

DEVELOPMENT OF PHOTOGRAMMETRY IN THE REPUBLIC OF KOREA

YEU, Bock-Mo
Dept. of Civil Engr., Yonsei University

CHOI, Jae-Hwa
Dept. of Civil Engr., Sungkyunkwan University

YOM, Jae-Hong
Photogrammetric Dept., Air Korea Co.
Seoul, Korea

Commission VI,

1. Early stage of photogrammetry in Korea

Although Korea has a long history of map making, it was not until in 1946 that photogrammetry was first introduced into map making in Korea. Aerial photographs were taken by surveyors in U.S Corps of Engineers to produce maps at the scale of 1:50,000 and 1:25,000. When the Korean War broke out in 1950, 1:40,000 scale maps were additionally prepared by means of photogrammetry to meet the increasing need of producing accurate maps quickly and efficiently.

After the cease fire was announced, aerial photographs which till then had been used for map making became an important tool for photo interpretation and intelligence gathering. Photogrammetry development remained practically at a standstill from then until the sixties.

In 1962 a five year economy development plan was launched to save the deteriorating national economy.

It was only then that the need to acquire independent skill and knowledge of photogrammetry was realized, and consequently investment was made in this field. As this development plan turned out to be a success, photogrammetry continued to receive the attention it rightly deserved and became an essential tool of all future map making and planning.

2. Present Situation

1) Organizations

In Korea, the National Geographic Institute(NGI) is fully responsible for all geodetic survey and topographic mapping. All cadastral mapping and service is carried out at the Korea Cadastral Survey Corporation. The Republic of Korea Army Map Service (ROKAMS) undertakes military mapping and some portion of geodetic survey allotted to it by NGI and the Hydrographic Office of Ministry of Transportation is in charge of bathymetry and marine chart production.

The NGI has completed, by 1974, the production of topographic maps at the scales of 1:50,000 (239 sheets), 1:250,000 (13 sheets) and 1:1,000,000 (1 sheet) as well as 1:25,000 (763 sheets).

Approximately an area of 100,000 km is covered which is practically the whole country except for several isolated islands and the Demilitarized Zone. An overview of past map revision by NGI is roughly summarized in Table 1.

Table 1 Map Revision (Sheets)

Map \ Year	82	83	84	85	86
1:25,000 national base map	107	100	100	93	90
1: 5,000 large scale map	317	160	150	180	193
1:25,000 land use map	29	42	36	40	40

Also orthophoto maps of 1:5,000 is being produced for large metropolitan and new development areas at an annual rate of about 100 square kilometers.

The Korea Cadastral Survey Corporation which is responsible for production, management and distribution of cadastral maps, has turned to photogrammetric means from past ground surveying in map production. At the same time digitizing of cadastral maps are also being carried out for an effective cadastral administration.

The Republic of Korea Army Map Service (ROKAMS) produces various topographic maps for its own purposes and carries out its own photography, plotting and printing.

There are a few other organisations which produces thematic maps of their own, most of which are undergoing the automation procedure, using available computer hardware and software. There are also a few small scale private firms involved in photogrammetry. Recently, large cooperation are beginning to get involved in this business. It is likely that it will not be long before large scale modern photogrammetric private firms compete in the international market.

2) Research Institutes

Research has been quite active considering the limited resources and investments made during the past few decades. Most researches are carried out in universities and national research institutes. Their research fields are as shown in Table 2.

Table 2

Research Fields

Institute	Research Fields
Universities	Oblique Photographs, Non-Metric Cameras, Deformation Analysis, 3-D Analysis, Error Analysis, GPS, Satellite Geodesy, Landsat Data Processing DTM, Applications in Civil Engineering.
Korea Advanced Institute of Science and Technology (KAIST)	Image Processing, Geo-Information System, DTM Data Generation of SPOT Data
Korea Institute of Energy and Resources	Exploration Using Landsat TM Data, Land Use Maps, Image Processing
Korea Ocean Research and Development Institute	Marine Geology, Satellite Positioning at Sea, Ocean Temperature Distribution

3. Future Outlook

The economic boom of past decade has brought much progress in all fields of engineering, especially in automobile industry, electronics and construction. The growth of construction industry was the major reason for the progress in photogrammetry during this period.

The future of photogrammetry in Korea can be said to be a promising one because of the acquired knowledge from past researches and also because of the bright outlook in the local electronic industry. The fast growing hardware and software business of computer industry will play an important role in the progress of photogrammetry.

Already a few organizations such as NGI, Korea Cadastral Survey Corporation have started digital mapping and have specific plans to implement geo-information system in the near future. Geo-information system will be a very essential tool in all future urban planning and land use planning especially due to the fast growth of cities, which gets out of control at times.

Remote Sensing too will enter a new era in the next decade as there are concrete plans to install receiving stations and also to launch a satellite. The preparatory studies and skills is sure to be very active until the satellite is actually launched and this trend is very likely to continue for quite some time.

Also the government recently announced remote sensing as one of the six major fields of advanced science to be developed until the year 2000.

4. Summary

Although photogrammetry was introduced into Korea in a very unique way and at a very untimely period, about forty years ago, it is beginning to emerge as an important tool in various fields of national administration.

It has yet to grow into a major engineering field, but considering the present trend of rapid economic growth, urbanization, population growth, there is bound to be a great need for an information handling system such as the GIS. This in turn will bring about the need and progress of photogrammetric and remote sensing activities. It is hoped that it will not be long before photogrammetry plays a major role in bringing about benefit and prosperity to all mankind, here in Korea too.

References

- Korean National Committee for IUGG, 1987. Report of the Geodetic Works in Korea for the Period from Jan. 1910 to Dec. 1986., National Report to the XIX General Assembly, Vancouver, CANADA.
- National Geography Institute, 1985. Mapping in Korea, Third United Nations Regional Cartographic Conference for the Americas.
- Yang, Y.-K., and D.M. Lee, 1986. Future Trends in Microcomputer Image Processing Technology, Korean Society of Remote Sensing, Vol. 2, No.1, pp. 35-47.