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Using quantitative analysis of digital traces in ethnographic studies of online communities

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Problem statement

In recent years, the problem of blurring of traditional principles and procedures has become more and more acute in the methodology and practice of ethnographic research. This is largely due to the growing variety of forms of research and subject areas to which the ethnographic approach is applied. One of these relatively new areas for ethnography is the online space. The integration of computer-mediated communication into everyday life contributed to the development of ethnographic studies of virtual communities, which required the adaptation of the methodological foundations and tools developed for classical field ethnography to modern digital contexts[1]. The basic conceptual framework of ethnographic research is also undergoing methodological restructuring. The concept of community, which is central to field ethnography, cannot be applied to all interactions on Internet sites. Other concepts familiar to ethnography, such as the field, observation, participation, and so on, are also redefined[2].

As a result of such discrepancies in conceptualization, various styles and practices of online ethnography are formed. One of the first to appear was the *virtual ethnography* approach proposed by Ch. Hine[3]. Methodologically, the approach is based on the adaptation of traditional ethnographic tools to the online environment, combining virtual data collection techniques (for example, video interviews, chat interviews, email interviews, online observation) with offline interviews and/or offline observations. Today, online ethnography can be identified under other labels:

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[1] Markham A. N. Fieldwork in Social Media: What Would Malinowski Do? // Qualitative Communication Research. 2013. Vol. 2. No. 4. P. 434–446; Abidin C., de Seta G. Private Messages From the Field: Confessions on Digital Ethnography and its Discomforts // Journal of Digital Social Research. 2020. Vol. 2. No. 1. P. 1–19.

[2] Postill J. Localizing the Internet Beyond Communities and Networks // New Media & Society. 2008. Vol. 10. No. 3. P. 413–431; Andrejevic M. Infoglut. How Too Much Information Is Changing the Way We Think and Know. New York: Routledge, 2013; Garcia A. C., Standlee A. I., Bechkoff J., Cui Y. Ethnographic Approaches to the Internet and Computer Mediated Communication // Journal of Contemporary Ethnography. 2009. Vol. 38. No. 1. P. 52–84.

[3] Hine C. Virtual Ethnography. London: SAGE, 2000.

digital ethnography[4]; *cyber-ethnography*[5], *netnography*[6]; *expanded ethnography*[7]; *ethnography of virtual worlds*[8], etc[9]. Despite their frequent synonymizing in research practice, a deeper examination reveals certain differences both at the theoretical and methodological levels[10].

One of the key issues on which different approaches of online ethnography clash is how to consider the offline context in the analysis. Thus, there is a methodological gap in virtual approaches between researchers who assume that online practices are rooted in offline contexts and researchers who study user interactions in specific online environments, such as multiplayer computer games, where there are no significant intersections with the offline environment[11].

Other methodological approaches rely on the notion that the fluid and dispersed landscape of the online environment not only complicates research procedures, but also opens up new methodological perspectives. Increasingly, researchers are paying attention to the specific features of the online environment (dynamic nature, complexity, instability, fragmentation, etc.), for which it is

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[4] Murthy D. Digital Ethnography: An Examination of the Use of New Technologies for Social Research // Sociology. 2008. Vol. 42. No. 5. P. 837–855.

[5] Escobar A. Welcome to Cyberia // Current Anthropology. 1994. Vol. 35. No. 3. P. 211–231.

[6] Kozinets R. V. Netnography: Doing Ethnographic Research Online. London: SAGE Publications, 2010.

[7] Beneito-Montagut R. Ethnography Goes Online: Towards a User-Centred Methodology to Research Interpersonal Communication on the Internet // Qualitative Research. 2011. Vol. 11. No. 6. P. 716–735.

[8] Boellstorff T., Nardi B., Pearce C., Taylor T. L. Ethnography and Virtual Worlds: A Handbook of Method. Princeton: Princeton University Press, 2012.

[9] See the article for more details: Barkhatova L. A. From Virtual to Digital Research: Methodological Promises and Limitations of Approaches. Sociological Studies. 2023. No. 1. P. 62-70.

[10] Domínguez D., Beaulieu A., Estalella A., Gómez E., Schnettler B., Read R. Virtual Ethnography // Forum Qualitative Sozialforschung / Forum: Qualitative Social Research. 2007. Vol. 8. No. 3; Caliandro A. Digital Methods for Ethnography: Analytical Concepts for Ethnographers Exploring Social Media Environments // Journal of Contemporary Ethnography. 2018. Vol. 47. No. 5. P. 551–578; Hampton K. N. Studying the Digital: Directions and Challenges for Digital Methods // Annual Review of Sociology. 2017. Vol. 43. P. 167–188.

[11] Myasnikova M. L. An Online Ethnographic Approach to the Study of Internet Communities: Methodological Disagreements and Basic Principles. Book review: Hine C. Ethnography for the Internet: Embedded, Embodied and Every day. Bloomsbury Academic, 2015–240 p // The Journal of Sociology and Social Anthropology. 2017. Vol. 20. No. 1. P. 199–207. (In Russ.)

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proposed to use digital methods that involve new ways of conceptualizing and measuring digital phenomena[12].

As a result of such a methodological transformation, approaches involving mixed methods are implemented in ethnography[13]. To a large extent, this is due to the fact that when studying online communities, data are digital traces of messages, likes, comments, etc., which have a form convenient for analysis using quantitative methods. Modern developments in the field of online ethnography advance a toolkit that combines ethnographic observations with quantitative analysis of digital traces[14], on which the dissertation study is focused.

The use of quantitative analysis, which is not typical for ethnography, provides significant methodological advantages. Studies in this area show that the use of quantitative analysis allows us to expand the scope of ethnography, increase the transparency of procedures and improve the reproducibility of results[15]. Also, quantitative methods can be used in ethnography to achieve the complexity of descriptions[16].

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[12] Rogers R. Digital Methods. Cambridge, MA: MIT, 2013; Kozinets R. V. Netnography: Doing Ethnographic Research Online. London: SAGE Publications, 2010; Caliandro A. Digital Methods for Ethnography: Analytical Concepts for Ethnographers Exploring Social Media Environments // Journal of Contemporary Ethnography. 2018. Vol. 47. No. 5. P. 551–578.

[13] Hine C. Mixed Methods and Multimodal Research and Internet Technologies / In: Hesse-Biber S. N, Johnson R. B. (eds) // The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry. New York: Oxford University Press, 2015. P. 503-521.

[14] Geiger R., Ribes D. Trace Ethnography: Following Coordination Through Documentary Practices // In: Proceedings of the 44th Hawaii International Conference on System Science. 2011. P. 1–10; Laaksonen S. M, Nelimarkka M., Tuokko M., Marttila M., Kekkonen A., Villi M. Working the Fields of Big Data: Using Big-Data-Augmented Online Ethnography to Study Candidate–Candidate Interaction at Election Time // Journal of Information Technology & Politics. 2017. Vol. 14. No. 2. P. 110–131; Pajo J. Quantitative Falsification for Qualitative Findings: Falsifying an Ethnographic Theory of American Public Discourse on Nuclear Waste with Text Mining in R // Social Science Computer Review. 2019. Vol. 37. No. 3. P. 315–332.

