Cartographic Design and Aesthetics "FAQ"

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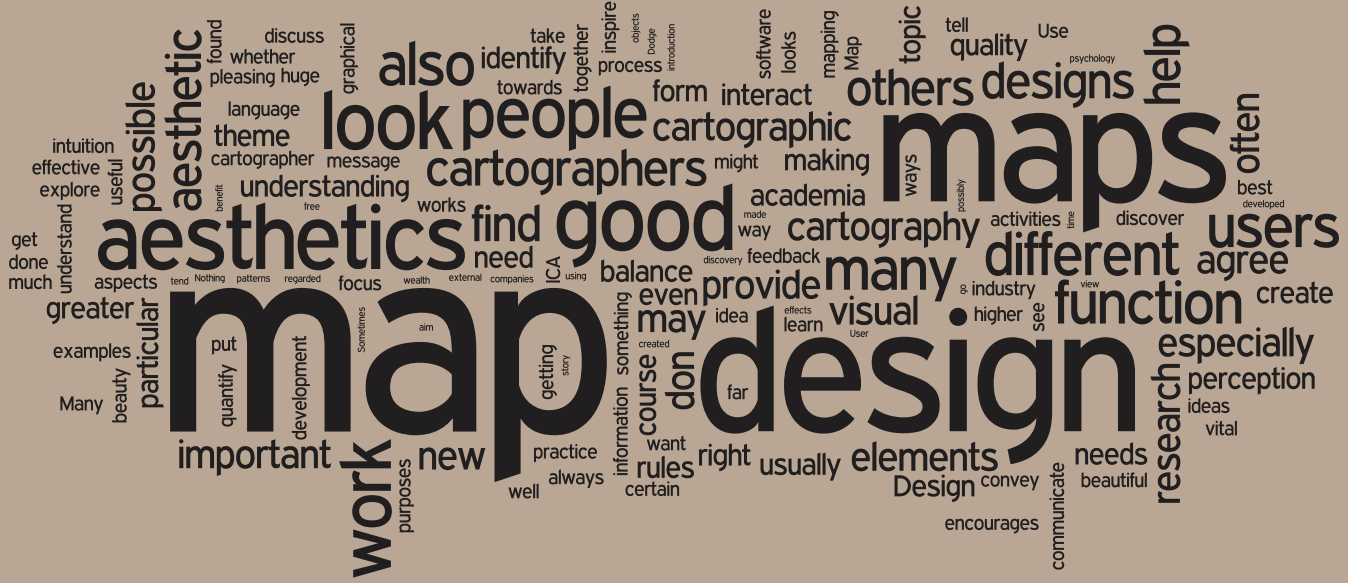

In this paper, we aim to provide a brief introduction to aesthetics and its relationship with cartographic design. We will not explore the topic in any detail or discuss problems associated with the creation of "rules" of design, but will instead focus on providing some concise definitions for the benefit of practicing mapmakers, especially those who are unfamiliar with the concept of aesthetics. We hope that these will encourage a greater appreciation of this under-researched topic and its significance within cartographic practice.

WHAT IS ALL THIS ABOUT DESIGN AND AESTHETICS IN CARTOGRAPHY AND WHY ARE THEY IMPORTANT?

Maps are created for many purposes, from navigation to nostalgia. If we are concerned with good cartographic design, we are interested in making maps that are more effective in serving their purposes, both in how they function and in how they look. Design is therefore relevant to many general elements of the map, such as color, typography, generalization, visual balance, and layout, as well as the character and shape of the symbols themselves. Simply put, good design is getting the balance of all the graphical elements on a map to work harmoniously. It is also important to consider that function and appearance are intertwined. The function of a map will drive many of the design considerations the cartographer makes, but beyond that there is also considerable scope to address the look and feel of a map. In cartography, aesthetics is about the visual effect of a map—its particular "look"—which is constructed from the interplay of the graphical elements.

Aesthetics is a highly debated issue; opinions are strong and varied and there are no universal rules, even though when we say a map is "beautiful" we believe that others ought to agree with us.

IS THERE A WAY TO MEASURE OR QUANTIFY THE QUALITY, OR EVEN THE BEAUTY, OF A MAP'S DESIGN?

It is notoriously difficult to test the quality of a map's design or beauty with any rigor, let alone establish some concrete, quantitative rules. However, tests in other fields, such as the psychology of face perception, have found that it is possible to identify certain characteristics which people find pleasing across races and cultures (Bruce and Young 1998). There is a huge amount of similar research waiting to be done in cartography. When people look at maps they often reveal their likes and dislikes. It may not be possible to quantify this rough analysis, but seeing how people interact with maps may provide some good indications. Can they find out the map's central theme easily? Do they understand its symbology? Do they show excitement, intrigue and a desire to explore? How people react to and interact with a map usually reveals something about how the map is performing, so there is much to learn from looking at this more closely.

