

**11. ON ONE POSSIBLE INTERPRETATION OF THE
INTERPRETATIONS OF THE AUTHORS OF THE TORAH OF THE
PLANS AND ACTIONS OF THE CREATOR**

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Introductory remarks

§1. The epistemology of the authors of the Torah

Analysis of holy books which form the foundation of modern religions is of great interest since these books present rather holistic ideologies (Weltanschauung). They seek to cover all aspects of human existence, from the most fundamental questions of the creation of the universe to the problems of daily social life.¹

The ontology of holy books breeds much controversy. Rationally inclined people tend not to accept these books and the stories presented in them. These books are viewed as figments of imagination which are often in contradiction with modern scientific theories. There have also been attempts to bring these books in accord with modern science, and not only certain isolated events described in these books but also the various legends of creation of the world, the people, etc.

Here, I will not concern myself with the ontological aspect of holy books as such. I want to examine, disregarding the "truthfulness" of the text (whatever the criterion of truth may be), the epistemological principles which guided the authors of these books, i.e. the epistemology of the creators of legends and stories and social institutions, as well as of those who collected them all together in holy books.

I want to note right away that in speaking of God's actions I shall always mean the way they were interpreted by the authors of Holy books.

In view of large number of holy books each of considerable size, I chose to examine one such book, the Old Testament and its core section - the Torah (Pentateuch) in an attempt to reconstruct the methodology of the authors of these texts. At the same time, I hope that if my ambitious endeavor is at all successful the methodological principles I have discovered can be beneficial in the analysis of other holy books, perhaps in their entirety. All these considerations can be grouped into an area of research under the title of "The epistemology of the creators of holy books."

I have a strong suspicion that the basic epistemology of the authors of the Torah was rooted in the indeterministic vision of the universe. This does not

¹Eliade, M., Gods, Goddesses, and Myth of Creation: A Thematic Source of the History of Religions. New York: Harper and Row, 1974.

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preclude the extreme case of deterministic vision of certain isolated events. Conversations with a number of scholars-proponents of the classical approach to the Torah from deterministic perspective confirmed my supposition. As already noted in the introduction, "classicists" thought I exaggerated the significance of individual paragraphs in the Torah which in fact contradict its overall design so their inclusion in the Torah is a result of an oversight on the part of its redactors. In actuality, the classicists viewed Torah from a deterministic perspective. My concept entailed a different idea: that essentially spontaneous indeterministic vision formed the foundation of the epistemology of the authors of the Torah. This approach brings a holistic vision of God's indeterministic conduct and regards God as a Limited and Self-perfecting creative entity (rather than a static omnipotent, omniscient, and omnipresent entity given a priori). It gives a new interpretation to such events in the Torah as the creation of the universe, relationship between God and Man based on parity, etc.

Plunging into speculative domain, one could even advance the following reason for such indeterministic vision of the universe and Man's place in it on the part of the authors of the Torah. At the time Torah was written - 2500-3000 years ago, the impact of the right and the left hemispheres of human brain on the thought processes of man was very different than it is now. Perhaps the last 3000 years, especially after the advance of Aristotilean logic, witnessed the enrichment primarily of the left hemisphere; the right hemisphere was enriched too, but perhaps to a lesser extent.

So, the thrust of my investigation of the Torah will be to understand the epistemology of the authors of this document which falls outside the scope of the strictly program-like method.

§2. Ten questions on the Torah.

My analysis of the epistemology of the authors of the Torah begins with the formulation of ten questions. All of them have a direct bearing on the basic problems raised in the Torah. With the possible exception of the sixth question which has rarely, if at all, been brought up, these questions are common and generally well known.

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First question: "Why God does not state in detail his program of creation and development of the universe but rather acts by stages (substages) each time announcing the purpose of each stage (and only of some substages)?"

Being omnipotent, omniscient, and omnipresent God as a creator could be expected to possess an elaborate program of development.

Second question: "What global criterion of optimality guided God as the creator of the universe?"

It seems that every creator wants to do something to the outmost (maximum or minimum), so we can assume that God strives to do the same. This is precisely the view held by some theologians as well as some great physicists who believed God to be guided by the principle of least action in creating the universe.

