A SEMANTIC STUDY TO ANNOTATION OF GEOGRAPHICAL NAMES
- SOME PROBLEMS IN ATLAS CARTOGRAPHY -

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1. Introduction

The term 'semantic study' is considered in this paper as that investiga-
tion on the base of mainly linguistic aspect of semantics, i.e. questions
are what the settled content is communicated with the specific annotation
of geographical names on maps, how the depicting method is apporopriate,
and so on.

The purpose of this study is to elucidate the essentially conceptual
base for actual genelalization and depiction of the geographical name an-
notations on maps, and also for the key to the development of such proce-
dure in the computer assisted cartography.

This paper will start with investigation into situation of geographical
name annotation on a map, then semantics of geographical names, after then
annotation methods with semantic communication techniques, and at the last
necessity of geographical name thesaurus construction.

2. Situation of geographical name annotation on a map

Geographical names annotated on a map are not only as the map symbols,
but also more complex and important as that those annotations indicate
phonetic signs or proper characters with their annotated positions having
keys to give real spatial image of the actual places from the map. The re-

670

sult then provide spatial recognition about the area where the map depict-
es. This function is one of the actions providing the denotative recogni-
tion of maps in general.

The annotations are desirable to be monosemy, and exactly agreed or at
least easily analogized with the already famializard one when selection
is necessary among plural names. The annotations must also be readily re-
congnized on a map. Those properties are at most furnished to annotations
on a map to meet the demand of their function.

The annotation to plural nambers of geographical names is a problemati-
cal one when those names indicat the same place and they have respective
meanings. Official names must be selected in case of topographic maps as
the officially traditional manner. However plural official names existed
for many places particularly in the international boundary zones. Besides
that, the autholized name may not always be popularized and map users are
sometimes thrown into confusion for recognition of the place. Then, proce-
dure of place name selection and depiction may be questioned. This problem
was often occured in the atlas cartography.

Map users may confuse with place names in the unfamiliarized area de-
picted on atlas maps. When map users found disagreed place names with fa-
milialized ones for the key places providing spatial recognition about the
area, they might be thrown into confusion. The formulation of the apporo-
priate choice and depiction of such place names must be necessary for uni-
versal avoidance of such confusion. As a traditional solution for this
problem, annotation of other names is added in parentheses following the
autholized name.

As one other case, the same one geographical name sometimes annotated at

plural different places. Some words may usually be attached to such geo-
graphical name if discrimination is necessary among them in the concerned
area.

Thinning density of place name annotations is usually necessary for im-
proving legibility of maps usually at reducing map scall in map generali-
zation process. Establishment of thresholds to select geographical names
is necessary for the area where is complicated and/or dense with named ob-
jects. There are not only a quantitative threshold for the density of ob-
jects, but also a qualitative one. The later may be based on the semantic
evaluation. Both selection grades are depended to the specific map scale
and principal usage of the map.

3. Semantics of geographical names

Geographical names. i.e. the proper names for geographical entities are
consisted of toponyms as natural feature names and place names as inhabit-
ed place names. Geographical entities were named in order to respectively
distinguish each entity.

Materialization process of geographical names was supposed that inhabi-
tants might name any geographical entity which was necessary to be distin-
guished around their recognizable world at first.

At that stage, those names might be principally generic names at present
such as simply 'river', 'mountain', 'valley', etc. particularly for topo-
nyms. Besides them, 'colony', 'road', 'bridge', etc. for place names.
Those groups formed up regions which were classified in the natural name
region for the former group and the cultual name region for the later
group. These two regions are partly overlapped, complexed or fused in many

cases.

According to the extension of inhabitants' recognizable world, the same place name might be found at many places and it caused confusion to distinguish each other. Then some wards would be atached to the orginal one for distinguishing each other. Atached words are as follows: attributive adjective, e. g. directions such as east, west, south and north; order such as large or small, high or low, new or old; impressed image such as specific person's name; specific colour, e. g. red, white, black, etc. By this process, the new geographical names might be generated. Some of them are retained, e. g. 'Mont Blanc' (white mountain), 'Rio Grande' (large river), and so on.

Some others were compounded with plural names, modified to different names or ceased to exist. As a similar example of modification, original names were frequently transcribed into another new language and new name would be set according to progress of colonization.

According to these process, the generalized name for more extended area was sometimes generated by selection of the core or common ward from the relevant names to the area. Besides them, subdivision of an existing geographical entity sometimes brought numbering system into naming of subdivided entities such as street numbers, e. g. '5th street' in New York.

Although the materialization and progress of geographical names, the geographical entities are considered at present to be principally areas having some extent and minor features such as individual point or line object, e. g. house, road, etc. are excluded.

Meaning of geographical names is classified into some groups besides the

ones mentioned above. For instance, reflection of ideology, natural or any characteristic features, memorial or religious matter are as examples. They are mentioned belows:

Ideological: many names are able to be find in Chinese city names
Natural: many names are able to be find in Japanese city names
Person's or relevant to enterprise's name: often find in some nations
Religious: 'St.' etc.
Name of walled town: e.g. attached suffix such as 'burg', 'bourg', 'bo-
    rough', 'burgh', 'burg', 'borg', 'grad', etc.

