

Original article

Ergonomic issues: safety, economization and humanization of work

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ABSTRACT

The term “ergonomics” means practical learning which determines the conditions for the optimal adjustment of tools, equipment, technology and organizational structures to meet the needs of employees. In an age of scientific-technological progress systematic research on human work supported by technology is indispensable. Technical civilization is not the “non-humanistic” world. Its creators enter into ethical relationships with recipients.

The process of work humanization must be considered on three cognitive levels: theoretical, axiological and practical. This approach is neither contradictory nor competitive to the traditional understanding of ergonomic tasks, but is complementary to it. It is significant as it teaches how to use the achievements of knowledge wisely to facilitate and take human life to a higher level, also in moral terms.

KEYWORDS

human, work, ergonomics, economization, humanization, ethics



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1. Introduction

The term “ergonomics” (from Greek: *ergon*-work, *nomos*-law) is an interdisciplinary field of knowledge based on the results of: psychology and sociology of work, medicine, legislation, economics, technical sciences used for this purpose to make human work more effective and safer. The task of ergonomics is to adapt tools, machines, devices, that is, technical means to the needs of a human performing an intended activity, producing utility goods.

Ergonomics considers and tackles the problems of technical and social measures for protecting human beings against negative effects of products of modern civilization. It addresses the issues of such use of technical achievements that allows for eliminating unnecessary human effort and determining the principles of the proper use of human forces and skills [Jastrzebowski 1857, p. 93].

Ergonomics teaches how to safely use increasingly complicated techniques and technologies, without which the life of modern societies is impossible.

Nonetheless, work and working people are subject to valuation not only because of safety, efficiency and effectiveness of activities, but also because of direct and indirect relations in the systems: man-product of work-man. These relations, in which humanity is revealed as a basic value in the human world, are analyzed by the humanities, mainly ethics, which imposes on a working person's obligations towards other individuals and social groups. They "settle" people not only from the immediate effects of their activity, but also from the consequences of acts distant in time.

Due to the expansion of the area of people's activity and the increase in the effectiveness of their activities, consideration of both technical and economic and humanistic/moral aspects of human work is necessary, since a real person – through active and innovative attitude in the work process – not only produces useful goods, but also shapes his/her own personality (self-creation).

The article defines key concepts and outlines perspectives, which are particularly important for solving work safety problems related to the proper use of tools and technologies for maintaining life and health as well as carrying out work as an ethical relationship.

2. Safety at work

The term "security" appears in all languages. It is explained variously, from many cognitive perspectives, as a dynamic multifaceted phenomenon. For example: Latin *securitas* means: safety, carefree, guarantee, but also fearless disposition. In English, the term *security* is used for a broad concept of security as such, while *national security*, *civil security*, *job security* means respectively: security of the state, citizens' safety and work safety [Balcerowicz 2002]. The dictionaries of the Polish language define security as a state of non-threat, peace and combine it with health and safety at work as this section of protection of human activity whose task is to prevent accidents and ensure harmless conditions for performing professional activities.

However, work safety – it is also the possibility to find employment and receive due payment for the work done. In this context, the term "security" is understood as equal opportunity to undertake professional activation ensuring decent living conditions. These important problems are mainly dealt with by economics, sociology and social policy. They show that the level of job safety / economic security varies throughout the world. For example, in the United States, "In the years 1981-1982, 1 out of 10 Negroes and 2 out of 100 Whites lost their jobs. The proportion between the median income of men has not changed since the 1950s. At the beginning of the nineties, the median for the Whites was \$ 25 384 a year, which means that half of white men earned more than the other half. For black men, the median was \$ 15 630. The lower median was 62% of the higher one and remained unchanged for nearly fifty years (...). At present, 14.4% of children under the age of 6 live in the US; 44% of Hispanic origin and 50% of Blacks are living below the poverty line (...) Only 2.4% of enterprises belong to Negroes, 85% of

which are sole proprietorships. (...) Holding the highest managerial positions is one of the most diversifying indicators. On the Fortune list, white men occupy 97% of the positions. The remaining 3% are held by women – mainly white – accounting for 50%, 0.6% Negroes, 0.4% Latinos and 0.3% Asians” [Holowka 2001, p. 288].

