

# **Cartographic Symbolization: An Evolution from Sea Monsters to Inuksuit**

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## **SUMMARY**

The purpose of this paper is to discuss the evolution of cartographic symbolization and in particular how cartographic symbolization has changed from the hand drawn era to the computer assisted era. To cite examples from the field of Hydrographic charting, using the Inuksuit as a case study, this evolution has had a profound effect on the state of cartographic symbolization. Discussed in this paper is how computer assisted cartography and mass standardization has changed the look and feel of modern day hydrographic charts and the problems and difficulties of introducing new cartographic symbols which are based in traditional methods.

**Key words:** Symbolization, Inuksuit, Culture, Tradition.

## **INTRODUCTION**

Arthur Robinson, a professor of Cartography University of Wisconsin, has suggested that, “cartography is in the midst of a revolution in technology and we are about midway through it” (Robinson 1995). The revolution he is speaking of may as well be over as the evolution from hand-drawn to mechanical and now to digital has had profound effects on the state of cartography and in particular cartographic symbolization. This change has had both positive and negative impacts on the field of Cartography and the field of Hydrography. Cartographers and Hydrographers have the unique responsibility to depict the earth in a fashion which is accurate and which shows as much information as possible; without confusing or making the purpose of the map difficult for the user to understand.

Maps and charts alike are drawn using graphic symbols to depict features on the Earth's surface. These graphic symbols have transformed themselves throughout time, since the earliest maps were created in ancient Mesopotamia (2 300 -2 500 B.C.), there has been a trend from an individualistic/stylistic form to a more uniform/standardized presentation. Although the purpose of mapping has almost completely remained the same, mapping as a practice has changed from an art form with some science to almost pure science without or with very little art form.

The evolution over time of generalizing and standardizing symbols is two fold: one is to lessen confusion among diverse users, and second to represent more information on the map than can otherwise be shown. Historically, only skilled artisans were able to

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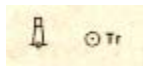
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achieve a good representation of reality through abstract symbology, whereas today extensive symbol libraries help the average cartographers get the same message across with a lot less skill. With the advent of computer graphics the repeatability of more complicated symbology has become easier; in fact symbols to the naked eye are 100% identical. Symbols created using computer graphics can now be drawn more elaborately and with more complexity without the concern of confusion, inconsistency and inaccuracy. The following example (Figure 1) shows a comparison of a modern, more complex symbol for a marina shown as a sailboat, versus an old symbol, simply shown as a circle encompassing the letter M.



**Figure 1**

Even though computer assisted cartography has greatly aided the field, one must be mindful of the negative repercussions. In the Internet age a multitude of symbols exist readily, it is important not to become a victim of clip-art-cartography, which consequently leads to the proliferation of poor maps. With computer graphics it has obviously become easier (and superior to manual drafting) to make maps with pictorial symbols rather than representative ones. In the following example (Figure 2) there is no question as to what sort of common feature the (tower) symbol on the left represents, whereas the symbol on the right obviously needs a legend or ancillary description (Chart No.1) and perhaps an understanding of western languages (Tr).



**Figure 2**

The main advantages of using pictorial symbols are that they:

- lessen the need for a legend (leading to more efficient use of map space and cost reductions);
- represent a feature closer to reality (communicating with less abstraction)

The question then arises can pictorial symbol representation be used for other less common, localized yet conspicuous features such as Inuksuit (Inuit built Stone Monuments)? Can it be represented by its own symbol or does one have to misuse or adapt a cairn or monument symbol with descriptive text? Is it possible to move forward in graphic communication by going back to our traditional / historical roots in cartography? With advanced CAD systems and modern plotters one can readily remove a certain sterility, which has been introduced to mapping for cost reduction and mass production reasons. Today the loss of traditional cartographic skills seems to have

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accelerated with the advent of computer aided design and Globalization. One should in fact take advantage of the consistency and accuracy of the CAD programs and meld them as much as possible with traditional methods, perhaps through the use of more stylized hatching or intuitive pictorial symbols.

