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 investigation 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 appropriate, and so on.

The purpose of this study is to elucidate the essentially conceptual base for actual generalization and depiction of the geographical name annotations on maps, and also for the key to the development of such procedure 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-
suit then provide spatial recognition about the area where the map depicts. This function is one of the actions providing the denotative recognition of maps in general.

The annotations are desirable to be monosemy, and exactly agreed or at least easily analogized with the already familialized one when selection is necessary among plural names. The annotations must also be readily recognized 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 numbers of geographical names is a problematical one when those names indicate 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 authorized name may not always be popularized and map users are sometimes thrown into confusion for recognition of the place. Then, procedure of place name selection and depiction may be questioned. This problem was often occurred in the atlas cartography.

Map users may confuse with place names in the unfamiliarized area depicted on atlas maps. When map users found disagreed place names with familialized ones for the key places providing spatial recognition about the area, they might be thrown into confusion. The formulation of the appropriate choice and depiction of such place names must be necessary for universal avoidance of such confusion. As a traditional solution for this problem, annotation of other names is added in parentheses following the authorized name.

As one other case, the same one geographical name sometimes annotated at
plural different places. Some words may usually be attached to such geographical name if discrimination is necessary among them in the concerned area.

Thinning density of place name annotations is usually necessary for improving legibility of maps usually at reducing map scale in map generalization process. Establishment of thresholds to select geographical names is necessary for the area where is complicated and/or dense with named objects. There are not only a quantitative threshold for the density of objects, 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 inhabited place names. Geographical entities were named in order to respectively distinguish each entity.

Materialization process of geographical names was supposed that inhabitants might name any geographical entity which was necessary to be distinguished 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 toponyms. 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 cultural 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 attached to the original one for distinguishing each other. Attached 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', 'borough', '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 (UNEGG), 'exonym' is a geographical name used in a certain language for a geographical entity situated outside the area where that language has official status and differing in its form from the name used in the official language or languages of the area where the geographical 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 familiarized 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 UNEEGN, '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
graphic symbols of one writing in terms of corresponding graphic symbols of a second writing system, and its results. Unfortunately, there no uniformly ready recognizable system is internationally existed 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. Annotation methods with semantic 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 plentiful 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 officially 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 recognizable 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 entities in some boundary zone. However, transcribed annotation in syllabic and/or ideographic scripts is unable to communicate those differences. Suffixes of country names in parentheses must be necessary for indicating the respective languages. This manner was adopted in Japanese 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 Ordnance 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 structure of respective names.

5. Necessity of geographical name thesaurus construction

Thesaurus is vocabulary control for information retrieval. This function will be operated 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-equipped.
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 problematic aspect of geographical names on maps at the semantic view point. Avoiding 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

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).
United Nations Group of Experts on Geographical Names (UNEGGN) (1986):
   Technical studies (World Cartography Vol. XVIII).
   manual, 2nd ed.