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ХАРКІВСЬКОГО НАЦІОНАЛЬНОГО
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МІНІСТЕРСТВО ОСВІТИ ТА НАУКИ УКРАЇНИ

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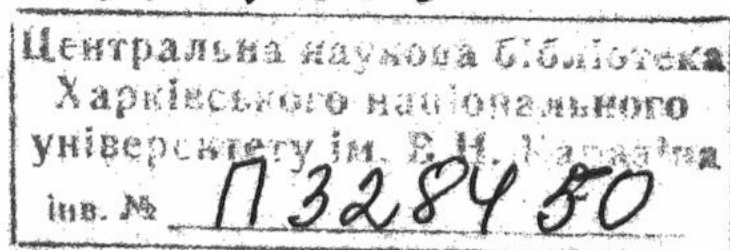
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РАЗДЕЛ 1. ФИЛОСОФИЯ НАУКИ

PART 1. PHILOSOPHY OF SCIENCE

Igor Biletsky

PHENOMENOLOGY AND LEGITIMATION OF TRUTH

In this article the problem of the scientific and nonscientific (i. e. "in general") truth will be considered. This problem isn't new: in philosophical literature on logical positivism and phenomenology it was regarded very widely and in different aspects; but the peculiarity of this text is that the mentioned problem is considered in touch with the problem of knowledge legitimation, in connection with the problems of belief, values and so on; there will be also regarded phenomenological aspects of it, the ways and possibilities of the phenomenological analysis namely of the scientific truth.

In science and everyday life truth is usually defined as a knowledge corresponding to the reality. This definition has become that common for most of us that no question arises. But problem is not that simple. The correspondent or so called "classic" conception of truth runs into some line of problems, the main of them are: the problem of the cognized reality nature, the problem of correspondence character and verification/falsification criteria etc. [1]; the line can be continued. The central one is it should be thought the problem of the cognized reality nature. It consists in that all we perceive and can know for certain doesn't go out from our consciousness and perception boundary, i. e. all we perceive is only perceptions, all we know is founded endly on these perceptions. We can't go out from our consciousness and for us it is principally impossible to know are we real substantial subjects in the real substantial world or only some kind of brain in a pot with connected electrodes that induce irritations which could be perceived by our brain as a diversity of external world events [2]. The problem of solipsism or non-solipsism goes on to remain the mystery behind "seven seals". Once Bertrand Russell has remarked that the consistent solipsism coincides with the absolute realism [3]. In this article I will not consider logic details of it and note only moments that are concerned the problem of truth. It's quite indifferent here whereof – solipsism or realism we go out, but in both cases here we come to the necessity of phenomenological means for the solution of the problem.

The phenomenology regards phenomena of consciousness putting aside problems of empirical existing or non-existing. It makes so called phenomenological reduction excluding all problems of this kind; in result we can get quite obvious data which it's possible to build quite apparent structure of our knowledge on. The truth is defined as an obviousness (by E. Husserl) [4] or as an unhiddenness (by M. Heidegger) [5]. The last means the unhiddenness of being, i. e. of that that is, that exist by itself without mediatory theories and concepts. Here we meet again the above-mentioned problem of the correspondent conception concerning the cognized reality nature. Here this problem turn into the question of difference between the being and the knowledge as a reflection of being. How exact the reflection would be it always remains only a reflection, not being, not elements or objects of being. This moment has become a corner-stone of the existentialism indicating on the fundamental quality of human being to be not (rationally) cognizable but (existentially) lived. But the last doesn't mean that the human being that generally speaking has place in consciousness is not at all cognizable. There has place an analogy with the Kantian distinction between phenomena and things themselves. The mind according to I. Kant is simultaneously both the phenomenon and the thing itself. In the similar way our consciousness can be both the being and the reflection of the being. The truth is the obviousness and/or unhiddenness of being and its reflection as its own element. Correspondence concerns only to this last and the truth as a correspondence is a component of the phenomenological truth. The

correspondence takes place between two obviousness or/and two unhiddennesses [6]. The first concerns being of the consciousness, the second concerns being of the knowledge inside the consciousness.

In general as the etymology itself of this word in some languages (Slavic "istina") says truth is that that is, that exist itself without an additional foundation. It will be the absolute perfect truth. All other truths are partial and relative. Parmenides in connection with it said about two worlds: world of the true, eternal, perfect and unchangeable being and world of opinions. All known human knowledge belongs to the last; as for the true, eternal, perfect, unchangeable being which is the last truth it is some transcendent beginning which nobody can learn and understand proceeding from our usual knowledge belonging to the opinions world. The last truth can be a pure consciousness, pure intention without filling or on the contrary some universal consciousness including in itself all the world and percept in some changed consciousness states similar to those which are called in the orient mystic traditions "samadhi", "satori" and so on. Positive sciences and the positive philosophy don't take into account these in the great degree deep metaphysical meditations, they are founded on the quite different more earthly and shallow speculations proceeding from the original dividing into subject and object. After such dividing there is no place for the "true, eternal, perfect, unchangeable being" – we have descended into the opinions world. As M. Heidegger remarks the being doesn't require any foundation [7], it simply is, in the same way the phenomenological truth as obviousness, unhiddenness or being require no foundation. It doesn't concern the correspondent conception of truth. The above-mentioned problems of this conception manifestate it. If we always are inside our consciousness and can't go out from it, all verification/falsification criteria are criteria of our thinking, no more. That's the same as a prescription of laws to the phenomena world by our mind (according with the Kant's philosophy). All reality is subjective. The being is being of the intentional consciousness and correspondence has place between different levels of intentionally. The criteria of correspondence become criteria of apparentness and clearness. In the role of them there can be regarded other conceptions of truth such as pragmatistical, coherent, conventional ones. These conceptions (or criteria) of truth can be regarded here generally speaking both as criteria of correspondence and as independent criteria of truth. Simply in our common scientistical thinking truth is always some sort of correspondence therefore just other independent truth conceptions acquire a meaning only as criteria of correspondence. But as it's known the scientific thinking ignore such problems as the problem of the cognized reality nature because it (this thinking) begins from the quite determined postulates asserting the subject-object dividing of reality with the unconditional priority of object. If we take into consideration that we can't go out from our consciousness the dividing into subject and object and accordingly the problem of correspondence change little or more their character. We can just completely refuse all correspondences and the object priority regarding our knowledge as something quite another, quite different from the reflection of outer world. The truth and the knowledge become a mean of adaptation to the outer or inner world, a mean of aims achievement or simply something by itself. So if we go out from the coherent truth conception our knowledge can abstract itself from the world and become some sort of the Kantian thing by itself. The single require applicable to it is the require of noncontradictory and consistentness. All this works in the case of formal, logical, mathematical and so on theories. Further there follows an application of these theories to outer (or inner) world data. The possibility or nonpossibility of this application forms for example the context of the pragmatistical truth criterion. The knowledge here become in general an instrument of our doing, of our will etc. Conventional conception also works here if the knowledge isn't an outer world reflection.

If all these conceptions are not taken by themselves independently they become criteria of inner clearness and obviousness allowing to ascend from our partial and restricted opinions to the perception of the "true, eternal, perfect, unchangeable being". They allow an ascending which will however never be finished because the knowledge will never coincide with being.

There arises the question "Why is the coincidence of knowledge and being unreachable?" In order to answer this question let us address to the problem of technique in the learning processes. As it has been remarked in the philosophy of technique most of the learning operations are analogous to techniques ones. Moreover all these operations as such as the rational and empirical knowing in general can be represented as some technical processes. The technique appeared as some unconscious transfer of the form, functions and relations of the human body onto the work of the human hands and

then as the further exteriorization of them in the outer world [8]. Our concepts can be regarded in the instrumentalist and operationalistic plan i. e. as some technical means. This takes its origins as early as in the ancient philosophy, Aristotle's one in particular [9]. The technique and the knowledge as technique in this plan are a part of the human but not world's being. If there is some initial dividing it will remain and nowhere disappear. The human language itself can already be "grasped as technique, and a technique of a higher rank, a metatechnique" [10]. Accordingly the knowledge expressed with the words can't be some other as a technique. Thereby the substitution of one being by another one's elements takes place and the coincidence or the reunification of all partial beings into the "true, eternal, perfect, unchangeable being" doesn't happen.

The above-mentioned criteria restore their role also in the contrary case when we ignore the problem of the cognized reality nature and go out from the correspondingly determined initial dividing into the subject and object with the priority of the last. There is changed merely the correspondence character. This is right because as it has been said the consistent solipsism coincides with the absolute realism. In this other case all reality is on the contrary objective but the consciousness is nothing, illusion, it doesn't exist in the material plan as itself, it is only the brain's function and only as the brain's function it's a material system. The correspondence here becomes the structure correspondence between two material system. There disappears only the consciousness as itself. The criteria of correspondence become the results of the structures interaction. We can't speak here of the absolute truth because it's the being, its unhiddenness and obviousness and we have affairs with its phenomena but not with the being itself as the truth we work with is the structural correspondence. Returning to the problem of the technique's place and role in learning let us at once remark that all said about it earlier restore its meaning for this second case too. Our learning is some technical doing originating from our organism's functions and restricted by structural correspondences and noncorrespondencies with the learned reality.

The structural correspondence existing here is not always that clear and obvious. Therefore in order to correct its presence there can be used other truth conceptions. Here they become only criteria of correspondence no more.

All that was said can be marked as the inner aspects of truth. "Inner" means here something propitious, essential, some inner essence making something by itself. I.e. all before-said can be regarded a definition "what the truth is", independently on concrete real cases "what the truth happens to be". Our consideration wouldn't be full without them therefore let's pass to the analysis of these outer (in opposite to inner) aspects. At once I would like to remark that the difference between the inner and outer ones is conditional enough. The second ones are a continuation of the first ones and the first ones acquire the real context only in and by means of the second ones. Thus in their unbroken connection the real scientific and not only scientific knowledge develop. There exists a lot of different philosophical, sociological, historical and other pictures of this development. The main of them are I deem the positivistic and neopositivistic representations of it, postpositivistic pictures by T. Kuhn, P. Feyerabend, St. Toulmin and so on. If the positivists and neopositivists together with representatives of different jointed directions tried to find out some absolute criteria of verification/falsification, to determine what are the truth, the knowledge and so on the postpositivists usually simply point out the historic stipulation of every knowledge system. The development of science in their interpretation for example comes forward as the successive change of paradigms (T. Kuhn) or as the struggle of scientific ideas' populations for surviving with the intellectual selection (St. Toulmin) or something else of this kind. The problem of truth is forced out by the problem of historic development and stipulation of knowledge. In place of the truth the legitimation comes.

In some degree this was always but with all force and actuality it has been manifested in our days, in the so-called "postmodern epoch" characterized by the more epistemological pluralism and the displacement of attention from the research of foundations onto the conditionness of every knowledge, norm etc. The conditionness does here mean the legitimation conditions. As for the knowledge (the scientific knowledge in particular) the problem of its legitimation was raised and analyzed by Jean-Francois Lyotard. This French philosopher has pointed out in his "The postmodern condition" that in the second half of XIX century there takes place a delegitimation of knowledge. It was connected with the loss of their weight by common metadiscourses represented by the great rational systems of classic thought [11]. These metadiscourses had given a legitimation which could not be given by the positive knowledge [12]. During some time there took places attempts of

legitimation with other new systems of thought. To the attempts of this kind there should be attributed the materialistic and realistic philosophies of XIX – XX centuries. In result however the opinion on which every knowledge, every science is first of all a game has become common. The inner rules of this game renovated in cause of the recursivity principle give means of argumentation during an enterprise of this kind [13]. The postmodern science as Lyotard writes aspires in cause of it to searching of nonstability that can be found out in many elaboration of modern sciences [14].

The failure of former legitimation metadiscourses it should be thought is connected with the initial break between the being and knowledge i.e. between the truth as being or its obviousness and the truth as the correspondence. In the last case the unremoval break between the being of knowledge and the reality by itself is present. The cause of it is that the being of learnt object (of learnt reality) doesn't coincides with the being of learning subject (i.e. consciousness). As it has been said we can't go out from our consciousness and simultaneously we assume the initial subject-object dividing and can't do other. In result we get a game consisting in laying of one onto another. The rules, subject and object of this game change during it. It's the being and truth of our knowledge.