An example of a pictorial symbol used in hydrographic charts and relevant to this paper is the cairn (Figure 3). A cairn is depicted as three circles stacked in a pyramidal form and described by the following definitions:

- Canadian Hydrographic Service: Cairns are piles of stones piled into a pyramid shape.
- International Hydrographic Organization: Cairn a mound of stones, usually conical or pyramidal, raised as a landmark or to designate a point of importance in surveying.

**Figure 3**



*Cairn Symbol*



*Cairn in Reality*

However, as good as this pictorial symbol may be at representing a real feature, it does not adequately represent all landmarks which are “piles” or “mounds” of stones. For example, while an Inuksuit is a pile of rocks, it is not built in the same fashion nor with the same purpose as a Cairn. In fact, by tradition, the various ways in which the rocks in an Inuksuit may be stacked will define its purpose and specific message for travellers. This leads to the following questions:

- What is an Inuksuit?
- Is it culturally significant?
- How can it be symbolized?
- If conspicuous, should it be symbolized on Hydrographic Charts?

## **1. WHAT IS AN INUKSUIT?**

The arctic stone figures most familiar to southerners are called Innunquaq (plural form of Innunquait) which is Inuktitut for “in the likeness of a human”. However, these are often mistaken for an Inuksuit, which means “to act in the capacity of a human” (Hallendy, 2001). As southerners we have adopted the term Inukshuk as a generic term for the many forms of Inuit stone monuments. Innunquaq are fashioned out of slabs of rock, both large and small, in the

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shape of a person standing with their arms outstretched. “While the original purposes for which Inuksuit were built have been lost, some common explanations continue to this day. The first explanation is that they guide or channel caribou into areas or shooting pits where Inuit can easily hunt them. Another purpose attributed is that they serve as markers, or signposts, to help guide Inuit across the tundra” (Patenaude, 2000). Some also suggest that the many of the Inuksuit were built as objects to mark places of power and veneration (Hallendy, 2001).

## 2. HOW CAN AN INUKSUIT BE SYMBOLIZED?

Figure 4



*Innunguait in Reality*



*Inuksuit in Reality*

It is evident that many of these Inuksuit are significant markers in an almost barren landscape. An Inuksuit is an information beacon for travellers in Canada's north. “An open leg on an Inuksuit found near water or a coastline points to an open channel for passage to navigate your way, and if the Inuksuit is in the middle of land, the open leg points towards a valley as a route to pass through the mountains. The open (longer) arm of an Inuksuit points you in the

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direction you should be going. A marker Inuksuit placed near a lake shows that the fish can be found in the lake at the exact same distance the Inuksuit is placed from the shoreline.”(Government of Canada [www.aaw-ssca.gc.ca](http://www.aaw-ssca.gc.ca)) It is believed that many Inuksuit are several hundred years old and over their history the Inuksuit have taken on many forms and have served in many different ways.

### **3. IS THE INUKSUIT CULTURALLY SIGNIFICANT?**

Inuksuit are not only visually significant (conspicuous) but also culturally significant to the Inuit. Today, gaining in popularity they have become a greater part of the Canadian Fabric and perhaps the unofficial symbol of the Arctic (Heyes, 2002). Although with this new popularity differentiating a “modern” (sometimes called “tourist”) Inuksuit and those constructed in different times and having different meanings outside the original purpose may become problematic. Nevertheless, they show to the world that mankind has left a familiar mark on even the most inhospitable terrain. Mapping as well puts mankind’s stamp or perspective on the environment. Is it not only fitting that the Inuksuit shares this exact same quality? As maps give us a sense of identity so do the Inuksuit, as a cultural icon of the Canadian Arctic. Due to this fact, it is important to map these icons of which people are becoming aware of. “Western Maps are inspired by luminaries of our Eurocentric past.” (Morantz, 2002) As cartographers, it is important to realize and become aware of the paradigms we may carry as baggage where objects that may be viewed as insignificant by some cultures, may be viewed as significant by others. It is important that we remain sensitive of those cultures whose connection with the land is inherently different than ours. Inuksuit have the potential to communicate temporal depth, social continuity, sense of identity, due to such things as their visibility and durability (some Inuksuit are undoubtedly hundreds of years old). In that context, they also serve to reinforce, among other things, the importance of the relationship with the land for generations of Inuit. In the map below (Figure 5) by Simeonie Qapappik, (an Inuit elder from Baffin Island) the importance of the Inuksuit on the landscape becomes evident.