[15] Abramson C. M., Joslyn J., Rendle K. A., Garrett S. B., Dohan D. The Promises of Computational Ethnography: Improving Transparency, Replicability, and Validity for Realist Approaches to Ethnographic Analysis // Ethnography. 2018. Vol. 19. No. 2. P. 254–284.

[16] Aipperspach R., Rattenbury T. L, Woodruff A., Anderson K., Canny J. F., Aoki P. Ethno-Mining: Integrating Words and Numbers from the Ground Up. Electrical Engineering and Computer Sciences, University of California at Berkeley, 2006. Technical report No. UCB/ EECS-206-125. https://www2.eecs.berkeley.edu/Pubs/TechRpts/2006/EECS-2006-125.html

A significant problem associated with the integration of quantitative analysis into ethnography is the nonreactive nature of the analyzed data. Digital traces reflect interactions that have happened before. The analysis of such data *a priori* lacks immersion, which is one of the key principles of ethnography. In turn, in the absence of systematic observation sessions, this may cast doubt on the ethnographic nature of the study[17].

Despite the variety of principles, objectives, and methodological innovations, the various approaches of online ethnography are not completely mutually exclusive. Modern online ethnographies can combine the features of different approaches that are adapted to the substantive objectives. However, with the variety of diverse forms of online ethnography, the role of quantitative analysis is not sufficiently conceptualized in terms of combining methods in an ethnographic strategy.

In the dissertation research, we propose a methodological approach that advances the growing dialogue between quantitative analysis of digital traces and online ethnography. Considering the quantitative stage as the basis for ethnographic observation, we demonstrate the opportunities that such a methodological blend provides for the analysis of the structure and interaction order in online communities.

Problem development

The ethnographic approach originates from cultural anthropology, in which it was used to study the sociocultural characteristics of traditional societies. The key representatives of this research area, who made an important contribution to the development of the methodological principles and procedures of ethnography, are B. Malinowski[18] and Cl. Geertz[19].

[17] Gobo G. Doing ethnography. Los Angeles, CA: Sage, 2008.
[18] Malinowski B. Argonauts of the Western Pacific. M:ROSSPEN, 2004. (In Russ.)
[19] Geertz C. Interpretation of Cultures. M: ROSSPEN, 2004. (In Russ.)

At the origins of the ethnographic tradition in sociology is the Chicago School, whose legacy includes the work of R. Park[20], W. Whyte[21] and other researchers of urban communities. The works of P. Atkinson[22], M. Hammersley[23], J. Clifford and G. Marcus[24], P. Willis and M. Trondman[25], M. Angrosino[26], K. O'Reilly[27] and others identified the key directions within ethnography, which, on the way of its development, was under influenced by different theoretical traditions. In Russian sociology, ethnographic studies of social work by P. Romanov[28], labor relations by A. Alekseev[29], villages by T. Shanin[30], studies of urban communities by V. Voronkov and E. Chekadze[31] and others should be noted.

The rapid development of computer-mediated communication has caused a surge of researchers' interest in the study of communication in virtual space. A corpus of works has been formed that attempts to define the boundaries of a new object of ethnographic research - online communities. One of the first definitions of virtual communities was given by H. Rheingold[32]. An important contribution to the systematization of key features, functions and types of online communities was

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[20] Park R. The city as a Social Laboratory / Bankovskaya S. (translated). 2002. Vol. 2. No. 3. P. 3–12. (In Russ.)

[21] Whyte W. F. Street Corner Society: the Social Structure of Italian Slum. 4th edition. Chicago: University of Chicago Press. 1993.

[22] Atkinson P. For Ethnography. Los Angeles, CA: Sage, 2015.

[23] Hammersley M., Atkinson P. Ethnography. Principles in Practice. 2nd edition. London, 1995. P. 88–104.

[24] Clifford J., Marcus G. Writing Culture. Berkeley: University of California Press, 1986.

[25] Willis P., Trondman M. Manifesto for 'Ethnography // Ethnography. 2000. Vol. 1. No. 1. P. 5–16.

[26] Angrosino M. Doing Ethnographic and Observational Research. Thousand Oaks, CA: Sage, 2008.

[27] O'Reilly K. Ethnographic Methods. 2nd edition. Abingdon: Routledge, 2012.

[28] Romanov P. Procedures, Strategies, Approaches of "Social Ethnography"// Sociological Journal. 1996. No. 3-4. P. 138-148. (In Russ.)

[29] Alekseev A. Dramatic Sociology and Sociological Self-reflection. Vol. 4. SP.: Norma, 2005. (In Russ.)

[30] Shanin T. Methodology of Double Reflexivity in the Studies of the Modern Russian Village // Sociological Journal. 1998. No. 3-4. P. 101–116. (In Russ.)

[31] Voronkov V., Chekadze E. (eds) Sociologist in the Field: Leave to Stay, SP.: Aletheia, 2009. (In Russ.)

[32] Rheingold H. A Slice of Life in My Virtual Community // Global Networks: Computers and International Communication / Harasim L. (ed.). Cambridge, MA: MIT Press, 1994. P. 57-80.

made by J. Preece[33], Q. Jones[34], A. Garcia and co-authors[35], E. Rozhdestvenskaya and V. Semenova[36] et al. The development of this research area was also carried out by M. Andrejevic[37] and J. Postill[38], who showed that a significant part of online interactions do not fit into the framework of the conceptual model of the online community described in the literature. For example, for such ephemeral and unstable forms of communication as retweets or browsing tech support forums, A. Caliandro develops the concepts of online crowd and online public, considering various aspects of publicity and affect[39].

We also note the domestic line of online research, represented by the book series "Online Research in Russia", the authors of which are I. Devyatko, A. Shashkin, S. Davydov, O. Logunova, A. Klimova and other researchers. It provides an insight into the systematization, cataloging and key methodological issues in the field of online research, both quantitative and qualitative[40].

Among the pioneering online ethnographic studies, we can point out the works of Sh. Turkle[41], M. Markham[42], Ch. Hine[43], and others, which are an attempt to show

[33] Preece J. Online Communities: Designing Usability, Supporting Sociability. Chichester, England: John Wiley & Sons, 2000.

[34] Jones Q. Virtual Communities, Virtual Settlements and Cyber-Archaeology // Journal of Computer Mediated Communication. 1997. Vol. 3. No. 3.

[35] Garcia A. C., Standlee A. I., Bechkoff J., Cui Y. Ethnographic Approaches to the Internet and Computer Mediated Communication // Journal of Contemporary Ethnography. 2009. Vol. 38. No. 1. P. 52–84.

[36] Rozhdestvenskaya E. Y., Semenova V. V. Cyberethnography of Virtual Community: Analysis of Touristic Message Board // Interaction. Interview. Interpretation. 2014. Vol. 7. P. 22-43. (In Russ.)