Torah (as well as other parts of the Old Testament) does not provide an explicit answer to this question.

Third question: "Why is God willing to engage in a struggle with Man (Jacob) and accept criticism from Man (Moses)?"

It would seem that an omnipotent and omniscient God possessing intellectual and physical powers much superior to Mans would have no trouble suppressing individual Man in any respect.

Fourth question: "Why God does not create the universe all at once, why does it take Him six days?"

Omnipotent, omniscient, and omnipresent God could create the world in a flash which, in fact, is the way creation is described in some religions. Torah presents creation of the world as a process of some duration, not condensed.

Fifth question: "Assuming creation of the universe required several days why did God not reduce the number by proceeding in a parallel manner?"

Indeed, it is evident from the text that the work of the first "two and a half days" - division of light from darkness, creation of heaven, firmament, and water, had to be carried out in certain order since the existence of one presupposes that of the other. But the creation of the sun and the moon on the fourth day could be done alongside the creation of grass, herb, and trees accomplished on the third day.

Sixth question: "Why was it necessary for God to evaluate the results of His work so frequently during the first six days?"

Being omniscient, God should have known the results of his actions beforehand: why exert effort to choose and evaluate what has been created if it is

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known that nothing but what was planned was created. Our daily lives and the operation of the firms reveals that a control system reflects either a lack of certainty as far as materials, technologies, equipment, and labor corresponding to the planned standards or the difficulty of stipulating all the conditions to be imposed upon the inputs and their transformation in order to ensure certain output.

Seventh question: "Can a Creator with the power to foresee everything destroy His own creations?"

According to the authors of the Torah, God inflicts the flood (Genesis, 6:17), destroys Sodom and Gomorrah, Admah and Zeboim (Deutereonomy, 29:23). The standard explanation for the destruction of Man during the course of the flood and the inhabitants of these cities states that people, having free will, chose to act in a way unacceptable to God and were punished for it. But animals and plants also suffered destruction and the earth was flooded with water? These objects had no free will, did not wallow in sin, and could have been put by the Creator to other purposes.

Eighth question: "Why God seeing the wickedness of the serpent and distinguishing between clean and unclean flesh in general chose to tell Noah to take all the animals along and save them from the flood in order that they may multiply afterwards?"

This question raises two issues. One concerns the creation of the serpent and other unclean flesh with an omniscient creator knowing everything ahead of time. The second involves the preservation of the unclean animals after their unclean essence became apparent.

Ninth question: "Why does not an omnipotent, omniscient, and omnipresent God prevent evil? Who (what) is responsible for the evil in the world?"

Tenth question: "What prompted God to impose unconditional demands upon the conduct of the Jews including the 10 commandments assigning rewards and punishments accordingly while at the same time making these demands concrete by making them situation-specific with the fulfillment and violation of these rules carrying respective rewards and punishments?"

I will attempt to resolve these ten questions below summarizing my results in the conclusion.

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Chapter 1. God's Limitations and Self-perfectibility

§1. Incompleteness and imperfectness of the created universe and its Creator

As a point of departure, it should be noted that the authors of the Torah regarded the creation and the functioning of the universe as an incomplete creative process. One definite conclusion we come to from reading the Torah is that God aspires toward development of the universe, not idleness or even maintaining the status quo. God's creation of the world and His participation in the workings of the life on earth all confirm this point.

At the same time, God is portrayed as an evolving Creator: God continues to develop during the course of his creative process.

General considerations lead us to infer the following four combinations between the degree of completeness of the Creator and the created universe (provided the scale is a dichotomy).

Table 1. Combination of God, the universe, and their degree of completeness.

Universe	God	
	Finished	Unfinished
Finished	Islam	Budhism
Unfinished	Christianity	Judaism

Within the framework of this typology, Judaism can be interpreted as a religion which fuses together the concept of an incomplete universe, i.e. a universe in which new objects appear and the notion of an evolving Creator. Perhaps Islam represents a religion which portrays the universe as complete so it can only be discovered while no new things can be created or constructed; God is complete as well. Christianity depicts an incomplete universe but a complete God. Perhaps Buddhism by deeming the external world complete regards God as evolving.

