# LOGIC, METHODOLOGY AND PHILOSOPHY OF SCIENCE

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## PHILOSOPHY OF ENGINEERING AND DESIGN (TECHNOLOGICAL) ACTIONS

*We live in a world of technologies. Classical Philosophy of Science, Philosophy of Technology, Epistemology, etc. philosophical disciplines appear insufficient for valid reflections on today's world. The Philosophy of Engineering and Design (Technological) Actions is seen promising to become a fruitful field of philosophical reflections and is offered from the perspective of the Philosophy of Action and Agency (Practical Philosophy). The foundations of the latter are presented in Part II. In the Part I, the Philosophy of Engineering and Design (Technological) Actions is outlined in a comparative with Philosophy of Technology, Humanities Philosophy of Technology, Philosophy of Engineering, Philosophy of Science, Epistemology, etc. plane. The paradoxes of E. Feenberg's technique, the interpretation of which is proposed in the part III, are involved for the illustrating of the maintained understanding. In the conclusive part (IV) the general danger of distortive philosophical understandings about the technological common world of today are mentioned.*

***Keywords:*** *Philosophy of Technology, Humanities Philosophy of Technology, Philosophy of Engineering, Philosophy of Engineering and Design (Technological) Actions, Philosophy of Science, Philosophy of Action and Agency (Practical Philosophy), Epistemology.*

The scope and disciplinary field of contemporary Philosophy of Action and Agency (another title — Practical Philosophy) remain to be fundamentally open, unlimited as such. Different philosophical disciplines can enter it and be reconsidered in accordance with main points of the perspective of Practical Philosophy (Philosophy of Action and Agency). Here, I investigate the possibilities of entering of Philosophy of Technology (both *Humanities Philosophy of Technology* and *Philosophy of Engineering*) and, ancillarily Philosophy of Science, into the field of Practical Philosophy (Philosophy of Action and Agency) as I have been elaborating the latter. To do that

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I take it for granted that conceptually 'technology' and 'agency' are connected and rely on it, but I work on a special explication of such connection.

Nowadays world hangs on technologies. It involves economic, cultural, social, political, ethical, and other aspects. Philosophy of technologies is about what are technologies, how to understand "technology" conceptually and its constituting of the mentioned factors. From the other side these factors constitute technologies. If the priority of the mentioned human factors is accepted, we have Humanities Philosophy of Technology (according to the classification made by Mitcham [Mitcham, 1994]); otherwise, the concern is with technologies themselves and involves the understanding of practice of creating artifacts and of phenomena of the designed items, it is an Engineering Philosophy of Technology (or Technological Philosophy). The later concern is closer to Philosophy of Science, Analytic Philosophy, Philosophy of Action and Decision Making; the first — to the Humanities and Social sciences.

Humanities Philosophy of Technology relies on the "given" phenomena of technology and searches for human goals and values as its roots; its relations to morality, politics, different social and cultural processes, as well as to metaphysics. Often, it used to be critical about technology, indicated negative effects of technology on human society and culture, and being.

One of my aims is checking the hypothesis about fruitfulness of non-contraposing *Humanities Philosophy of Technology* and *Engineering Philosophy of Technology* by outlining *Philosophy of Engineering and Design (technological) Actions*; another — to show that technology as agency inherits scientific peculiarities of natural, social, and humanitarian sciences and of correspondent actions; further — technologies can be viewed as applied science, but overcome it, technologies are not reducible just to applied sciences. Among methodological tools there are general points of Philosophy of Action and Agency (Practical Philosophy) maintained by me [Laktionova, 2016]; I am also using the metaphors of "hermeneutic circle" and of "hinges". Mentioning of the literature I rely on, there are some classical authors, for example, Von Wright, Hempel, Hilpinen, Feenberg etc.; as a very important source for this paper is [Franssen, Lokhorst, Poel, 2022]. Among the introductory remarks the general descriptive character of this paper should be indicated.