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**Figure 5**



#### **4. SHOULD WE CHART INUKSUIT?**

“Historically speaking, past Cartographers would steal information from other maps, good cartographers would dig deeper into surveys rather than use historical accounts.”(Morantz, 2002) So just because others do not map or chart Inuksuit does not mean that these features should be discounted as insignificant visual aids. Cartographers and Surveyors should investigate further and decide whether the Inuksuit need to be charted. Mapping and trailblazing, moving into new frontiers, are a motif and a tradition for Surveyors and Cartographers alike. The creation of new methods and new symbology is a part of the idea of moving forward of our understanding of our world.

How do we find a balance in accurately displaying information without removing all of the cultural significance and identity of that particular place? How can this be done while observing international standards? The solution can only be through communication and involvement of all parties. So the question persists, should the Inuksuit be charted? In some cases the answer will be yes and in many the answer will be no. If it is a conspicuous feature then Hydrographic survey guidelines would require us to position and describe. However, if we do not create a proper symbol to identify the feature, we are not accurately communicating its description and the answer will always be no.

As time progresses one might arguer that cartography is moving further and further away from its origins. Perhaps it has become more of a tool used for systematically dividing space, rather than showing the user what they might expect to see, guiding people through the perceived unknown. The use of the map/chart as a tool is not only achieved by the actual map itself but also by the stylistic flare which the map exhibits. Techniques of style and art when used on a map or chart give the user a greater sense of the area which they are about to traverse. In the past much of the stylistic form was used to fill gaps in the unknown areas and as those gaps have become

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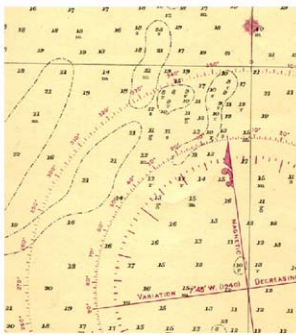
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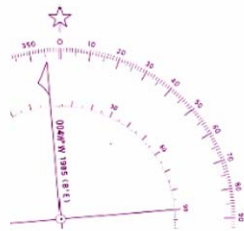
discovered, less usage of style and art are evident. “Cartography is about maps. This includes the art, science and technology of map making, the use of maps as research tools and as sources of information, and the study of maps as historical documents and works of art.” (Dudycha, 2003)

Shown below is an example of an old and new style Canadian Hydrographic compass rose (Figure 6). Note the earlier fleur-de-lis motif used in the magnetic declination arrow. With International standardization, this element of style been removed and Canadian Charts have become more detached from their Nouveau France beginnings introduced by early explorers/cartographers like Samuel de Champlain.(Figure 7)

