Forum

The Census: It Can Be Done More Accurately with Space-Age Technology

I WAS VERY INTERESTED in Brugioni's Commentary in the September 1983 issue of this Journal (pp. 1337–1339) concerning the undertaking of the Census of the United States using "space-age technology." His comments are typical, I think, of many people in the remote sensing field who are either unaware of or insensitive towards the public or the political questions that the public generates.

Brugioni correctly points out the problems and complaints concerning the 1980 Census of Population, that of undercounting in many areas, especially in large cities where mayors cried foul. However, I have yet to hear any public official advocate using surveillance techniques, essentially what Brugioni is advocating, to conduct the Census. The outcry over invasion of privacy would be tremendous. The idea of "spy-in-the-sky" technology being used to count Americans would be a difficult pill for the citizenry to swallow, conjuring images of Big Brother that a novelist would envy.

I feel that the public outcry alone will prevent the use of space-age technology in the Census. There is, however, another aspect of Brugioni's solution that falls short. Perhaps he would address the issue separately, but there is more to the Census than simply the count of population. A good example of the many uses of Census information is the reapportionment of electoral districts mentioned by Brugioni. In South Carolina the racial breakdown of districts in elections at all levels of office, from the Congress to city council, is based on data from the Census. The districts must be balanced racially to pass Justice Department standards. This data would probably not be available from a remotely sensed Census. Other Census information, including income of residents, occupation, and migration patterns would be difficult if not impossible to establish using remote sensing techniques.

Brugioni makes some interesting points about Census failures. Perhaps we ask too much of what is the current method of surveying the population. However, I believe that Brugioni's reliance on technology as the solution to Census ills is misplaced. In America, is there not a right to ignore the Census and the Census taker? Or is it so important that we be counted that our own spy networks must be trained on us? Simply because the technology is here, must we use it? I think not.

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Further Comments on "The Census"

I WAS MOST INTERESTED in the article by Dino Brugioni urging the use of aerial photography in national censuses. During 1967–8 I directed a project in Nigeria in which we used aerial photos prepared by the Nigerian Federal Survey Office, in conjunction with three demographic sample surveys on the ground, to estimate the population of the Lagos Metropolitan Area. The photos produced ground images at a scale of 400 feet to the inch, a very good scale for this kind of work. We obtained population estimates of about 1.4 million in 1967, a decrease of about 8% during the Nigerian Civil War of those years, and a mid-1980's projection of about 5 million, based on a natural growth rate of about 4% per year in this youthful inmigrant population, plus inmigration estimates before and after the war. These figures look entirely reasonable today.

There is nothing magic about doing a census using aerial photos. One can do the same thing on the ground by having people enumerate the same things (housing units, farms, roads, latrines, etc.). It simply takes much longer and costs more money; whereas the aerial scan can be repeated at more frequent intervals more accurately at lower cost. During the late 1970's, three faculties of the University of Ife in Nigeria combined forces to do an enumeration of Ife and Ilesha Divisions in Oyo State, in the Nigerian cocoa belt. Student teams went from village to village enumerating residential units and obtaining other data. A population figure just under one million persons for this large area was obtained in 1979. During the ensuing year the well known Nigerian demographer Lawrence Adeokun and I toured the area spot-checking on villages. We found our compiled figures to be entirely reasonable in every case, and no instance of serious error was found.

The Nigerian government is now giving serious consideration to using aerial photography in its next national census. This would be a significant step. It is regrettable that the United States, which was the first country in the world to conduct regular national censuses as well as the first country in the world to put a man on the Moon, may not become the first country in the world to use modern technology to improve its troubled census picture.

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Response to Dean Sinclair

First, let me say that the people *I* know in the remote sensing field are not unaware of or insensitive to the public, as Mr. Sinclair contends. Rather, they have devoted careers and lives to serving the public.

Mr. Sinclair should be aware that there is no inherent or local right to ignore the census or the census taker. Title 13 of the U.S. Code provides a penalty for noncompliance with the census. This non-compliance, for a variety of reasons, has prompted a number of counties, cities, and states to file actions in federal courts asking that the census be adjusted because of under counting. Some of the cities maintain their population counts are actually up to 15 percent above that reported by the Bureau of the Census. Their loss of revenue amounts to millions of dollars annually. Some cities have advocated alternate methods of conducting the census, including aerial photography.

The census envisioned by the framers of the constitution was solely a headcount to determine representation in the House of Representatives. As I stated in my article, additional questions have been added over the years. However, those interested in deriving statistical data from the census more often than not can get more accurate and timely information from professional and trade associations. Mr. Sinclair is misinformed that the Census Bureau gets information on income from the census. The Census Bureau receives its information on personal incomes from the Internal Revenue Service. The Bureau of Economic Analysis of the Commerce Department produces estimates of personal income independent of the Census Bureau.

The reapportionment of Congress is done by the Census Bureau, which advises the states as to the number of seats they will have in the Congress for the next decade. The redistricting of Congressional districts is passed on by state legislatures. District lines are drawn to assure representation of racial minorities, *not* to achieve racial balance. There are two methods of appeal for reviews of redistricting: local actions can be brought in federal or state courts contesting the lines or actions, and by the Justice Department against those states (mainly Southern) impacted by a series of voting rights laws.

As for Mr. Sinclair's concern about "surveillance techniques," I am not advocating the surveillance of individuals. Indeed, there is no such capability from aerial reconnaissance. What I am advocating is taking a count of housing units and applying appropriate facts from existing data bases to derive an accurate population count. As such, my method is much more impersonal than the current census, which demands an individual's name and the answers to a number of very personal questions.

I am sure that Mr. Sinclair, a geography major, is aware that most maps and charts currently created by U.S. Agencies make use of "spy in the sky" technology. I do not know of any case where individuals or groups complained. Mr. Sinclair should also be aware that many states use aerial photography for assessing property taxes.

The present census-taking methods have been described as "inaccurate," "an exercise in futility," "passé," and "costly." I still maintain that the methodology I propose is more accurate, cheaper, more responsive to the needs of modern day America, and, I will add, far less personal.

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