## I

It is very important to remember that prominent interdisciplinary streams of today's investigations are the Technology Assessment and the Science and Technology Studies (STS). They develop from 80$^{th}$ years of XX century and maintain reciprocal influence between social, political, cultural factors — from one side and scientific research and technological innovations — from the other. So, these branches, their developments and philosophical reflection about them might be seen as supporting the mentioned aims (but direct involvement into and proper philosophical analyses of them is left by me for following investigations in future).

It is crucial not to forget that Philosophy of Science is not the same with Philosophy of Technology. It is also important not to identify technologies with engineering.

Technology is broader, involves instrumentality (purposeful use of things) and productivity (controlled creation of new things). Instrumentality is more relevant for Humanities Philosophy of Technology; productivity — for Analytic Philosophy of Technology (therefore for engineering).

Experimental science is dependent on technologies; theoretical scientific research and theoretical technological research including engineering often go together or even coincide. But science influence society, culture, politics etc. independently from technology as well as technology influences them. History of science and history of technologies (nevertheless of possible overlapping or rather crossing) do not coincide.

Experiments and mathematics are crucial for science. The foundational questions of philosophers and scientists are very close. But philosophers and technologists are more distanced. At the same time, questions of human actions and practical rationality are important for all philosophers, scientists, and technologists (engineers, designers). And it is a question about if the titles of 'technologists,' 'engineers', 'designers' could be seen as generally synonymous with just slight accentuation on diverse traits about specificity of their professional actions.

Technology is not merely applied science: technological topics often do not appear in science. But both science and technology are related to epistemology or theory of knowledge; epistemological topics are relevant within the contexts of science and technology.

In a proper classical way of speaking only natural sciences are sciences. Within them causal natural relations are investigated; unalienable feature of gained knowledge is certainty; general methods of research are *explanation* and experiment. Within so-called humanitarian sciences primarily texts are investigated; and main general method of research is *understanding*. There is also place for social sciences; they are about society, different social phenomena and use both methods of explanation and of understanding in research. The division of sciences is not satisfactory; there remains a lot of questions. For example, the Economics: is it social, humanitarian, or natural, or may be even considered as belonging to all the mentioned groups, then what is the point of the division?

Explanation can have deductively nomological or inductively statistical (probabilistic) character (according to [Hempel, 1965]). Today, mostly the latter is widespread, but only the first provides for the *certainty* which is seemed as 'unalienable feature' of classically understood concept of *knowledge*.

Explanation and understanding are related to each other. I propose to use the metaphor of a "hermeneutic circle" to relate these cognitive processes. One is rather to enter into the (hermeneutic) circle and from its center watch complementarity between explanation and understanding: to explain one needs to understand and vice versa — to understand one needs to explain; one cannot explain without understanding as well as one cannot understand without explanation; explanation and understanding are integrated into one another.

Science concerns with *what is*, how things are, knowing that; technology — with *what is to be*, how things ought to be, knowing how (about it, see [Simon, 1969;

Skolimowski, 1966]). Technology brings the world closer to the way people want it to be. Science strives to discover the world as it is, independently from humans. Engineering changes the world as a service to the public.

Design process (understood generally as constituting of series of translational steps) is the core of practice of technology or engineering: customer's needs and wishes (in an idealized case) are translated into functional requirements (what devise must be able to) which define the design task (design specifications) for engineers to accomplish. The end of design process is blueprint and copies of a devise. But manufacturing, marketing and final stages of recycling are or should be also crucial steps of design process. There appears a problematic challenge about design science. Even Von Wright [Von Wright, 1963] indicated that technical norms of the form "If one wants to achieve X, one should do Y" are not the same with anankastic norms of natural necessity "If X is to be achieved, Y needs to be done".

Technology can be seen as agency, then for philosophical reflection about it, about its potentiality and potentials, descriptive and normative issues as well as practical and theoretical rationality etc. are to be paid attention to.