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Jakov V. Tararoyev

THE PROBLEM OF CAUSALITY IN QUANTUM COSMOLOGY

Before considering the mentioned problem in details, it is necessary to specify the reasons and sources of its occurrence, and also to open its essence, which consists in the following: with the development of our cosmological representations and transition from static to the dynamic concept of the Universe, a question of its initial condition becomes more and more urgent, i. e. this is a question about that condition, from which its evolution began. The development and affirmation of relative cosmology did not solve but just complicated this problem; arising in the given theory primary singularity, remained basic physical and philosophical problem of relative cosmology. As a matter of fact it did not find the intelligible answer for a question of the occurrence of initial singularity reason

of two answers and therefore about the occurrence of the Universe reason. Two answers were offered for its sanction really:

1. So-called "theistic" hypothesis, where the reason of occurrence of singularity and the Universe refers to the God. According to this hypothesis the world has arisen at God's will, that is especially outlined, and in this context relativistic cosmology was considered by them as the scientific proof of God's existence. "Thus, the Creator can exist without changes century from century, but to accept the decision to create the Universe in time. Here therefore there is a world having a beginning. Thus the reason becomes eternal and consequence doesn't. It seems to me, that the Universe could arise only so: by the strong-willed act of the conscious Creator. And, on my sight, we have the complete right to name this conscious Creator of the Universe by the word "God" ". [1]

2. From atheistic point of view the decision of a problem of singularity and reason of a beginning of the Universe's expansion essentially had not a place to be, because up to and outside of singularity nothing existed, and to search any reasons in one nothing had of sense. As a matter of fact, the answer was offered, that singularity was a zero point of a causal – consequence line, before which there was absolute nothing. "It is thought, however, that it is necessary to expect complete unemployment of usual concepts and laws of physics considering even such systems, which have not yet so huge density. In particular, it is possible, that concept "the time" completely loses the usual sense as well. Therefore it seemed natural questions are deprived of any scientific contents. That questions are: "And what was even earlier? Whether there was a beginning of the Universe?" [3]. And further: "And at last, the fundamental singularity problem of the Universe is perfectly open. Here, in particular, such "damned" questions concern, as, for example, what is the reason of the explosion which has resulted in expansion of the Universe, whether it oscillate with a cycle approximately hundred billions years, and what was "even earlier?" It is possible, however, that last question is deprived of sense. "[3]

The occurrence and development of quantum (inflationary) cosmology has deduced this problem on a qualitatively new level. Real and high-grade alternative to theistically hypothesis actually has appeared and this hypothesis removed the majority of contradictions of relativistic cosmology without reference to "concept God". Naturally, the new situation has caused the burst of interest first of all among the foreign experts (mainly among the science philosophers and theologists) and created a rough polemic between them (see [4], [5], [6], [7]). Further we shall consider this discussion and analyze it, maybe we will be able to make our own conclusions.

For protection the "theistic" hypothesis V.M. Lane Craig, professor of Maximum Philosophy Institute (Belgium) put a number of arguments as following:

1. Kalam Cosmological Argument, which structure is following:

- a. Everything, that begins to exist, has the reason;
- b. The Universe begins to exist;
- c. Hence, the Universe has the reason." [4]

Naturally, this reason is understood as the God, because for the Universe occurrence by Craig is understood as the occurrence of any kind of a matter and the reason of its occurrence can be anything that is outside of a matter.

2. Antropic argument, according to which the parameters of our Universe wonderfully "are arranged" for the existence of the man. It means, that the probability of occurrence of the Universe with such parameters is equal $(10^{10})^{-123}$, that enables to "...theologize Craig's to assert, that this unimaginable low probability illustrates the need for the Founder, as the Universe could not appear casually". [7]

3. Objection against recognition of a quantum condition as the reason of a beginning of expansion of the Universe. Let's specify the basic. "Backwardness of quantum fluctuation models. "[6]; quantum cosmology "...is speculative and has not scientific status". [6]; Craig also asserts, that quantum fluctuation models "...are beginning, incomplete, problematic. "[6]

Except of mentioned arguments against a recognition of quantum (inflationary) cosmology others were put forward by theologists including some arguments that are carrying only a physical character.

Thus combining various arguments and supplementing them one by one, theology and the religious philosophy continued to assert the theistical reason of the Universe occurrence.

However not only a number of arguments against so called "theistical" hypothesis were mentioned by atheism supporters, but also lots of arguments in protection of quantum (inflationary)

cosmology and of appropriate consequences of it, concerning the reason of the Big Bang. Let's consider them.

1. The objections against Kalam Cosmological Argument concern its several aspects:

A. A concrete definition of concept "Universe", (in more details this question will be considered later) it's difference from concept "world", "megaworld" "Universe" etc. The essence of this objection lies in statement, that the phenomenon of the Big Bang carries local character and in no case the speech touches upon the occurrence of all matter.

B. But even if to consider the theistical hypotheses strictly in framework of relativistic cosmology, it comprises in itself some logic contradictions of the following character:

I. Statement about the beginning of time together with the Big Bang "...Enters much too bewildered concept of outtime God's existence" [4], because any existence assumes presence of time.

II. "Craig, says, that "philosophically it is undesirable" to represent the God as the reason before the Big Bang and action of the God as simultaneously with the beginning of the Universe". [4] Thus according to Craig, it is necessary to enter a concept of "the simultaneous reason". But it is logically senseless, because "...creative actions of the rational agents require an error of time between appearance of the appropriate intentions and their performance". [4] And further the same author continues: "Nevertheless, it is important to specify in the note, that many reasonable people much easier believe that the Universe has not the reason, than that the supernatural agent instantly creates the Universe. With the aim of these people have accepted this reason, it is necessary that Craig give them to understand two postulates: (a) it is impossible metaphysically for the Universe to have the reason; and (b) it is possible metaphysically, that the Universe is created immediately by the supernatural agent". [4]

C. The first parcel of the given argument is much wounded from the point of view of quantum physics. As Devis marked "... Physically probably, that the Universe has arisen without the reason from nothing, the origin of space and time can be spontaneous according to the quantum theory". [4] An evident volume acknowledgement to it is the spontaneous occurrence of subnuclear particles in vacuum fluctuations. Besides that it is necessary to specify the concept "the reason" and we shall engage it little below, and now we shall continue to consider objections against other theistical arguments.

2. Objections against antropic argument are based on the statement, that the probable consideration of processes, taking place in far past and the return approximation them on present is not quite correct. Really, considering for example probability of existence of each of us from the point of view of our far ancestors, we understand, that the further our ancestor will defend from us in time, the less will be the probability of our existence for him. For most remote it will be very much small. Between that, for each of us it (probability) is equal 100%. In other words, attempt to estimate probability of the really stepped event from positions of the far past does not comprise in itself any positive. The really stepped event is a consequence of a cause – consequence line, in which each event is not determined, and also carries a probable character. In this light the birth of each of us is just an actualization of one of many probabilities. Similarly the occurrence of our Universe is actualization of probability of existence just such installed. And from the same positions it follows, that not the Universe "is arranged" under the man, but the man "is arranged" under the Universe; there was a life and he has arisen developed also. Thus "tuning" occurs on a fundamental, ontological level, in the certain measure we may to consider the less scale "details" to be casual.

3. The objections against the third theist's argument is not necessary to consider here in detail, they are considered in [2]. In addition to them we will maintain the following: the supporters of a theistical hypothesis require from quantum cosmology the sanction of the following problem which is the instruction of exact "entry conditions", which in one hand are unequivocally followed from the physical laws, in another hand are determined by properties of our Universe. But theists approve that quantum cosmology is not interested in the entry conditions, which play the important role in classic cosmology. Agrees to Craig's "...the basic purpose of quantum cosmology is explanation of the entry conditions ... which in classical cosmology (standard hot model of the Big Bang or inflationary model) are required as the inexplicable data". [5] However, founders of quantum cosmology declare, that "Quantum cosmology has advantages above standard cosmology of the Big Bang and inflationary cosmology because it predicts, that the entry conditions of the Universe include the basic conditions

of the minimal excitation with fluctuations of small frequency, which conduct to inflationary expansion and formation of galaxies". [5]

Besides that theists approve, that "Hartel – Houkeng's cosmology has the purpose to not offer any unconditional probabilities." [5] Unconditional probability is understood in this case as probability, which is not dependent on any concrete thing or any concrete case. Really, the probability of occurrence of our Universe, which is a square of the module of its wave function $|\psi(x, \varphi)|^2$, where x is a generalized coordinate, is not based, is not subordinated to the concrete physical agent. But at the same time, this probability is determined "by mathematical abstract object", namely wave function ψ . And from this point of view we can make the following conclusion: in quantum cosmology there is no reason for occurrence of the Universe (and not only ours) in its classical understanding: the agent \rightarrow the event. However it does not give the bases for the statement of a "theistical hypothesis" in no case because it's (classical reason's) absence is compensated by statistical laws.

Let's consider this situation in details, by analyzing the concept "reason". For this purpose, first of all, it is necessary to specify it's duality and the distinction between its two concepts. Really in classic natural sciences and first of all in classic physics the concept "reason" was understood unequivocally namely as an occasion. Within the framework of classic determinism which represented a rigid causal – consequence line by itself, the reason was understood as an event (condition) A previous to an event (condition) B and causing the event B. Especially it is necessary to emphasize the rigid communication between A and B, expressing by the formula: if A, then B. It is possible to illustrate the given statement by set of examples, which are all the laws of classic physics: If the force works on a body, it gets acceleration, if the conductor is in a variable magnetic field, an electrical current is induced in it, if the thermodynamic system at constant pressure and temperature receives energy from outside, its volume grows. In those examples both force and variable magnetic field and acting energy were the classic reasons of the subsequent events which are purchase by a body of acceleration, the occurrence of an electrical current, increase of volume. And each of the above-stated reasons causes a consequence unequivocally and obligatory. All set forth above examples, and in general all classical physics are stacked in the circuit – the agent \rightarrow the event.

However together with development of postclassical science, mainly of quantum physics, the concept of reason has got one more sense.

Studying of the microworld the scientists found the phenomena, that were not determined at all, and that were absolutely "uncausal" from classic point of view. To those phenomena it is possible to attribute the spontaneous disintegration of a complex particle on more simple, manifestation by particle of tunnel effect, the spontaneous occurrence of a complex particle from more simple and etc. All those events and similar to them, have not the reason in the above-stated sense, i. e. we can not specify the event (condition) A, which should caused the event B. and they are not stacked in the circuit: the agent \rightarrow the event.

But it does not mean the end of physics in general and these phenomena does not need to be explained by "theistic hypothesis". It means just that we have confronted with a new level of reality? that has other laws and other properties that differs from macroworld's. One of these basic properties is the principle of identity asserting identity of all particles of one class in the given system. And if in macroworld the body C of one nature is not identical to other body D of the same nature, then in the microworld this principle does not work any more (for the certain classes of particles). Some concepts accordingly do not work also, or more precisely speaking, such concepts require an updating. One of such concepts is the concept of "reason". Really, both at disintegration, and at occurrence, and at manifestation by particle of tunnel effect, we can not specify events A1, A2, A3, which caused them. And in this sense the given events is absolute accidental. But in place with that, they also are natural, but they are subordinated to the special, statistical law. This law works on an ensemble of bodies (particles) of one nature and the behavior of any one body (particle) is estimated by probability. Thus, the reason of the given phenomena is not the phenomenon, condition or subject, but abstract law forbidding or permitting one or another event to act. However it is yet not the complete characteristic of a postclassical view on the reason. It would be "cvasi-classical" without one important feature, which is not rigidly determined law, unequivocally determining a consequence B, but the law of probability, determining probability of the event B.

Generalizing the analysis of the concept "reason", we can conclude the following: there are two senses of this concept:

1. The classical reason, which is *the event, the condition or the phenomenon* unequivocally determining consequence, i. e. the reason is an element A in the formula: *if A then, B*.