So what were, according to the authors of the Torah, the methods employed by God in the creation and development of the world? Proceeding from the

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assumption that God is omnipotent, omniscient, omnipresent, etc., one would expect Him as a creator having an absolute goal to create instantaneously a completely ordered, harmonious, and perfect world. And not necessarily a static world, but even a dynamic one. This world is not required to operate as a stationary process, it could change. Nevertheless, the above mentioned features of this world would keep these changes within the limits of dynamic equilibrium, i.e. the relative weights of the parameters defining development (transitions from one stationary process to another) are kept constant.

So we would expect the authors of the Torah to depict God as possessing a totally complete and consistent algorithm of creation which He uses in the course of implementing his complete and clear-cut program for achieving an absolute goal. As a creator, He foresees everything which people intend to do or which might happen in nature. Even if unable to prevent certain disturbances, God at least has prior knowledge and can thus prepare for them.

It seems to me, and I will try to substantiate my point of view with a more concrete analysis, that the concept of creation of the world which the authors of the Torah had in mind is based on the metaphysical principles of an incomplete and imperfect universe, of an ongoing process of development during which God continues to self-perfect inventing new and modifying old methods of creation. This approach does not exclude the possibility of a locally perfect world, i.e. of completeness and consistency of some of its individual parts.

I find the metaphysical assumption of an incomplete and imperfect universe to be very beneficial in establishing the epistemology of the authors of the Torah. I acknowledge the value of the opposing metaphysical concept, for instance one proposed by Leibnitz, that the world created by God is perfect. A scholar working within this metaphysical framework strives to reveal this perfection. This concept lead a number of theologians-scientists to develop physical theories which turned out to be quite creative, at least to an extent. The mechanics of the motion of the planets worked out by the great French scientist P. Maupertuis is a case in point. He held the celestial world created by God to be perfect and assumed that God was guided by the criterion of optimality based on the principle of least action. Subsequent mathematical development of this theophysical optimization concept

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had a profound impact upon the discovery of the extremal principle of variational mechanics.²

So, I assumed that the basic metaphysic guiding the authors of the Torah was rooted in the concept an ongoing creation of an imperfect world by an imperfect creator.

According to the authors of the Torah, God is omnipotent. There is a passage in the Torah where God speaks about himself to Abraham: " ... I am the Almighty God..." (Genesis, 17:1) or "Is any thing too hard for the Lord?" (Genesis, 18:14). Nevertheless, the text of the Torah indicates that its authors did not regard the power and the knowledge of God as being absolute and fixed once and for all. The greatness of God lies in his ability to expand his knowledge and might as well as morality. He accomplishes the task in two ways: by creating various structures which help him in achieving this end and by self-perfection. Had the authors of the Torah had a different perception of God's creation there would have arisen a number of paradoxical questions starting with the first pages of the Torah. Some of them - the ten questions have been put forth already. We can begin to outline a scheme to resolve these seemingly paradoxical questions once we assume that the authors of the Torah possessed a largely indeterministic method of thinking. It was an unconscious, spontaneous, implicit method on their part, concealed within their intuition. Still, as I have already noted, I believe they did possess this method of thinking.

I now want to consider the two ways for God to augment his might, knowledge, and morality.

§2. Expansion of God's power by external means.

All other conditions being equal, we can try to link the effectiveness of the power expansion by the Creator with the capacity of the newly created objects to incorporate and quickly modify their inner goal. Here, our investigation of the problem stands to gain from the taxonomy of systems elaborated by R. Ackoff³. In keeping with his classification we can distinguish between machines, organisms, and goal-oriented systems. Deductive derivation of these systems reveals that their

²Polak, K, The Extremal Principle in Mechanics. Moscow: Nauka, 1951.

