction of the environment. *Media, Culture and Society*, 13: 443-458.
- Harris, P.G. (2004). ‘Getting Rich is Glorious’: environmental values in the People’s Republic of China. *Environmental Values*, 13: 146-165.

- Harris, R.B. (1996). Approaches to conserving vulnerable wildlife in China: does the color of cat matter—if it catches mice? *Environmental Values*, 5: 302-334.
- Harris, R.B. (1991). Conservation prospects for musk deer and other wildlife in southern Qinghai, China. *Mountain Research and Development*, 11: 353-358.
- Holbert, R. L., Kwak, N. and Shah, D. 2003. Environmental concern, patterns of television viewing, and pro-environmental behaviors: integrating models of media consumption and effects. *Journal of Broadcasting & Electronic Media*, 47:177-196.
- Jenkins, T.N. (2002). Chinese traditional thought and practice: lessons for an ecological economics worldview. *Ecological Economics*, 40: 39-52.
- Jin L. (2002). *Newspaper converge of agricultural biotechnology in mainland China: the hegemony theory reexamined*. Texas A&M University, thesis.
- Krippendorff, K. (1986). *Content Analysis: An Introduction to Its Methodology*. London: SAGE Publications.
- Martin, C. (2002). Foreword. In Lu. Z & Schaller G. *Giant Pandas in the Wild*. New York: Aperture Foundation.
- Mazur, A. 1987. Putting Radon on the Public's Risk Agenda'. *Science, Technology, and Human Values*, 12: 86-93
- Sterckx, R. (2002). *The Animal and the Daemon in Early China*. Albany: State University of New York Press.
- Wells, H. G. 1920. *The Outline of History: Being a Plain History of Life and Mankind*; New York: Macmillan.
- Wolch, J., Gullo, A., & Lassiter, U. (2001). Changing Attitudes toward California's cougars. *Society and Animals*, 5: 95-116.
- Yin, J. 1999. Elite opinion and media diffusion: exploring environmental attitudes. *The Harvard International Journal of Press Politics*, 4.3: 62-86.
- Zhao Y. (1998). *Media, market and democracy in China: between the party line and the bottom line*. Urbana: University of Illinois Press.