2. The postclassical reason, which is *the law* determining the probability of a consequence, i.e. the reason is the element A* in the formula: *if A*, it is probable B*.

Let's apply all these statements to a causal problem or to a problem of the reason of our Universe occurrence. It is obvious that the reason of its occurrence can be classical or postclassical or, in case of impossibility of the first two the "theistical hypothesis" can apply on its role. Let's consider all three variants.

1. Considering the process of the Universe occurrence i. e. The Big Bang and inducing it fluctuation a scalar field ϕ , it is possible to approve, that this process concerns to the level of a microworld, the level of a microreality, and consequently the conceptual microworld device is not acceptable for the description of a similar processes. Hence, the classical reason for the Universe occurrence has not a place to be.

2. As it follows from the above, just postclassical reason determines the process of our Universe occurrence, because just the reason in postclassical understanding determines the behavior (consequence) in quantum systems, and the system from which our Universe have appeared wholly and completely was quantum.

3. From the items 1 and 2 it is possible to conclude, that there is no sufficient necessity in so-called "the theistical hypothesis". It is valid, in spite of the fact that the classical reason does not explain our Universe occurrence, it is explained by the postclassical reason and, using the principle of "the Ockham's razor" we do not have necessity to enter one more hypothesis for Big Bang reason, if its quantum origin is satisfactorily enough.

Considering actually quantum cosmology and general picture of the world, which follows from it and connecting all this with the causal problem, we can make the following conclusion: as it was already mentioned above it primary postulates the physical vacuum existence (as a most low power condition of a field), described by the scalar field ϕ . The scalar field ϕ fluctuates (changes the size) under the casual law. When ϕ achieves the certain size, a sharp vacuum reorganization takes place, the size area of order $a \sim 10^{-33}$ cm, (Plank's size) is inflated up to $a \sim (10^{10})^{10^3}$ cm, where subsequently, due to difficult physical processes, fields and particles with their further evolution appear. Especially it is necessary to specify what all above-stated processes (inflating and generation of fields and particles) occur *always and everywhere*, as soon as ϕ accepts the certain meaning. However all *properties* of arising fields and particles (and therefore Universes installed as a whole) down to fundamental are determined *only* by casual law.

From this follows that the reason of our Universe occurrence is just the postclassical reason. The casual fluctuation law of a scalar field ϕ is a law A* in the formula: *if A*, then it is probable B*, where B is the Universe with the certain physical and geometrical properties. From infinite variety of "casual universes", the occurrence of one and other has a probable character (and the probability of their occurrence is different from zero), the possible variants are staticized, one of which is also our Universe. Thus we live in that Universe and we notice that Universe, the occurrence of which is determined by the probable law, and therefore, by the probable reason. So, as we see, "the reference on a theistical hypothesis" of our Universe occurrence is insolvent and instead of the "classical reason" for an explanation of its occurrence we can more correctly use words "the postclassical reason".

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Tamara Bulavina

HANNAH ARENDT AND SITUATION WOMEN IN SCIENCES

Women in the condition of sciences

As a matter of fact writing the story about women in sciences is not an easy task, because it is surrounded by the strong ideological tendencies. It is more difficult than writing the story of men in sciences, which one can write without thinking of its wrong interpretation. In this case your statements can be explained as mystical or ridiculous. Or it can appear opposite to either yours or the scientist's you study social position. Actually this is the story not exactly of men but rather of people. In case of the story of women there is no illusion of the story of people. Pathos of gender studies is obvious and at the same time it seems to be impossible to realize. The story of women cannot be written as the story of just other people maybe because this problem appears as a result of lack of material about women in the history of sciences. It is hard to take up a definite position in the historical studying of women and the procedure of the research turns into the attempts of avoiding the difficulties.

It is more difficult than writing the story of women's movement, where the researcher and his object are united under one ideological trend and it is possible to see a social need in such problem, in which the researched material doesn't resist so urgently, as one can face with when writing the story of women in sciences. Maybe that is why these stories are developing in incomparable speeds.

The question seems ridiculous: what is the difference for the adventure of mathematics or physics who make it: man or woman. Roberta Mura in article *Searching for Subjectivity in the World of Sciences: Feminist Viewpoint* gives a great number of examples in which many women scientists find it irritating. One example is the words of physicist Chien Shiung Wu at the symposium on *American Women in Science and Engineering* at the Massachusetts Institute of Technology in 1964, who said: "I wonder whether the tiny atoms and nuclei or the mathematical symbols or the DNA molecules have any preference for either masculine or feminine treatment". These statements obviously relate to patriarchal discourse, with its pathos of objectivity and division on subject and object.

Such statements make the task of writing such a story especially difficult not only because they deprive it of its right to exist, but also because their authors are women-scientists and there is the necessity of including them in this story, too. They resist it twice: as co-authors and as objects.

The studying of women in sciences finds itself in an ambiguous situation because the majority of women scientists shares the view point mentioned before, either they wouldn't be able to work and the researches in this field, who are usually feminists would have to decide a difficult task. There is no material about women in the history of sciences because of the understandable reasons, and to write within the bounds of feminist research about people who hadn't seen any need in it or even were against it, is bizarre. With all this, feminists criticized science so much that maybe it is better not to know that women work in this field.

It is not easier in the opposing situation. For example "McClintock insistence on the need to listen to material and be guided by it. The relationship between the scientist and her material is described in terms evocative of a mystical communication. She expresses feeling of affection, kinship and empathy for the plants that she studies. At times the boundaries between subject and object are suspended and the geneticist experiences herself as part of the microscopic system that she want to understand..." (quoted by Roberta Mara). Such statements in all ways belong to patriarchal discourse, but now with its essential pathos though their destructive action on objective/subjective division is obvious. That is why despite the obvious profeminist character of such statements not all the feminists support them. Patriarchal discourse says its everywhere-existence, and that is one more reason of the difficulty of writing the story of women in sciences.

It is difficult also because the category "women" is very broad and heterogeneous, and this story should definitely both be various and have uniting it and/or differing signs maybe proving its necessity.

There had been rather thorough critic about subjective/objective division, also thanks to the urgent participation of feminists in sociology of knowledge. In the result of this it is proved that such division is a myth, and/or the effects which destroy it are obvious. It makes a basis for the statement mentioned before in which the digression of such mythology and its creative character is demonstrated. It had been already pointed on its disadvantages. Although it is one of the rare cases of the answer to the critic, the definitions of not critical but "positive" opinions. I want to undertake an attempt of the research in which the hierarchical duality of subject and object removes not by their concentration but by emerging the situation of co-authority. Hannah Ardent will be my co-author. She will help me in solving the next, from my point of view very important, task. The majority of women in sciences are not inclined to stress the fact that they belong to women, there are no developed discursive practices or they hadn't seen any need in it. Exactly towards them as a very wide layer of the representatives of science, the history of women in science, new strategies of the research should be developed. This would permit researching without rejecting your points of view or imposing them on the others.

Hannah Arendt: The Life of Jewish Woman

Hannah Arendt was born on October 14, 1906, in Wilhelmine Germany. It should be said that she was one of the first or maybe the first woman who maintained her name as a prominent philosopher. "Who does she think she is, Aristotle?" complained the editor one of her book, William Phillips. After her approval you can't say that women cannot be philosophers, though her name has been slightly forgotten, which allows my colleagues think so.

I can't firmly maintain that she was a prominent philosopher because I don't want to pay tribute to hierarchical division on significant and insignificant figures in sciences, though she took her position mostly because she could give up usual practices by realizing them.

You can't put her works into feminist. Maybe this gave grounds Adrienne Rich to maintain that *The Human Condition* "embodies the tragedy of female mind nourished on male ideology". I wouldn't support this nice on its own statement. (I would use it with pleasure in any other case). Firstly because you can put into Ardent her own statement about Walter Benjamin, about whom she wrote an essay and, apparently, not by chance: "to describe his (in our case her) compositions in our usual coordinate system, you can't get by without a great majority of negative opinions". By sure Hannah Ardent wasn't obviously pro-feminist author, but she wasn't an anti-feminist one. (Although in this case she is just a usual author). From this it is possible to begin a number of negative opinions. And you have to begin from the thing that though her way of living was quite like usual – she came through all the stages of becoming a professional philosopher (not like Benjamin, with whom we had just compared her – "he was a person of giant erudition, but was not a scientist etc. "), but the results of her creative work were out of the usual column division. She thought of herself as a "writer" rather than a philosopher despite the impressive Teutonic academic credentials (a PD. From Heidelberg).

I have the right not to agree with Adrienne Rich because she had been a pupil of the two prominent philosophers-existentialists – Karl Jaspers and Martin Heidegger, and had never refused of it, with one of whom she had been in correspondence almost all her "scientific life", and with the

other in love affair, but she hadn't become an existentialist but undertook a sudden step – her research had touched the field of politics. And one more "but" – she hadn't become a politologist in its usual meaning but one of the most interesting author in this field. With all this she hadn't been involved in political life and hadn't been a member of any party.

And again, she wasn't a pro-feminist author, but one of her first works was signified in the title of this chapter Rahel Varnhagen: The Life of a Jewish Woman, about a salon hostess in Berlin in the early 1800s, subjected under repression – it was not published until 1958, for about 30 years, thanks to it she could be one of us now.

She wasn't a pro-feminist author, but for rather a long period (1949-1975) was in correspondence as with Jaspers, also with Mary McCarthy in whose creative work her being women played an important role. The description of defloration, diaphragm-fitting and breast-feeding in McCarthy's novel, The Group seemed scandalous at the time. As wrote about her Rita Goldberg in her review about their correspondence: "McCarthy was criticized for fluffy girlishness as well as for sexual explicitness". But exactly with her she discussed "the Cold War, McCarthyism, Vietnam, Kennedy liberalism, the student riots of the 60s. When one friend finds herself in hot water, the other flies to her aid. Arendt and McCarthy had no qualms about expressing themselves honestly, even obnoxiously". In this connection we can add one more "but". It was very important for Arendt that she had been Jewish, but the correspondence with McCarthy was completely out of this topic.

She wasn't a pro-feminist author, but she wrote her doctoral dissertation about such gender problem as love, in which she lighted it from the weight of gender stratification, it was the Augustine's concept of love, though she has still belonged to the field of private.

Using terms suggested by Ardent we may maintain that the communication actions, which were the components of her creative work, were orientated on leaving the system of rational signification, "beyond good and evil", as Dana R. Villa entitled the article about her. That's why the statement of the last mentioned can be called truthful: "the influence of Arendt on such theorists as Philip Lacoue-Labarthe, Jean-Luc Nancy, and Jean-Francois Lyotard is unmistakable... Lyotard's... polemical critique of consensus-oriented politics (in The Postmodern Condition) refers us to Arendt's own fierce commitment to plurality and difference as essential conditions of political action... Lacoue-Labarthe and Nancy... remind us that Arendt's primary project is to deconstruct the tradition's teleological model or action".

From my point of view we see a fitting and rare example of the relationships with fathertongue. Dorothy E. Smith in The Conceptual Practices of Power suggests that "the fathertongue is condition of speaking beyond what we learn from our mother; it is ineluctable; we may bridge the gap between the mother– and fathertongue". Arendt's works can be regarded exactly as an attempt to bridge the gap, though the language offered by her cannot be called "mothertongue" in a certain essentials sense. Her favorite activity, as she wrote to McCarthy, was "thinking business, but it is not a womanly way of thinking. It can't be like this, because it is a binding section. That is why I repeat the words of Elisabeth Young-Bruehl that "in her intellectual greatness, Arendt has had her greatest value to feminism, I think, precisely because feminism have said clearly "she was not one of us" and proceed from there to an examination not of her but of feminism in light of her life and work". Young-Bruehl has her own reasons to maintain so. She consider the statement of Arendt that if private realm should disappear or be absorbed into social and economic processes, or into the political realm itself, the conditions for tyranny or authoritarianism and, in the modern world, totalitarianism are present, very important for understanding of famous idea of feminists that "the personal is political".