³Ackoff, R., Creating the Corporate Future. New York: John Wiley and Sons, 1981.

differences stem primarily from the source of the goal introduced to the system and the flexibility of this goal. To specify these parameters: a) the origin of the goal introduced into the system can be external or internal; b) the degree of goal's flexibility can be expressed by such linguistic variables as fixed, changing slowly, changing quickly, or changing rapidly. This classification generates eight types of systems including the three types proposed by R. Ackoff.⁴ The entries of matrix-table 2 include examples of these types of systems.

Table 2. Typology of systems

Source of Goal	Goal's changeability			
	fixed	slow	average	fast
External	Special machines	Specialized machines	Universal machines	Superuniversal machines*
Internal	Living organisms with behavior unchanging	Living organisms with slowly changing behavior	Man and angels	Systems possessing artificial intelligence
*These can be machines constructed from universal blocks which can in turn be used to create new machines.				

Some of these systems are present in the Torah: they are all intended to expand God's power. Let us examine these systems in order of decreasing "power".

First of all, there are systems more perfect than common people. Of course, there are angels. They appear before Abraham to tell him of the miracle of birth of his son by old Sarah (Genesis, 18). Angels appear before righteous Lot to save him and destroy the inhabitants of Sodom and Gomorrah (Genesis, 19). Angels also come to Balaam in order to set him on the right path (Numbers, 22:21-38). Nevertheless, Torah does not mention any of the ways of creating these superhuman objects. Then there is the special group of people designated in the Torah - the sons of God (Genesis, 6:2,4). Although there is no mention of their intellectual abilities, Torah states that common women had born giants from them (Genesis, 6:4).

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One of greatest "amplifiers" - vehicles of God's power is, according to the authors of the Torah, Man created in God's image, after His likeness (Genesis, 1:26). It is precisely and primarily Man who is used by God to carry out His plans of development of the world. God puts Man above all other living creatures subordinating them to Man.

When God created man and woman, He blessed them and spoke to them:

"... Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.

And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed; to you it shall be for meat.

And to every beast of the earth, and to every fowl of the air, and to every thing that creepeth upon the earth, wherein there is life, I have given every herb for meat: and it was so." (Genesis, 1:28-30).

But Man was only able to rule over some segment of the God created set of objects: these were the living organisms known at that time - cattle, fish, etc. At the same time, inorganic matter - the sea, the sun, the moon, the stars and the sky - was not subservient to Man.⁵

Mans relationship with the inorganic world is crucial for him because of its impact on his life. If there was complete harmony among all living beings here on earth or even if Man was able to tame the earth He would still be threatened with destruction coming from the depths of the universe.

In spite of Mans limited ability to tower over the environment his role is important enough for God to establish parity with some of the Men, the chosen ones, and establish a covenant with them.⁶ According to the covenant, God agrees

⁵Subservience of the inorganic world to Man could manifest itself in Man taking it to be his property and being able to influence it. But still Man no influence over the sun, the moon, the stars, or the sky (only over the land and the sea).

In de Saint- Exupery .A., Little Prince, 1943, one of the characters - a businessman, pretends to own the stars. But he has no influence over them so his control is completely illusory. The following passage reveals the attitude of the Little Prince towards the businessman who owns the stars:

" ' I myself own a flower', he continued his conversation with the businessman 'which I water every day. I own three volcanos, which I clean out every week/for I also clean out the one that is extinct; one never knows/. It is of some use to my volcanos, and it is of some use to my flower, that I own them. But you are of no use to the stars...' "(p.47).

⁶In my article, "Plan, Market, and Measurement", Acta Slavica Iaponica, Vol. 2, 1984, pp. 1-24, the analogy of the contract between an omnipotent God and Man was extended to some sociological phenomena. These analogies explored the possibility of contracts between the

to multiply the people of Abraham, to make him the progenitor of many peoples, and to give him and his descendants all of the land of Hanaan forever; a Jew, on the other hand, must obey the testament handed down by God demanding that every Jew be circumcised.

