

# Ethical Questions in the Work of Hans Jonas in Informatics and Information Science

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## Summary

*Society in which we live today is on a lesser scale determined by the manufacture of material goods, and increasingly determined by the exchange of information and knowledge, as well as by communication over-networking. Introduction of ethics into informatics proves that modern science should also comply with ethical standards, adjusted to technology, as the grounds of basic human values. The ethics of informatics determines an ethical framework in the procedure of collecting, processing and the use of data, and it is based upon unquestionable ethical premises, as well as on those that have imposed themselves during informatics development: information privacy, openness, safety, availability and justification of their violation. The main goal of this paper is to bring those theses into connection with informatics and handling computers, and then to discuss about possible consequences connected with jobs of informatics experts, that primarily refer to their area of expertise. Ethics is, in general communication, rather loaded or even overloaded by morality, so its practical meaning – or practical meaning of ethical efforts – is often no longer recognizable.*

**Key words:** responsibility, ethics, informatics, information science application of computers.

## Introduction

The modern society, organized according to western cultural frameworks, progressively considers itself to be an informatical society. It is also understood that such a society communicates primarily within electronically organized relations, and that it is, when it comes to relevant issues, communicationally organized via media systems (which always includes the public and public control). Furthermore, it is understood that the social changes are observed via the media. In the same way, those changes are formed and changed by the society. In his book "The principle of responsibility", philosopher Hans Jonas poses a question of "the new technological civilization ethics" (Jonas, 1984). Its necessity is explained by "the new dimensions of responsibility, imposed to people by the existence and the danger of application of modern technics". To irresponsibility in handling the technique, Jonas opposes "the command of caution" which, formulated as "the principle of responsibility", says: "act so that your actions are in line with the requests of pure human life on Earth." (Jonas<sup>1</sup>, 1984). Although Jonas does not explicitly mention informatics and computer application, a great deal of his theses refers to that domain, so one could think that informatics is seen as a "technological discipline par excellence". It is proved in some of Jonas's theses. This paper deals with informaticians' ethical problems, which serve as a basis to answer the questions of responsibility. In this short survey of ethical problems related to engineers generally, the following topics will be elaborated: ethical problems which are encountered on a daily basis, problems related to computer system, problems of availability/ shortage of information, privacy and confidentiality of ethical data at a workplace – ethical principles which should be pursued by programming engineers and a modern view on computer morality called the Hacker ethics. This ethics offers an expanded view on a philosophy which might make ethics and its rules irrelevant, since it would be of concern to everybody. The Hacker ethics is new work ethics, which questions Protestant work ethics – an attitude towards work that has been present for so long. Protestant ethics was elaborated in a book by Max Weber, "The Protestant ethics and the essence of capitalism" (1904 – 1905). In short, Protestant work ethics highlights the importance of the feeling of responsibility towards work duty, and accentuates an attitude towards work that has to be liberated from constant calculation on how to earn a salary with maximal comfort and minimal effort. The work has to be done for its own cause, as a life profession. Since computer ethics is a rather new discipline, there are no company rules for every possible situation, and it more or less boils down to the individual and his moral principles. Therefore, the goal of this document is not to impose strict behavior rules, but to indicate a wide range of problems appearing

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<sup>1</sup> The Imperative of Responsibility: In Search of Ethics for the Technological Age (trans. of Das Prinzip Verantwortung) trans. Hans Jonas and David Herr (1979). (University of Chicago Press, 1984)

in everyday life. For that reason, there are a lot more real-life examples than concrete instructions on how to behave in a given situation. Since there are often more asked than answered questions, it is advisable to apply an advice from ethical principles: “Ethical disproportion is best solved by careful consideration of basic principles, and not by obeying strict details of rules.”

### **What does responsibility imply?**

The principal basis consists of several theses posed by a German-American philosopher, Hans Jonas, in his book “The principle of responsibility – an attempt of an ethics for technological civilization” (Jonas, 1984). The theses must be brought into connection with informatics and handling computers, and then it must be discussed about possible consequences related to jobs of informatics experts, that primarily refer to their area of expertise.