It seems very promising that is/ought distinction is relevant to distinguish science from technology correspondingly. Nevertheless, of the formal gap between 'is' and 'ought' (the so called Hume's guillotine), within the approach of Philosophy of Action and Agency the relation between «is» and «ought» has reciprocally additive character. Descriptive discourse of 'is' contains internally normative 'ought' issues and vice versa. Every context 'finds' itself through its own performative realization. We rely on some given from previous experience samples, sometimes even institutionally and formally legitimized procedures. Nevertheless, what is accomplished in and by performative actions (every action (including linguistic, which is very illustrative) is performative) is constituted internally from inside of being made, becomes significant, meaningful, real. After, we can reflectively appeal to its descriptive as regulative particularities; and sometimes positively, but sometimes critically rely on them in future. 'Is' and 'ought' go around 'hermeneutic circle'; one rather enters the circle to see, to experience how they 'flow' and complement each other.

Design (technological) action involves rationality and creativity. Rationality is relevant to decide among alternatives and to choose the action; creativity — to generate these alternatives. There is analogy with scientific contexts of justification and discovery. But in science practical consequences of a theory are not paid attention to as largely as in the context of technological discovery. The latter depends at least on time and money. Means-ends reasoning is relevant for design, but satisfactory complete means-ends theory is still missing. Decision making approaches are available and explored. Engineering design appears to be optimization process. But optimisation is value-oriented, and it is not satisfactory just to accept formally a value, even driven from the engineering design. Engineering is at least partly an art, not a science. We appeal later to Feenberg's Paradoxes of Technology [Feenberg, 2010]; and among them to The Paradox of the Means: the means are the end; and The Paradox of Value and Fact: values are the facts of the future.

Produced artifacts are man-made things; they have an author (according to [Hilpinen, 1992]). Technological or technical artifacts are made to serve a purpose and exclude by-products or waste products (results of intentional but not precise creation) and works of art (results of intentional actions that do not serve some purpose); they are functioning for something. But the notion of function is as such very problematic as well as very problematic remains to be the question about how functions and intentions are related (if they are).

I also allow myself to suppose that *Analytic Philosophy of Technology, Engineering Philosophy of Technology, Technological Philosophy* (maybe some other alternative titles) are very close and I claim that these investigative fields could be seen as *Philosophy of Engineering and Design (Technological) Actions*. *Philosophy of Engineering and Design (Technological) Actions* is expected by me to be viewed as a field where is/ought distinction, science and technologies, can be interpreted in terms of complementarity mentioned before; also, *Humanities Philosophy of Technology* and *Philosophy of Engineering* meet.

So far, there are the following distinctions:

Science is dealing with the sphere of "is". Technology is dealing with the sphere of "ought". There is Philosophy of Science, History of Science; Philosophy of Technology, History of Technology; they are not the same. Within Philosophy of Technology there are Humanities Philosophy of Technology and Philosophy of Engineering. *Philosophy of Engineering and Design (Technological) Actions* appears as such interdisciplinary reflexive sphere where all just mentioned investigative spheres are essentially relevant; where "is" and "ought" (science and technology) are performatively mutually connected, inextricably linked. Philosophy of Engineering and Design (Technological) Actions can be viewed as Applied Science but is not reducible to the latter. Philosophy of Engineering and Design (Technological) Actions enters into the investigative field of Philosophy of Action and Agency (Practical Philosophy).

Turning to ethical and social aspects of technology, first, let us remember an outdated instrumental vision of technology and neutrality thesis: technology is a neutral instrument which can become good or bad by being used by agents. Conceptualization of technology influences ethics of technology. There have been different ways of conceptualizing of 'technology': as a world view, as a historical necessity, as political phenomenon, as social activity, as cultural phenomenon, as professional activity, as cognitive activity etc. Science and Technology Studies (STS) as well as Technology Assessment nowadays actualize *two* main trends of understanding technology and it brings more and new ethical challenges: *the first* is a move away from technological determinism and from the assumption that technology is a given self-contained phenomenon which develops autonomously to an emphasis on technological development being the result of choices (although not necessarily the intended result); *the second* is a move away from ethical reflection on technology as such to ethical reflection of specific technologies and to specific phases in the development of a technology. Thus, Ethics of Technology becomes empirical, and involves not only reflections on technological results, but on actions

of engineers and on processes of technological development. So, for the Ethics of Technology not contraposing of 'is'/'ought' is relevant, thus, it is more appropriately to call it Practical Philosophy of Technology (Philosophy of Technology as Agency) — even just to underline that it is not just about 'ought'.