[37] Andrejevic M. Infoglut. How Too Much Information Is Changing the Way We Think and Know. New York: Routledge, 2013.

[38] Postill J. Localizing the Internet Beyond Communities and Networks // New Media & Society. 2008. Vol. 10. No. 3. P. 413–431.

[39] Caliandro A. Digital Methods for Ethnography: Analytical Concepts for Ethnographers Exploring Social Media Environments // Journal of Contemporary Ethnography. 2018. Vol. 47. No. 5. P. 551–578.

[40] Shashkin A. V., Deviatko I. F. Davydov S. G. (eds) Online Research in Russia: Trends and Prospects. M. : Online Market Intelligence, 2016. (In Russ.)

[41] Turkle S. Life on the Screen: Identity in the Age of the Internet. New York: Simon & Schuster, 1997.

[42] Markham A. N. Life Online: Researching Real Experience in Virtual Space. Walnut Creek, CA: AltaMira, 1998.

[43] Hine C. Virtual Ethnography. London: SAGE, 2000.

that online interactions, despite the absence of physical interaction, are also as legitimate for study as offline - interactions. This largely determined the focus of these studies on the differences in social ties, interactions and identities in online and offline realities.

Important results in the field of developing the methodology for online ethnographic research include the approaches of virtual ethnography by Ch. Hine[44], ethnography of virtual worlds by T. Boellstorff[45], netnography by R. Kozinets[46], digital ethnography, presented in the works of R. Rogers[47], D. Murphy[48], L. Hjorth and colleagues[49], etc. These approaches provide different conceptualizations and methodological tools, the choice of which will largely determine the logic of the study.

We can also note a number of ethnographies with a subject focus, which at the same time have an important contribution in terms of the development of research tools[50]. Among such online ethnographies in domestic sociology, we can

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[44] Hine C. Virtual Ethnography. London: SAGE, 2000.

[45] Boellstorff T., Nardi B., Pearce C., Taylor T. L. Ethnography and Virtual Worlds: A Handbook of Method. Princeton: Princeton University Press, 2012.

[46] Kozinets R. V. Netnography: Doing Ethnographic Research Online. London: SAGE Publications, 2010.

[47] Rogers R. Digital Methods. Cambridge, MA: MIT, 2013; Rogers R. The End of the Virtual. Amsterdam: Amsterdam University Press, 2009.

[48] Murthy D. Digital Ethnography: An Examination of the Use of New Technologies for Social Research // Sociology. 2008. Vol. 42. No. 5. P. 837–855; Murthy D. Emergent Digital Ethnographic Methods for Social Research / In: Hesse-Biber S. N. (ed.) // The Handbook of Emergent Technologies in Social Research. New York: Oxford University Press, 2011. P. 158–180.

[49] Hjorth L., Horst H., Galloway A., Bell G. The Routledge Companion to Digital Ethnography. 1st ed. Routledge. 2016.

[50] See for more details: Oates S. Revolution Stalled: The Political Limits of the Internet in the Post-Soviet Sphere. Oxford: Oxford University Press, 2013; Johnson M. R. Inclusion and Exclusion in the Digital Economy: Disability and Mental Health as a Live Streamer on Twitch.tv. Information // Communication & Society. 2019. Vol. 22. No. 4. P. 506–520; Trevisan F., Reilly P. Ethical Dilemmas in Researching Sensitive Issues Online: Lessons from the Study of British Disability Dissent Networks // Information, Communication & Society. 2014. Vol. 17. No. 9. P. 1131–1146.

single out the works of E. Polukhina[51] and A. Strelnikova[52], P. Demin and E. Sorochan[53], in which ethnographic tools are developed within the framework of the netnography approach. The book prepared by the Russian Club of Internet and Society Lovers should also be noted, which describes the main thematic areas of Internet research, including in line with online ethnography[54].

More and more researchers are paying attention to the specific features of the Internet environment. The practice of Internet research with mixed methods is developing, which gives a more comprehensive understanding of various aspects of the substantive focus[55]. A similar body of research has formed in online ethnography. In terms of the development of mixed methods in online ethnographies, two main directions can be distinguished. The first direction is represented by studies in which data that are qualitative in nature are analyzed predominantly using quantitative methods. These include the ethnographic studies of A. Cottica and colleagues [56], O. Berthod and co-authors[57], O. Akemu and S. Abdelnour[58], H. Carlsen and S. Ralund[59], and others, in which methods such as network analysis, thematic modeling, etc. were used. Increasingly, quantitative

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[51] Polukhina E. V. Online Observation as a Method for Collecting Data // Interaction. Interview. Interpretation. 2014. No. 7. P. 95-106. (In Russ.)

[52] Polukhina E. V., Strelnikova A. V. «…What is the Gift Exchange? This is the Maximum Confidence»: Features of the Social Order in Virtual Gift Exchange Communities // Interaction. Interview. Interpretation. 2014. No. 7. P. 7-21. (In Russ.)

[53] Demin P. V., Sorochan E. A. Social Effects of Online Communities: Netnography of a YouTube Embroiderers' Association // Monitoring of Public Opinion: Economic and Social Changes. 2020. No. 5. P. 312–343. (In Russ.)

[54] Kolozaridi P., Shchetvina A., Sokolova E. Method: Digital Ethnography. 2018. URL: https://mmbookhse.ru/books/47/sections/558/ (date of access: 20.01.2022). (In Russ.)

[55] Hine C. Mixed Methods and Multimodal Research and Internet Technologies / In: Hesse-Biber S. N, Johnson R. B. (eds) // The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry. New York: Oxford University Press, 2015. P. 503-521.

[56] Cottica A., Hassoun A., Manca M., Vallet J., Melancon G. Semantic Social Networks: A Mixed Methods Approach to Digital Ethnography // Field Methods. 2020. Vol. 32. No. 3. P. 274–290.

[57] Berthod O., Grothe-Hammer M., Sydow J. Network Ethnography: A Mixed-method Approach for the Study of Practices in Interorganizational Settings // Organizational Research Methods. 2017. Vol. 20. No. 2. P. 299–323.

[58] Akemu O., Abdelnour S. Confronting the Digital: Doing Ethnography in Modern Organizational Settings // Organizational Research Methods. 2018. Vol. 23. No. 2. P. 65–77. P. 296–321.

[59] Carlsen H. B., Ralund S. Computational Grounded Theory Revisited: From Computer-led to Computer-assisted Text Analysis // Big Data & Society. 2022. Vol. 9. No. 1.

methods are being integrated into online ethnography as an independent stage of research, which is carried out along with the qualitative stage. As examples of such studies, one can note the works of S. Laaksonen and co-authors[60], R. Geiger and D. Ribes[61], A. Bjerre-Nielsen and K. Glavind[62] and other authors.

In recent years, the first works have also appeared that problematize one of the key questions about the position of a researcher in online ethnographies using quantitative methods. Following the continuity of the ethnographic tradition, G. Campagnolo[63], Ph. Brooker[64], M. Airoldi[65] and others put forward an immersed position, which implies the active participation of the researcher in Internet discussions. This position is opposed by the role of a more detached observer, which is characteristic of ethnographies with covert observation[66].

