

Automatic rendering of a Cassini style

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A pictorial style is considered as a transfer function between the properties of a scene and the attributes of the representation (Willats & Durand 2003). We consider that a style is thus the rendering parametrization for a specific purpose. In the context of cartography, assigning visual variables to cartographic objects is also a parametrization of the final rendering, the map. Topography has been (carto)graphically depicted in many ways through centuries. Therefore a topographic style is mainly considered as something more complex integrating both depicted and experienced geographical space and related cartographic practices (See Kent & Vujakovic 2009, Christophe 2012, amongst others).

Having analyzed contemporary topographic styles (Ory et al. 2013), we have focused on a particular old one, whom design choices have not been clearly specified because they were not the purpose of these maps: the maps of the Cassini family. Those maps are well-known, very attractive for general public and very useful for historical purposes. Our issue is the following: is it possible to consider representative visual characteristics of Cassini maps, that could be reproduced automatically in order to make Cassini-like maps and thus being able to manage a Cassini style? And while acquiring knowledge about Cassini maps rendering, are we able to acquire knowledge about the cartographic practices, the perception and experience of space at the time?

Our approach is based on a cartographic study of Cassini maps, to identify representative visual characteristics that could be reproduced and reused

on cartographical data: this preliminary work provides cartographic knowledge about Cassini choices of representation difficult to compile. A challenging aspect is to manage the imprecision on the Cassini renderings due to artistic choices or to geographical phenomenon more 'experienced', than real (e.g. relief). Based on this study, our proposition is a combination of extensions of the OGC Styled Layer Descriptor and Symbology Encoding norms, as new classes of styles related to sophisticated rendering methods to expressively render geodata in a Cassini style.

This research work highlights first how combining knowledge about style and stylization from GISciences and Computer Graphics is an opportunity to improve tools for map design. Moreover it enhances knowledge on cartographic practices and the way they are the reflection of an experienced geographical space by the engineers, designers and artists at that time.

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