I would like to point out one more reason why I consider Young-Bruehl's point of view mentioned above truthful.

Though her "thinking business" is Jewish rather than womanly, only by this she realized leaving "fathertongue". Paraphrasing Dorothy E. Smith it should be said that where a traditional gender division of labor prevails, men enter the conceptually organized world of governing without a sense of transition. The male researcher in these circumstances passed beyond his particular and immediate setting (the office he writes in, the libraries he consults, the streets he travels, the home he returns to) without attending to the shift in consciousness. Her Jewish descent just became one of the components of her "circumstances passes beyond her particular and immediate setting" influencing her creative work. These motives distinctly had already sounded in the context of the discussion with Jaspers the question of "Jewish existence" that as she wrote in letter "for the time being called

fatefulness. This fatefulness arises from very fact of "foundationlessness" and can occur only in a separation from Judaism. I did not intend at to provide an actual interpretation of this having-a-fate". Comparison and combination of fatefulness and foundationlessness is very significant. Helena Troubina in article *The Identity in World of Plurality: Brightening of Hannah Arendt* points out that Arendt differs... clearly marked in her own localization and realized identification. She considered herself of being a thinker, occupying an exact place on the earth... This place, paradoxically speaking, is in lack of particular place, i. e. in deprivation of birth, care and education given at home, town, place, cultural and metaphysical tradition, social environment, political party. Examples from her biography can be suspended endlessly.

According to Stephen J. Whitfield, both of her parents Paul and Martha (Cohn) Arendt had grown up in Russian-Jewish homes headed by entrepreneurs, but it didn't influence Hannah who is the only child in family. Arendt's childhood was punctuated with grief and terror. Her father, an engineer, died of paresis (syphilitic insanity) when Hannah was seven, and episodic battles between Russian and German armies were fought near their home soon thereafter. Her mother married Martin Beerwald, in 1920 she died, providing Hannah with two older stepsisters, Eva and Clara Beerwald.

She had to face closely with the Nazi ideology. No romance could be stranger than the clandestine affair between the Jewish anti-fascist Hannah Arendt and the Nazi philosopher Martin Heidegger. Nazism showed the new sides to her. At last she fled Hitler's Germany for France (1933) and the United States (1940).

Her fortune, this deprivation of cultural context influenced her creative work in the direct way.

Arendt wrote book *Eichmann in Jerusalem*. According to Rita Goidberg it was "immediately attacked for its unflattering portrait of Jewish leaders' cooperation with the Nazi deportations during WWII, though this was merely part of a "report", as Arendt herself put it, on Eichmann's methods of rounding up Jews for exterminations". One of the topics *The Human Condition* was an analysis of the invasion of totalitarianism in the field of private, with which she had to face not only once.

I can say that not only her human condition, but even condition, in which Benjamin had found himself (her essay about him I had mentioned above) influenced her creative work more than his. To one of the chapters of her book (*The Human Condition*) there is an epigraph from Isaac Deensen that one can live through all the sorrows, if you put them into history or tell a story about them. Maybe in accordance with these words, while creating her works she tried to live through not only the her own sorrows, but also Benjamin's, who couldn't live through them and committed suicide. Her studying of the situation of deprivation or lack as a concrete one makes new practice and stresses false neutrality. So she shook one of the most important components of the existing society. Dorothy E. Smith stresses "this break between an experienced world and its social determination beyond experience is a distinctive property of our kind of society". According to psychoanalyst Luce Irigaray, the non-neutrality of the subject of science can be manifested "through what is uncovered or what is not uncovered at a moment in history, in what science take or does not take as the stakes of its research". Basing on this we can support Arendt in her destructive initiatives, stressing that history is the component of science.

Now it is necessary to let co-authority to sound a bit louder, because Arendt left a great number of valuable notes, touching one of the topics, which we are going to discuss here now.

In *The Human Condition* she wrote: the thing that each individual life between the birth and the death can be at last told as the story with the beginning and the end is an additional and prehistoric condition of the history, a great story without a beginning and an end. Without the history of women in sciences the history of sciences would be not only insufficient, but also impossible. Arendt develops this idea further. Who someone is or was we can know, only knowing the story, the character of which he had been, or his biography; everything else we know about him including the work he created or left, tells us only that he is or was. That's why, though we know less about Socrates, who hadn't left any work, than about Plato and Aristotle, we know better and closer, who Socrates was, because we know his history, than we know about who Aristotle was, though we are informed about his opinions much better. That's why the story of women in sciences is a very important deed not only because it removes "white spots" but also because it carries out the task, which can't be carried out by anyone except her. Even by leaving a great number of works it is impossible to tell about yourself. From the books written by someone it is impossible to know who

was this person. Arendt confirms this idea: Although stories are the inevitable results of the action, not only the author, but also the teller comprehends and "makes" the story.

At last, as R. Villa points out "Arendt theorizes action not only as essentially non-strategic and non instrumental but as essentially non-sovereign: the peculiar freedom of action cannot be captured by philosophies of action that place autonomous agency at their center". Basing on this the project of the development of the history of women in sciences from the point of prosopography can be regarded as one of the directions broadening these ideas.

Developing this direction, I'll finish with the address to one of my co-authors. Troubina adduces Arendt's words from *The Life of the Mind*: thread of traditions is torn and we won't be in the condition to renew it. What we had lost is the unremitting past. What we are left with is the past, but the fragmented past. She adds "nevertheless, though this past can't already be told as united narration, though the events of the twentieth century made such a monstrous gap between the past and the present, Arendt relied on the permanent retelling of the individual and the collective past aiming to unite it with the history of the present, as on an ontological conditions of the existence of people".

Irina I. Tsekhmistro

TO THE CONNECTION BETWEEN FIRST AND SECOND PROBLEMS OF HILBERT

In the report given on the 8th of August 1900 at the II International Congress of mathematicians in Paris, Hilbert had formulated his famous 23 problems, among them the first was a problem of continuum. As the second a problem of proving consistency of axioms of mathematics was named. Draws attention the fact that Hilbert at once pointed at the presence of internal connection between both of these problems.

System of axioms of mathematics, he noted, is nothing but known rules of arithmetical actions along with the axiom of continuity. Consequently, the proof of consistency of axioms of mathematics of material numbers is equal to the proof of mathematical existence of notions material number and continuum. (Under mathematical existence of the object Hilbert understood the absence of contradiction in its definition). That's why in this case he hoped along with the proof of consistency of axioms of mathematics to get final and quite strict ground of the notion material number, and by that the defined solution of the continuum problem. "Indeed, Hilbert wrote, if it is possible to prove consistency of these axioms, then all reasons which sometimes were given against the existence of material numbers, completely lose grounds. But the conception of material numbers, that is continuum, is under stated opinion not only the totality of all possible decimal expansions or the totality of all possible laws, according to which the elements of some fundamental line may follow, but the system of elements, mutual correlation between them are set by the system of axioms, for which only those provisions, which may be acquired from these axioms by the final number of logical conclusions, are just. Only in this light, on my mind, the notion of continuum may be strictly logically comprehended. In fact, this, as I think, correlates nicely to what the experience and clear notion give us. Then the concept of continuum and also the concept of the system of all functions, exists in the same meaning as a system of integer rational numbers or as Cantor classes and potencies of high ranks" [2]. Hilbert was confirmed in the accomplishing of the strict ground of the material number notion, thus the proof of consistency of the continuum of material numbers.

Though in the first problem the hypothesis of continuum was formulated by Hilbert immediately after Cantor as an issue of potency of actual numbers, when discussing second problem he paid special attention to possibilities of the strict reasoning of material number by proving consistency of axioms of the arithmetic, it's clear that the possibility itself on deciding an issue of potency of actual numbers considerably depends on the possibility of strict reasoning of the notion of actual number. So, generally speaking, the second problem of Hilbert contained testing of this particular statement as

an issue of potency of continuum. The answer to the second problem of Hilbert is theorems of K. Godel about non-completion of formal systems of arithmetic, which he proved in 1931.

In the process of the development of these ideas of Hilbert it had been determined that the central issue of giving proof of mathematical theory – an issue of its consistency – had acquired clear enough sense for a theory which was fully formalized. The essence of formalization of the theory is in the writing of all its provisions on strictly single-valued language. The final number of some of these provisions is proclaimed axioms. The formalization is a way of removal of inexactitude and ambiguity of natural language. On the basis of certain rules of conclusion, which also written in formal way, from axioms it's possible to go to any proposition of theory or to infer it. The conclusion formalizes itself. Thus the building of some machine-like developing system is accomplished, in which by the means of enough but final number of steps it's possible to get to any provision or theorem, concerning given sphere, only if number of axioms is big enough and there are all necessary rules of output. In this case we have absolute strict formalized theory which itself can become an object of mathematical investigation.

Figuratively speaking this completely formalized mathematical theory is a gigantic mathematical formula, which because of it can be subjected to strict mathematical investigation concerning its consistency. The essence of the proof of consistency of formalized system is in establishing of such qualities of it which make impossible displaying in it propositions of types "A and non-A". This proof is carried out with attraction of the most simple and doubtless ways. In particular, using in the proof propositions in which in any form the idea of actual infinity is attracted, according to Hilbert, it's absolutely inadmissible, because actual infinity in any form of its performing is responsible for appearing of contradictions and paradoxes (e.g. as paradoxes of the theory of great numbers). Hilbert gave an assumption about possibility on proving of consistency of arithmetic by substantially finite means.

In 1931 Godel published two theorems, the idea of them was in establishing non-accomplishment of the program of Hilbert in proving consistency of arithmetic by finite means. In theorems of Godel the idea is in arithmetic of actual numbers, but restrictions, set by him, have sense for arithmetic of material numbers too, and for any other, expanded or completed system, containing arithmetic of actual numbers.

In the *first theorem of Godel* it is proved that if formalized arithmetic is non-contradictory then it at least has one proposition that can't be inferred in it along with its negation. Addition of this proposition (or its negation) to the system of axioms as a new axiom doesn't save the situation, because in the expanded by this method formal system a new non-decided proposition appear.

According to the *second theorem of Godel* consistency of arithmetic can't be proved by means formalized in it, that is finite means. For proving the consistency of arithmetic of actual numbers it becomes necessary to address to such sending which go out of frames of the system in question, and refer to a richer system. Along with that the assumption is important, that this richer system, from which the premises are got for conducting the proving of consistency of this given formal system, is itself consistent. Thus, proving of consistency of rather rich formal system may have only relative sense: the given formal system is consistent, if consistent is the not-formalized some richer system, from which premises for conducting the proving of consistency of this given formal system are got. German mathematician G. Gentzen (1935-1936), had soon found the proof just like that of relatively consistency of arithmetic, but by means of more powerful than arithmetic.

In itself this fact of establishing the possibility of proof only of relatively consistency for rather rich systems has great philosophical meaning, because it has obviously ideologically closed to famous philosophical provisions on dialectic of relative and absolute in knowledge.

Only rather poor systems have the absolute consistency, for example, calculation of statements, all axioms of which are equal-truthful statements (tautologies), the rules of the inference are in transference of one equal-truthful statements into other equal-truthful statements, the same is the calculation of predicates, i.e. all formal logic, which is wholly based on the tautology principle. Thus the great discovery of K. Godel needs realizing of follows significant and absolutely inevitable dilemma, which human brain must decide in the sphere of so called exact sciences: tautology and only tautology or (if system is rather rich) relatively consistency, i.e. in the end postulating, assumption of consistency. But this strictly set and absolutely inevitable cognitive situation in the sphere of exact

sciences is only consequence of more general epistemological fact, according to which the drama of human cognition indissoluble from internal dialectic nature of its basis.

So, paying attention again to the problem of continuum, we may conclude that since the moment of appearance of Godel theorems on non-completion of formal systems of arithmetic there have been weighty reasons to assume that continuum-hypothesis of Cantor can't be proved.

Even if the consistency of formalized arithmetic of actual numbers can be proved only on the basis of pure assumption on consistency of some more powerful arithmetic system, then in any next one expanding arithmetic system to one as, for example, the system of material numbers, which represents continuum in the arithmetic form of expressing it, element of assumption is necessary one. It undoubtedly should have entailed inevitable relativity of consistency of rather complicated statement as concept of potency of continuum.