Despite the variety of forms of online ethnography, the perspectives of quantitative analysis of digital traces in such studies are not conceptually considered. In the dissertation research, we propose an ethnographic approach that, through the use of a synergistic combination of quantitative and qualitative methods, allows us to comprehensively identify and describe the structure and interaction order in online communities. An important feature of our approach is the synthesis of methodological logics that are rarely found together. Traditionally, online platforms

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[60] Laaksonen S. M, Nelimarkka M., Tuokko M., Marttila M., Kekkonen A., Villi M. Working the Fields of Big Data: Using Big-Data-Augmented Online Ethnography to Study Candidate–Candidate Interaction at Election Time // Journal of Information Technology & Politics. 2017. Vol. 14. No. 2. P. 110–131.

[61] Geiger R., Ribes D. Trace Ethnography: Following Coordination Through Documentary Practices // In: Proceedings of the 44th Hawaii International Conference on System Science. 2011. P. 1–10.

[62] Bjerre-Nielsen A., Glavind K. L. Ethnographic Data in the Age of Big Data: How to Compare and Combine // Big Data & Society. 2022. Vol. 9. No. 1.

[63] Campagnolo G. M. Participative Epistemology in Social Data Science: Combining Ethnography with Computational and Statistical Approaches // International Journal of Social Research Methodology. 2022. Vol. 25. No. 3. P. 391–403.

[64] Brooker P. Computational Ethnography: A View from Sociology // Big Data & Society. 2022. Vol. 9. No. 1.

[65] Airoldi M. Ethnography and the Digital Fields of Social Media // International Journal of Social Research Methodology. 2018. Vol. 21. No. 6. P. 661–673.

[66] Forberg P., Schilt K. What is Ethnographic about Digital Ethnography? A Sociological Perspective // Frontiers in Sociology. 2023. Vol. 8.

that are a community in the sociological sense (emotional dynamics in discussions, manifested identity, etc.) are considered using a hybrid toolkit in the form of a combination of interviews or observations in online and offline environments. We propose an approach to ethnographic research of online communities based on the use of digital methods, both qualitative and quantitative, which provides a more nuanced and detailed understanding of the specifics of online interactions, especially in a situation where the community is localized only in the online environment.

The object of the research – methodological approaches to the ethnographic study of online communities.

The subject – the perspectives of using quantitative analysis of digital traces in ethnographic studies of online communities.

The aim of the dissertation research is to develop and justify a methodological approach to the collection, analysis and generalization of empirical data on online communities in ethnographic study using quantitative analysis of digital traces.

Achieving this aim involves solving the following **objectives**:

1. To systematize the existing principles, procedures and practices of ethnographic studies of online communities.
2. To propose typology of the methodological approaches to online ethnography.
3. To develop a methodological toolkit for studying online communities based on online ethnography using quantitative analysis of digital traces.
4. To test the proposed toolkit using an empirical study of the professional sociological online community and evaluate its analytical capabilities.

The results of objectives 1 and 2 involve the conceptualization of the methodological foundations of online ethnographic research based on the analysis of the corpus of author's concepts, methodologies and practices of online ethnographic research. The implementation of these objectives is described in the articles:

Barkhatova L. A. From Virtual to Digital Research: Methodological Promises and Limitations of Approaches. Sociological Studies. 2023. No. 1. P. 62-70.

Barkhatova L. A. The Overview of Online Ethnographic Research on Communities of People with Disabilities // The Journal of Social Policy Studies. 2021. Vol. 19. No. 4. P. 715-726.

The results of objectives 3 and 4 demonstrate the perspectives of using a quantitative analysis of digital traces as part of testing the developed ethnographic approach to the study of a particular online community. The results are presented in the articles:

Barkhatova L. A. The computational analysis of digital traces in ethnographic studies of online communities // Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique. 2023. Forthcoming.

Barkhatova L. A. Structural Features of Russian Sociologists' Communication: an Online Community Case Study // Monitoring of Public Opinion: Economic and Social Changes. 2020. No. 5. P. 204-221.

Theoretical foundations of the research

The theoretical basis of the dissertation is presented by the approaches of digital ethnography, supplemented by developments in the field of mixed methods. As a starting point, we take the concept of digital methods by R. Rogers, in which the Internet is considered not only as an object of study, but also as a source of methods[67]. The idea that digital methods follow the environment has also been developed by other authors who have focused on how online platforms organize communication flows[68]. This theoretical perspective makes it possible to take into

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[67] Rogers R. Digital Methods. Cambridge, MA: MIT, 2013; Rogers R. The End of the Virtual. Amsterdam: Amsterdam University Press, 2009.
[68] Airoldi M. Ethnography and the Digital Fields of Social Media // International Journal of Social Research Methodology. 2018. Vol. 21. No. 6. P. 661–673; Caliandro A. Digital Methods for Ethnography: Analytical Concepts for Ethnographers Exploring Social Media Environments // Journal of Contemporary Ethnography. 2018. Vol. 47. No. 5. P. 551–578.

consideration the infrastructural properties of the online space, which are often ignored by virtual approaches.

Digital methods, offered in this prism as an alternative to virtual methods[69], also make a significant contribution to the development of ethnographic research tools. They allow us to consider online ethnography as a mixed methods approach. The digital data that a researcher encounters on the Internet can be structured and analyzed using quantitative methods[70]. To highlight the advantages of using quantitative methods in ethnography, which are traditionally not characteristic of it, we consider the works of C. Abramson and co-authors[71], J. Pajo[72], R. Aipperspach and colleagues[73], D. Shaffer[74] and others. Since the mixing of methods in our study is built within the framework of an integrative analysis[75], we turn to ethnographies

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[69] The opposition between these methods and conceptualizations is described by R. Rogers in his book: Rogers R. The End of the Virtual. Amsterdam: Amsterdam University Press, 2009.

[70] Hine C. Mixed Methods and Multimodal Research and Internet Technologies / In: Hesse-Biber S. N, Johnson R. B. (eds) // The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry. New York: Oxford University Press, 2015. P. 503-521.

[71] Abramson C. M., Joslyn J., Rendle K. A., Garrett S. B., Dohan D. The Promises of Computational Ethnography: Improving Transparency, Replicability, and Validity for Realist Approaches to Ethnographic Analysis // Ethnography. 2018. Vol. 19. No. 2. P. 254–284.

[72] Pajo J. Quantitative Falsification for Qualitative Findings: Falsifying an Ethnographic Theory of American Public Discourse on Nuclear Waste with Text Mining in R // Social Science Computer Review. 2019. Vol. 37. No. 3. P. 315–332.

