

## CREATIVE COLOURS SPECIFICATION BASED ON KNOWLEDGE (COLORLEGEND SYSTEM)

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In the map design process, the stage of symbol specification is often uncertain and the user's choices of graphical signs may be unsuitable to their needs. In particular, colours choices, as mistakes or misunderstandings, are often highlighted: too many colours, colours un-adapted to user's data, too meaningful colours, etc. involving disturbances when readers try to read the map and understand its cartographic message.

Our research work handles with knowledge and processes specifically involved in symbol specification and, in particular, in colours choices. The paper presents the results of our PhD thesis concerning the proposition of a methodology to help users to make personalised and original colours choices during map design process. Our purpose is thus to cooperatively build a colours specification with the user, depending on their tastes and needs. It involves offering cartographic expertise to users and favouring their creativity.

In this paper, we handle with colours specification during map design process. Our purpose is to help users to make personalised and original colours specification while respecting cartographic theory. We highlight the complexity of this problem. We assume that it requires identifying knowledge coming from various domains such as visual perception, cognitive sciences, graphic semiotics, cartography and art. From this identification, we propose a knowledge base for colours specification made up of three elements:

- Cartographic rules divided into semantic and conventional rules.
- Artistic rules coming from famous paintings.
- Inspiration sources (map samples and famous paintings) as knowledge supports to manage cartographic and artistic colours uses.

Our knowledge base is represented as constraints on the colours specification in progress. Those constraints are managed by our COLorLEGend system allowing users to make various colours specifications according to their tastes and needs while respecting cartographic or artistic rules.

COLorLEGend has been experimented by a user test: expert and novice users had to make a map according to their tastes, with the help of one of five paintings. Most of users found COLorLEGend easy to use, efficient to make an original and cartographically correct colours specification and very helpful to select colours combinations.

A result of this work is the possibility to manage colours through a 3D-space defined by conventional, contrasted and artistic axes: various maps may thus be made according to user's tastes and needs and may vary more or less on the first, the second and/or the third axe.

In the context of the appropriation of cartographic tools by various users and in the context of the improvement of experimentation around visual variables of Bertin, the identification and formalisation of a knowledge base on colours uses are important steps in order to improve the knowledge about cognitive processes underlying map design process. Further research on the role of colour in making and understanding of cartographic message is under progress.