Before explaining Jonas’s theses, his understanding of “responsibility” and “responsible work” must be explained more closely. It can be best explained by quoting the answer of a president of a big concern to the question: what is indispensable to prevent catastrophic acts of technics?: “International security standards, (...) international control (...) and then a necessary faith in God, that the technics will become yet more secure in its further development”. By means of this quote we want to explain the fact that we do not have such an idea when it comes to responsible relation towards technics. For us, the question whether technique functions and whether it will be useful or harmful to individuals or humanity as a whole, is not a thing of faith in God, but exclusively an issue of people who, directly or indirectly, participate in its development. The objection here is that responsibility, as something which is a human purely a work, is transferred to an intangible, and therefore a higher, instance that cannot be attacked. In this way, any responsibility could be easily neglected, like the one for “the remaining risk”, which is often gladly reduced. Our understanding of responsible action is emphasized in the following quotation: “Only when there are more engineers listening to the voice of their conscience, who take into consideration whether their actions lead to the ordinary or to the divine, to the ugly or to the beautiful, to the good or to the bad – only then can the shadows of destruction be sent away from us” (Jung<sup>2</sup>, 1963). Let us turn to different forms of responsibility which we encounter in our work in informatics. We would like to illustrate them in several examples:

1. An associate would like to test his product (compiler) better, but the work must end due to a deadline. Who takes the responsibility?
2. Can we justify cooperation on a data input system which is created to measure the work efficiency of a worker who is in charge of data col-

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<sup>2</sup> Carl Gustav Jung was a Swiss psychiatrist, an influential thinker and the founder of analytical psychology known as Jungian psychology.

lection? Or a cooperation on a project which can be proved to leave many people unemployed?

3. Associates, whose beliefs do not allow them to work on military projects, worked on an experimental product of general usage. The client with most interest in the product is a military person. Is he given moral support?
4. An instrument of an expert system can be equally used for development of medical diagnostic system and for the development of a battle system. Can its usage be limited?
5. Can cooperation on a project like SDI (strategic defense initiative) be justified?

These examples show us that it is necessary to distinguish:

- responsibility for a result, meaning that it concretely and according to a schedule, fulfills previously determined tasks (example 1); from
- responsibility for a set goal and the effect of a project, as well as the results gained thereby (examples from 2 to 5)

We would like to briefly take stance on the first kind of responsibility, "the result of responsibility". We will completely skip the legal aspect. As for the moral aspect, i.e. "the feeling of responsibility for a result", we believe there is no principal, but a gradual difference between developing computer programs and other wanted results, since perception and estimation of mistakes and shortcomings in computer programs is extremely difficult. Anyhow, the acceptance of one of them also includes the moral responsibility to finish it as better and as more careful as possible. I believe it is irresponsible to accept a task superficially, just to fool others. The focus of my theses should be based on ethical and (in a wide range) political aspects, as can be seen in examples from 2 to 5. It is important to note a difference between the projects (i.e. the results) with direct, obvious action, or applicable possibilities (example 2); and projects with indirect, hardly obvious consequences. In the latter we can include all kinds of "metaresults", e.g. software developing instruments (compare examples 3 and 4). We must note a close connection existing between responsibility for a result and the one related to setting a goal. It is obvious from

example 5 and the attitude of David Parnas<sup>3</sup> about cooperation with SDI (compare with Parnas, 1995). He explains his decision not to cooperate with SDI by the fact that nobody can take responsibility for the result, and the set goal is not only questionable, but also dangerous. This standpoint, based primarily on technical arguments, must be distinguished from any other standpoint which refuses SDI because of its possible political goal, such as combat ability and request for hegemony that lies under it. In short, this would mean that, if we want to inves-

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<sup>3</sup> David Lorge Parnas is a Canadian early pioneer of software engineering, who developed the concept of information hiding in modular programming, which is an important element of object-oriented programming today. He is also noted for his advocacy of precise documentation.

tigate whether it is justifiable to work on a completion of a task, we must first pose a question of its goal. If the answer is positive, another question arises: shall the expected result achieve that goal? If that is not the case, or if we must count on various side effects, the goal must be modified accordingly. The modification must assure that the new goal can be achieved by eliminating the side effects, or that, when formulating the goals, inevitable goals and side effects must be counted on. The justifiability of such modified goals must then be re-examined. Technical civilization ethics. Our projects are a part of constant attempt to solve the problems of the entire human kind or a group of people by technical means. We are all aware of wanted and unwanted, as well as local and global, effects of technical solutions. Does this require a special “technical civilization ethics”? Hans Jonas studies this question in his book and answers it affirmatively (see Jonas, 1984). In continuance I would like to consider his theses that I found extremely important more closely.