I CREATE MAPS, BUT WHY SHOULD I CARE ABOUT DESIGN AND AESTHETICS? I HAVE ALL MY INFORMATION ON THE MAP, SO WHY SHOULD I WORRY ABOUT WHAT MY MAP LOOKS LIKE?

As most maps are made to be used by people other than their creators, cartographers need to be conscious of the needs of map users. If we want to communicate a particular message through a map, its overall aesthetic can help to convey this message by influencing how users interact with the map and their perception of the information it contains. Understanding how aesthetics influences map reading and perception can help us to design maps that are more effective and engaging. This does not mean that maps have to be regarded as beautiful—they may use a grotesque or even repugnant aesthetic to communicate a theme effectively. Many good analogies can be found in the design of other objects, such as cars, furniture, or buildings. While we might agree that some designs exhibit a higher level of functionality than others, we may not agree that all are aesthetically pleasing. Architecture, especially, frequently challenges our notions of how form and function work together. Some architects have attempted to put form above function with controversial results, while others seek greater a unity of form and function in their designs. Sometimes we describe our own feelings towards designs using emotive language, often with the expectation (however irrational) that others will agree. All of this can only offer a glimpse towards understanding the value of aesthetics in mapping, which not only encourages greater diversity, but also leads to maps that challenge and inspire.

HOW CAN I FIND OUT WHETHER MY MAP IS WELL DESIGNED? HOW CAN I IDENTIFY THE POORER ELEMENTS ON MY MAP THAT NEED TO BE IMPROVED?

Cartographers tend to say that their design "looks right" when they have arrived at a solution, meaning that these decisions are based on intuition (Robinson et al. 1995; Kent 2013). This would suggest that if something doesn't look right, it probably needs to be reconsidered. Of course, reducing a keen sense of aesthetics and good design to "intuition" implies that the process is much simpler than it actually is! Sharing work and learning what works is vital. It is always a good idea to run fresh designs by a friend or colleague—the best maps are usually tempered by external scrutiny. These are helpful first steps, but making contact with cartographers and makers of good maps, or posting work on an online forum, such as CartoTalk (**cartotalk.com**), might yield more valuable advice. They should be able to provide higher quality feedback, pass on some useful tricks, and pinpoint certain aspects of the map that possibly need attention. But aside from cartographers, it is also worth obtaining feedback from potential users, perhaps by conducting a focus group to identify areas for improvement. It is all too easy to design maps for ourselves and neglect our users—we can often be surprised to discover what works for them (and what does not!).

I WANT TO LEARN MORE ABOUT AESTHETICS TO CREATE WELL-DESIGNED MAPS. HOW CAN I GET BETTER AT THIS? (AND DON'T TELL ME TO TAKE A COURSE, GO TO A CONFERENCE, OR HIRE A CARTOGRAPHER!)

By far the best approach is to look at as many maps as possible to see how cartographers wield this "aesthetic language" to help convey a theme or tell a story—look at the techniques they employ. With time, this experience will help you construct a visual compendium of examples that can inspire future mapmaking. A good place to start is the set of examples on the ICA Commission for Map Design's web site (**mapdesign.icaci.org/map-examples**); visual compendia such as Rendgen and Wiedermann (2012) and Field and Demaj (2012), can also be useful. Conversely, look at what others point to as bad mapping and try to understand why people take that view. Learning what not to do with maps is part of the process. But don't just limit this to maps—it is possible to find inspiration everywhere. Looking afresh at nature, especially, can provide a wealth of ideas for considering how, for example, colors or patterns work together to create new effects and help to visualize data. Experiment and enjoy: work out new styles, find some favorite map types, and discover whether their aesthetic can be replicated or developed. Nothing beats trying things out in different ways. Many people follow a very specific path in building their map (usually owing to the particular way in which a piece of software encourages working). Try and break free, and don't dismiss the idea of sketching out some different ideas before getting started. Use them as a blueprint but don't be afraid to modify what is being done. Rather than it being a strict code, there is room for serendipitous discovery when making maps, and often some of the most unlikely changes or modifications bring a whole new aesthetic. Exercising control is also important—there is such a thing as over-designing—but the goal should always be to get the balance right.

HOW CAN CARTOGRAPHERS IN ACADEMIA FURTHER THE UNDERSTANDING OF MAP DESIGN THROUGH RESEARCH ACTIVITIES?

There are many aspects of this huge topic that require research, especially in understanding how different users respond to different map designs. We must recognize that different users have different needs, abilities, experiences, habits, and personalities (see Dodge et al. 2011). Of course, map design isn't restricted to the realm of academia. In many ways the development of cartographic practice is now far more active in industry with large software companies driving technological development. It's important to realize that collaboration between academia and industry is vital. Bridging this gap can only be good for cartography. The work of the ICA Commissions, such as those on Map Design, Art and Cartography, and Use and User Issues, are all actively engaged in research into map design and there are plenty of opportunities to discuss and pursue new activities.

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