

ABOUT THE DEVELOPMENT OF THE METHODOLOGY OF CARTOGRAPHIC IMAGE DESIGN AND QUALITY CONTROL

Lyubov V. Yalovkina

GBU Mosgorgeotrest, 11, Leningradsky Prospekt St., Moscow, 125040, Russia, Engineer,
e-mail: kartografka@list.ru

Olga N. Nikolaeva

Siberian State University of Geosystems and Technologies, 10, Plakhotnogo St., Novosibirsk,
630108, Russia, Ph. D., Professor., Department of Ecology and Environmental Management,
phone: (383)361-06-86, e-mail: onixx76@mail.ru

The current level of technological progress has made popular and demanded the maps intended for a wide range of users. The technology for creating maps became available not only to certified cartographers, but also to specialists from other fields, and sometimes to the very users, which leads to the expansion of the circle of map manufacturers. At the same time, not all manufacturers can guarantee the high quality of the created products. Today, regulatory documents cover issues of design on only topographic, geological and technical (for example, surveying) maps, for which unified symbols were developed and introduced. For other types of maps, including those intended for a wide range of users, the assessment of design quality is not considered as an independent problem. Approaches to assessing the quality of maps, described in the literature, are limited to the analysis of their accuracy, content, reliability and modernity, but not enough attention is paid to design. The authors of the article aim to fill this gap and lay the methodological foundations of quantitative assessment and quality control of the design of cartographic images. When conducting research, the authors turned to the experience of specialists in the field of qualimetry.

Key words: cartographic image design, quality assessment methodology, qualimetry, evaluative properties, design assessment methods.

REFERENCES

1. Garmiz, I. V. (1990). *Kachestvo kart: sovremennye problemy i metody [Card quality: current issues and methods]*. Leningrad: University of Leningrad Publ., 212 p. [in Russian].
2. GOST R 51608-2000. (2000). Digital topographic maps. Quality Requirements. Moscow: Gosstandart of Russia, 12 p. [in Russian].
3. GOST 68-3.4.2-03. (2003). Digital maps. Methods for assessing data quality. General requirements. Moscow: TsNIIGAiK, 28 p. [in Russian].
4. Salishchev, K. A. (1990). *Kartografiya [Cartography]*. Moscow: Moscow State University Publ., 400 p. [in Russian].
5. Sorokina, N. P. (1987). *Ob otsenke kachestva pochvennykh kart. Kartografiya v epokhu NTR. Teoriya, metody, praktika [On the assessment of the quality of soil maps. Cartography in the era of scientific and technological revolution. Theory, methods, practice]*. Moscow [in Russian].
6. Filatov, V. F. (1988). To improve the quality of cartographic products. *Geodeziya i kartografiya [Geodesy and Cartography]*, 3 [in Russian].
7. Ratajski, L. (1977). Loss and gain of information in cartographic communication. In *Beiträge zur theoretischen Kartographie. Festschrift für Erik Arnberger. Wien.* (pp. 217–227).
8. Ratajski, L. (1976). Pewne aspekty gramatykijęzyka mapy. *Polski przegląd ad kartograficzny*, 8(2).
9. Wagan, A. I., Godil, A. A., & Li, X. (2008.) Map quality assessment. *PerMIS*. doi: 10.1145/1774674.1774718.

10. Sanchiz, M., Lemarié, J., Chevalier, A., Cegarra, J., Paubel, P. V., Salmerón, L., & Amadieu, F. (2019). Investigating multimedia effects on concept map building: Impact on map quality, information processing and learning outcome. *Education and Information Technologies*, 24(6), 3645–3667. doi: 10.1007/s10639-019-09943-x.
11. McKendry Jean E., & E. Machlis Gary. (2009). Cartographic design and the quality of climate change maps. *Climatic Change*, 95(1-2), 219–230. doi: 10.1007/s10584-008-9519-5.
12. Malinova, M., & Mendling, J. (2013). The Effect Of Process Map Design Quality On Process Management Success. In *ECIS2013 Completed Research*. Retrieved from http://aisel.aisnet.org/ecis2013_cr/160.
13. Gedz, L. V. (2015). Classification of estimated qualimetric properties of a cartographic image. *Izvestiya vuzov. Geodeziya i aerofotos"emka* [Izvestiya vuzov. Geodesy and Aerophotography], 4, 75–80 [in Russian].
14. Zhukova O. Yu., & Gedz, L. V. (2012). Assessment of the influence of external factors on the visual perception of color cartographic products. *Izvestiya vuzov. Geodeziya i aerofotos"emka* [Izvestiya vuzov. Geodesy and Aerophotography], 6, 29–34 [in Russian].
15. Zhukova O. Yu., & Gedz, L. V. (2014). Evaluation of the quality of the visual properties of electronic maps on the example of tourist. *Izvestiya vuzov. Geodeziya i aerofotos"emka* [Izvestiya vuzov. Geodesy and Aerophotography], 5, 33–38 [in Russian].
16. Azgaldov, G. G. (2012). *Kvalimetriya dlya vsekh* [Qualimetry for everyone]. Moscow: "InformZnanie" Publ., 165 p. [in Russian].
17. Azgaldov, G. G. (1982). *Teoriya i praktika otsenki kachestva tovarov* [Theory and practice of assessing the quality of goods]. Moscow: Ekonomika Publ., 256 p. [in Russian].
18. Azgaldov, G. G., & Povileiko, R. P. (1977). *O vozmozhnosti otsenki krasoty v tekhnike* [On the possibility of assessing beauty in technology]. Moscow: Standards Publ., 120 p. [in Russian].
19. Azgaldov, G. G., & Raykhman, E. P. (1974). *Ekspertnye metody v otsenke kachestva* [Expert methods in quality assessment]. Moscow: Economics, 139 p. [in Russian].
20. Lyuty, A. A., Kazantsev, N. N., Plate, A. N., & Suvorov, A. K. (1986). *Proektirovanie sistem znakov tematicheskikh kart* [Designing sign systems for thematic maps]. Moscow: USSR Academy of Sciences, Institute of Geography, 239 p. [in Russian].
21. Nyrtsova, T. P. (1984). Development of a methodology for an objective assessment of the readability of cartographic fonts and their machine building. *Extended abstract of candidate's thesis*. Moscow, 196 p. [in Russian].
22. Vostokova, A. V., & Koshel, S. M. (1985). *Oformlenie kart. Komp'yuternyy dizayn* [Card design. Computer design]. Moscow: AspectPress Publ., 287 p. [in Russian].
23. Ivanova, L. F., Losyakov, N. N., & Skvortsov, P. A. (1983). *Proektirovanie oformleniya obshchegeograficheskikh i tematicheskikh kart* [Designing the design of general geographical and thematic maps]. Moscow: MIIGAiK Publ., 64 p. [in Russian].
24. Kopylova, A. D. (1957). A study of the perception of cartographic notations. *Extended abstract of candidate's thesis*. Moscow, 16 p. [in Russian].
25. Kramer, G. (1975). *Matematicheskie metody statistiki* [Mathematical methods of statistics]. Moscow: Mir Publ., 648 p. [in Russian].

Received 16.12.2019

© L. V. Yalovkina, O. N. Nikolaeva, 2020