Three main lines of (traditionally called) Ethics of Technology are: cultural and political approaches; engineering ethics (includes topics of sustainability and social justice); ethics of specific technologies (includes computer ethics in a broad sense). Technology involves moral agency due to the combination of two ideas: that technologies influence human perception of the world and behavior and that there is no fundamental difference between humans and technological artifacts (the last sounds controversially). The Applied Ethics remains to be an important perspective for (traditionally called) Ethics of Technology. Application of normative standards, concepts, methods to new fields of technology and to new technologies enriches the standards, concepts, and methods; provides their relevance on interdisciplinary level.

The topic of responsibility also is central in Ethics of Technology. It involves at least rethinking of the notion of responsibility and of the bearer of responsibility. There appear new approaches: Value Sensitive Design and facing new Value-Conflicts. Technological risks (probability of undesirable event or effect) are trying to be allowed as small as possible; but risk reduction comes at a cost. Thus, the questions what makes a risk (un)acceptable, what is safe enough remain open.

## II

I elaborated and justified to rethink some problems of traditionally considered as Theoretical and Practical Philosophical Disciplines within the field of Philosophy of Action and Agency (Practical philosophy) [Laktionova, 2016]. I use these titles as synonymous; nowadays Practical Philosophy is not identical just with Ethics (philosophical study of 'good' and 'bad' in the context of 'ought'). Most of the sources I relied on are from Analytic Tradition of XXth century Philosophy, but the Continental Tradition (German Project of Rehabilitation of Practical Philosophy with one of its aims — to re-actualize Aristotle's idea of common investigative field of Ethics, Economics, Politics (now it is also appropriate to involve Law, Ecology etc.), Communicative Practical Philosophy and Ethics of Responsibility) was also involved; the trend not to contrapose the named traditions appeared relevant.

Some thematic plots of Ontology, Epistemology, Moral Philosophy and Ethics, Social Philosophy, consequently of Philosophy of Language and Philosophy of Mind (as these two main disciplines of 'Analytic Philosophy' appeared to be the main fields for investigating of the classical topics of Theoretical and Practical Philosophy) were analyzed by me under maintained general perspective of Philosophy of Action and Agency (Practical Philosophy). Thus, (usually considered as) theoretical and practical spheres of philosophy can be fruitfully integrated without contraposition under the perspective of Philosophy of Action and Agency.

The crucial methodological and conceptual points of Practical Philosophy (just to mention and underline some) I insist on; and results of their application

into interpretating some of problems of theoretical and practical philosophical disciplines are:

• the principle of performativeness, realization, feasibility, accomplishment: initial non-given-ness but attaining the validity by different contents due to their own implementation in the relevant statuses (the agent himself, portions of reality, regulations (normativity in its constitutive and regulative functions) of actions are not given, but realized through actions);

• general phenomenalism, constructivism, anti-realism;

• not substantial, but conceptual, as a way of constructing experience, understanding of categories and entities;

• refuting to use the terms "subject" and "object" and their derivatives, avoiding of contraposing them (I use them only in the sense of 'topic' (subject) and 'goal' (object));

• common sense reliance on habituality; methodological minimalism (for example about truth; about values) and pragmatism;

• the reciprocal determination of «being» and «human agency»;

• validity of personal identity (not in terms of criteria for justification or prove but) from inside of the experience of free agents (person as an agent finds herself identical to herself though her life; personal identity appears performative);