**Figure 6**



Old style compass rose



New style compass rose

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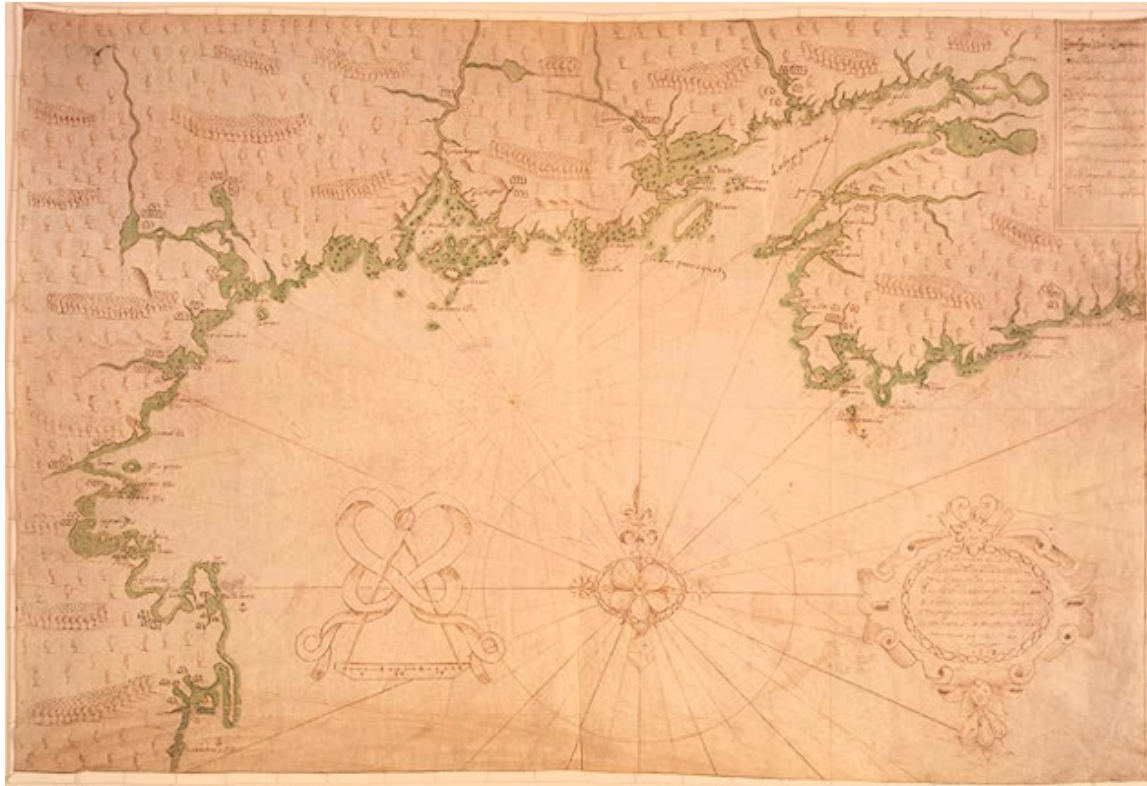
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**Figure 7**



Iles de la Nouvelle France, Samuel de Champlain 1567-1635

Sometimes human nature causes one to continually do things because that is the way they were done before and as time goes on it is easy to forget why things are done in that way. It is easy to assume that is the right way and all other ways are wrong. There is nothing wrong with pausing to ask the question, why? Thus questioning current trends borne from existing patterns. "More often than not, the map user is different from the map maker and the map maker rarely collects the original data."(Dudycha, 2003) In the hydrographic case this is untrue, because as cartographers who often participate in field surveys, we have the unique opportunity to create products that are more effectively designed with the user's needs in mind. Charts are special purpose maps in that they have one major difference over a typical map: charts are designed to be worked on as a tool for navigation, maps tend to be read and looked at. Because of this it is so important to accurately display as much information as possible, in order to aid in marine navigation. But if art and style do not interfere with the effective use of the chart as a tool, why not include them as much as possible?