[73] Aipperspach R., Rattenbury T. L, Woodruff A., Anderson K., Canny J. F., Aoki P. Ethno-Mining: Integrating Words and Numbers from the Ground Up. Electrical Engineering and Computer Sciences, University of California at Berkeley, 2006. Technical report No. UCB/ EECS-206-125. https://www2.eecs.berkeley.edu/Pubs/TechRpts/2006/EECS-2006-125.html

[74] Shaffer D. W. Quantitative Ethnography. Madison, Wis: Cathcar Press, 2017.

[75] Small M. L. How to Conduct a Mixed Methods Study: Recent Trends in a Rapidly Growing Literature // Annual Review of Sociology. 2011. Vol. 37. P. 57–86.

that have used similar designs. Here we consider the studies of R. Geiger and D. Ribes[76], Ch. Hine[77], S. Laaksonen and co-authors[78], P. Howard[79] et al.

Description of the methodological approach

The dissertation research proposes a methodological approach to ethnographic research using a quantitative analysis of digital traces, which allows describing the structure and the interaction order of online communities. The developed approach is based on a methodological framework, which consists of an analysis of elements that are relatively universal for all online communities: structure, topics of discussion, rules of interaction, conflicts, and composition of participants.

The qualitative component of the approach is based on covert observation with a relatively low degree of participation. It is supposed to build participation mainly through active and adapted "listening" of the media, proposed by R. Winter and A. Lavis [80]. The basis of this strategy is the interplay with the analyzed fragments of communication in their interactive and emotional context. This includes working with the emotional context of the posts and comments that should be recorded in the observation diaries. In addition to text materials, it is also supposed to analyze non-verbal elements of communication: pictures, emoticons, reactions and memes that are found in the discussions of the participants.

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[76] Geiger R., Ribes D. Trace Ethnography: Following Coordination Through Documentary Practices // In: Proceedings of the 44th Hawaii International Conference on System Science. 2011. P. 1–10.

[77] Hine C. Mixed Methods and Multimodal Research and Internet Technologies / In: Hesse-Biber S. N, Johnson R. B. (eds) // The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry. New York: Oxford University Press, 2015. P. 503-521.

[78] Laaksonen S. M, Nelimarkka M., Tuokko M., Marttila M., Kekkonen A., Villi M. Working the Fields of Big Data: Using Big-Data-Augmented Online Ethnography to Study Candidate–Candidate Interaction at Election Time // Journal of Information Technology & Politics. 2017. Vol. 14. No. 2. P. 110–131.

[79] Howard P. N. Network Ethnography and the Hypermedia Organization: New Media, New Organizations, New Methods // New Media & Society. 2002. Vol. 4. No. 4. P. 550–574.

[80] Winter R, Lavis A. Looking, But Not Listening? Theorizing the Practice and Ethics of Online Ethnography // Journal of Empirical Research on Human Research Ethics. 2020. Vol. 15. No.1-2. P. 55–62.

The approach assumes duration in conducting ethnographic observation, which reflects one of the key principles of ethnography. We proceeded from the fact that short-term observation does not allow us to fully trace the dynamics of discussions and conflicts in the online community. To consider the contextuality in field notes and subsequent interpretation, observation sessions should be conducted in real time or with a short-time lag of several days[81].

In parallel with ethnographic observation, the methodological approach involves quantitative analysis of digital traces. This stage of the research includes the following methods: quantitative content analysis, network analysis and topic modeling. The focus of each method on solving its substantive objective makes it possible to implement them simultaneously with each other. To describe the composition of the participants in the studied online community, the approach is based on the use of quantitative content analysis. The application of network analysis is aimed at studying the structure of the community. To identify the topics discussed and estimate their popularity in the community, the use of topic modeling is expected.

An important element of the proposed approach is the analysis of communication between community representatives on other online platforms in the format of a small additional research stage. The comparison of different online communications is aimed at triangulating the findings obtained during online ethnography, which gives a wider context and allows, on the one hand, to validate the results, on the other hand, to expand the interpretation.

Approbation of the approach in the empirical case

The developed methodological approach of ethnographic research using quantitative analysis of digital traces was tested through an empirical case of the

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[81] More detailed arguments in favor of real-time observations for communities with asynchronous communication are presented in the article: Barkhatova L. A. The computational analysis of digital traces in ethnographic studies of online communities // Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique. 2023. Forthcoming.

sociological online community. The aim of the analysis of the empirical case was to identify the structure, rules of interaction and conflicts, as well as topics of discussion in the online community.

The choice of the professional community is due to the active development of professional communication in the online environment, including online platforms for informal communication. It is worth noting that professional groups are traditionally one of the objects of ethnography. However, in online ethnography, studies of professional online communities have not yet become widespread[82].

The choice of sociologists as a professional group is associated to a greater extent with limited opportunities for immersion in the field. Since the research methodology involves the use of nonreactive data in the form of digital traces, which *a priori* gives less involvement, it was decided to take a professional group that is the most available for immersion in the field.

At the time of the field stage, the online community studied was one of the most numerous and authoritative sociological online communities in Russia. In order to comply with the ethical standards of anonymity in our research, we do not mention the name of the Internet community. It should be noted that the studied site in the dissertation research is considered as an online community, since there is a rich emotional dynamic in the discussions of the participants and a collective professional identity is constructed. The total number of registered members of the online community was more than 2.5 thousand users. The composition of the participants is represented by well-known Russian sociologists who work in leading Russian universities and scientific organizations, as well as novice researchers and representatives of related professions (marketing, advertising and PR, etc.).

The empirical basis for online ethnography was the content of the studied online community for 6 years: from 2017 to 2022. At the same time, along with ethnographic observation, a quantitative analysis of digital traces (content analysis, network analysis and topic modeling) was carried out to describe the studied

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[82] For this reason, the dissertation presents a review article on more mainstream ethnographic studies of inclusive online communities.

community more fully, which was based on the content of the studied online community 2017–2018[83].

Also, as part of the approbation of the approach, an analysis of the scientific conference was carried out, which made it possible to compare the online community with other online communication channels of the studied professional group. For analysis, one of the largest sociological conferences in Russia, the International Grushinskaya Sociological Conference, was chosen, in which both academic sociologists and practicing sociologists took part. The analysis was conducted at the last stage of the study for triangulation of the findings. Mostly, archival content was taken as a basis - videos of online sections and their transcripts posted on the conference website. As part of this stage, the socio-demographic composition and nature of communication on the sites were compared, and we also examined the extent to which the topics discussed in the online community are typical for conferences[84]. This made it possible to highlight the general trends inherent in the communication of Russian sociologists and to determine the specifics of the online community under study.

Limitations of the research

The developed methodological approach using quantitative analysis of digital traces seems to be relatively universal for ethnographic studies of online communities. The approach is based on a methodological framework consisting of an analysis of the structure, composition of participants, topics of discussion, rules of interaction and conflicts, which makes it possible to comprehensively describe interactions in online communities.

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[83] This decision was due to technical limitations - changes in the API of the social network under study, with the help of which the data was uploaded.

[84] The implementation of this stage of the study is described in more detail in the article: Barkhatova L. A. The computational analysis of digital traces in ethnographic studies of online communities // Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique. 2023. Forthcoming.

