

“Is It OK That She Is a Woman?”

Social Perceptions of Professional Gender Segregation in IT among the Russian Brainpower

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Abstract: The article deals with Russian brainpower's perceptions of gender segregation in a technical university when training both IT-specialists and STEM professionals in general. The theoretical and methodological basis for interpreting the results of the empirical study are the main provisions of the theory of social representations, the concept of habitus and the concept of narrative identity. The assumption used as a research hypothesis is that gender “indifference” or neutrality, rather than gender discrimination, takes place in higher technical education in the Russian technical university. The analysis of the data obtained as a result of the study confirmed that there are gender professional distinctions in the group consciousness of brainpower. In Russian speech practice and culture, a thesaurus of non-binary perception of professional gender identity has not yet been formed. At the same time, there is a shift in perceptions of gender professional identity in IT towards gender “neutrality”, which allows us to expect a relatively “soft” transformation of social attitudes and adaptability of professional consciousness to changes in the perception of gender in IT.

Keywords: IT-education, technical university gender identity, professional gender discrimination, professional gender segregation

Introduction

The study of gender inequalities in the social sciences has developed rapidly since the second half of the twentieth century, thanks to the conceptualisation of feminist epistemology ([Harding, 1987](#)) with its key methodological assumption that “it is the social position of the cognitive actor that affects the subject matter of his or her knowledge and how it is acquired” ([Zdravomyslova & Temkina, 2015](#)). It is known that the concept of “gender” received its meaningful content in linguistics, where it denoted the grammatical gender, the category of gender-based division of words and forms. After the American sexologist John Money used the concept of “gender” in his works on transsexual people to refer to the difference between the biological sex and the social roles of men and women, this concept was in demand by authors of feminist studies. In particular, the theory of the “new psychology of gender” with its key provision stating the absence of innate psychological differences between women and men was appealed to. Today, both academic and socio-political discourse uses it to describe and explain various manifestations of gender disproportionality (inequality, discrimination, segregation, asymmetry, etc.). We focused on research of such phenomena as professional gender segregation in the IT sphere.

Sources and Methodology

Among the most developed theoretical positions that set the sociological context for the study of gender issues are the following. Gender segregation is reproduced through gender stereotypes ([Breda et al., 2020](#)) and educational institutions ([Charles & Bradley, 2002](#)). Boys and girls in most cultural groups socialize according to established gender stereotypes. Consequently, adolescents develop so-called “gender thinking”, which determines the system of values, educational and life trajectory of an individual. In particular, the idea of girls’ inclination towards “caring” professions and boys’ inclination towards “technical” professions is formed. An important research observation is that, even if traditional forms of socialization change, gender-essentialist attitudes are very stable, and the service sector, which involves performing jobs similar to housework, continues to be stereotypically associated with women’s professional occupations. Girls choose these professions at universities, which maintains gender inequality even in societies where gender parity is maintained ([Barone, 2011](#)). Gender stereotyping also has a significant impact on adolescents’ assessment of their own abilities. It was found that boys’ assessment of their mathematical skills (unlike girls) is higher compared to girls’ assessment because they respond to the cultural expectations established in their social group. As a result, high self-esteem allows men to advance more successfully in careers related to quantitative calculations ([Correll, 2011](#)). Researchers of gender socialization draw

attention to the fact that, in the mass consciousness, stereotypes about women's social roles are more variable than stereotypes about male roles ([Froehlich et al., 2020](#)). And it is the stability of the latter that becomes an influential factor in gender segregation, including occupational gender segregation ([Cejka & Eagly, 1999](#)).

A different perspective on understanding the nature of gender segregation and in particular occupational gender segregation is presented in economically oriented research. Most economists who study gender phenomena and processes follow the methodological framework of the neoclassical paradigm, represented by the theories of rational choice, economic utilitarianism, patriarchal capitalism and dual labour market ([Blackburn et al., 2002](#)). Among the most important propositions developed within these theories to explain occupational gender segregation, we will highlight the following:

- Human economic behaviour is explained using the *Homo oeconomicus* model, or “rational choice model”. The basic behavioural characteristics of *Homo oeconomicus* include: egoism (i.e., following one's own interests); rationality (i.e., consistent behaviour coordinated in time and space, choosing in any situation the behaviour option that best meets the goal set); utilitarianism (i.e., utility maximisation). The meaning of *Homo oeconomicus* behaviour is to allocate limited resources between some set of competing goals in an optimal way.
- The decision of a man or a woman to enter the labour market is seen as a rational decision of the individual. The specialization of each gender is linked to both biological factors (procreation) and social factors (discrimination in the labour market). Since each of the sexes specializes in an activity where it has a comparative advantage and therefore provides higher productivity in the respective sphere of activity (women in the household, men in the market), the economically rational strategy for the family as a whole would be for the husband to work in the market sector and the wife to work in the household.
- Women's entry into the labour market, where they are inferior to men in terms of the scale of human capital accumulated, explains the lower wage rates for women. The neoclassical approach in economic theory has been subject to serious feminist criticism, the main argument being that the neoclassical paradigm is built on a purely androcentric (i.e., modelling human behaviour according to the values of the ‘male’ world) view of the isolated individual preoccupied with his own interests and emotionally unconnected to other people. In other words, the sphere of market relations is presented as completely free of sympathy, altruism and a sense of solidarity. The search to overcome the conceptual limitations within the neoclassical paradigm has given rise to a new economic discipline, gender economics, which

synthesizes different methodological approaches in modern economic science and the latest advances in gender theory ([Becchio, 2019](#)).

In Soviet Russia, due to the specifics of its historical development, the position of women in the labour sphere was formed differently from that in Europe and the United States. In the Soviet Union, the period of industrialization, with its acute need for manpower, created a demand for the use of women's labour in a variety of industries. Accordingly, ideology, education, and propaganda cultivated the image of the female worker. World War II reinforced these attitudes. Although women were highly represented and hold significant importance in the world of work, only in the 1990s did the Russian Federation begin to discuss the global problems of gender inequality.

From a legal point of view, there is no occupational gender segregation in the Russian Federation. At the state level, the "Beijing Declaration and Platform for Action" adopted in 1995 by the Fourth World Conference on Women is recognized. The Russian Constitution contains an article that says: "Men and women shall have equal rights and freedoms and equal opportunities for their realization" (Article 19, clause 3). In January 2023, the National Strategy of Actions for Women for 2023–2030 was published, which declared the aims to increase the life expectancy of women, decrease the level of violence against women, increase the political activity of women, increase the number of women-leaders, reduce the difference in salaries between women and men, etc.

The establishment of gender equality in the professional environment was facilitated by the popularization of ideas of gender neutrality in the country. This was manifested in giving women the opportunity to work where previously only men could work. Thus, since January 2021, 356 previously prohibited professions have been available to women. At the same time, as in many countries of the world, de facto occupational segregation takes place in contemporary Russia ([Vorob'eva, 2018](#)). Thus, the level of wages of Russian women in relation to men's wages in 2021 was 72.5%. There is an imbalance at all levels. For example, female executives in 2021 earned, on average, about 89,000 rubles (about \$1200), while men earned 128,000 rubles (about \$1600) ([Russian Federal State Statistics Service, 2022](#)).

Educational strategies in contemporary Russia also show gender differences. Thus, more women get higher education (52% vs 48%), while skilled worker training programs are predominantly attended by men (70% vs 30%). Men prefer to continue postgraduate studies (53%) and more often finish doctoral studies (60.7%). Women choose residency (68%) and assistantship (55%), and therefore more often become mid-level specialists (51.9%), graduates of bachelor's, master's and specialist's degrees ([Russian Federal State Statistics Service, 2022](#)).

There are several trends in contemporary Russian scientific discourse in discussing the gender problem.

The most common is the observation of the gender inequality problem in modern society, the discussion of the indicators of women's access to rights and freedoms, and the balance of men and women represented in socio-political and professional spheres ([Zadvornova, 2019](#); [Luk'janova, 2021](#); [Zaichenko & Savel'eva, 2020](#); [Khotkina, 2020](#)).

Another trend can be labelled as conservative. The authors of this trend argue that the concept of "gender inequality" sets a context that obscures rather than clarifies the specific gender roles established by historical tradition and the cultural specificity of a particular community. It is therefore more valuable for research to describe existing gender systems, rather than to problematise gender inequalities ([Vorob'eva, 2018](#); [Rudchenko, 2020](#)).

