Chapter 2
Technologies

ABSTRACT

The production process is made up of a set of actions involving processing of raw materials, energy materials, and semi-finished products, turned into finished products. The production process is always related to a specific product and takes place in specific production units. The basic part of the production process is the technological process. Moreover, it includes eco-manufacturability, auxiliary processes such as storage, transport, control. Eco-manufacturability, as reasonable harmony between technical operation of machines, technology, energy and a permanent need for protection, shaping, positive progress, enhancement and development of the human environment, air, water, soil, plants, animals, urban areas, rural areas, the Earth, natural resources, materials and structural materials, machines, devices, tools, systems, and rooms.

2.1. OPERATION STATE VARIABLES

Deliberately selected indicators describe the variables of the technical system, environment, material, operation state. Within functional relations, the indicators model, i.e. replace and represent the reality of operation. Monitor, as used in medieval England, denotes an advanced-level apprentice, teaching other colleagues and standing in for the teacher (Wł. Kopaliński).

Let us consider the strategies adopted by an apprentice (trainee) when substituting for the master, developing technical systems, improving the environment and evolving the human being – the most complex system/environment – who substitutes for whom in activities, optimization of means and manners, shaping life, evolving the human being?

In an environmental/technical sense, the monitor is e.g. the autopilot replacing the pilot; intelligent building – a system replacing the homeowners managing the property; artificial intelligence – computer systems replacing the creators, system owners (boundary zone), building and operating airplanes (technical system), yet without restoring the environment (the surroundings).

In a human, medical sense, the monitor stands for: firstly – an ontological strategy, (systemic) human development, diversification between the structure and functions of an organism, including those functions that are subject to environmental factors and bring about structural, emotional or

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social changes; secondly – a strategy of evolution (boundary zone), still (so far) active, documented with observations originating from palaeontology, biochemistry, molecular biology, genetics, comparative anatomy, embryology and biogeography. This theory explains the mechanisms of occurrence of new species and the reasons behind the wide diversity of biological forms on the one hand and their unity on the other, reflected for instance in the widespread occurrence of nucleic acids. Evolution (Lat. *evolutio* – development, growth) – is a continuous process based on gradual changes in inherited traits passed from one generation to the next through elimination, by natural or artificial selection, of some specimens (genotypes) from the current population. Including new mutations, it has a continuous effect on the current gene pool of the population, thus constantly forming its average phenotype. Depending on the strength of selection and the rate of generational exchange, sooner or later the disparities compared to the source population are so significant that entirely separate species begin to emerge; and thirdly – an immunological strategy (health and environment protection) – *immunology* (Lat. *immunitas* – release from burdens), in this case the release from the perils of illness. Immunology – strategy (field of science) on the borderline between biology and medicine, dealing with the biological and biochemical basis for immunological/defensive reaction of a system to pathogens or other substances and bodies foreign to an organism, such as, e.g. toxins or transplants. It also analyses the regularity of such reaction and any potential dysfunctions. The human, medical (somewhat cursory) glance at the monitors of human life and development reveals a certain extensiveness, depth and complexity of measurement, target setting and contemplation, selection of technical conditions for a system/environment, faced by specialists in technology and energy sources monitoring.

Monitoring, as a science, involves social, purposeful and creative observation, management and control optimizing the conditions, postulated states of variables and indicators thereof, e.g. product quality, efficiency, performance, consequences and harmlessness of technology, technical system in an environment, with the primary focus on (*Al.-Zubiedy, 2006; Bieliński, 1993; Bieliński, 2004; Bochat, 2010; Drzymała, 1992; Flizikowski, 1998; Flizikowski, 2002; Flizikowski, 2005; Flizikowski, 2008; Flizikowski, 2010a; Flizikowski, 2010b; Flizikowski, 2011; Janowicz, 2010; Kamyk, 2008; Lisowski, 2009; Macko, 2000; Mroziński, & Kikiewicz, 2001; Mroziński, 2005; Mroziński, 2009; Mroziński, 1986; Sidor, 2006; Sikora, 1996; Szala, 2003; Szala, & Co-authors, 2007; Świątkowski, & Flizikowski, 2010; Tarnowski, 2010; Tyszczuk, 2006; Wilczyńska, 1995; Zawada, & Co-authors, 2005; Zimniak, 2004*):

- **Machine Design:** Which is an arrangement of external and internal structures and motion states of processing elements (at the documentation stage – cause of existence, at the manufacturing stage – materialisation rule, at the operation and scrapping stage – model of all innovative machine activities); design features constitute design indicators.
- **Technology:** As systematized knowledge, cognitive activity and research pursued in any field of science, allowing a purposeful, "global economic interest" oriented exploitation of resources, production of goods and provision of services.
- **Energy:** Which is for machines what consciousness is for men. Energy is preserved and indestructible, it may only change in form or become absorbed by other material system. The sources of energy may include the following goods: primary (renewable and non-renewable), secondary (products and waste).

Continuing the pursuit of knowledge and the work of creators of culture, development of environment and technical systems, it can be stated