

wood is credited with breathing life into a mundane monitoring effort by creating the Living Planet program, leading to upcoming missions that will study everything from ocean circulation to Earth's gravitational field. The overhaul is widely viewed as a success story, says Krimigis, but Southwood faces a tougher job in getting ESA's upcoming big-ticket missions to fly on budget without diluting the science. Toward this end, Southwood says he gained valuable ex-

perience at the instrument bench. "You have to get a firm hold on the engineering of a project if you are going to get the project done to time and to cost," he says. Says Krimigis, "I wish him good luck."

At ESA, Southwood will succeed the highly respected Roger Bonnet—"an incredibly hard act to follow," he says. With European countries struggling to reconcile their national aspirations with their pan-European goals, Southwood views both ESA and

CERN, the European particle physics laboratory near Geneva, as models for how a wider European integration might work. "If Europe can't get its act together in something like science, big science where it has to, what's the hope of it doing something in more politically complex areas?" he asks. "European space activities have to be successful if they are going to make people feel positively about Europe."

—ANDREW WATSON

Andrew Watson writes from Norwich, U.K.

DEMOGRAPHY

A Billion and Counting: China's Tricky Census

Officials try to keep politics out of the world's biggest enumeration as they gather data on mobility, fertility, and other sensitive demographic indicators

BEIJING—It was a few minutes past midnight on 1 November when the police knocked on his door. "Census," they announced as their reason for rousing the young Beijing pedicab driver out of bed. The police were helping census takers locate migrant workers who might otherwise flee or avoid participating in the largest enumeration in history. But when the driver failed to produce the appropriate papers, he says the police also fined him \$6 and threatened to send him back to his home in Henan province. "Their attitude was violent," says Bai, who gave only his last name. "They were not conscientious or considerate."

The brusque behavior of the police is an unintended offshoot of the fact that census-taking is serious business in China. This month some 6 million clipboard-carrying workers knocked on 350 million doors in the fifth census since the founding of the People's Republic in 1949. For weeks Beijing's streets have been covered with slogans like "truthful reporting is every citizen's duty" and "the census is good for the country and good for the people." The central government has gone to great lengths to emphasize the benefits of providing accurate data to set national policies on housing, education, the environment, and other social issues. "The census is very important for us," says Chen Shengli, a spokesperson for the State Family Planning Commission, one of a score of ministries anxiously awaiting the results, expected out in preliminary form in February.

For millennia, the central government has sought accurate demographic information to manage its vast population. The first four PRC censuses were remarkably good by international standards, says Judith Banister, the former head of the U.S. Census Bureau's China branch and now a professor at the Hong Kong University of Science

and Technology. The counts, she says, were bolstered by a strict household registration system, a relatively immobile population, and a vast supply of low-cost labor. But more than accuracy is at stake. The wrong numbers could have political ramifications if they raise questions about compliance with such policies as the one-child-per-



Counting on them. The Chinese government has heavily promoted the value of cooperating with census takers to answer questions on the long form (opposite).

family rule. They could also—despite stern warnings to the contrary—lead to reprisals at the local level.

This census will produce a much fuller picture of Chinese society than the last one, done in 1990. It marks the first time that Chinese statisticians have felt confident enough to use a long form, says Y. C. Yu, former head of demographic and social statistics at the United Nations and a trusted adviser to the Chinese government. A randomly selected 10% of the population is being asked additional questions about their movements, housing, sanitary and cooking facilities, employment, education, and fertility rates (see graphic). At the same time, census officials

rejected requests from researchers to include questions about income and household possessions after pilot runs showed that the Chinese, like citizens in many other countries, would refuse to cooperate.

Answers to the long form are intended to illuminate the numbers and migratory patterns of China's populace, including the 60 or so million people who have left their farms and villages in search of a better life since China began to relax economic and social controls in the 1980s. This "floating population" represents a potential powder keg for a government trying hard to control urbanization and maintain order. But using the census to monitor their movements is tricky. Asking

how many family members are away, for example, may lead to an accurate total for migrants, but it won't say anything about where they are and what they are doing. At the same time, respondents are unlikely to implicate themselves in any wrongdoing. "People employing peasants or [illegally] housing migrants really have an incentive not to tell the truth," says Dorothy Solinger, a political scientist at the University of California, Irvine.

To reassure the public, the government has repeatedly proclaimed that its census takers are ordinary citizens, that the information will remain confidential, and that the census won't be used as an excuse to send migrants back to their hometowns. But as Li

Xiru, a census manager at the statistics bureau, acknowledges, census takers are told to "find out the real situation" by talking to other grassroots sources. That's what happened in Bai's case, where the same police who often treat migrants harshly were enlisted to make sure those migrants were counted.