### **The new dimensions of responsibility**

In his historical discussion Jonas compares the current situation with the one from the previous “untechnical age”, approximately the medieval times. The area of their responsibility included an exclusively clearly defined and a very limited life space – “the city”. The limits of responsibility were clearly marked by the city walls. Outside this “human state area” there was nature, intact and left to exist on its own. Today, almost the entire planet became a “global city”. On Earth, there are almost no more large areas uninfluenced by people, no more areas existing on their own. Thus, the area of human responsibility is drastically increased. “Technics” (Greek: “techne”) originally meant “skill”, and primarily referred to objects, e.g. agricultural, domestic and hunting tools. Such technics had rare and slight effects on people (except the tools that have always been present). Today, technics almost always affects people (even the producers themselves), whether directly – as with genetic modulation or behavior control techniques – or indirectly, e.g. environmental changes. The increase in the area of human responsibility is equal to the increase in the area of inevitable consideration: if that area had earlier been spatially and temporally limited and clear (thus limited to an area of one’s “city” and the length of a human life and possibly another human life), today it is spatially and temporally unlimited. It includes the entire Earth and even a part of the universe surrounding it, and encompasses many future generations, until their life space is completely destroyed. That changed the subject domain of ethics. If earlier ethics was limited to direct human relations, today it must comprise the indirect consequences of human actions, including the unknown and the unborn. Jonas includes these ideas, thereby expanding Kant’s imperative: “do so that you can wish your maxim becomes the general law” by his own imperative: “do so that the consequences of your actions are in accordance with the requests of human life on Earth” (Jonas, 1984). While Kant’s ethics refers to human interaction in direct

contact, Jonas is trying to explain "the new dimensions of responsibility" by means of his expanded imperative. Of course, many unanswered questions still remain, such as:

- What is "real human life? Is life in underground bunkers still considered "real"?"
- How wide is the concept of "permanence"? It is certain that today we can still imagine the conditions of life and the possibilities of humans in the year 10,000? Maybe this Jonas's imperative could be determined like this: do so that the capability of deciding on life conditions of the next generation is unlimited (do not thus create the confusion about the real condition).

"The advantage of bad prognosis over good prognosis". Jonas introduces this seemingly odd thesis on grounds of the following probability: in great technical projects, there is a large number of "failures" as opposed to one great "success". Thus, the risk of failure is major. Even when the risk is decreased by verification measures, a great problem remains. Jonas explains it by comparing it to a competition ("the element of competition in human actions"): great technical projects in a great deal simulate competitions where, with a (probable) "chance of final victory", exists (significantly less probable, but not excluded) "a danger of infinite loss". As an example of such competition we can give the allegedly "secure" roulette system, consisting of duplicating the stakes after every lost game (only betting on a pair – *rouge-noir* chances). It is certain that the probability of a small prize is increased, but in case of a miss (which is relatively impossible – when minimal stake amount determined by the casino is exceeded), the loss is rather great. The logical conclusion for Jonas, after these reflections, is the "command of caution". No "ultimate goal" justifies "infinite total investment". The mere thought of the possibility of "the infinite loss", although impossible, should be enough to discourage us from such intent.