As a limitation of the developed approach, the lack of access to offline, should be noted. Online focus alone may not be enough to explore online communities, especially those in which a significant proportion of the participants' interactions take place offline[85]. Also, the approach based on digital methods is not quite suitable if the research question posed involves deepening and going offline[86].

Contribution to the development of the subject field

1. The dissertation research systematizes the basic principles, procedures and practices of ethnographic research of the online communities in two directions: 1) in relation to the epistemological basis of ethnography; 2) in relation to the conceptualizations of basic concepts and applied methods with various approaches within online ethnography.

2. The typology of methodological approaches to online ethnography is proposed, which is based on differences in the conceptualizations of key concepts and methodological tools.

3. The developed methodological approach offers a methodological framework for an ethnographic study of online communities, consisting of an analysis of the structure, discussion topics, composition of participants, rules of interaction and conflicts. Approbation of the approach showed that the synergistic combination of quantitative analysis of digital traces (content analysis, network analysis and thematic modeling) with ethnographic observations leads to a more nuanced and rich understanding of interactions in online communities.

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[85] For example, these can be communities of multimodal worlds, which, along with online communication of participants, involve offline events.

[86] An example of such a research question would be to identify the problems that members of inclusive online communities share with each other in online communication.

Statements to be defended

1. The systematization of the methodological foundations of online ethnography has shown that in this area of research at the epistemological level, adherence to the basic principles of the ethnographic approach remains, which, however, are eroded in research practice. In the case of studying online communities, the toolkit changes and the basic concepts (for example, field, community, etc.) are redefined. The ethical issues associated with conducting the study also become more complicated. In response to the presented methodological challenges, two main areas of online ethnography have emerged in sociology: (1) in the form of hybrid ethnographies, in which online communities are considered simultaneously in online and offline registers; (2) in line with the study of communication flows by digital methods, both qualitative and quantitative in nature.

2. The presence of methodological and terminological confusion is demonstrated, which manifests itself in the abundance of conceptually poorly distinguishable definitions within the framework of different ethnographic approaches. To systematize heterogeneous research practices, a typology of methodological approaches to online ethnography is proposed based on the conceptualization of key concepts and the tools used: (1) virtual approaches, (2) netnography, (3) digital ethnography. The developed typology illustrates the existing transition from virtual approaches to digital ethnography. She also shows that at the conceptual level, the mixing of methods is organically integrated into digital ethnography, in which quantitative methods can be used both at the level of individual analysis techniques and act as an independent stage of research.

3. The developed methodological approach is based on the use of content analysis, network analysis and topic modeling methods, along with ethnographic observation of the online community. It has been demonstrated that the quantitative analysis of digital traces forms a general basis for ethnographic observation, providing opportunities for a more comprehensive

understanding of the structure and order of interaction in the online community, as well as for increasing the reliability and validity of research results.

4. The approbation has shown that the proposed methodological approach reveals new opportunities for the synergistic connection of qualitative and quantitative data for the analysis of structure, topics of discussion, rules of interaction and conflicts. Analysis of the degree of centralization of the structure of the online community allows researchers to expand their understanding of the moderation policy and the role of the moderator in managing the community. The study of homophily patterns allows researchers to supplement the interpretation of conflicts in the online community. The synthesis of qualitative and quantitative data is also important in the analysis of discussion topics. Topic modeling, without considering the results of observation, gives a distortion towards a more pragmatic perception of discussions. Qualitative methods make it possible to reflect the emotional nuances of the interaction of participants more accurately. However, relying solely on the results of observations makes it difficult to assess the popularity of selected topics in the community under study.

The main research findings

The principles, procedures and practices of online ethnography

Despite the development of discussions in the literature that problematize the methodological foundations of online ethnography, the analysis demonstrates the presence of many conceptual and practical issues related to the realization of ethnographic research in the online space[87].

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[87] See the article for more details: Markham A. N. Fieldwork in Social Media: What Would Malinowski Do? // Qualitative Communication Research. 2013. Vol. 2. No. 4. P. 434–446; Abidin C., de Seta G. Private Messages From the Field: Confessions on Digital Ethnography and its Discomforts // Journal of Digital Social Research. 2020. Vol. 2. No. 1. P. 1–19.

It is shown that the starting point in the study of online communication within the framework of ethnography was the idea of the hybrid nature of field work based on the combination of online observation with offline interviews and/or offline observations[88]. This logic forms the direction of research in line with virtual ethnography, in which online communities are considered through online and offline practices[89].

In the modern world, when a significant part of online communication is formed in an unstable environment (for example, a news feed or hashtags)[90], there is a growing interest in digital methods that offer new tools for studying online phenomena[91]. A body of methodological solutions based on using digital methods has formed that allow analyzing a variety of online platforms, including those that are not a community in the sociological sense.

The analysis of the literature shows a trend associated with the development of research practice, in which hybridity is manifested in a combination of qualitative and quantitative methods. A layer of ethnographic research has formed, involving a quantitative analysis of digital traces, along with a qualitative research stage[92]. In

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[88] Hine C. Virtual Ethnography. London: SAGE, 2000; Beneito-Montagut R. Ethnography Goes Online: Towards a User-Centred Methodology to Research Interpersonal Communication on the Internet // Qualitative Research. 2011. Vol. 11. No. 6. P. 716–735; Hallett R.E., Barber K. Ethnographic Research in a Cyber Era // Journal of Contemporary Ethnography. 2014. Vol. 43. No. 3. P. 306–330.

[89] Hine C. Virtual Ethnography. London: SAGE, 2000; Hine C. Ethnography for the Internet: Embedded, Embodied and Everyday. London: Bloomsbury Publishing, 2015.

[90] Airoldi M. Ethnography and the Digital Fields of Social Media // International Journal of Social Research Methodology. 2018. Vol. 21. No. 6. P. 661–673.

[91] Rogers R. Digital Methods. Cambridge, MA: MIT, 2013.

[92] See the article for more details: Hine C. Mixed Methods and Multimodal Research and Internet Technologies / In: Hesse-Biber S. N, Johnson R. B. (eds) // The Oxford Handbook of Multimethod and Mixed Methods Research Inquiry. New York: Oxford University Press, 2015. P. 503-521.; Geiger R., Ribes D. Trace Ethnography: Following Coordination Through Documentary Practices // In: Proceedings of the 44th Hawaii International Conference on System Science. 2011. P. 1–10; Pajo J. Quantitative Falsification for Qualitative Findings: Falsifying an Ethnographic Theory of American Public Discourse on Nuclear Waste with Text Mining in R // Social Science Computer Review. 2019. Vol. 37. No. 3. P. 315–332; Laaksonen S. M, Nelimarkka M., Tuokko M., Marttila M., Kekkonen A., Villi M. Working the Fields of Big Data: Using Big-Data-Augmented Online Ethnography to Study Candidate–Candidate Interaction at Election Time // Journal of Information Technology & Politics. 2017. Vol. 14. No. 2. P. 110–131.

addition, a separate research area of "quantitative ethnography" appears, which suggests the use of statistical tools for validating codes obtained from the qualitative analysis of big data[93].