As an aspect of geographical names, there are exonyms and conventional names. By the definition of United Nations Group of Experts on Geographical Names (UNGEGN), 'exsonym' is a geographical name used in a certain language for a geographical entity situiated outside the area where that language has official status and difffering in its form from the name used in the offficial language or languages of the area where the geograpahical entity is situated. And 'conventional name' is a written form of a name which is widely and currently used in given linguistic community, and which does not coincide with any local official form of the name. Those names must be regarded in order to that they respectively have individual meanings to provide not only ready reference to the places for peoples who familialized with those written languages, but also to give some exact recognition about them.

Relevant to foreign place names, there are the problems of transcription and transliteration systems, and those processes. By the definition of UNGEGN, 'transcription' is the process of recording the phonological and/ or morphological elements of a language in terms of specific writing system, and its results. 'Transliteration' is the process of recording the

674

graphic symbols of one writing in terms of corresponding graphic symbols of a second writing system, and its results. Unfortunately, there no uniformely ready recongnizable system is internationally exsisted not yet. It is hoped that the actual system is sometimes necessary to be attached with the table which is used as the comparison of that system with the conventional one popular at the place where users lived.

Regarding to standardisation of geographical names, nationally relevant organizations and United Nations cooperated with relevant international organizations are charged and promote the domestic and/or international standardisation. Those results contribute to avoiding confusions about identification of geographical names. However, semantic keyes are sometimes missed when the variant names, i.e. other than standard one would be canceled.

4. Annoutation methods with scmantic communication techniques

Generalization, i.e. appropriate selection geographical names for annotation on a map would be performed to meet the purpose of the map under preparation.

Standardized names provide exact monosemys and often perform a function similar as map symbols with some restricted communication on meaning of geographical names. This nature is appropriate to maps used in principally navigation.

Other maps, e.g. general maps would be expected to provide prentiful information about the represented area. Answering to this expectation, those maps would usually depict not only standard names, but also other names such as conventional names in parentheses got in line. This manner has had

recently popular in atlas maps. Standardized policy is that names offi-
cially used by the nation concerned would be annotated. If conventional
ones exist, they can be added in parentheses following the correct name.
However, inverse manner is sometimes found in some atlas maps. It might be
supposed that this inverse manner would be adopted by the policy for ready
recongnizable for principal users there.

Annotation of plural names in alphabetic scripts of respective languages
can usually communicate the differences of respective languages at joint
depiction for the entitis in some boundary zone. However, trascribed anno-
tation in syllabic and/or ideographic scripts is unable to communicate
those differences. Suffixes of country names in parentheses must be neces-
sary for indicating the respective languages. This manner was adopted in
Japanes official maps.

Old historical names sometimes provide important key to any spatial
analysis. Annotation of historical differences of names is depicted by the
respectively specific character styles. This manner is realized in the
Ordnace Survey's topographic maps and in the topographic maps of Japan.

Selection and generalization of names must be operated on the base of
semantic information about the origin and structue of respective names.

5. Necessity of geographical name thesaurus construction

Thesaurus is vocabulary control for information retrieval. This function
will be opperated with computer assistance and be able to contribute for
quick retrieval on multiple aspects of geographical name information when
the data shall be completely collected and operation software will be
ideally designed and hardware also appropriately well-equiped.

676

At first as a prototype work, a small thesaurus may be constructed with some package software, personal computers and small name collection. However the fundamental function must be facilitated in this level. Its essential function is gazetteer or geographical dictionary with retrieval.

After construction and operation of thesaurus for local area, some large one will be realized for some broader area, then its extension will be realized step by step. For this extension process, it is desirable to establish the standard specification in the early stage.

6. Conclusions

The author indicate some probrematic aspect of geographical names on maps at the semantic view point. Avioding any confusion at retrieval, not only an official name, but also variant name such as conventional name are annotated on a map. And historical names are also important for providing recognition key to the area. Selection and generalization of geographical names will be operated on the base of semantic information of names. Then construction of appropriate thesaurus must be necessary.

References

P. Guiraud(1957):La Semantique (Collection QUE SAIJE?N655).

S. I. Hayakawa(1978):Language in thought and action, 4th ed.

K. Yamaguchi(1967):Chimei no naritachi (Materialization of place name).

do.   (1974):Chizu to chimei (Map and Place name).

do.   (1977):Chimei o kanngaeru (Consideration about place name).

do.   (1984):Chimei no ronri(Logics of place name).

J. Bertin(1977):La graphique et le traitement graphique de l'information.

United Nations Group of Experts on Geographical Names (UNGEGN) (1986):
   Technical studies (World Cartography Vol. XVIII).

J.S. Keates(1989):Cartographic design and production, 2nd ed.

J. Aitchison, A. Gilchrist(1987): Thesaurus construction: a practical
   manual, 2nd ed.