The concept of “work”, which is fundamental for this work, is not easy to define. According to T. Kotarbiński, “work – means any combination of deeds (in a particular case, a sequence of deeds) having the character of overcoming difficulties to satisfy someone's essential needs. When a need requiring overcome difficulties arises, then the situation is coercive, i.e. if one does not do a specific thing, it will be bad and worse than if it is done. A vivid example of the above is such a situation when someone hungry struggles with difficulties to obtain means to satisfy hunger” [Kotarbinski 1982, pp. 80-81]. It follows that human effort, that is spending forces and resources are necessary conditions for effective performance of work, i.e. achieving planned, lasting results changing the difficult situation of an individual or a collective entity. However, these actions must be undertaken for decent purposes, and therefore should bring good to both a working person and recipients of his/her work, so that they could deserve the title of “work”.

The term “work” is understood as a productive activity whose products are subject to the rules of exchange and competition and as non-productive work, the results of which do not have a “factual” character, but their significance is also crucial for the functioning of the community.

Regardless of the forms in which human work is manifested, overcoming obstacles associated with its performance always requires:

- realistic attitude,
- skills,
- ability to focus on problems,
- independence and autonomy of thinking and acting,
- the right choice of means and objectives of operation,
- creative abilities,
- good intentions,
- efficient energy expenditure,
- division of labor consistent with the qualifications of individual employees,
- applying objective measurements of own and other people's work effects.

Social conviction about the importance of professional work as a carrier of existential values has become consolidated.

Professional work:

- maintains an appropriate – in relation to the needs – standard of living,
- protects against falling into poverty,
- protects against dysfunctions of family life,
- ensures the economic independence of the working person,

- is a condition for the stability of families,
- in most situations, it is the only source of livelihood,
- releases new motivations and aspirations of an employee,
- includes the unit in team work and collective work,
- teaches co-responsibility for its results,
- influences the shaping of the social order,
- contributes to an increase in the economic growth rate,
- is a responsibility and a moral obligation,
- is a necessary condition for self-creation of a human being,
- the nature of human work determines the stages of changes in the development of humanity, including the type of socio-economic formation,
- mediates in interpersonal relations,
- refers to the moral stance of a human being.

There is no unambiguous understanding of the concept “work” in science as it is a multi-shaped phenomenon, and the very concept of “work” functions in different contexts. In addition, the more thorough knowledge of the work process “clashes” with stereotypical thinking based on simple schemes. In most cases, this approach to social phenomena is unreliable, because it is burdened with a number of cognitive errors, and yet – despite the unreliability – it can provide a human with a false sense of predictability and security.

In the consideration of the effort, it is worth referring to J. Ortega y Gasset, who notes that “Every life is a struggle, it is an intense pursuit of being oneself. The difficulties we face in realizing our lives are the factor that awakens and triggers our capacity for action, our inclinations” [Ortega y Gasset 1995, p. 99]. The necessity to do work is one of life's coercion common to people living in all social formations and is therefore a natural condition for human functioning in the world. Work “is a serious act, and it draws its gravity from this pressure of the compulsive situation” [Kotarbinski 1982, pp. 83-84].

As the most important component of economic processes, work performs an economic function since it provides utility values: food, medicines, clothing and housing. It organizes and sets the market in motion. It is a relationship in which an investor equipped with capital/money commences subsequent stages of work by launching measures and resources obtained earlier in order to carry out tasks directed to the future. Work is a series of relations that are established between producers and the social environment – stakeholders and which are realized through the exchange of products and means of payment.

The quality of work products is determined by the ability of producers to use scientific achievements, good professional preparation/professionalism, division of labor consistent with the specialization of employees, ability to use innovative product manufacturing techniques efficiently and skills to conduct an active pro-investment policy.

Organizational behaviors and official ties contribute directly to:

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- introducing new patterns of employee behaviors,
 - activating creative abilities,
 - adapting people to the environment without a fundamental change in their personality,
 - coordinating activities of teams,
 - remaining in relationships with cultural values and principles,
 - motivating to undertake effective work,
 - triggering the need for flexibility and originality of thinking,
 - creating a framework in which it is easier to make products that adequately meet demands of buyers, are original, with a significant aesthetic value,
 - taking action in a situation of scarcity of resources (material resources, time, energy),
 - initiating interactions,
 - teaching effective conflict resolution.

It should be emphasized that labor safety problems are important integral components of social policy and include “all activities and administrations that address the social needs of citizens, that is money transfers, health care services, education, personal social services, care services, housing, employment and specialized services for various target groups” [Szarfenberg 2011, p. 59].