In any case the proof of absolute consistency of the arithmetic of actual numbers like Hilbert program of formal grounding of mathematics had to on necessity represent first step on the way of completely single-valued and strictly determined decision according the potency of continuum. And it appeared that this step is principally cannot be done. Along with determining of non-accomplishment of Hilbert program of grounding of mathematics, the hopes for absolute solving of continuum potency problem were vanishing too. If Godel, when investigating properties of formal system of arithmetic of actual numbers, had managed to build some artificial expression belonging to this system and claiming its own non solving in it, than as P.Cohen showed, continuum hypothesis of Cantor is an example of rather pithy mathematical conclusion, but without solution in the frames of existing axioms of the theory of great numbers too.

In the article "About Grounds of Theory of Great Numbers" P.Kohen estimates the relation of Godel theorem to incompleteness of formal systems to continuum hypothesis as follows: Godel theorem "is the greatest barrier for any attempt to understand the nature of great numbers completely. At the same time, showing that higher infinities reflect in numbers theory, because they allow us to prove non-proved without them provisions, Godel theorem makes extremely difficult defending the point of view that higher infinities can be simply rejected. Our habit to the theorem of incompleteness must not prevent us from seeing this fundamental incompleteness of all formal systems, which has much more perspective consequences than independence of private statements like continuum hypothesis. Just that lies in the basis of my pessimistic opinion that any amateur investigation in future too will not enlighten main philosophical problems" [1, p.171]. But only because, we add, these problems by their nature go out of frames of mathematical language and needs discussing with the help of much richer categories than mathematical ones, in particular, categories of great numbers and a whole. The last notion simply has not a place in mathematics.

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РАЗДЕЛ 2. ФИЛОСОФИЯ ОБРАЗОВАНИЯ

PART 2. PHILOSOPHY OF EDUCATION

Moshe Schneider

INTER-CULTURAL BRIDGING IN ISRAELI SCHOOLS

Throughout the world, immigration as a phenomenon is increasing in scope. Successive waves of immigration shape culturally heterogeneous societies, and the State of Israel is no exception. One of the main characteristics of Israel's immigrant absorption system is its assimilative policy. Successful immigrant absorption has been defined in Israel as the immigrants' abandonment of their culture of origin and coming to resemble veteran Israelis as closely as possible.

This approach was widespread until the 1970's throughout immigrant-absorbing societies, but since then it has been increasingly neglected. One of the major reasons for this change in approach is that in the long run, the assimilative approach has been seen to give rise to large groups of immigrants that remain permanently on the margins of society. With the assimilative approach, the educational system plays a highly significant role by perpetuating this marginality, even into the next generation. Yet, if a different approach is adopted, the educational system can actually prevent this from happening.

This section presents a new model for immigrant absorption in Israel—inter-cultural bridging. Inter-cultural bridging prevents immigrants from remaining on the margins of society. Its agents are carefully selected; they serve as role models for young immigrants and their families and as agents of change among veteran Israeli pupils, parents, and educators. These bridging agents are themselves fairly recent immigrants, and although they are not desirous of assimilating into Israeli society they also do not want to live on the margins as a separate group. The bridging agents represent the many recent immigrants to Israel who add new Israeli characteristics to their individual identity without abandoning the traits of their national origin. They are a model of interweaving.

After the selection process, the bridging agents are given intensive on-the-job training. They receive professional guidance throughout the duration of their work, individually and in groups.

The role of the inter-cultural bridging agent in the school has two aspects: individual and systemic. The first concerns intervention on the personal level, aimed at strengthening slack connections in the "small triangle" of relations between the immigrant pupil, his family, and his teachers.

The second aspect concerns systemic interventions that affect the school climate and its organizational culture. The bridging agents serve as a source of inter-cultural knowledge and information about Israel's reality for immigrant pupils and their families, and as a similar source of knowledge and information about the immigrants' culture of origin and the unique aspects of their status for veteran Israeli pupils and teachers. They act to preserve the continuity of the young immigrants' cultural identity, and to reduce the asymmetry between them and the veteran Israeli pupils in the school.

The bridging agents gain legitimacy for the immigrant pupils' use of their mother tongue in school, and encourage the continued development of linguistic abilities in the mother tongue along with learning Hebrew. In particular, they reinforce the role of the parent within the family (whether this role be filled by parents, grandparents, and other adults) and emphasize its various aspects—including providing the child with protection and guidance, and supplying knowledge and mental resources. They establish the parents' status as important partners in the school's educational process.

The bridging agents attempt to influence school staff attitudes towards new immigrants, and to shift their perceptions of immigration as abandoning the old life and beginning a new one new life to acknowledgment of the value of the immigrants' past even after their arrival in Israel. When necessary, the bridging agents also mediate in inter-personal or inter-group conflicts that result from inter-cultural misunderstanding.

The inter-cultural bridging model has been implemented in a number of Israeli cities and towns. The initial findings of the follow-up study, which utilizes intensive documentation of the activities and data collection in the field, indicate that the model is effective and has a low cost/efficiency ratio.

The inter-cultural bridging model is the product of many years of research and a great deal of literature (see bibliography).

The role played by the inter-cultural bridging agent in educational institutions.

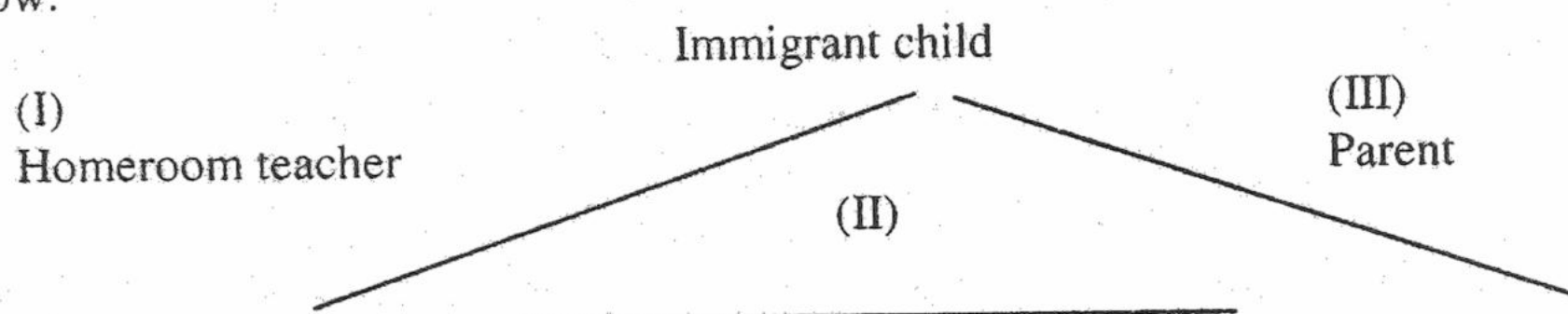
"Native-born Israelis and immigrants are oceans apart... The bridging agent joins their hands together." (kindergarten bridging agent, July 4 1996)

The role of the inter-cultural bridging agent, who is himself a new immigrant, is shaped individually by every educational institution in accordance with the system's needs and the needs of the immigrant families within it. His "clients" include the school principal; the teachers; the new immigrant pupils and their families; the school support system (counselor, remedial teacher, social worker, psychologist, truant officer, nurse, etc.); and other functionaries in the institutions.

As mentioned, the role played by the bridging agent has both *individual* and *systemic* aspects.

1. The individual aspect: The triangular model

The individual aspect of the bridging agent's role concerns reinforcing the triangle depicted below.



This is, of course, an analytical model. One bridging agent described the reality of his task as "... the work done on every side [of the triangle] influences the entire triangle" (State Religious elementary school bridging agent, June, 1996).

In each of the three sides of the triangle, the connection between the two axes can be imperfect, partial, or missing altogether.

A. The homeroom teacher—immigrant child connection

The homeroom teacher may be unable to communication with the immigrant children; she may feel helpless and may be filled with a sense of inefficacy.

"This is my first experience dealing with new immigrants. At the beginning of the year I cried. I didn't know what to do. I couldn't talk with the children, I couldn't reassure them when they cried... I sit and talk to them but they don't understand me." (State Religious nursery school teacher, February 1992).

B. The homeroom teacher—parent connection

New immigrant parents are viewed by the teaching staff as neglecting their children and not promoting their development.

"Their [the immigrant parents] are young. They work hard, they don't take care of their children. An Israeli child starting nursery school knows words and some sentences. Some immigrant children don't even know that. They don't know the language, and they cannot communicate with the nursery school teacher." (State Religious nursery school teacher, February 1996).

"[When I came to the kindergarten]... the [kindergarten teacher] had a problem with mutual understanding, with the parents too. She said that during parent-teacher meetings, their eyes were full of lack of comprehension... the children cried and didn't understand her" (State Religious nursery school bridging agent, June 1996).

C. The parent—immigrant child connection*

Very often in new immigrant families, the parent figures (including grandparents or other adults) are in despair due to the change for the worse in their situation following immigration. The children are disappointed by the despair projected by the adults, and feel that they are not getting the sense of belonging, the status, and the protection that veteran Israeli pupils receive from their parents. Thus, parental authority begins to erode.

"Some families were extremely pessimistic. Their status dropped, and they hadn't the strength to better themselves. This had a powerful effect on the children, even if they didn't talk about it. They want a strong mother and father, like the Israeli children have." (State Religious elementary school bridging agent, June 1996).

One of the roles of the bridging agent is to identify weak spots in the triangle, diagnose where the problem is, and strengthen loose connections. To this end, they may choose any one of a variety of possible actions: conducting home visits, holding observations in the classroom and in the schoolyard, coordinating data from the school registries, participating in staff meetings, making sure that the immigrant pupils do their homework, making sure that absences are immediately investigated, providing guidance, support, and encouragement in the first days in Israel and/or in the school, doing their best to ease the "shock of transition", helping protect and reinforce immigrant parents' and grandparents' parental function, being catalysts for developing positive dynamics in all three sides of the triangle, and using a preferential strategy of identifying and developing positive strengths and areas of interest. One bridging agent said:

"What is problem-solving? First, the problem must be given a name. I have to understand what I have to solve, to talk with all those involved such as the child's parents and friends, to build the child's image, to begin to understand where the problem's roots lie, to ask why. All this must be done before I can even begin to solve it." (State Religious elementary school bridging agent, June 1997).[†]

The how and why of inter-cultural bridging in the schools

In one sense, Israeli society is multi-cultural, as it consists of a great number of diverse ethnic groups due to the large waves of immigration, not to mention the Jewish-Arab dimension of multi-culturalism.

The concept of multi-culturalism has more than one meaning (Bodi, 1995). It can refer to the multi-cultural makeup of society, a multi-cultural *ideology*, or to *policy aimed at* actualizing the multi-cultural ideology. There may also be other meanings.

Description of reality: Multi-culturalism can simply refer to a society with many cultural groups, i. e. to the ethno-cultural makeup of the society.

Ideological: Multi-culturalism can refer to different cultures' mutual respect for each other, and an overall view that multi-cultural society is a desirable state of affairs. It can emphasize the basic social principles of shared values such as democracy and tolerance.

Policy: Multi-culturalism can refer to policy aimed at advancing differences and providing for multi-cultural developments. It can legitimize different groups' demands and support fundamental rights for all (such as the right to vote) and resist cultural discrimination.

Preventing immigrants' temporary marginality from becoming permanent is linked to the second and third meanings of multi-culturalism: mutual respect among different cultures and a policy of advancing differences and allowing for multi-cultural development. Both these levels need cultivation in Israel's educational system, and this cultivation is contingent upon the educational system, Israel's other social systems, and their absorption of immigrants who have already arrived and those yet to come.

The Hebrew University of Jerusalem's "Yeshut" Project developed a model of inter-cultural bridging in educational institutions that has been implemented on a small scale since 1995. These inter-cultural bridging agents function on two levels in educational institutions: individual and

* Changes in the family system as perceived by immigrant adolescents from the former Soviet Union are described at length in Levinson and Roseman, 1993.