## CONCLUSION

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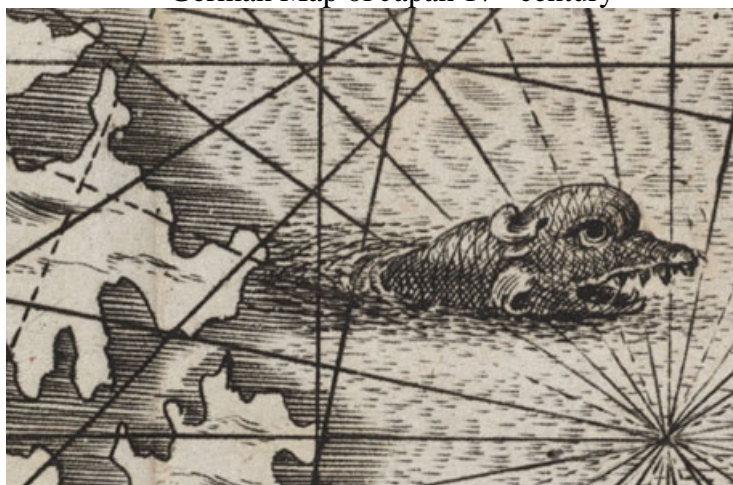
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The purpose of this paper is to help stimulate discussion, to reevaluate where we are and how we got here. Coming to terms with the constant of change. We know the earth even ever so slightly changes, times and taste change, so do the seasons, technology changes and thus discovery changes. Despite all the technological advances, the Inuksuit endures. “It will always perform two synonymous roles – one that conveys messages about places and navigation and the other that reminds the Inuit of ancestral relationships with the land.”(Heyes, 2002) While I believe there is genuine value in cultural phenomenon and reintroducing elements of art and style in the use of pictorial symbolization, I am not advocating that we put sea monsters back on the charts. Although, even today much of the ocean is still not surveyed (90% Unsurveyed National Geographic, 2005) just maybe those sea monsters do exist in those voids. (Figure 8)

Figure 8

German Map of Japan 17<sup>th</sup> century



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**Appendix A**  
**Conspicuous Inuksuit (Visible from Seaward and Significant to Navigation)**



1. West Vancouver



2. Collingwood



3. Igloolik



4. Rankin Inlet



5. Montreal



6. Toronto

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## **BIOGRAPHICAL NOTES**

John Mercuri is a multi-disciplinary hydrographer with the Canadian Hydrographic Service who is involved in Arctic Surveys and Charting. As well he is a graduate from Carleton University, Ottawa Canada (1997) and has also studied cartography and GIS from the Helsinki University of Technology, Espoo, Finland (2002).

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## References

- Dudycha, Douglas J. (2003) "Introduction to Cartography and Remote Sensing." ([www.fes.uwaterloo.ca/crs/geog165/cart.htm](http://www.fes.uwaterloo.ca/crs/geog165/cart.htm))
- Government of Canada. (2004). "Aboriginal Awareness Week."  
<http://www.aaw-ssca.gc.ca>
- Hallengy, Norman. (2001). "Inuksuit, Silent Messengers of the Arctic." Douglas & McIntyre. Toronto, Canada.
- Heyes, Scott. (2002). "Protecting the authenticity and integrity of Inuksuit within the arctic milieu." McGill University. Montreal, Canada.
- Morantz, Alan. (2002). "Where is Here? Canada's Maps and the Stories they Tell?" Penguin Books Ltd, a division of Pearson Canada, 10 Alcorn Avenue, Toronto Canada.
- Patenaude, Allan L. (1997-2000). "What is an Inuksuit?"  
<http://www.ualr.edu/~alpatenaude/page1.htm>
- Robinson, Arthur H. (1995). "Elements in Cartography 6<sup>th</sup> edition." John Wiley & Sons Inc. Hoboken, New Jersey.

## Appendix A References

1. West Vancouver, British Columbia. (Photo: Andy Mons)  
<http://andymons.com/>
2. Collingwood, Ontario (Photo: Richard Dakin) <http://www.usefilm.com/image/694349.html>
3. Igloolik, Nunavut. (Photo: Cherry & Bryan Alexander)  
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4. Rankin Inlet, Nunavut. (Photo: Tim Janzen)
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<http://mishami.image.pbase.com/u38/arifakhan/large/25014774.Dscf0138.jpg>
6. Toronto, Ontario (Photo: Inuksuit by Kellypalik Qimirpik)

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Figure 6. Compass Rose

Canadian Hydrographic Service Charts (various)

Figure 7. Iles de la Nouvelle France, Samuel de Champlain 1567-1635

United States Library of Congress

Figure 8. German Map of Japan 17<sup>th</sup> century

Watson Collection Cornell University

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