Such broadly understood occupational safety includes:

- “Macroeconomic policy, labor market policy, tax policy,
- Housing policy,
- Health protection policy, education policy, employment policy,
- Educational policy, development of cultural and educational institutions,
- Cultural policy” [Balcerzak-Paradowska 2004, pp. 240-241].

Some of the values that determine the level of work safety and the sense of security of individuals and communities are material goods, others – provided mainly by the state and by local self-governments – are intangible goods. The level and quality of life depends on the efficiency of their provision to the community.

In the conditions of accelerated civilization development, new social security systems are still being sought, among others such as: “the concept of institutional pluralism in the social sphere (*welfare pluralism*), the use of mixed forms (*welfare mix*) and the use of the nascent initiative of local communities (*welfare society*)” [Kubow 2011, p. 43; Grewiński 2006, p. 8]. In the circumstances of the welfare state's reduction of its tasks and obligations, particular attention is paid to the participation of private institutions providing educational, cultural, medical and recreational services in a more effective and efficient fulfillment of broadly understood, essential social needs.

3. Economization of work

The term “work economization” should be understood as the activity of which “one of (...) general secrets is the accumulation of goals around a common center: it happens only when doing what is needed for a given purpose, we are doing the same the thing, which is required for other also accepted goals” [Kotarbinski 1982, p. 192-193]. To illustrate this thought, T. Kotarbiński quotes the parable about an old father who, wanting to encourage lazy sons to dig a garden carefully, told them a made-up story about the treasure buried deep in the ground. Looking for it, the sons duly cultivated the soil, which directly contributed to the high yield and income.

Work, as the basic human activity, is realized either as a concrete causative act directed at material objects and using more and more perfect tools, or as cooperation: with other people, with employee teams. This type of causation is addressed to people and is carried out by people. However, it can also be a concrete act against people. The latter case lacks in good intentions, and therefore the human effort has no moral value, as it causes social damage. It is worth referring to M. Weber and H. Rickert’s concept of “reference to values” (*Wertbeziehung*) as a tool necessary to describe human behavior – an actor and to analyze social life so as to emphasize that the efficiency and the effectiveness of economic enterprises cannot be the sole goal in the economy.

The conditions necessary for carrying out an efficient and fruitful work process relate to:

- a sensible, reasonable idea,
- sound, careful, accurate planning of activities,
- effective and efficient use of improvements and inventions,
- concentration of forces and resources in one place: concentration, “the more efficiently these activities support each other, the integration is better “ [Kotarbinski 1982, p. 192],
- “cleanliness of work”, that is “elimination of inclusions and any ballast at all” [Kotarbinski 1982, p. 190],
- effective initiation of the execution process,
- adaptation of specific measures to specific objectives,
- separation of individual persons’ actions from the wholeness of activity,
- skillful anticipation of changes triggered by direct effort as opposed to those that occur either automatically or accidentally,
- proper mastering of the art of conducting selection: tasks, methods, ways of operation,
- applying the right theories and tools for motivating employees [Sciborek 2014, pp. 107-173],
- efficient identification and use of managerial factors [Kotarbinski 1982, p. 227],
- understanding the principles of the theory of events and applying it to the analysis of managing persons’ behaviors,
- achieving a high level of qualifications,

- conducting the execution process in accordance with the principles,
- implementation of activities planned in the initiation and design phases aimed at subject conversions,
- checking the quality of the final product,
- transferring a product to recipients.

Human work and its products have an impact on the quality of life and the sense of safety of individuals and communities, they strengthen the social order and determine the types of social formations and political supremacy.

4. Humanization of work

Work – as a purposeful action aimed at intensifying the life forces of individuals and social groups – can be a source of objectification of a human being. The alienation of work (K. Marx) is a dangerous phenomenon, since it consists in the fact that labor products are taken over by political authorities, as a result of which the rulers and the group of interests protected by the power perpetuate their own dominant position. As a result of the work alienation, political authorities – in accordance with the regulations adopted – manage producers as a workforce through the use of objectified products manufactured by employees.