[†] Most of the quotes here are taken from interviews conducted at the end of the 1996/7 school year, with the aim of summing up the work of the bridging agents for that year. In contrast, the descriptions of "loose connections" are from the time before the bridging agents began their work.

systemic. They are agents of inter-cultural change. They work to improve the institution's patterns of coping with immigration absorption; they cultivate a multi-cultural climate, encourage the immigrants' personal-cultural identity, and reduce asymmetry between veteran Israeli status and that of the immigrants. They are a source of knowledge and inter-cultural information for both immigrants and veteran Israelis; they mediate in conflicts based on cultural differences. Most importantly, because they are immigrants themselves, and because they have been successfully absorbed in Israel without relinquishing their former identities and without closing themselves off to Israeli culture, they serve as role models for immigrants.

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Haim Fraiman

THE CONNECTION BETWEEN TEACHER BURNOUT AND STYLE OF CLASSROOM MANAGEMENT

In my capacity as a teacher and a principal in the Israeli educational system for the last thirty years, every morning I encounter teachers as they come to work. Some of them arrive energetic, happy and filled with motivation, while others come in tired, poorly motivated to teach, late for class, impatient with people around them; sometimes, they absent themselves from work altogether.

This phenomenon, stimulated me to research the subject of burnout among high school teachers, and to investigate the relationship between teacher burnout among those teachers who employ authoritarian, democratic, and liberal styles of classroom management. Research of this type has yet to be done in Israel.

Research on the subject of burnout was first carried out byFreudenberger (1974), who established that employees may reach a situation of being drained, and of physical and mental exhaustion during work. It was he that termed this phenomenon "burnout". Perlman. & Hartman (1982) compiled 48 studies, and found common elements that indicate burnout: physical and/or mental exhaustion resulting in low employee output, and de-personalization.

Research literature presents two models of burnout. The first one is static, based upon elements related to the work environment, and the teacher's personality traits (Freudenberger, 1980; Pines &

Aronson, 1981; Edelwich & Cherniss, 1980; Birdsy, 1980; Pines, 1993). The second model is dynamic, and attributes a number of successive phases to burnout (Friedman, 1992; Farber, 1991; Blase, 1982; Ezrahi, 1985).

This is a dynamic process, described by researchers as beginning from a stage of low burnout levels and gradually proceeding to a high degree of burnout. Although the intensity of the experience of burnout differs among individuals, three fundamental elements can always be identified: physical exhaustion, emotional exhaustion, and cognitive exhaustion. A teacher may develop one, two or all three symptoms; a teacher experiencing all these reactions for an extended period of time is in a state of extreme burnout. A teacher who experiences some of these reactions some of the time must recognize his state in order to take steps to overcome it.

A critical source of teacher burnout is the teacher's interaction with the pupils during the teaching process, i. e. learning in the classroom (Blase, 1986; Milstein & Golaszewski, 1985; Arieli, 1995; Milstein, Golaszewsky & Duquette, 1984; Kremer & Kurts, 1985; Chichon & Koff, 1978). This phenomenon leads me to look at the link between teacher burnout and the style of classroom management employed.

Three teaching strategies appear in the study, which deals with three styles of classroom management: authoritarian, democratic, and liberal. I will examine these strategies using the three elements of burnout mentioned above, i. e. physical, emotional, and cognitive, by looking at:

- * Teacher/pupil relations
- * Maintaining order in the classroom
- * Teacher response to undesirable behavior in the classroom.

No study examining the relationship between teacher burnout and classroom management style employed by the teacher has yet been carried out. I believe that my study will benefit teachers and the entire educational system by:

- * Indicating the link between classroom management style and teacher burnout
- * Coping with, reducing, and preventing teacher burnout
- * Teacher training in teacher training colleges

This study is of great importance because according to research on teachers in elementary and high schools in Israel (Shirom, 1986; Friedman, and Laton, 1993) the phenomenon of teacher burnout in Israel is becoming increasingly severe.

The importance of my study lies in its examination of diverse directions of inquiry that have not yet been explored, which may lead to solutions, and may shed light on the connection between the different classroom management styles and the phenomenon of teacher burnout.

This denotes the **Problem** of the study: To minimize teacher burnout in teaching/learning.

The problem denoted

The **Theme** of the study: The pedagogical background of the relationship between teacher burnout and their style of classroom management.

The **Object** of the investigation: The relationship between teacher burnout and classroom management style in the teaching/learning process.

The **Aim** of the study: To investigate the link between burnout in teachers and the style of classroom management they use, and to work out theoretically-based pedagogical means of minimizing burnout in teaching/learning.

The **Hypothesis** of the study:

1. I hypothesize that the differences between styles of classroom management—authoritarian, democratic, and liberal—will lead to differences in the degree of teacher burnout.
2. There is a link between the teacher's physical health, his satisfaction with his interaction with pupils, his satisfaction with his professional competence, his achievements in the teaching/learning process, and burnout.

Tasks:

1. To analyze the theoretical sources concerning the nature of teacher burnout.
2. To investigate the relationship between teacher burnout and classroom management style, and to draw up a theoretical model of this relationship

3. To investigate and characterize pedagogical means for optimizing the link between teacher burnout and classroom management style.

Methodology of the research:

The research sample included 4 Beer Beer Sheva high schools in which teachers employ different teaching styles. The total teacher population in these schools is 600 teachers of the 9th, 10th, 11th, and 12th grades. The number of pupils in each class ranges from 30 to 40.

The pupil population of these schools is the same; the pupils come from similar socio-economic backgrounds.

The Research Tool included:

1. **Questionnaires:** I distributed questionnaires to teachers in the schools' teachers' lounges. The purpose of the questionnaires was to:

- * Measure teacher burnout in relation to teaching style
- * Analyze the classroom management style of that particular teacher

Questionnaire No. 1 was selected from Friedman's (1985) study, which examined teacher burnout in Israeli elementary schools. This burnout questionnaire was prepared and examined by Friedman, and its fifteen items were found to have a high degree of reliability (Cronbach's Alpha 0.89). The questionnaire itself is divided into two sections: questions 1 through 10 concern physical, emotional, and cognitive exhaustion from teaching, and questions 11 through 15 concern personal fulfillment.

The emotional exhaustion factor accounts for 60% of the phenomenon of burnout, and the personal-fulfillment accounts for the other 40%.

The internal reliability of each of these two burnout factors is high. The emotional exhaustion factor has a Cronbach's Alpha of 0.88, while the personal fulfillment factor has a Cronbach's Alpha of 0.70.

Questionnaire No. 2. Concerned teacher's viewpoints towards education and control over the pupils, and characteristics of the authoritarian, democratic, and liberal styles of classroom management.

This questionnaire includes nineteen items, and is made up of three types of items. This questionnaire examines the criteria characteristic of the teacher's style of classroom management, in order to establish whether this style is authoritarian, democratic, or liberal. The criteria included in the questionnaire are: teacher/pupil relations, maintaining order in the classroom, and teacher reactions to undesirable behavior.

Reliability

Reliability and validity tests were conducted using the Pearson correlation individually for each item. The results of examining the correlation showed that there was a high correlation between the answers of the first questionnaire and the answers to the second questionnaire. The correlation coefficient ranged from 0.70 to 0.90. Additionally, an examination was conducted for the entire questionnaire, and a Cronbach's Alpha reliability of 0.82 was found.

Validity

A factor analysis examination was carried out, and results were received. The questions were found to be valid, with a common factor ranging from 0.7 to 0.9.

2. **The Interviews:** carried out twenty interviews with twenty teachers who employ different teaching styles and different classroom management styles. These interviews compared to the teacher burnout characteristics which appear in the research literature.

These 20 interviews are designed to support the questionnaires and to validate their results, and to provide additional reinforcement for the research results.

Three meetings were held with each teacher. The first meeting was solely for acquaintance purposes, (although I had already known all the teachers superficially), and to explain to them the goal of my study, to tell them about myself, to get to know them better, to show them that I was sympathetic towards their distress, and to create in them openness to talk about their work.

I was able to collect a great deal of material from my conversations with these teachers. I have presented here most of what they said that was linked directly to the study.

The Theoretical contribution of my Research

1. To enable every teacher to teach using the style of classroom management that they choose, and to hold the educational views most compatible with his own personality and outlook, without fearing that his chosen style will expose him to a higher risk of burnout than other styles of classroom management.

2. To develop the teacher's awareness of and alertness to his feelings. A teacher who feels good physically, and who is satisfied with his interaction with his pupils and with his own professional progress will not become burned out. The converse is also true: a teacher who is physically and emotionally fatigued by his work with the pupils, and who feels that he is not making progress at work will develop burnout. Such a teacher can feel fatigued in one of the elements, some of the elements, or all of the elements.

3. The study indicates that the teacher using the democratic style of classroom management has a greater chance of developing burnout, but that he also has a greater chance to reverse the burnout process and not to reach its terminal stage.

4. Burnout is an ongoing process. Identification of the problems in its early stages, and taking preventative measures, will prevent its further development.

5. The research model that describes the interaction between the teacher and the pupil should help the teacher identify the style of classroom management that he employs and the nature of his interaction with his pupils, and should enable him to examine whether he is currently suffering from any degree of burnout.

Reactions angering the teacher during the learning process in the class do not necessarily lead to burnout; however, teachers will derive satisfaction from the learning process in accordance with the pupils' scholastic achievements.

The Content of the Thesis:

The thesis include introduction, five chapters, summary and conclusion, discussion, the list of literature and appendixes.

Chapter 1, discussing burnout, the study does that most of the definitions of burnout describe it as a process of depletion of emotional energy and deterioration of function in teachers. This process is ongoing, and occurs in stages. The dynamic model of burnout describes the phenomenon's development from the early stages of low burnout level through the later stages of high burnout level.

The underlying idea here is that if burnout is the product of a process, then teacher burnout is not static. That is, the teacher suffering from burnout undergoes successive stages until he reaches a high level of burnout.

This phenomenon leads me to investigate the nature of teacher burnout through looking at the pedagogic process that begins with teacher/pupil interaction, to examine the stage of burnout experienced by the teacher, and to see whether his style of classroom management, which reflects his educational outlook, is somehow connected with his burnout.

In this chapter, the study presented the elements of burnout: physical exhaustion, emotional exhaustion, and cognitive exhaustion. Research has shown that an individual experiencing all these elements of burnout over an extended period of time is undergoing a severe burnout crisis. Some teachers experience only some of the symptoms some of the time.

Researchers Blase (1986), Milstein & Golaszewski (1985), Arieli (1995), Milstein, Golaszewsky & Duquette (1984), Kremer & Kurts (1985), and Chichon & Koff (1978) claim that teacher/pupil interaction is a source of pressure and of burnout.

Base on this conclusion, the study examined the interaction between the teacher and his pupils during the teaching/learning process in classes managed using the authoritarian, democratic, and liberal styles.

Chapter 2, deals with Classroom Management. Classroom management is the heart of teaching. Gump (1967) found that the teacher devotes fully half of his time to managing the class. Doyle (1977) describes the classroom environment as consisting of multi-dimensional events occurring simultaneously in the class, immediate action that the teacher must take during the lesson, unexpected events during the lesson, and the public nature of teacher and pupil activities within the class. All these contribute to the complexity and difficulty of the task of classroom management. Therefore, the task of classroom management is liable to put constant pressure on the teacher (Emmer & Evertson, 1981).

There are three fundamental classroom management strategies: authoritarian, democratic, and liberal. Each of these has its own educational approach, and ways of implementing this approach in the class. Every classroom management style has its own unique characteristics. The authoritarian style is typified by authoritarian and normative behavior; the democratic style is noted for teacher behavior that directs pupils and takes their needs into consideration; and the liberal style is characterized by the complete autonomy given to pupils during learning, and by total non-intervention on the part of the teacher in classroom activities.

A teacher will manage a class differently using each of these styles. This difference in classroom management style is most evident in the nature of teacher/pupil interaction.