A contract between an all-powerful God and Man could turn into a useless formality used exclusively for demagogic purposes.⁷ It seems two basic preconditions are necessary in order for the covenant between God and Man to have any meaning: God must admit to his own imperfectness, on the one hand, and to the greatness of Man, on the other. In other words, the latter must be able to act independently and even more importantly have the capacity to create independently. Under these circumstances, it may be prove more expedient for God-Creator to grant Man basic autonomy while imposing upon him only some conditions of development upon him.⁸

In other words, authors of the Torah judged parity between God and Man to be a more perfect system of operation of the world. God increases his overall power over the universe by delegating control over parts of it to the people. A more straightforward scheme of managing the world would be based on the assumption that God possesses absolute power and so has no need to share this power with anyone.

ministries and the subordinated plants within the framework of a centralized economy such as the Soviet economy. In that article, I wrote that the God of the Old Testament concludes a contract with Man because He, God, is in competition with the Gods of other peoples and seeks to win followers by concluding a contract. In the light of the above discussion, this point of view seems to be an oversimplification. The factor of competition among gods may play a role in the conclusion of a contract between God and Jews, but not a decisive one.

⁷For example, in the Soviet Union each year the administrative body of a factory makes a collective agreement with the trade unions representing the interests of the workers. But this agreement is a meaningless formality since the trade unions are completely controlled by the government, in this particular case represented by the party organization and the management.

⁸Just this kind of phenomenon is occasioned in market economies by interactions of giant corporations and small-scale companies which are the giants' subcontractors. Theoretically, a major firm could eliminate a small entrepreneur by either buying him out or driving him out of business. It does not do it though, because it does not pay a major firm to have its top management bother about a small-scale operation - it's best left to the care of individual entrepreneur. Recently it has also become clear that a major firm is sometimes better off leaving R&D of new products to small independents because of a potentially reduced efficiency of research effort in a multi-level hierarchical corporation.

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Parity between God and Man in concluding the covenant would be further reinforced if some representatives of both sides were comparable in power, both physical and intellectual. Indeed, authors of the Torah provide examples of parity between God and Man.

First of all, the legend of the clash between Jacob and God (Genesis, 32:24-32) testifies to the notion of the physical power of Man being comparable to that of God. In this struggle God was unable to overcome Jacob, merely "...touched the hollow of his thigh; and the hollow of Jacob's thigh was out of joint, as he wrestled with him." (Genesis, 32:25). And God spoke to Jacob "...Thy name shall be no more Jacob, but Israel: for as prince has thou power with God and with men, and hast prevailed." (Genesis, 32:28). "And Jacob called the name of the place Peniel: for I have seen God face to face, and my life is preserved." (Genesis, 32:30).

Whatever the interpretation of this contest between God and Man may be (an angel, not God doing the battle) Man turned out to be comparable in his physical strength to a force greater than himself.

Comparability of the intellectual powers of God and Man is in general affirmed by the authors of the Torah in their description of Adam after he tasted the fruit from the tree of knowledge: Adam becomes intellectually equal to God. The sole difference between them is that Adam is mortal. And God expelled Adam from the Garden of Eden so that he could not taste from the tree of life and become immortal.

"And the Lord God said, Behold, the man is become as one of us, to know good and evil: and now, lest he put forth his hand, and take also of the tree of life, and live for ever:

Therefore the Lord God sent him forth from the garden of Eden..." (Genesis, 3:22-23).

The authors of the Torah also tell of a number of concrete cases testifying to the comparability of the intellectual powers of God and Man. When God becomes angered by the disobedience of the Jewish people during their stay in the desert and decides to destroy and replace them with a new nation originating from Moses, Moses protests and persuades God to preserve the people.

"And the Lord said unto Moses, How long will this people provoke me? and how long will it be ere they believe me, for all the signs which I have shewed among them?

I will smite them with the pestilence, and disinherit them, and will make of thee a greater nation and mightier than they.

And Moses said unto the Lord, Then the Egyptians shall hear it, (for thou broughtest up this people in thy might from among them;)

And they will tell it to the inhabitants of this land: for they have heard that thou Lord art among this people, that thou Lord art seen face to face, and that thy cloud standeth over them, and that thou goest before them, by daytime in a pillar of a cloud, and in a pillar of fire by night.