A special category can include papers whose authors call for a revision of the results of earlier studies, recognising them as unrepresentative due to the imperfection of the procedural tools used. For example, according to the authors of these works, the inequality in pay between men and women is not very significant if hourly wages, rather than monthly earnings, are taken into account ([Roshchin & Yemelina, 2022](#); [Maltseva & Nesterova, 2009](#)).

When describing situations in STEM occupations, in the IT sector in particular, American researchers pointed out that, because STEM (science, technology, engineering and mathematics) involves disciplines where male primacy (according to gender stereotypes) is expected and male agency is a factor for success, STEM can be a difficult environment of unequal gender opportunities for women, and, as a result, can cause them to lose motivation and confidence in their own abilities. This is confirmed by the fact that women quit their jobs in STEM fields twice as often as men. This phenomenon is called the "leaky pipeline": after receiving an education in STEM, women do not work in their specialty in the future ([Sheltzer & Smith, 2014](#)). In Russia the situation is similar. In the first decades of the 21st century, women hold less than 30% of jobs in the STEM sector, and in some industries this share is systematically decreasing. For example, in information technology, the percentage of women fell from 35% to 25% between 2004 and 2014 ([Khotkina, 2018](#)).

Empirical data collection procedures and methodological framework

This paper is part of ongoing research on the communicative and social aspects of Russian higher education, which has been carried out for several years at St Petersburg State Electrotechnical University.

The aim of this research has been to test the presence and impact of social perceptions of gender segregation in IT among Russian technical intelligentsia as an implicit (hidden) factor in the reproduction of gender segregation.

The research hypothesis was defined as follows: gender segregation in higher technical education in a Russian technical university is characterized not by gender discrimination, but by gender “indifference” (or neutrality).

The empirical data were obtained by conducting a focus group with 12 respondents with higher technical education, representing age groups from 22 to 55 years old, as well as work experience in information technology and experience of teaching relevant disciplines in a technical university. Heads of IT departments at the university and partner organisations, as well as university IT lecturers, were invited to participate in the focus group for the study. The composition of the focus group participants allowed the necessary information to be obtained, revealing a palette of opinions and judgements on the research topic.

The International Standard Classification of Occupations (ISCO) was used to define IT occupations, according to which IT occupations include: system analysts (ISCO code 083), programmers and other computer specialists not previously accounted for (084), card and tape punch operators, or key entry operators (322), and automatic data processing machine operators (342) ([Tijdens, 1997](#)).

The notion of “occupational segregation” is used in this paper to mean “the articulated hierarchical distinction between male and female professions”.

The term “occupational discrimination” is used to mean negative or prejudicial treatment of a person based on his or her occupation.

Interpretation of the empirical data obtained was carried out using the key provisions of the theory of social representations (S. Moscovici); concept of habitus (P. Bourdieu); concept of narrative identity (P. Ricœur).

The methodological guidelines of these concepts are formulated as follows: social representations are viewed as mechanisms of cognition of the social world, whose structure contains three dimensions: informing, the field of representations, and attitudes. In this way, social representations exert a coercive influence on social behaviour and ways of adapting new facts and knowledge to already formed and pre-existing views, opinions, and evaluations ([Moscovici, 2000](#)).

The concept of habitus captures “acquired dispositions, acting in practice as categories of perception and evaluation or ... as an organizational principle of action” ([Bourdieu, 1979](#)).

Dependence on early experience prevents people from quickly adapting to new social conditions and can generate dissonance ([Ledneva, 1995](#)).

The notion of “narrative identity” captures the mediation of consciousness by “stories”, narratives that are understood as various models of narrative configuration of action. In other words, personal identity is proposed to be viewed as narrative identity. Only through a story is an attitude towards oneself constructed in which the narrator declares himself as himself and assigns to himself the actions that are attributed or can be attributed to him by someone else ([Ricoeur, 1996](#); [Tétaz, 2012](#)).