The study examined the elements of teacher burnout—physical, emotional, and cognitive—and the relationship between these elements and the style of classroom management employed by the teacher—authoritarian, democratic, or liberal—according to the following criteria:

- * Teacher/pupil relations
- * Maintaining order
- * Teacher responses to undesirable behavior.

Chapter 3, is the research model. The research model presented was constructed in accordance with the classical studies of White, Liwein & Lippit (1939), Ziv (1975) and Bar El (1996), with the aim to identify the classroom management style employed by each teacher. This study examined three fundamental styles of classroom management – authoritarian, democratic, and liberal – by looking at teacher/pupil interaction in classrooms run according to each of them. The follow criteria had been used:

- * Teacher/pupil relations
- * Maintaining order
- * Teacher responses to undesirable behavior.

In order to examine the relationship between the different styles of classroom management and the physical, emotional and cognitive elements of teacher burnout.

Teachers using the authoritarian, democratic, or liberal styles of classroom management have different outlooks and show different behaviors, as shown by Ziv's (1975) study.

III. The Research Model

The research model presented in this section was constructed in accordance with the classical studies of White, Lewin & Lippit (1939), Ziv (1975), and Bar-El (1996). Its aim is to identify the classroom management style employed by each teacher.

This study will examine three fundamental styles of classroom management—authoritarian, democratic, and liberal—by looking at teacher/pupil interaction in classrooms run according to each of them. The follow criteria will be used:

- Teacher/pupil relations
- Maintaining order
- Teacher responses to undesirable behavior.

This will be done in order to examine the relationship between the different styles of classroom management and the physical, emotional, and cognitive elements of teacher burnout.

Teachers using the authoritarian, democratic, or liberal styles of classroom management have different outlooks and show different behaviors, as shown by Ziv's (1975) study.

Authoritarian Style of Classroom Management	Democratic Style of Classroom Management	Liberal Style of Classroom Management
Only the teacher decides upon and determines activity.	Each activity is decided upon by the pupils, with the help and encouragement of the teacher	Complete freedom to make decisions is given to individuals and groups, with minimal teacher intervention.
Authoritarian, dictates methods, measures used, and future plans	Plans and measures to be employed are discussed with the pupils. The teacher suggests alternatives to the pupils and enables them to act accordingly.	The teacher provides study material and explains to the pupils that he will provide information when they ask for it. He does not participate in pupil discussions.
For the most part, the teacher dictates the study tasks.	Pupils participate in choosing study tasks.	The teacher refrains from intervening in pupil activities.
The authoritarian teacher praises and criticizes pupils "individually. " He maintains his distance and avoids active participation in pupil activities, except for demonstration purposes.	The democratic teacher praises and criticizes pupils "objectively, " or refers solely to "facts. " He attempts to be a member of the group, without taking too much of the work upon himself.	The liberal teacher offers spontaneous comments on pupil activities. He does so infrequently, however, and only in response to a direct question. He refrains from assessing or directing pupils.

Teachers using the authoritarian, democratic, and liberal styles of classroom management show different classroom behaviors. Below, I will describe different teacher behaviors and pupil reactions to them, as shown in Blair's (1962) study.

Teacher Behavior	Pupil Behavior
Authoritarian	
Constantly criticizing the children	Submissiveness and covert rebellion. Teacher is frequently disliked.
Demands discipline	Usually disciplined and obedient.
Rewards infrequently, for fear of spoiling the children	The children are tense and uncooperative, and are likely to be impudent.
Feels that the children cannot be trusted.	Learning slows considerably when the teacher is absent from the classroom.
Democratic	
Shares work planning and decisionmaking with the class	The pupils like the work and the teacher, and enjoy working with each other
Offers help and guidance to those who need it, but not at the expense of the entire class	The pupils produce good work, both quantitatively and qualitatively
Encourages group sharing	The pupils praise each other and are willing to take responsibility.
Reward and punishment are meted out objectively	There are no learning problems when the teacher is absent from the class.
Liberal	
Does not believe in discussing matters with	Low class morale, poor quality work.

the pupils, or in helping them.	
Has difficulty making decisions.	The pupils are tense and look for scapegoats.
No clear goals	No teamwork
Neither encourages nor criticizes; offers neither help nor advice	The pupils do not know what to do in the teacher's absence.

Differences derived from the different styles of classroom management are, therefore, evident. Each management style is characterized by its own educational outlook, i. e. an authoritarian teacher will behave differently than a democratic or liberal teacher.

Chapter 4 & Chapter 5, are the Methodology and the Finding of the investigation, which comprises diagrams & tables that represent the outcomes of the research.

The goal was to classify all the teachers examined according to styles of classroom management, i. e. authoritarian, democratic, and liberal.

The study indicated the differences in educational outlook, approach, and attitude towards the pupils and the class learning process that comprise the various styles of classroom management. This difference is evident in the examination of the 196 questionnaires distributed to the teachers. The teachers' responses showed two teachers using the liberal style of classroom management, forty-six using the authoritarian style, and 148 using the democratic style. The teachers were classified according to the same criteria used for classifying the teachers who were interviewed, i. e. teacher/pupil relations, maintaining order in the classroom, and teacher reactions to undesirable pupils behavior.

The teachers who responded to the questionnaire were classified according to their responses. Those answering "always" and "very often" were classified as liberal; those answering "often" or "sometimes" were classified as democratic; and those answering "very rarely" or never" were classified as authoritarian.

Both the questionnaires and the interviews were meant to serve as a basis for, and to reinforce, each other's conclusions concerning the three styles of classroom management, i. e. authoritarian, democratic, and liberal. Some of the teachers interviewed explicitly identified their style of classroom management on their own. The teachers' own assessment of their style of classroom management corresponded with the criteria according to which the teachers were classified.

The general summary shows that the number of teachers utilizing the democratic style of classroom management is greater than the number of teachers using either the authoritarian or liberal style. (Only a small number of liberal teachers was discovered, and the sample was not representational.) The explanation for the large number of teachers using the democratic style lies in the changes that have taken place in the Israeli educational system in recent years, and the increasing awareness of democratic education in teacher training in the colleges.

The differences between teachers was discovered in their behavior in the class, and in their perception of the relationship between themselves and their pupils.

The field study showed a great deal of difference between the teachers using the various styles, and this result also corresponds to the literature and the research model.

The classification of teachers by style of classroom management was aimed as examining which elements of burnout characterize the teachers in each style of classroom management, as well as the degrees of burnout, and whether any one style showed the lowest percentage of burnout.

The elements of burnout that were examined included physical, emotional, and cognitive exhaustion (Pines & Arson, 1981). Physical burnout is characterized by constant fatigue, general exhaustion, and lack of energy. Burned-out individuals often suffer from aches and pains, or even become ill. A physically burned out teacher will describe his condition as tired, or wiped out at the end of his work day; he will say that his work with the pupils is very hard on him, and that he is physically exhausted by teaching.

Emotional burnout is characterized by a feeling of depression, helplessness, hopelessness and a feeling of being trapped. Such teachers feel that working in teaching frustrates them and burns them out, and will describe a lack of patience with their pupils.

Cognitive burnout is characterized by the teacher's development of negative views towards himself, his work, his professional achievements, and his life. His esteem for himself and his work is

constantly decreasing. Such a teacher will describe himself as working too hard in teaching, and will state that working with pupils makes him very tense; he will say that he finds no satisfaction in his work, will consider leaving the profession, and feels like he is not progressing in life.

Burned-out teachers tend to be tardy, or to be absent from work altogether. The elements of the burnout process are different for each teacher (Mattingly, 1977); burnout is a process that goes in stages (Etzion, 1983; Pines & Aronson, 1981; Shirom, 1989; Friedman, 1992).

An examination of the literature shows two models explaining burnout: the static model, which relies on fixed factors, and the dynamic model, which considers burnout as a process including a number of stages, from low to high. The importance of the dynamic model lies in the fact that I hypothesized that it would constitute a pedagogic tool to describe burnout in its initial stages, and, by doing so, it would be possible to reduce the phenomenon to a minimum. The dynamic model is reflected in the study, where 31.1% of teachers using the democratic style of classroom management were found to be in the process of becoming burned out, while 17.4% of teachers using the authoritative style were found to be in the process of becoming burned out. The study shows that most of the democratic teachers manage to reverse the burnout process—four times more than actually reach the final stage; out of the 31.1% of teachers at some stage of burnout only 7.4% are at the final stage. Many fewer teachers using the authoritarian style tell that they manage to overcome their burnout. Of 17.4% of teachers suffering from burnout, 10.9% become totally burned out.

The percentage of teachers using the democratic style of classroom management who reverse the burnout process is very high. This finding can serve as the subject of new research examining why it is the democratic teachers who are so successful in overcoming burnout.

Blase (1982) claimed that it may be that the burned-out teacher has a particular educational outlook that he finds difficult to implement in his class. This claim is reflected in a number of the interviews that I carried out: teacher no. 2 indicated the objective difficulty of so many pupils in a class (forty); This makes it difficult for her to develop a direct relationship with each child. Teachers 3 and 5 noted that the difficulty lay in the age of the pupils, and claimed that it was a difficult age; "they've got all kinds of strange ideas, not necessarily studies." Teachers 6, 11, and 13 also describe their difficulties as based in the pupils themselves, who are not like they used to be; they are impertinent, loud, and have many behavioral problems. Teacher no. 17 blamed his personality and his culture, claiming that he is incapable of reprimanding his pupils and demanding discipline in his class.

In his definition, Cherniss (1980) depicted burnout as reduced worker motivation, as reflected in loss of enthusiasm. This is reflected in teachers in the field, in the teachers that were interviewed, and in those who responded to the questionnaire (see the t-test in the statistical report). Teachers 3, 6, 9, 11, 13, and 18 described this in their interviews.

Maslach & Jackson's (1981) division of burnout factors into physical exhaustion, lack of self-actualization, and depersonalization. These were manifested in the subjects of this study. The burned-out teachers expressed their physical exhaustion from their work, their frustration, and the feeling that they were working too hard. They also found it difficult to understand and to serve their pupils.

However, this study focused on the three basic elements of burnout as described by Pines & Aronson (1981), i. e. physical, emotional, and cognitive burnout. They described physical exhaustion as constant fatigue, general weakness, and lack of energy. Indeed, the examination I carried out revealed these symptoms in all the burned-out teachers. The examination of 196 teachers found no difference in physical exhaustion according to style of classroom management, i. e. authoritarian or democratic. Of the twenty teachers interviewed, ten reported physical exhaustion; five of these were authoritarian, four were democratic, and one had once been authoritarian and was now democratic. Four of the teachers interviewed described physical exhaustion as the only element they experienced (teachers 13, 17, 18, and 20). The rest of the teachers had additional characteristics.

Emotional exhaustion, characterized by depression, hopelessness, and a feeling of being trapped, was described by the teachers interviewed as a feeling of being fed up with their work with pupils, and reported that teaching frustrated them and burned them out; they felt impatience towards their pupils (teachers 2, 3, 5, 6, 9, and 11). Teachers who were found to be burned out by the questionnaires answered the questions describing emotional burnout by stating that they were tired of teaching and that their work with pupils caused them frustration. No difference was found among teachers using authoritarian and democratic styles of classroom management.

The characteristic of emotional exhaustion appeared in 6 teachers out of the twenty interviewed. Of these, four teachers use an authoritarian style of classroom management, and two employ a democratic style. One teacher indicated only emotional burnout (no. 2). Another teacher indicated only physical and emotional burnout (no. 9), and four other teachers indicated all the elements of burnout: physical, emotional, and cognitive (nos. 3, 5, 6, and 11).

Teacher No. 1 was shown to be physically and cognitively burned out, while teacher no. 19 was found to be only cognitively burned out.

The interviews showed that the number of burned-out teachers using an authoritarian style of classroom management was slightly greater than the number of burned-out teachers using the democratic style. Five authoritarian and four democratic teachers were found to be physically burned-out, as was one teacher who had formerly been authoritarian and was now democratic. Four authoritarian teachers and two democratic teachers were found to be emotionally burned out, while three authoritarian teachers and two democratic teachers were found to be cognitively burned out, as was one teacher who had formerly been authoritarian and was now democratic.