Now if thou shalt kill all this people as one man, then the nations which have heard the fame of thee will speak, saying,

Because the Lord was not able to bring this people into the land which he swore unto them, therefore he hath slain them in the wilderness.

And now, I beseech thee, let the power of my Lord be great, according as thou hast spoken, saying,

The Lord is longsuffering, and of great mercy, forgiving iniquity and transgression, and by no means clearing the guilty, visiting the iniquity of the fathers upon the children unto the third and fourth generation.

Pardon, I beseech thee, the iniquity of this people according unto the greatness of thy mercy, and as thou hast forgiven this people, from Egypt even untill now.

And the Lord said, I have pardoned according to thy word..." (Numbers, 14:11-20).

The creation of such systems as fauna and flora that have internal goals but change slowly is also intended to increase God's power. But this is accomplished mainly through Man since fauna is placed under Mans control, Man is its master (Genesis, 1:26-28).⁹ Flora is in turn meant to serve as food for people and animals (Genesis, 1:29-30).

We should note that the Torah makes certain qualifications regarding this principal, allowing animals to behave similarly to people. For example, animals and people can use a mutually comprehensible language to discuss certain problems. These problems may be of major importance touching upon God's deeds in the most direct way.

The serpent, using its ability to communicate with Man, talks Eve into breaking God's taboo on eating from the tree of good and evil thus diminishing God's power (Genesis, 3:1-5).

⁹Man changes animals primarily through domestication. Another way is cross-breeding. Torah's attitude toward the various methods by which Man changes the animal kingdom is another question.

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At the same time, by dealing with man directly, animals can play a very positive role by serving as intermediaries between God and Man. Ability to communicate with Man allowed the ass of Balaam to attract its master's attention to the angels sent to him by God (Numbers, 22:23-24).

As far as systems whose goal of development is introduced from the outside, Torah only speaks of those having a "fixed mechanism" of operation. These include such basic, unchanging, non-organic formations as earth, heaven, sea, and celestial bodies. The purpose of man-made objects such as tools, clothing, shelter, etc. is not only assigned by Man, but can be implemented only through Mans direct use of them; i.e. even the external goal assigned to these objects by Man cannot be directly implemented in the object as such. In machines and other mechanisms created by Man following the period described in the Torah, this goal is to some extent implemented in the structures themselves. This external goal incorporated into the object can change within a certain range depending on the structure of the mechanism.

In the extreme case, development of various devices can lead to the creation of systems better equipped to achieve external goals assigned to them by Man than Man himself.

Tracing the theory of evolution we can assume that Man is not the crowning or the end point of development; and just as Man evolved from an ape, so a new specie, a specie originating from Man, might also appear.

These are precisely the thoughts Nietzsche puts in the mouth of Zarathustra in his speech to the people:

"I teach you the overman. Man is something that shall be overcome. What have you done to overcome him?"

" All beings so far have created something beyond themselves; and do you want to be the ebb of this great flood and even go back to the beats rather than overcome man? What is the ape to man? A laughingstock or a painful embarrassment. And man shall be just that for the overman: a laughingstock or a painful embarrassment. You have made your way from worm to man, and much in you is still worm. Once you were apes, and even now, too, man is more ape than any ape.

" Whoever is the wisest among you is also a mere conflict and cross between plant and ghost. But do I bid you become ghosts or plants?"

" Behold, I teach you the overman. The overman is the meaning of the earth. Let you will say: the overman shall be the meaning of the earth!"¹⁰

A new specie superior to Man does not have to be created based on the substratum of Man, i.e. based directly on mans genetic code. It can be created by Man outside of himself as an artificial system.

Two questions arise in this respect: 1) is an artificial system capable of formulating its own goals; 2) can Man assign goals (constraints) to this system so that the "side effects" of its operation would not cause him too much suffering.

There is no definite answer to these questions. People with the so called western system of values continue to develop an artificial system capable of being superior to Man. They assume the point where irreversible processes, from the standpoint of human well being, might start to take place is still very remote. In this sense, disciples of western civilization, no matter what local benevolent goals they might have, are in a sense globally following the teachings of Zarathustra:

" What is great in man is that he is a bridge and not an end: what can be loved in man is that he is an overture and a going under." ¹¹

So, in principle, Man created by God in order to increase God's might can increase his own, human power and eventually create a force superior to Man and augment the power of God at the same time. But these considerations fall far outside the scope of the Torah which limits Mans development to the growth of his own power and thus the power of God.