In the dissertation research, it was revealed that in the online environment adherence to the epistemological basis of ethnography is declared[94]. However, in practice, adherence to the basic principles of ethnographic research is preserved mainly in virtual approaches, while we can observe their blurring in digital ethnographies. This is most acute in relation to the principle of inclusion in the field, which largely occurs due to the lack of a conventional understanding of the necessary degree of participation of the researcher[95].

It is also shown that, in addition to the methodological problems associated with the adaptation of the conceptual premise and tools to the digital environment, it also complicates the ethical procedures[96]. On social media, many online sites are open to the public: they can be viewed by anyone, and posts and comments can be found through a search query in the browser. Accordingly, when using direct quotations, the researcher may reveal the identity of their authors[97]. There are also

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[93] Shaffer D. W. Quantitative Ethnography. Madison, Wis: Cathcar Press, 2017; Kaliisa R., Misiejuk K., Irgens G. A., Misfeldt M. Scoping the Emerging Field of Quantitative Ethnography: Opportunities, Challenges and Future Directions / In: Ruis A. R., Lee S. B. (eds) // Advances in Quantitative Ethnography. ICQE 2021. Communications in Computer and Information Science, Vol. 1312. Springer, Cham, 2021. P. 3–17.

[94] Murthy D. Digital Ethnography: An Examination of the Use of New Technologies for Social Research // Sociology. 2008. Vol. 42. No. 5. P. 837–855.

[95] Forberg P., Schilt K. What is Ethnographic about Digital Ethnography? A Sociological Perspective // Frontiers in Sociology. 2023. Vol. 8.

[96] See the article for more details: Barkhatova L. A. The Overview of Online Ethnographic Research on Communities of People with Disabilities // The Journal of Social Policy Studies. 2021. Vol. 19. No. 4. P. 715-726.

[97] Walford G. The Impossibility of Anonymity in Ethnographic Research // Qualitative Research. 2018. Vol. 18. No. 5. P. 516–525; Hallett R.E., Barber K. Ethnographic Research in a Cyber Era // Journal of Contemporary Ethnography. 2014. Vol. 43. No. 3. P. 306–330; Beneito-Montagut R. Ethnography Goes Online: Towards a User-Centred Methodology to Research Interpersonal Communication on the Internet // Qualitative Research. 2011. Vol. 11. No. 6. P. 716–735.

difficulties in obtaining informed consent, the need for which, in the context of studying large online communities, is increasingly being questioned[98].

The typology of methodological approaches of online ethnography

The dissertation research proposes a classification of methodological approaches to online ethnography based on different conceptual premises and methodological tools: (1) virtual approaches, (2) netnography, (3) digital ethnography[99].

The research practice of ethnographic studies of online communities originates from virtual approaches, which involve an attempt to adapt traditional ethnographic tools to the online space, combining virtual methods with their offline counterparts[100]. The basis of fieldwork is the researcher's immersion in the community, as is assumed in field ethnography, but using other communication channels such as online forums, multiplayer games, e-mail, etc[101]. Within this approach, two sub-styles can be distinguished: virtual ethnography, which focuses on the interactions of online and offline environments[102], and the ethnography of virtual worlds, which is aimed at studying interactions within specific environments (mainly multiplayer computer games)[103].

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[98] Denzin N. K. Cybertalk and the Method of Instances / in S.G. Jones (ed.) // Doing Internet Research: Critical Issues and Methods for Examining the Net. Thousand Oaks, CA: SAGE, 1999.

[99] See the article for more details: Barkhatova L. A. From Virtual to Digital Research: Methodological Promises and Limitations of Approaches. Sociological Studies. 2023. No. 1. P. 62-70.

[100] Caliandro A. Digital Methods for Ethnography: Analytical Concepts for Ethnographers Exploring Social Media Environments // Journal of Contemporary Ethnography. 2018. Vol. 47. No. 5. P. 551–578.

[101] Bengtsson S. Faraway, so Close! Proximity and Distance in Ethnography Online. Media, Culture & Society. 2014. Vol. 36. No. 6. P. 862–877.

[102] Hine C. Virtual Ethnography. London: SAGE, 2000.

[103] Boellstorff T., Nardi B., Pearce C., Taylor T. L. Ethnography and Virtual Worlds: A Handbook of Method. Princeton: Princeton University Press, 2012; Boellstorff T. Coming of Age in Second Life: An Anthropologist Explores the Virtually Human. New York: Princeton University Press, 2008; Nardi B.A. My Life as a Night Elf Priest: An Anthropological Account of World of Warcraft. University of Michigan Press, 2010; Pearce C. Communities of Play: Emergent Cultures in Online Games and Virtual World. Cambridge: MIT Press, 2009; Taylor T. L. Play Between Worlds: Exploring Online Game Culture. Cambridge: MIT Press, 2006.

At the other pole of developed typology, is digital ethnography, which examines the practices through which digital platforms structure communication flows[104]. Within this approach, we identify the anthropological tradition, the focus of which is the relationship between local practices and the global consequences of the use of digital media[105]. Another direction is represented by digital methods, which offer measurement considering the infrastructural properties of online sites[106]. The dissertation research shows that the mixing of methods is justifiably integrated into such an approach.

The netnography approach[107], which has become widespread in studies of online communities of brand consumers and online communities of practice, occupies an intermediate position in the proposed typology. At the epistemological level, netnography can be classified as a virtual method paradigm[108], as it predominantly preserves the hybridity of the toolkit, considering both online and offline practices. However, unlike virtual approaches, netnography uses more diverse methods and techniques for collecting and analyzing data. It was revealed that online surveys and asynchronous interviews are more often used in netnography, and the application of certain quantitative analysis techniques is not excluded[109].

[104] Airoldi M. Ethnography and the Digital Fields of Social Media // International Journal of Social Research Methodology. 2018. Vol. 21. No. 6. P. 661–673.

[105] Coleman E. G. Ethnographic Approaches to Digital Media // Annual Review of Anthropology. 2010. Vol. 39. P. 487-505; Hjorth L., Horst H., Galloway A., Bell G. The Routledge Companion to Digital Ethnography. 1st ed. Routledge. 2016; Miller D., Wang X. Introduction: Smartphone-Based Visual Normativity: Approaches from Digital Anthropology and Communication Studies // Global Media and China. 2021. Vol. 6. No. 3. P. 251–258; Miller D. (ed.) Why We Post. URL: https://www.uclpress.co.uk/collections/series-why-we-post (date of access: 21.05.2022)

[106] Rogers R. Digital Methods. Cambridge, MA: MIT, 2013; Rogers R. The End of the Virtual. Amsterdam: Amsterdam University Press, 2009.

[107] Kozinets R. V. Netnography: Doing Ethnographic Research Online. London: SAGE Publications, 2010.