• crucial traits of *consciousness* (different from *mind*) were proposed;

• the concept of perceptive agency and experience (inseparability between perception and interpretation) was elaborated;

• the content of knowledge includes the aspects of proposition (know-that), experience (knowledge-by-acquaintance in terms of B. Russell [Russel, 1910—11]) and capacity (know-how);

• benefits of integration of the main strategies of justification of knowledge were evaluated; justification of a certain content in the status of knowledge is provided by its accomplishment;

• the methodological significance of the «normativity» was rethought, its regulative and constitutive functions were clarified not in terms of priority between them, but as such which accompany and complement one another;

• the phenomenon of «linguistic turn» was presented by the structure of its stages (the linguistic turn can be divided into 3 stages: 1. interest in the theoretical *artificial language* of natural science and attempts to reduce to it everyday language; 2. interest in *everyday language*, understanding its irreducibility to the artificial one; 3. interest in *speech per se*);

• the category of «meaning» is viewed as redundant, our words mean but not because of the 'given' meanings;

• the concept «common world» ('Mitwelt' from [Meyer-Abich, 1990]) is seen as a «mosaic» of performative institutions. Common social and natural background space, world is constituted by institutions, habituated practices, samples of appropriate actions, realized agency;

• institutions play the role of frameworks, 'hinges' (from [Wittgenstein, 1956]) we rely on in our activities. Institutions must function;

• the comparative analysis of individual (one sings a song), collective (the song is singed by 10 people separately and everyone's singing is compared) and common (joint) actions (choir is singing) on the background of individual, collective and common rationality was being made, as well as possibility of individual, collective and common responsibility (I insist that there is no common responsibility, only individual and collective (as a sum of individual) responsibilities are possible); individual, collective, and common rationalities in argumentation and correspondent actions are mutually dependent on each other: the individual is incomplete, collective is insufficient, common involves and overcomes incompleteness and insufficiency of individual and collective;

• reciprocally additive character, without priorities, of the relation between «is» and «ought» (Aristotelian Eudemonistic Ethics and Kantian Imperative Ethics meet);

• the Moral Epistemology was incorporated into the proposed context of Practical Philosophy.

So far, I have explicated my understanding of Philosophy of Technology relying basically on [Franssen, Lokhorst, Poel, 2022]. Then I have mentioned important appropriate issues for the approach Philosophy of Action and Agency or Practical Philosophy as I see and defend it. *Philosophy of Engineering and Design (Technological) Actions* is seen appropriate to enter the field of Philosophy of Action and Agency or Practical Philosophy; the latter is a promising sphere for a positive philosophical reflection about technologies.

## III

Now, let me appeal to Feenberg's 10 paradoxes of technology [Feenberg, 2010], and he seems to be an author in the works of whom the non-contraposing Humanities Philosophy of Technology and Engineering Philosophy of Technology might be found. Feenberg means by paradox counter-intuitive nature of what we rely on as known about technology; its root is inadequate common sense understanding of technology.

**1. *The paradox of the parts and the whole***. *The origin of whole lies in its parts but, paradoxically, in reality the parts find their origin in the whole to which they belong*. The part can be separated from the whole but then it loses its function. A part depends on the whole, which it is to serve. And the reciprocal also holds: parts and whole are mutually interdependent. Technology is universal in contrast to particular and local items, but its provision and application can be challenging in different social and cultural contexts. Technology has its 'niche' in particular social context, but can be taken out from it and applied in a different one, sometimes, or even most often, with dramatic unexpected consequential side-effects to which no attention was paid in advance. Technology does not function by itself but needs to be provided, supplied, and applied.

**2. *The paradox of the obvious.*** *What is most obvious is most hidden*. The medium recedes into the background and what we notice in the foreground are the effects it makes possible.