Despite the government's promises, many citizens equate the census-taking process with the police. "I don't like the census because I'm an illegal resident of Beijing," says a recent college graduate surnamed Wan who worries about being discovered. Indeed, rising expectations of privacy have become a problem for the government in this year's enumeration. "People's ideas have

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changed," says Qian Yukun of the National Bureau of Statistics, "so their degree of co-operation has also changed."

Another sensitive issue the census will explore is the country's fertility rate and ratio of boys to girls at birth. Although researchers and family planners are desperate for such data, accurate information is hard to come by. Families worried about being fined for births that violate China's strict family-planning policies may try to hide children. Local officials who fear the consequences of not enforcing quotas may contrive to depress the reported counts for their villages. As a result, says Banister, past censuses have undercounted children younger than 6 by about 5%.

For the past decade, the statistics bureau, which also runs the census, has done an annual survey that samples 0.1% of the population. The results are routinely adjusted at the national

central government's tenuous hold over local officials. The center "can issue these wonderful-sounding pronouncements," explains Susan Greenhalgh at the University of California, Irvine, "but the localities often do just what they want to do."

researchers believe that infanticide is a factor behind the imbalance, although Chinese demographers tend to dismiss the idea and to focus instead on selective neglect. In any case, the census is expected to quantify what some officials and researchers see as a potentially huge problem—the social consequences of a staggering surplus of unmarried males.

At one point demographers hoped that the lopsided sex ratio reflected an underreporting of girls by couples who were reserving an official space in the family for an unborn boy. But there is a growing consensus that, for the past 15 years at least, most of the "missing girls" never existed.

At the other end of the life cycle, this year's census will update mortality data that are hard to come by because China does not have reliable death registries. This undercount of the dead inflates the expected life-span. Huang Rongqing, a demographer at the Capital University of International Economics and Trade in Beijing, offers several explanations for the undercount, including peasants who break the

law by burying instead of cremating their dead and factory bosses employing illegal migrant workers. In addition, Huang notes that discussions of the dead are taboo among some of China's minorities and that peasant parents are afraid of being blamed for the death of an infant.

The statistics bureau hopes to publish complete results of the census in 2002, along with samples of raw household-level data.

That information is eagerly awaited by researchers everywhere. They are heartened by promises from the bureau to do better than in 1990, when similar

sampling data proved to be virtually useless. But the census is also a test of the ability of the body politic to paint an accurate picture of itself. A Beijing taxi driver named Hu expects his countrymen to pass with flying colors. "Of course people will report truthfully," he says. "Not reporting truthfully is wrong, isn't it?" —DANIEL WALFISH
Daniel Walfish is a freelance writer in Beijing.

H4. The number of people registered in this household who have been away for less than half a year

Male:
Female:

R6. Household registration situation

1. Living in this place, registration in this place
2. Living in this place for half a year or more, place of registration is someplace else
3. Living in this place for less than half a year, have been away from place of registration for more than half a year
4. Living in this place, registration here is being processed (skip to R8)
5. Originally in this place, now outside the country working or studying, so temporarily have no registration (skip to R8)

H20. Does housing have toilet?

1. Flush toilet used only by this household
2. Flush toilet shared with neighbors
3. Other kind of toilet used only by this household
4. Other kind of toilet shared with neighbors
5. No toilet

level—by as much as 15% for birth figures—to correct for underreporting. Last year's figure put the country's population at 1.26 billion. Census numbers are never altered, however, as they are based on an actual enumeration rather than a sample. That situation has led some demographers to speculate about what might happen if the 2000 census produces a number below 1.26 billion. An official in the statistics bureau recognizes this potentially embarrassing development. "Of course," he admitted reluctantly, "the count shouldn't be low."

There are also disagreements within the central government. Qian of the statistics bureau says the government has told families that fines for registering extra children will be reduced this year to foster an accurate tally. Not so, says Chen of the State Family Planning Commission, who insists that families have never been given amnesty of any kind for excess births.

One legacy of the single-child policy is a

R12. Reason for leaving original place

1. New job or business operation
2. Job transfer
3. Allocated a job after university graduation
4. Study or training
5. Original housing was demolished
6. Marriage
7. Followed migrating family member
8. To be near family or friends
9. Other

R25. Number of births

How many live births you've had:

Male:

Female:

Among which survive:

Male:

Female:

R26. Birth situation from November

1, 1999 to October 31, 2000

1. Have had no births

2. Have had a birth

Which month:

Sex:

Male:

Female:

The government has tried to address the problem of undercounting by telling local officials that they will not be punished if the census results in a number that exceeds their quota. On the other hand, a similar pronouncement in 1990 did not prevent actions against some unfortunate cadres, say some researchers. The problem, they add, is the

distorted gender ratio at birth. The patterns are aided by the widespread use of ultrasound machines in the countryside to determine the sex of the fetus which, in some cases, lead to aborting females. A 1995 survey showed an alarmingly high ratio of 118 boys to 100 girls aged 0 to 4, compared to the normal birth ratio of 106.5:100. Some foreign