[108] Caliandro A. Ethnography in Digital Spaces: Ethnography of Virtual Worlds, Netnography, and Digital Ethnography / Denny R., Sunderland P. (eds) // Handbook of Anthropology in Business. 2014. Walnut Creek, CA: Left Coast Press. P. 658–680.

[109] Kozinets R. V. Netnography: Redefined. 2nd ed. Thousand Oaks, CA: Sage, 2015.

Combining the analysis of digital traces and ethnographic observation

The dissertation research developed a methodological approach that combines ethnographic observation with the quantitative analysis of digital traces. Empirical testing illustrated the ability of the approach to comprehensively describe the structure and interaction order in the online communities. The division of quantitative methods by tasks: content analysis - to describe the composition of participants, network analysis - to analyze the structure, topic modeling - to identify the topics of discussion, made it possible to create a basis for the ethnographic observation.

The proposed methodological approach, through the use of quantitative data, gave a more nuanced and detailed understanding of the interactions. Network analysis, which consisted of the estimation of the density and centralization of ties, as well as patterns of homophily, made it possible to move away from the premise of the homogeneity of communities, which is not always tested in ethnography[110]. In terms of data connection, the results of network analysis were organically embedded into the interpretation of the rules of interaction and conflicts that were revealed from the results of observations.

The combination of quantitative and qualitative methods used in the dissertation research made it possible to more fully interpret the topics around which the discussions are formed. Topic modeling made it possible to reveal the topics of discussion and quantify their popularity. However, without intersecting with ethnographic observation, topic modeling gave a distorted view of the pragmatic nature of discussions in the community. The analysis of observation materials made it possible to capture the emotional component of interaction, which is the basis for constructing solidarity and manifestation of professional identity in discussions[111].

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[110] Hine C. Virtual Ethnography. London: SAGE, 2000.

[111] The examples of such discussions are presented in the article: Barkhatova L. A. The Computational Analysis of Digital Traces in Ethnographic Studies of Online Communities // Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique. 2023. Forthcoming.

Also, the quantitative analysis of the centralization of the community structure successfully complements the understanding of the moderation policy, which was analyzed using qualitative analysis. The presence of a small group of community leaders represented by the most active participants and discovered at the stage of network analysis, made it possible to interpret the discussions of the participants more reasonably on the need to regulate the activities of the moderator and conflicts on this background.

Preliminary immersion in the problems made it possible to integrate the findings of the online community into the general context of the development of communication within the studied professional group[112]. This made it possible to highlight the specifics of the online platform and the general trends that are observed in the Russian sociological community.

Conclusions

1. Online ethnography declares a general epistemological adherence to the principles of ethnographic research, which in practice are blurred because of significant changes in the object of study. Due to the specific features of the online environment, the research language is being reconceptualized and the methodological tools are being transformed. This has contributed to the formation of various styles and practices of online ethnography, offering different theoretical and methodological optics for studying online communication.

2. The classification of methodological approaches of online ethnographic research proposed in the dissertation research demonstrates the transition from virtual approaches to digital ethnography, which is accompanied by a revision of ethnographic tools and development of other conceptualizations of basic concepts.

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[112] This is revealed in detail by the example of the analysis of the communication structure presented in the article: Barkhatova L. A. Structural Features of Russian Sociologists' Communication: an Online Community Case Study // Monitoring of Public Opinion: Economic and Social Changes. 2020. No. 5. P. 204-221.

3. Due to the infrastructural features of the online environment, the field of Internet research is represented by a corpus of methodological approaches using mixing methods. Online ethnographic research also does not remain outside this trend. In an attempt to cover different aspects of the substantive focus more comprehensively, various mixed strategies are being integrated into online ethnography. It was found that the most organic quantitative methods fit into the conceptual framework of digital ethnography.

4. The developed methodological approach shows that the quantitative analysis of digital traces provides a general framework for ethnographic observation. The combination of quantitative methods (content analysis, network analysis and topic modeling) effectively complements qualitative understanding, making it more nuanced and detailed.

5. The dissertation research revealed new perspectives on the dialogue between different data. It was shown that quantitative methods combined with ethnographic observation give a comprehensive analysis of the structure and order of interaction in the online community.

List of publications of the dissertation author, which reflect the main results of the dissertation research

The results of the dissertation research are presented in the following **publications presented for defense**:

Barkhatova L. A. The computational analysis of digital traces in ethnographic studies of online communities // Bulletin of Sociological Methodology/Bulletin de Méthodologie Sociologique. 2023. Forthcoming.

Barkhatova L. A. From Virtual to Digital Research: Methodological Promises and Limitations of Approaches. Sociological Studies. 2023. No. 1. P. 62-70. DOI: 10.31857/S013216250020183-4. (In Russ.)

Barkhatova L. A. The Overview of Online Ethnographic Research on Communities of People with Disabilities // The Journal of Social Policy Studies.

2021. Vol. 19. No. 4. P. 715-726. DOI: https://doi.org/10.17323/727-0634-2021-19-4-715-726. (In Russ.)

Barkhatova L. A. Structural Features of Russian Sociologists' Communication: an Online Community Case Study // Monitoring of Public Opinion: Economic and Social Changes. 2020. No. 5. P. 204-221. DOI: https://doi.org/10.14515/monitoring.2020.5.1656. (In Russ.)

Additional publications:

Barkhatova L. A. The experience of applying mixed methods to study interactions in the professional sociological online community // In: Social Transformations and the transformation of sociology: The main challenges. Towards the 90th Anniversary of Vladimir Yadov. International Conference (Moscow, 28–30 November 2019). Collection of materials / M. Gorshkov (ed.). FCTAS RAS, 2019. P. 314-319. (In Russ.)

Barkhatova L. A. Ethical dilemmas of ethnographic fieldwork // Sociology: methodology, methods, mathematical modeling. 2018. No. 47. P. 44-66. (In Russ.)

Barkhatova L. A. Field ethnography: methodology, ethics and practice // ESforum. 2018. Vol. 57. No. 1. P. 9-13. (In Russ.)

Approbation of the research findings

The results of the dissertation research were presented at the following academic conferences:

- 7th Biennial ACSPRI (Australian Consortium of Social and Political Research Incorporated) Social Science Methodology Conference. (01-03 December 2020). Presentation: Ethnographic approach for studying interactions in virtual communities: A case study of Russian-speaking sociological online community.

- The RC20 (Research Committee on Comparative Sociology) Regional Conference on Comparative Sociology & the 2nd RC33 (Research Committee on Logic and Methodology in Sociology) Regional Conference on Social

Science Methodology: Asia. (12-16 September 2022, Tokyo). Presentation: Multi-sited digital ethnography as a strategy for studying professional online communities.

- XXI April International Academic Conference on Economic and Social Development. (13-14 April 2020). Presentation: The structure of professional ties in the online space: The case of the sociological online community.

- International Conference "Social Transformations and the transformation of sociology: The main challenges. Towards the 90th Anniversary of Vladimir Yadov" (28-30 November 2019, Moscow). Presentation: The experience of applying mixed methods to study interactions in the professional sociological online community.