§3. God's self-perfection.

Let us now consider another method for God to increase his power: through self-perfection, greater ability to encompass the global world.

The process of self-perfection in the methods of creation can be represented schematically in the following way:

1. There exists an image of the desired outcome, but this image defies evaluation until a certain stage of its implementation is achieved.
2. It is possible to judge the value of the image in question even before its realization, but it is not known whether the image can actually be attained.

¹⁰Nietzsche, F., Thus Spake Zarathustra. New York: The Modern Library, 1976.

¹¹Ibid, p.127.

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3. The fact that the desired image can be attained with the result basically corresponding with the desired one, does not mean that afterwards everything that has been thus brought into existence will be judged positively. Strictly speaking, since the knowledge one possesses is limited at each moment of time during which the creation, implementation, and utilization of the image take place, it is unclear whether a given creation will have a positive or a negative impact in the distant future.

4. Uncertainty in the overall evaluation of the created objects causes them to be modified or even destroyed in the course of development.

So the process of creation is not smooth or monotonic. Development proceeds in an oscillation trajectory: a drastic change in one direction is followed by counteraction stabilizing the process by means of a feedback mechanism. Oscillatory development may have a very profound basis in nature if we assume the presence of threshold states which must be overcome in order for something new to be created. This process may in turn call for such strong "jolts" as to not only change a given structure but destroy "neighboring structures" which could, in principle, be useful for further development. So, in spite of their rarity oscillatory processes could, under certain conditions, be more efficient than the monotonic ones since the latter sometimes tend to unfold very slowly.¹²

I want to illustrate these ideas with respect to God's self-perfection as depicted in the Torah.

According to the authors of the Torah, in the beginning God is portrayed as a creator who is not completely certain that the results of his actions will agree with the desired outcome. God has to carry out part of the plan sufficient to judge the overall result, i.e. on the basis of one part, God makes a final decision whether to single out his creation as an independent entity.

¹²Analysis of algorithms for solving optimization problems based on monotonic or oscillating (asymptotic) convergence suggests new ideas for determining the performance of different algorithms under different conditions.

Oscillating processes of development occur relatively frequently in history. In order to change the existing order and encourage people to take drastic measures and take sacrifices, it often becomes necessary to make more changes than would be advisable under an evolutionary approach. Such situations are primarily characteristic of revolutions. A revolutionary period accompanied by the destruction of many institutions can be replaced by Thermidor which means nothing else than a partial return to the old regime. As the human race matures, it creates social systems which insure development avoiding at least drastic oscillations.

The description of the first day of creation serves as an example.

"And the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters.

And God said, Let there be light: and there was light.

And God saw the light, that it was good: and God divided the light from the darkness.

And God called the light Day, and the darkness he called Night. And the evening and the morning were the first day." (Genesis, 1:2-5).

The depiction of subsequent days of creation can be interpreted in terms of God becoming more "educated" and more capable of transforming his plans for a given period of time into independent entities. (Here, a given period may represent a day or part of a day). Indeed, in the beginning of the period God states what must be done and by the end of the period the task is completed.

According to the authors of the Torah, although God completes whatever He has set out to do for that day (part of the day), He is not certain that what has been created will completely conform to what He had in mind. Therefore God must evaluate his work at the end of the day (part of the day). I shall elaborate on this point below.

Even though at the stage of creation of the world results of God's work always conformed, in His own judgement, to His intentions after the creation of the world the situation changes drastically. God discovers that much of what He has created can be of use in the future but that some things are bad and must be destroyed. This indicates that the authors of the Torah thought of God as not being able to know everything in advance and allowed events unforeseeable by God to take place. By responding to these unforeseen events and erasing them God improves the world and at the same time He perfects his methods for improving the world.