The thematic categories and the focus group guide aimed to test social perceptions of gender segregation and possible gender discrimination. Respondents were asked to share personal stories from their professional and social experiences. The questions were divided into three categories and were formulated as follows:

1. Can we say that professional gender segregation is reproduced in Russia, i.e., some professions are perceived as male and others as female? In your opinion, are there life spheres (social institutions) that determine gender segregation to the greatest extent (for example, preschools, schools, universities, families, mass media, language, etc.)? Have you encountered gendered occupational regulators in your own life? If so, what are some examples?
2. In your opinion, does Russian public opinion give the characteristics of “atypicality” “deviation” and “strangeness” to those who are engaged in activities that do not correspond to traditional notions of female and male professions? Have you ever heard from others or have you used (self)justification, (self)irony when choosing a “gender wrong” profession or occupation? Please give some examples.
3. Do you think there is gender segregation in the choice of a major study at university, and subsequent work in the major? If yes, how does it manifest itself? If not, what makes it possible to avoid it? Have you ever heard discriminatory evaluations of gender content in your university or in your organization when discussing an employee’s professional activities? If yes, please give some examples. Do you use gender characteristics when discussing professional issues? If yes, why? What, in your opinion, can be the social and/or managerial justifications (grounds) for gender professional segregation in the IT sphere? If you describe a typical IT professional, what personal (behavioural) characteristics would you include in his/her portrait?

Results and Discussion

The analysis of the results of the group interview will be presented according to the thematic categories described above.

1. The notion of gender segregation is evident in the social perception and interpretation schemes of all respondents without exception. Even when focus group participants declare a gradual decrease in the acuteness of distinguishing between male and female professions, they use speech formulas containing clichés and value judgments within their ideas about gendered professional hierarchy.

Examples of statements made by focus group participants:

M1: I can't say that it [gender segregation] doesn't exist. Men and women, thank God, are inherently different. There are more men than women who are mathematicians. The maternal instinct makes women more suited to parenting. I haven't seen a single male kindergarten teacher.

F1: Gender segregation is already established in kindergarten, when girls are offered snowflake costumes for the New Year's party and boys clowns. In schools, labour classes teach girls how to cook and sew, and boys how to repair furniture.

F2: Gender occupational segregation exists. Why, for example, there are no women among subway train drivers. In school labour classes, I was offended that I was not allowed to learn to work with a planer together with boys.

M2: It depends very much on the field, but in general yes [segregation exists].

F3: I think the field of preschool and elementary school can be entrenched in society as something 'more feminine than masculine'. I think this is because of the attitudes in our society. In Russia, it is more usual for a woman to take care of children in the first years of life than a man; hence the fact that these spheres are reserved for women in the professions. But driving and working in mechanical transport, as well as hard work with equipment or in difficult conditions, for example, in mines, at gas or oil production stations, on shifts, [or] work in factories is more perceived as men's work than as women's work.

2. Assessment of professional gender segregation as gender discrimination is found in the following contexts:
 - a) shift of coordinates from the assessment of professional qualities to physiological characteristics and gender stereotypes, as a consequence of non-acceptance of the idea of professional equality of the sexes.

Examples of statements:

F1: For some reason it is expected that a girl should be interested in cosmetics, not in playing robbers...

M1: As a child, my parents told me that a girl could not be hit even with a rose. In life, in the professional sphere, there were several cases when, faced with aggressive behaviour or manipulation by some women, I, stepping aside, behaved excessively politely, instead of giving a similar forceful rebuff.

M2: I love and know how to cook in the kitchen. Sometimes this comes as a surprise, since “cooking” is traditionally a woman's occupation. Many people think a man, at best, can cook meat, but not dessert. I like cooking desserts. Sometimes, if a button comes off, I hear from my wife: “Come on, I’ll sew it on, you can’t handle it”. So needlework is only for women, and men aren’t supposed to sew or knit? Sometimes I heard from acquaintances that a man must necessarily choose a “technical profession”, so a male humanist is either lazy or a “lyricist, hovering in the clouds”. But this was more often the case with unsuccessful men than with men who were successful in a “gender-nonconforming” profession. Women in “male” professions were more often treated with pity: why did she take on this burden when there were men around?

b) Use of humorous and ironic intonation to mitigate observed discrimination.

Examples of statements:

M1: There are few men in school, so they are valued more and children love male teachers.

M2: I won't forget my parents' phrase: we'll expel you from the will if you're not an electrician.

M3: At a meeting with the first year, there are only 12 girls among the 220 incoming students. The dean comes out and says: “How glad I am that there are only 12 women. You don't belong here.”