**3. *The paradox of the origin.*** *Behind everything rational there lies a forgotten history.* The presence of the past in the present is unremarkable by us. Technologies seem disconnected from their past. We usually have no idea where they came from, how they developed, and the conditions under which the decisions were made that determined their features. They seem self-sufficient in their rational functioning. An adequate explanation of any given device appears to consist in tracing the causal connections between its parts. No device emerged only from the logic of its functioning.

**4. *The paradox of the frame.*** *Efficiency does not explain success, success explains efficiency*. This is counter-intuitive. From a common sense point of view, technologies succeed because they are useful and 'do their job'. Efficiency, their worth explain why they are chosen from among the possibly available alternatives. Often at the beginning of a development none of the alternatives work well enough according to the requirements acknowledged later; nevertheless, innovations and improvements go on. From the standpoint of the improved device, its superiority among alternatives seems obvious to explain its success. But that superiority results from the original choice that privileged the successful technology over the alternatives and not vice versa. There is no general regularity under which traces of development can be explained: sometimes economic criteria prevail, sometimes technical criteria such as the "fit" of the device with other technologies in the environment, sometimes divergent social or political requirements. Of course, all technologies must be more or less efficient, but that does not explain why they are present in our technical environment as ingredients of our common world. In each case historical details of the contingent circumstances of success and failure tells the relevant, hopefully, true story.

**5. *The paradox of action.*** *In acting we become the object of action*. Every action returns to the agent as feedback. I claim even more: every action constitutes the (common) world its agent lives in.

This claim origins from my interpretation of Kant's categorical imperative or the law of moral [Kant, 2019]. I am not maintaining the literal relevance of Kant's findings today; but it is possible (Kant himself leaves or even grounds such possibility) to reinterpret them according to different contexts. Law of moral has general necessity: there is no possibility to act contradictory to it; it conditions every human action (thus it is transcendental). But, at the same time, the law remains to be transcendent: we are not able to know it, we can try to think, intuit, and have ideas about it. And form such thinking some schematic formulations (or rather most known from Kant's legacy formulas) appear:

• Act only according to that maxim whereby you can, at the same time, will that it should become a universal law.

• Act in such a way that you treat humanity, whether in your own person or in the person of any other, never merely as a means to an end, but always at the same time as an end.

• The idea of the will of every rational being is a universally legislating will.

• Act according to maxims of a universally legislating member of a merely possible kingdom of ends.

We are not just reciprocally exchanging the attitudes: I do something for you and wait that you do something to me in exchange; or I behave to you as I want you to behave to me. Our actions inevitably constitute the common world we are living in! We are hostages of our own actions. Our actions constitute ourselves, the world (common, social, natural, technological) around us and normative orientations we habitually rely on in everyday life. We gain out dignity from tolerant (respectful to the right of another person to have his own opinion with which I can completely disagree), humanistic (admitting of human life as the highest value) reciprocal attitudes. Categorical imperative forbids to use whatever an action concerns with (other agents and common world, including natural, normative, and other 'ingredients' of it) just as a tool, refuting to accept its value as such, not to reduce it just to a mean.

Practical significance of our existence as embodied and social beings is being gained by all our (including technological) actions. Through our body and our social belonging, we participate in a world of samples of causal powers and meanings we do not fully control. Our body is under the laws of nature; we are born into a cultural world we largely take as given.

The illusion of technique appears and blinds us to three reciprocities of technical action: causal side effects of technology, changes in the meaningfulness of our world and in our own identity. As Feenberg largely maintains, the illusion of independence arises from the nature of technical action which dissipates or defers causal feedback from the object (thing, item); technology is to change the world rather than the agent. Tools are designed towards the world, while protecting the agent (who is not just a tool user) from opposite reaction. But such reaction manifests itself. With the grow of technology, its unreasoned and often negative side effects become more dramatic.

So far, the importance of the 'niche' or context was accentuated. In modern society technologies are taken as purely instrumental and separate from their history, the common world in which they function, and the agents. These separations hide essential aspects of technology and ignorance of them creates illusion of technology. Illusion of technology is still often taken for reality of technology: technological action is never without consequence for the common world and agents. Technology is not just in the hands of craftsmen but is in hands of the owners of enterprise. Enterprise is a special social institution; it allows rapid effective progress but often with unfortunate side effects. But every agent is not outside but inside the world the action is directed on.