This means the following: where damage affecting larger portion of humanity cannot be completely excluded for the next several generations, the limit of responsible technics is reached, if not exceeded. This statement, in the meantime supported by the influential Church, is in opposition with the statement of the leading politicians, who modified Jonas's "danger of infinitive loss" to "the remaining risk". "The utopia of technical improvement dynamics and excessiveness of responsibility". In this chapter Jonas compares great technical projects to the activity of nature during the evolution. The nature takes a lot of time – it makes a great deal of slight mistakes, progresses slowly and does not affect the whole. As opposed to that, people are trying to reach the goal within their reach by means of great technical projects. There is no time for the mistaken ones (not even with great projects). Mistakes are not allowed – if too many risks are taken, the natural advantages are resigned. So, technical projects do not develop "communicative dynamics". The positive effects of reverse action ensure progress only if the first step had already been made. For instance, if construction

of a channel, a bridge or a tunnel is considered, a partial solution, which may only be obvious in the initial step of the construction, makes no sense. This means that the rest must be built (maybe even contrary to the knowledge gained in the meantime) in order to justify the initial initiatives. That leads to the famous “potato syndrome”: “the potatoes are on the table, so now they must be eaten”. Also, in relation to this, negative effects of reverse action must be mentioned: what must be included is the technics that would limit or diminish the harmful effects of past technical developments, e.g. effects of the removal of dangerous remains. From such dangerous effects Jonas derives the commitment of “watchfulness from the beginning”. His thoughts, among others, are modified in the following demands:

“The demand of political philosophy”. Due to complex and dangerous relations, the new ethics must turn to public politics more than to private behavior (compare Kant).

“The changed essence of human action changes the essence of politics”. Hereby, politics should not be understood in sense of party of daily politics, but in the original Greek meaning of “the community of citizens”.

“Representatives for the future” are indispensable. Daily politics only cares for present interests. “Nonexistence does not have a porch and the unborn are powerless.” While discussing such demands and their practical consequences, we must not give in. Among many possible prognoses, the most favorable is often encountered. Whoever raises a voice is being denied by arguments such as: “We still know so little” and “There is more time”. But, that is exactly what is not true because of the already mentioned dynamics. If “we still know too little”, that means that we should by all means study all the possible consequences before we indulge into a technical adventure. We have an “obligation towards the future”, primarily obvious in the “obligation towards our descendants. For Jonas, this is the “original form of responsible action”. In the end of his every consideration, Jonas takes a stance towards the possible “pessimistic reproach”. The previously introduced theses should not be misunderstood as pessimism. The greatest pessimist is the one who feels that the situation nowadays is so bad that, in order to change it, some very risky technical projects should be done. The role of informatics. Jonas does not in any occasion mention informatics and the computer appliance. Still, many of his theses relate to our domain, so it could be concluded that it is being seen as a “technical discipline par excellence”. Let us look into some of his theses and in that sense, at the same time, try to find touching points for “new thoughts in informatics”.

### **Computer systems and the thoughts on evolution**

Programming and evolution. The goal set by a programmer is from the very beginning hard to relate to the evolution of thought. The evidence is in the very word “programming”, which means planning of long term predetermined procedures and streams. A program always requires the “exact solution”, and often

the solution is found on the basis of early thoughts, i.e. their clients. Mistakes are undesirable – they can be tolerated, but can hurt further development. This is possibly where the change of thought in informatics started: lately, the incorporation of thoughts on evolution into software-engineering has been tried, using the so called "prototype". It is yet to be seen whether this approach is successful. Expert systems and evolution. Related to this topic, arises a question of a class of expert systems that needs to be the basis for human decision making in unformulated and completely formulated areas. By this we mean all the systems in which (most often on believable grounds) the decision-maker is allowed a "space for mind games", e.g. doctors' diagnosis; psychological advice (compare Weizenbaum/ELIZA!); marginal cases with the issues of presentation (lecturing); even legal areas. What shall we say when in a bank X we get the same data as in bank Y, because both of them operate with the same expert system and have the same scientifically-creative operating method?

In possible human form standardization I see a danger for further evolutionary development of human kind. I believe it is based on a large number of possible decisions – including many "wrong decisions". The next problem lies in the decision to shorten the time for decision making. Evolution allows itself a great deal of time. I do not think we should embrace the shortening when it comes to very significant decisions. Why is the saying that "all the decisions must be slept over"?

