Map Proofing and Revision

(Part 6)

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Map Proofing

- Before a map is finally printed and published consider the following factors:
  - Accuracy
  - Completeness
  - Design
  - Legibility of the map - names on one colour separation not to obscure important detail from another
- Because of the above reasons, make a colour proof before printing
- *Do this to avoid repeat corrections - time wasting!*

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Preamble

- *Human influence and activities upon the surface of the Earth have grown tremendously over the years and are now spreading even to areas where they have never before been seen and/or felt.*
- *For this reason and massive expansion in existing areas, there are calls for good management, monitoring and planning of the exploited resources.*
- *There is also greater demand for preservation of some of these resources that are now being wantonly exploited.*

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Preamble

- *But management and preservation of all resources can better be done with a good inventory of what the situation was and what it now is.*
- *From such information, various analyses about the situation could be carried out so as to seek necessary remedies to the particular situation.*
- *In this regard, basic topographic maps have for ages carried this responsibility but are slowly failing to carry on this duty in areas where they are rapidly becoming out-of-date with the passage of time.*
- *In Zambia, this is particularly a problem because it is exacerbated by the severe lack of the necessary resources (aerial photography mainly) to carry out map revision.*

Preamble

- *The advent of Geographic Information Systems (GIS), for management and analysing various aspects of human activities on Earth, has also brought about a new dimension to the form of geo-data that need to be provided.*
- *Thus, the need for up-to-date geo-data has become a two-pronged approach. That is, to keep maps up-to-date and to provide up-to-date GIS capable data.*
- *Therefore, data needs to be collected for multiple use, a situation which calls for a change in the archival systems currently in use as well.*

What is Map Revision?

- Production of a revised version of a map
- Retains same series and sheet number
- Version number changes
- Factual data and operational value changes
- Amount and nature of changes vary
- Very important task usually forgotten in preference for new mapping

Factors affecting map revision

- The **ideal situation** is to keep all maps up-to-date both *administratively* and *in detail* and this is a responsibility of the **mapping agency** which is usually an arm of government as Sebert (1997) of Canada observed that, "*When a government publishes a series of topographic maps there is an implied commitment to keep these maps reasonably up to date*".
- **Factors affecting map revision:**
  - Rate of change
  - Desired change on map or not
  - Is revision economical?
  - Can revision be done?

Types of revision

Full Revision

- All factual data revised
- All principal items of detail revised
- New edition published
- Major changes in map design and specifications

Partial Revision

- Either part of the map or selected items on map
- Explanatory notes required on what has changed
  e.g. only roads may have been updated

Revision Policies

- Cyclic Revision – short and long term

Short term

- Short periods of time involved e.g. aeronautical charts may need updating every 28 days
- Revision is a major commitment in this case

Long term

- Medium and small scale maps mainly
- Needs new aerial photography or imagery
- 5 to 20 years cycle
- Inelastic revision policy
- Puts greater demand on meagre resources

Revision Policies

- **Selective Revision**
  - Certain areas are given priority e.g. urban areas
  - May also be based on fixed time interval
  - May be driven by demand
  - Flexible revision policy
- **Continuous Revision**
  - May be due to limited manpower
  - May be due to digital revision systems in use
  - Spreads resources evenly over a period of time
  - Selective policy based
- **Chart Revision**
  - Additional data on changes issued separately

Data likely to change

- **Control network**
  - Not likely to change for a long time
- **Planimetric features** (buildings, lines of communication, land use, water systems, etc)
  - Change faster than anything else on the map
- **Relief**
  - Not likely to change except in areas of exploitation or construction e.g. quarries, mines, etc.
- **Names and symbols**
  - Change along qualitative and quantitative data
- **Changes are more on large scale maps**

Accuracy of revised maps

- Same as original map (0.3mm – 0.7mm at map scale in planimetry)
- Vertical scale depends on contour interval e.g. for 2° slope the error must not exceed one third of the contour interval; for slopes greater than 6° the error must not exceed the contour interval itself
- Need for producing a completely new map arises when there is over 40% change or the accuracy of the map is lost

Methods of Revision

- Medium scale maps
  - Field control – GPS and other methods
  - Photogrammetric control – aerial triangulation
  - Common features on old maps and new aerial photos act as a check for map accuracy
- Orthophoto method
  - Use new aerial photos and existing DTM to produce orthophoto
  - Compare orthophoto with old map
  - Extract new features and delete missing features
  - In digital mapping, digitize new features

Methods of Revision

- Stereo compilation method
  - Like for new mapping
  - Identification of new data done by comparison
  - Check map accuracy carefully
  - Obscured details filled in by field surveys
  - If captured digitally enter directly into database
- Up-to-date large scale map method
  - Reduce to scale of unrevised map
  - Compare the two
  - Update with regard to generalization rules
- Small scale aerial photos and satellite imagery
  - Very useful for updating medium and small scale

Methods of Revision

- **Large scale maps**
  - May need current and periodic revision

Current Revision

- Cadastral maps and documents
- Land classification documents
- Engineering surveys

Periodic Revision

- Updating only planimetric and vertical content
- Modernising the map – content and transformation

Updating Service Copy

- Master copy on which changes are noted
  - Dashed red lines for measured changes
  - Solid red lines for transferred changes
  - Any other suitable notation
- Best way to keep track of reported changes
- Best way to determine threshold of change