**6. *The paradox of the means.*** *The means are the end.* The technologies we use signify us as the kind of people we are. We "wear" our technologies as forms of self-presentation. Today it is widespread, that you are not just what you do, but what you use. Means and ends are not just related, they coincide over a wide range of technological issues. Agents gain their personal identity by accomplishing actions through their life, sometimes dangerously distortedly identifying themselves

within often just instrumentally understood technological actions (thus not gaining, but loosing themselves).

**7. *The paradox of complexity.*** *Simplification complicates*. It flows from the nature of technology. In simplifying, technological projects produce new complications. Technologies can be removed from their original context and transferred to a different, alien one. Even more: technology is decontextualized before it is transferred, even in its normal setting. Creating a technology involves abstracting the useful aspects of materials from their natural connections. This constitutes a radical simplification of materials, then it must be compensated by a recontextualization in a new technological 'niche' where we find them transformed in a finished and working device. But the recontextualization is not always completely successful. Technologies adapted to one common world can disrupt another common world.

**8. *The paradox of value and fact.*** *Values are the facts of the future*. Technical knowledge and experience are complementary rather than opposed. Technical knowledge is incomplete without the input from experience that corrects its oversights and simplifications. Values cannot enter technology without being translated into technological language. Experts must figure out how to formulate values as viable technical specifications. In the end, values are translated into technical facts and the technology should fit better into its 'niche'. Experience of users and victims of technology influences the technical design. We have experience and can reflect on it, though we can change our technologies to protect ourselves and to support the new actions they make possible. Values are not the opposite of facts. Values express aspects of reality that have not yet been incorporated into the taken for granted technical environment. That environment was shaped by the values that presided over its creation. Technologies express values. New values actualize revision of established designs.

**9. *The democratic paradox.*** *The public is constituted by the technologies that bind it together but in turn it transforms the technologies that constitute it.* It is constituted by feedback from society to technology. Social groups form around technologies that mediate their relations, make possible their common identity, and shape their experience. Communities exist through the technologies they employ. The politics of technology grows out of technical mediations that underlie many social groups that make up society. Social identities and worlds emerge. The technology-society relationship is "co-construction" of technology and society. Technologically mediated groups (formed and conscious of their identity) influence technical design through their choices and protests. Neither society nor technology can be understood in isolation from each other because neither has a stable identity or form.

**10. *The paradox of conquest.*** *The victor belongs to the spoils*. The illusion of technique gives rise to the belief that through technology we "conquer" nature. But human beings are natural beings, thus are we conquering ourselves? What a society does to nature is also what it does to itself. There is no godlike agent creating technology and society from the outside. The world itself is created by technical agency.

So far, the following summary can be made. Technologies are quasi-natural, they are as much social as natural, as much determined by the meanings we give, find in them as by the causal laws that rule over their powers. The concept of common world fits to the picture that comes out from the outlined specific technological inputs. Discussion of Feenberg's paradoxes might give rise to new more adequate nowadays common sense. The world, persons, communities, normativity, institutions etc. appear through realization of human agency as potential capacity by different individual, common, collective actions. Technical character of accomplishment of agency is crucial and inalienable from it as such.

## IV

Technologies can be fruitfully philosophically reflected on by being considered through (human, individual, collective, common) agency realised via technological actions. *Philosophy of Engineering and Design (technological) Actions* is a promising field for doing it. Any philosophical elaboration faces the danger to be distorted in ideological and even propagandistic way. Phenomena of technologies gives temptation for such distortions in the philosophical reflections due to the mentioned ambiguities connected with inventing, creating, exploring, using, common distribution, producing, relying on etc. From its side it also challenges the philosophy as such.