M4: Gender-positive sexism, that is, over-grading female engineering students: they won't work anyway, we'll leave them as ornaments.

F1: I have encountered the opinion of some employees that “a woman cannot be a good programmer — either a woman or a programmer”.

F2: ...the customer tends to trust the assertive man more, even if he's lax and weird — it's more in keeping with the image of a “programmer”.

M5: I can over-evaluate a female student to avoid tears.

3. Contradictory, even mutually exclusive assessments in respondents' social perceptions of the personal profile of a male IT specialist and a female IT specialist.

Examples of statements:

F1: ... qualifications don't depend on gender — it's in the head. From my point of view, when hiring a person, you should assess not by gender, but by how suitable they are for the tasks assigned to them, in terms of competence, character, skills, experience... But thinking processes of men and women are different.

M1: I will name the most common, in my opinion, stereotypes about intellectual and professional features of men and women. I have to say that I share many of them. So:

Men usually think rationally, strategically, guided by formal logic, often put career and success in the first place; are more likely to have their career and success in the first place; often make strong independent decisions, but can give in to the strong; prefer to achieve the goal in the planned way. Abrupt changes in task setting can throw him out of his working rut or disrupt his work; in an emergency situation, men are more capable of reacting quickly and taking action; harassment in a team is more often shown by men to women. For normal work programmers perceive a woman as “their man”, i.e., treated as a man. The image of the “beautiful lady” in the team can take away from the state of performance.

Women often think irrationally, emotionally, relying more on intuition; are better able to cope with a sudden change of task and are able to adjust more smoothly to the situation, scrolling through different variants of events in advance. They can do something extra just in case. Although, of course, there are people who behave according to the type of the opposite sex, i.e., for example, men with weak logic, capricious, adjusting, and women balanced, purposeful, capable of logical analysis, aimed at career growth; a woman's priority is more about pay check and family; in an emergency, women may become cranky or focus their attention on details, little things; if a woman in a male team is perceived as “my man”, it may be burdensome or unpleasant for her; if a woman thinks she is right, she will not change her opinion, though she may submit. As a result, there may be conflicts; interpersonal communication in a team is more important for women. A woman can be bored among programmers.

M2: I am an employer, I work with students, I prefer women, they are responsible. But if a programmer is required, I will choose a man: there are more chances to get a lucky man who shows independence in his work than a lucky girl.

F1: There is no obvious difference in describing a man or a woman as an IT specialist. It takes a fine professional. However, men don't keep an eye on the state of the computer, and for women, the aesthetic line is important.

F2: Men are software developers and testers, women are analysts.

M3: With pure programmers, the gender distinction is blurred. However, I know a case where an IT woman got married, soon her spouse wanted to change her gender to female. Bisexual coming out is not uncommon in the IT environment... sometimes students say: call me by this or that, that is, not by the name on the document. My answer is: I will call your name as it is written in the document; when you change the document, I will call you differently, too.

F3: As a unit manager, I encountered a situation where I see a woman in a photo posted on an email page, but the correspondent introduces herself in the male gender in the email. I asked to clarify the gender identity. There was no response.

F4: A colleague of mine, when recommending me for an IT position in an organization, asked the human resources representatives: is it OK that she is a woman?

Conclusions

Thematic and structural analysis of the statements of the focus group participants on the topic “Social perceptions of professional segregation in the sphere of information technology among the Russian technical intelligentsia” allows us to establish the following features of social perceptions of this professional group.

The participants of the group interviews state that gender segregation is becoming less and less evident in the IT sphere. At the same time, the personal stories and observations of our respondents, which did not directly refer to professional behaviour in IT, demonstrate the presence and relevance of gender professional distinctions in group consciousness, the consequence of which are strong emotional reactions of discussion participants, influencing their choice of social behaviour scenarios with a high probability of reproducing the gender dichotomy.

The predominance of clichéd, stereotyped evaluations and descriptions of gender differences in respondents’ answers and reasoning may indicate that Russian speech practice and culture have not yet formed a thesaurus of non-binary perception of professional gender identity.

The similarity in the recognition by most respondents of the shift in social perceptions of gender professional identity in IT towards gender “neutrality” allows us to expect a “soft” transformation of social attitudes and adaptability of professional consciousness of Russian professionals to changes in the perception of gender in IT.

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