The misappropriation of results of someone else's work is carried out in specific civilization situations, hurting actual contractors. It causes material and moral damage, which the abused are not always aware of. According to J. Lipiec, “external coercion comes in various forms, from a direct physical threat to sophisticated forms of economic, legal, cultural and <moral> pressure. Negative factors of coercion arousing <fear of> consequences of refusal to fulfill the role of the subject of work may turn into specifically positive motivations, consisting in internal acceptance of the victim's status, and even in the formation of the <happy slave> consciousness. Additional stimulation of such behaviors is provided by moral norms and ideologically entangled worldviews. Despite objective harm, humiliation, incapacitation, a subject of work subjected to appropriate educational training has a chance to make a subjective affirmation of his/her position, for example in the name of <natural order>, <higher necessity>, <unexplored judgments> or for fear of <greater evil> (which it could replace real evil)” [Lipiec 2005, p. 211].

The reconstruction of social structures and appreciation of the value of human effort through, among others objective criteria for assessing the value of work constitute the necessary conditions for liberating a human from enslaved work, experienced in this way from the earliest times and associated with the divisions into “better” and “worse”, “ours” and “strangers”. The history of civilization, however, shows how difficult or even utopian is any such model program of eliminating social inequalities and valuating human work effects with a fair measure.

Increasing awareness of the importance of work contributes to the “re-valuation of all values” [Lipiec 2005], building professional ethics and shaping deeper moral beliefs of employers and employees. Today, knowledge of the efficiency and economy of activi-

ties as well as ethics come together. Work humanization programs are example of their cooperation.

The humanization of work is realized when the way of a working human's real functioning in the world changes. Hence, when a person as a subject of work:

- it is not exploited,
- ceases to be a passive tool, completely subordinate to superiors,
- gains freedom of action wherever his/her initiative and ingenuity are needed,
- gains importance as a self-realizing being,
- is appreciated as an independent entity,
- obtains high proficiency as a specialist,
- has the ability to use his/her numerous abilities at work,
- uses precisely defined rules of cooperation in a team,
- gains the opportunity to be promoted and get pay rise,
- is responsible for the manner and quality of the tasks performed,
- the type of work performed corresponds to his/her abilities and interests,
- is provided with optimal health and safety conditions at work,
- is judged fairly for the outcomes of the work,
- is aware of his/her social position for his/her profession,
- knows what the effectiveness of his/her work and the social usefulness of its products are,
- the remuneration received provides him/her with decent standard of living.

Considering the issue of work from the ethical point of view, it is worth noting that it concerns three important cognitive planes: theoretical, where questions about time-long human ethical dispositions are asked; axiological, when the values, norms, emotional maturity, proactivity, motivations, consistency, ability to take risk and responsibility of a human being are considered, and practical, dealing with effectiveness and efficiency as well as the ability to understand the fairness of objectives, predicting partial and comprehensive effects of individuals' and human communities' activities.

Conclusion

It has been noticed already in modern times (A. Smith, J. St. Mill, R. Whately) that the safety and economization of work – as important social phenomena – should be considered from the perspective of knowledge about the efficiency of actions and from the point of view of ethics that determines the scope of ethical causation and the limits of man's moral responsibility for the effects of his/her actions.

Today, in the era of intensive industrialization, the prevailing opinion among entrepreneurs is that technical skills and the rules of maximizing profit are more important, whereas the principles of general ethics and professional ethics are ignored. In the intellectual tradition of Polish philosophy there is a rich output called the "philosophy of

practicality” (T. Kotarbiński, W. Gasparski), which should be used while conducting research on the ways of performing and valuing work.

In particular, attention ought to be paid to:

- clear appointment of employees' duties, the proper conduct of recruitment and derecruitment,
- pertinent gratification,
- effective conflict resolution,
- for eliminating or reducing conflicts of interest between groups of employees,
- care for the employees' satisfaction with the results of work,
- proper management of personnel in accordance with the requirements of ethics,
- for the safe use of new technologies,
- the care of companies for the protection of the natural environment,
- accurate identification of stakeholders' needs and care for the common good,
- creating conditions for developing general knowledge and professional skills of employees,
- concern about innovative solutions to work problems,
- integration of the work process and morality,
- building cooperation, collaboration based on moral trust.

The implementation of ethical principles in business activities is fostered by the permanent, socially just law. Moral principles, on the other hand, determine the axiological context, which defines the framework of responsible behaviors acceptable in a given cultural circle.

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Conflict of interests

The author declared no conflict of interests.

Author contributions

Author contributed to the interpretation of results and writing of the paper. Author read and approved the final manuscript.

Ethical statement

The research complies with all national and international ethical requirements.

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