Philosophy is not to be confused with an outlook, ideology, and propaganda. Philosophy in general is second-order reflexive study of the fundamental nature of reality, knowledge, and existence (in broad sense), it also can be seen as a theory or attitude that provide with guiding principles for behavior; it tries to open and analyze the mentioned fundamental issues such as they are. Academically understood, philosophy is rather a collection of different philosophical disciplines, approaches etc.; it is more relevant to ask about peculiarities of each of these then to ask about philosophy in general. An outlook is a person's point of view or general attitude to life; it is a matter of taste and preference, it is like a 'net' one tries to fit the world under. Philosophy and outlook are not the same. If we identify philosophy and outlook (as general and individual (correspondingly) same issues), we substitute philosophy with ideology. Ideology can be defined as a system of ideas and ideals, especially one which forms the basis of economic or political theory and policy; as a set of beliefs characteristic of a social group or individual; and it is a powerful source of manipulation. It goes together with propaganda. The latter means communication that is to influence and persuade people to agenda, which might selectively present facts to encourage a particular synthesis or perception, or using linguistic and speech tools to produce an emotional rather than a rational response to the presented information. It is widespread in news and journalism, government, advertising, entertainment, education etc. It fulfils the orders and can support economic, social, etc. interests. Hidden ideology, propaganda, manipulation (when people are simply used) neglect human value, persuade over human beings in support of particular interests. In the following table there are important traits of ideology, propaganda:

| IDEOLOGY | PROPAGANDA |
|---|---|
| A set of shared beliefs or a system of ideas that organizes one's goals, expectations, and actions. Ideologies can have positive or negative influences on a society. For example, feminism is an ideology that advocates rights and equality for women; and nazism was an ideology that promoted harmful racist and nationalist views. | Comes from the Latin for "propagate" or "spread." Propaganda is a tool or method of communication used to spread ideas and manipulate people's beliefs, attitudes, or actions to a goal. Propaganda can be used to spread messages that may seem harmless (e.g., an ad that positions a product as the best) as well as more harmful ideas (e.g., political messages that persuade people to hate or blame others). |

The political technologies are also widespread today. Some ideological and propagandistic directions are manipulative and dangerous for humanity. Let's remember popular several years ago phenomenon of Post-Truth (about it, see [Laktionova, 2017]). Then political promises were not made true in a legitimate way, but faked, as they were not true, but post-true (post-truth can be seen as a fake of truth).

Today's common world is very technological; that is why Philosophy of Technology, in particular, Philosophy of Engineering and Design (technological) Actions within the general perspective of Philosophy of Action and Agency (Practical Philosophy) is a promising for fruitful philosophical reflexions field which can prevent from dangerous ideological, propagandistic and manipulative steps.

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## ФІЛОСОФІЯ ІНЖЕНЕРНО-КОНСТРУКТОРСЬКИХ (ТЕХНОЛОГІЧНИХ) ДІЙ

Ми живемо у світі технологій. Класичні філософія науки, філософія техніки, епістемологія та інші філософські дисципліни виявляються недостатніми для слушних рефлексій про сьогоднішній світ. Філософія інженерно-конструкторських (технологічних) дій обіцяє стати плідним полем філософських рефлексій і пропонується з перспективи філософії дії та активності (практичної філософії). Підвалини останньої представлені в частині II. Водночас у частині I філософія інженерно-конструкторських (технологічних) дій окреслюється в порівняльній щодо філософії технологій, гуманітарної філософії технологій, філософії техніки, філософії науки, епістемології тощо площині. Парадокси техніки Е. Фінберґа, інтерпретації яких присвячена частина III, залучаються задля ілюстрації запропонованого розуміння. В підсумковій частині IV окреслюються загальні загрози викривлених філософських осмислень щодо технологічного спільносвіту сьогодення.

***Ключові слова:*** *філософія технологій, гуманітарна філософія технологій, філософія техніки, філософія інженерно-конструкторських (технологічних) дій, філософія науки, філософія дії та активності (практична філософія), епістемологія.*