The conclusion is that there is no clear burnout characteristic for each style. The liberal teachers were shown as not burned out, but, as I mentioned, the sample was small and not representational.

Arieli (1995) came to the conclusion in his study that the pupils' energy threatens the teachers and is the source of their feeling of vulnerability. Blase's (1986) study also found that the teachers saw pupils as the major source of stress in their work. This is reflected in my study, in which the teachers indicated their difficulty in functioning in the class when there are disciplinary problems with the pupils.

The practical research in the field and my research hypothesis—that differences would be found between the different styles of classroom management in the elements and degree of burnout—was disproved. It turned out that burnout is not an isolated phenomenon characterizing a particular style of classroom management; it affects teachers using all styles of classroom management.

The hypothesis proven by the study was Hypothesis No. 2, that there is a link between the physical health of the teacher, his satisfaction in his work as a teacher, and his personal achievements, and his level of burnout. The healthier the teacher and the more satisfied he is with his work and his professional achievements, the less burned out he will be (see Interviews 4, 7, 10, 14, 15, 16). As his health, his satisfaction level, and his feeling of professional achievement deteriorated, his burnout level increased (see Interviews No. 1, 2, 3, 5, 6, 9, 11, 13, 17, 18, 19, and 20).

The teachers shown to be free of burnout reported enthusiasm in their work, satisfaction with their professional progress and from their good relations with their pupils, and high levels of motivation in teaching and in implementing the theories that they have learned in the field. The teachers who were not burned out emphasized their emotional and cognitive satisfaction in their work with their pupils (see Interviews Nos. 4, 10, 14, 15, and 16).

The teachers shown to be burned out described the beginning of fatigue when they came to school in the morning (Interview No. 5), impatience with the pupils, and the tremendous effort involved in ensuring that all the pupils understand the study material (Interview No. 9); the beginnings of frustration, occasional fatigue, dissatisfaction with their professional progress (Interview No. 19), the beginning of physical exhaustion, the effect of aging and the many years of work on the teacher and his desire for a vacation (Interview No. 20).

The teachers shown to be burned out reported physical fatigue, impatience with their pupils, emotional fatigue, and lack of satisfaction with their professional situation (see Interviews No. 1, 2, 3, 6, 11, 13, 17, and 18).

The phenomenon of teacher burnout is, therefore, dynamic and constantly developing, and can occur in the entire teacher population.

These findings are of great importance for practical applications in the field. They lead us to the conclusion that whatever the educational outlook of the teacher, he will become burned out. The teacher must teach and manage his class according to the educational viewpoints most suitable to his personality. As long as the teacher is not physically fatigued, and is satisfied with his professional achievements, he will not become burned out.

As I have already mentioned, this study has paved the way for additional research on examining the situation of teachers using the democratic style of classroom management who are becoming burned out. This study showed that the number of teachers who manage to reverse the burnout process

is four times greater than those who reach a state of complete burnout. This is the most important contribution of the study, and it indicates that burnout can be overcome. An examination of the factors in this phenomenon will be a breakthrough in preventing teacher burnout.

Research Conclusions:

The study that comprised of interviews held with twenty teachers, and questionnaires filled in 196 teachers. The goal of the research was that each of the elements of the study would support the other.

The following conclusions can be drawn from the study:

1. There is a difference between styles of classroom management, i. e. authoritarian, democratic, and liberal. This is reflected in the teachers' relationships with their pupils, in how order is maintained in the class, and in teacher reactions to undesirable pupil behavior.

2. No significant difference was found in the characteristics of teacher burnout and in the degree of physical, emotional, and cognitive exhaustion in teachers employing different styles of classroom management.

3. The liberal teachers were found to be not burned out. However, the sample was small and not representational.

4. No significant difference was found in degree of burnout between teachers employing the authoritarian style of classroom management and those using the democratic style.

5. Democratic teachers were found more often to be in the process of becoming burned out than were authoritarian teachers. However, they were successful in overcoming their burnout and in reversing it. Thus, we arrive at an important conclusion: The dynamic burnout model relates to the phenomenon of burnout as a dynamic and developing process. The results of the field study show that the number of teachers employing a democratic style of classroom management and suffering some degree of burnout is four times higher than the number of democratic teachers actually reaching the final stage of burnout. This is the subject of a new study that will investigate the phenomenon, which will also present recommendations for reducing the process that leads to complete teacher burnout. This conclusion leads us in turn to another conclusion, that burnout can be overcome, and the burnout process can be reversed.

6. Of all the teachers examined, the number of teachers employing a democratic style of classroom management is the highest. This finding is particularly optimistic in light of Conclusion 5, because it is within the power of a large number of teachers to reverse the burnout process.

The most important finding is that Hypothesis No. 1:

Differences between styles of classroom management—authoritarian, democratic, and liberal—will lead to differences in the degree of teacher burnout was not verified, and therefore, if I hypothesized that a particular style of classroom management would show lower percentages of burnout, I would be able to recommend to teachers that they change their educational outlooks in order to avoid burnout, or at least to reduce it. However, this was disproved. Burnout characterizes all teachers, regardless of the style of classroom management they employ.

The study proved the second hypothesis, i. e. that:

There is a link between the teacher's physical health, his satisfaction with his interaction with pupils, his satisfaction with his professional competence, his achievements in the teaching/learning process, and burnout.

According to the questionnaires and interviews, it would seem that the more physically healthy the teacher is, and the greater his emotional and cognitive satisfaction, the less he will suffer from burnout (see Interviews No. 4, 7, 10, 14, 15, 16). Conversely, the more the teacher's health has deteriorated, and the less satisfaction he derives from his contact with his pupils and from his professional accomplishments, the greater the degree of burnout from which he suffers (see Interviews 1, 2, 3, 5, 6, 9, 11, 13, 17, 18, 19, and 20).

This finding in effect supports the previous finding, i. e. that the style of classroom management employed by the teacher is unconnected to burnout level. The phenomenon of burnout has its own rules, and it affects the entire teacher population with no regard to the style of classroom management used.

Research Recommendations:

In light of the above conclusions from the study, the following changes are recommended in order to reduce or prevent teacher burnout:

The research findings disprove the first hypothesis, i. e. that:

The differences between styles of classroom management—authoritarian, democratic, and liberal—will lead to differences in the degree of teacher burnout.

No clear link indicating a relationship between burnout and classroom management was found. The contribution of the study lies in that it shows that the style of classroom management employed by the teacher, the teacher's educational outlook, and its implementation in the class do not affect the degree of burnout from which he suffers. A teacher can use any of the classroom management styles without fearing burnout.

The study verified the second hypothesis, that:

There is a link between the teacher's physical health, his satisfaction with teacher/pupil relations and with his professional competence, his achievements in the teaching/learning process, and burnout.

The interviews and the questionnaires show that the more healthy the teacher is physically, emotionally, and cognitively, the less burned out he will be—regardless of the style of classroom management he employs.

Every teacher can teach using the style most compatible with his personality and educational viewpoints. This result reinforces the previous finding, that burnout has its own internal laws and that it applies to all teachers. My recommendations will be presented in light of these findings.

An additional important contribution of the study is that despite the fact that no differences were found between style of classroom management employed and burnout level, I did find a certain link between the democratic style of classroom management and teacher's ability to reverse the burnout process. The number of democratic-style teachers in different stages of burnout was found to be higher than in teachers using other classroom management styles, but their ability to reverse the process and overcome the burnout meant that only one-fifth of the teachers in the different stages of burnout became completely burned-out. The number of completely burned-out democratic teachers was no different from the number of authoritarian teachers, but the fact that many more (four times more) democratic teachers who become burned out at all manage to overcome the process leads me to set out recommendations for all teachers using all styles of classroom management on how to reduce burnout level so as not to become completely burned out. The democratic style of classroom management has proven to us, as shown by the study, that this can be done.

* The Ministry of Education should allocate resources for additional research on the reversal of the burnout process in democratic teachers, and should issue recommendations and guidelines for teachers.

* The number of pupils in each class should be reduced.

* Workshops and activities should be held for the teachers in order to increase their awareness of stress and burnout factors.

* Programs should be introduced in order to inculcate skills for teachers to help them handle pressure, and to equip them with new tools for more effective coping in the long term.

* Workshops for improving teachers' professional capabilities should be offered.

* Workshops for solving disciplinary problems in the class, analyzing classroom events, and teaching teachers new responses to these events should be offered.

* Support groups for releasing stress should be organized. Teachers suffering from burnout will be less isolated; this will reinforce their self-image and their will to handle the problem.

* Teacher awareness of burnout as an almost natural part of the profession should be increased, and they should be taught methods of prevention.

* Attempts should be made to change the learning climate. This can be done through the school principal's creation of a supportive and sharing environment, without over-strict supervision, and with a reduction of stress in the school.

* Teachers should be provided with teachers' aides; this will help the teacher no end in handling the pupils in the class, and will reduce stress resulting from disciplinary problems.

* Challenges should be set for teachers in their subject areas, such as coordinating the study track, teacher training, instructing teacher trainees, and the like.

* The teacher should be given maximum independence to organize the class and the study content as he sees fit.

* The school administration should provide positive reinforcement for the teacher, in order to increase motivation to handle pressure in the class.

* An educational environment comfortable for both teacher and pupils should be created, and as many pressure factors as possible should be eliminated, including noise, crowding, inappropriate lighting, and temperatures that are too high or low.

* An attempt should be made to arrange convenient teacher class schedules, without large gaps of time between lessons, and without too many classes too close together.

* Attempts should be made to bring teachers and pupils together, through joint activities and meetings, both formal and informal.

* The school administration should initiate activities in order to increase teacher morale and to improve their positive image in their own eyes and in the eyes of those around them.

Aliza Cohen

DEFINING "SOCIAL DEPRIVATION" IN ISRAEL

According to Elad Peled (1983), the "socially deprived" are the pupil population characterized by "social deprivation syndrome" (Minkowitz, 1969). This syndrome is reflected in three areas: a) scholastic achievements—serious failure in attaining accepted norms; b) scholastic ability—difficulty in understanding, connecting, implementation, and conceptualization; c) motivation to learn—lacking motivation in studies and other intellectual matters. The use of a specific term to define the target population demonstrates the perception upon which this educational policy is based.

The definition used to define a target population is the product of political struggle between different groups in society. The term used for the target population, and the policy for handling it, has changed a number of times over the last five decades. During the 1940's, the target population was perceived as anomalous, at the margins of society—i. e. street children (Brill, 1941). During the 1950's, it was perceived as an immigrant population—the children of immigrants. During the early 1960's, country of origin was added to the criteria of "immigrant"—that is, children of immigrants from Islamic countries.

During the 1960's and the 70's, the target population was viewed through an educational perception that strove to do more than diagnose and label with names such as "underprivileged" and "educationally disadvantaged." The term "socially deprived" was used, which implied that proper action on the part of the authorities could compensate for these children's initial deprivation. In the 1980's, an attempt was made to dissociate the stigma from the concept of "social deprivation", and a different definition was sought. Throughout these years, special note was always made of the fact that the target population was comprised mainly of children of "Oriental origin".

As has been discussed, educational policy is largely the result of the interaction between the political power of the dominant group and the target population, and of society's current culture and ideology. A diagnosis of a population of educationally disadvantaged pupils, who fail to attain the accepted level of scholastic achievement, is a clear and unequivocal act. However, during the 1950's, this phenomenon was associated with immigration — that is, the backwardness of these pupils was attributed to their being immigrants, a phenomenon common in countries with high immigrant populations. Therefore, it was thought that regular immigrant absorption processes would eventually resolve educational problems, as was the case in other countries.

During the early 1960's, as in the previous decade, the definition based on time in Israel was still accepted, along with an indication of the immigrant child's origin — i.e. "children of immigrants from Islamic countries", "from Asia and Africa", or, sometimes, "children of immigrants of Oriental ethnic origin". It was during the mid-1950's that the term "socially deprived" was first used. According to Elad Peled's interview with M. Smilansky (22-10-1978), this term was first formulated in 1956 by