## Conclusion

On "communicative dynamics" of technical projects. At first sight, it may seem that communicative dynamics in ICT systems (data analysis systems) is not the same as in other technical projects. Physically, it is easier to remove a computer or a magnetic track than a nuclear power station or a big airport. But, the first sight is often deceptive. Most frequently, really important ICT system are greatly "embedded", i.e. one of the integral parts of its surrounding, without which it is amputated and incapable to operate. Everyone is familiar with examples of computer "breakdowns" in airports, banking money transfers and the military systems of preliminary alerts. ICT is made of facts that cannot be changed by people any more, such as trivial examples of a four-digit zip code, or a flight code consisting of two letters only.

"A change of opinion" would here, for example, mean that in initial phase of our projects we ask the clients whether they want themselves or others to be made dependent by the ICT system. A "technical evaluation of consequences" is necessary here – understood generally. Professional activity and the question of responsibility. How can a man, who in his professional activity, confronts the questions of responsibility, react? Some of possible behavior patterns are:

to withdraw; to change work, i.e. to decrease business engagement; to engage politically outside his company (public jobs, parties, FIFF, business initiatives, peace groups...); to take responsibility in his own company; to engage politi-



cally in his company (political companies), e.g. as an advisor; to convince people by talking to them within (or outside) the company; to ignore the facts; to give over to resignation.

We must immediately state: we can not and will not give recipes, or “recommend a choice” when it comes to the patterns above. Instead, we would like to give several examples and, based on them, discuss different options (and their limits). The first example – the activity of advisor in a software company. In this example we shall talk about the work of an advisor, reflecting our own experience. For me, to candidate for the advisor in my company, the critical criterion was the idea of my “political engagement inside the company”. In the election period there was incertitude in further development of the company, especially concerning military projects related to security. The previous advisor in the company did not succeed with his idea of making a poll for every issue. The task of the new advisor was thus to find another method for talking about the subject, provided that the idea does not fail again and that nobody is provoked by it. Hesse continues by saying: “We have tried to openly talk to the company management, in order to signal the wishes and the ideas of the team. The idea was that a poll must be made among team members – with the question of which themes, and in which order, the advisor should deal with”. On the theme list – beside classic themes like working hours, the cafeteria and traffic connections – the theme complex “Company development” and “Social aspects” was highlighted. The poll was organized anent one of the company meetings. There, the project manager reported that he could not find associates for a certain military project and asked the management if they considered it reasonable to keep acquiring projects from that area under such circumstances. A long, mutually open and vivacious discussion followed, and it did not end in a conclusion, but both sides gave word to the advisor.

Hereby I would like to express my appeal for both sides, i.e. the union members and the workers who are not in the union, to exchange opinions and end the hostility. The second example – from weapon production machinery. Some employees, mostly the ones engaged in production for military needs, took part in an SDI program. Peace group supporters from the company and union representatives tried to talk about the subject. The reaction served as an internal “guide” to discard the appeals in forms of paroles for workers’ personal co-responsibility, as well as the attempt to “create an attitude of repulsion” among the union members. Such “political actions (...) which might significantly disrupt the peace in the company should not be tolerated”.

One group paid a lot of attention to “responsibility” (legal), which was given before it was even clearly familiar with “the new dimensions of responsibility” (Jonas, 1986). In a heated, confronted climate, political approach to the topic recommended by Jonas and which, naturally, has to start in the company (it has nothing in common with forbidden party-political actions in the company), can not work.

However, that is not all. Along with time optimization which is directed to work, protestant ethics understands an organization of time directed to work. With protestant ethics, the idea of regular working hours came into the center of life. Self-organization is lost and transferred into the area left after work: evening as remain of the day, the weekend as remain of the week and retirement as what remains after a working life. In the centre of life there is work, which is regularly done and which organizes all the other ways of spending time. Weber describes how, in protestant ethics, "inconstant work, to which ordinary worker is obliged, is often an inevitable, but always an unwanted inter-state. What a man 'without profession' is missing is exactly a systematic-methodical character, which, as we have seen, is required by the world". So far, that time organization in informatical economy has not changed a lot. However, rare people can still deviate from strict, regular working hours, despite the fact that new information technologies do not only compress time, but also make it more flexible (Castells calls it "time desequencing"). With technologies like the Internet and mobile phones, we can work wherever we want and whenever we want.

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