This practice can be interpreted as God eliminating undesirable, unforeseeable outcomes arising in the course of development of the universe, and not as God correcting his mistakes. Indeed, the notions of a 'mistake' and an 'unexpected' outcome are quite different. A mistake presumes that the method of development must be known to the creator. But because he does not know it or forgets it, his actions, as a rule, lead to negative consequences (positive results produced by mistakes, i.e. violations of the method, are rather rare). An unexpected outcome means that the creator has no way of knowing the consequences since there

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was no method for determining the best course of action. By reacting to unexpected outcomes, the creator expands his knowledge and ability to create more sophisticated methods of action in the future.

This approach sheds new light on the story of the flood as told in the Torah. According to its authors, the discovery of 'badness' in the conduct of many people could represent an unexpected outcome for God. He repents creating Man and animals and unleashes a flood (Genesis, 6:6-7). God bears down upon the life He has created with all his destructive power channeling his constructive force to saving the righteous Noah, his family and animals. (Genesis, 6:8,17-22, 7:1-24, 1-19).

The destruction inflicted upon the world by God was so great that it made him think of what He has done, look deeper into the motives behind human behavior and to change his own behavior in the future.

This point is explicitly stated by the authors of the Torah:

"... and the Lord said in his heart, I will not curse the ground any more for mans sake; for the imagination of mans heart is evil from his youth; neither will I again smite any more every thing living , as I have done." (Genesis, 8:21).

And to make good of his promise God establishes a covenant with Noah and his descendants. (Genesis, 9: 8-17).

The point I want to stress is that authors of the Torah did not think of God's fairness as a static category instilled in God to the limit. Initially, God is less fair or, more precisely, his actions are more arbitrary because He does not realize his limitations and the possible consequences of his actions. God's moral stature grows as He accumulates experience and becomes conscious of his actions. Indeed, authors of the Torah emphasize that following the flood God, before committing major destruction, discusses the expediency of his plan with people in order to prevent injustice. I mean the conversation with Abraham regarding the destruction of Sodom and Gomorah (Genesis, 18: 17-33) and with Moses regarding the Jewish people wondering from Egypt (Numbers,14: 11-20).

Keeping this in mind, let us examine the nature of the judgement "good" attributed by the authors of the Torah to God as He evaluates his work in the first six days. How could it happen that some of the things judged as being "good" by God during the period of creation later turned out to be largely bad? The simplest explanation: God's judgement was based only on the immediate present since He

had no knowledge of the future and could not have foreseen the consequences of his actions. He was still omnipotent in a sense of being able to correct the unforeseen results of his actions.

A somewhat more elaborate explanation could be based on the assumption that evaluation of the results is probabilistic in nature. Even if the authors of the Torah had an intuitive notion of probability, previous experience for determining the frequency of a given event would be required in order to make this sort of judgement. But God probably lacked this experience because He was creating the world for the first time and there is no hint of Him having any previous experience in creating other worlds.

Still, if the authors of the Torah regarded God as having creative possibly immanent power, i.e. independent of any previous experience of creation, then it would allow Him to create structures which might have a positive bearing in the future without knowing all the details of their future activities. In support of this claim, God, according to the authors of the Torah, created, preserved, and developed a manifold (see next chapter). In particular, qualitatively God preserved everything He created: the only changes made were in the proportions between the animals (the flood changed the ratio of clean and unclean animals) as well as people (for example, only Noah's lineage was saved).

§4. The direction of God's creative activity: growth of negentropy.

Assuming the Creator of the universe is limited and at the same time the system possesses certain degrees of freedom in the indefinite future, a question as to the mechanism of selection from a set of available alternatives arises.

Generally speaking, a dynamic system with any degrees of freedom must select a method of development. The decision making mechanism can be based on either one of the two opposite principles: the principle of randomness or the principle of an omniscient Creator; in the second case, the intentions and the potential of the Creator are known only to himself.¹³ As we know, extremes often

¹³The presence of the Creator is, in principle, compatible with a decision making mechanism based on chance. The point is that a random mechanism may perform better in some cases than an ordered one. For instance, in mathematics some algorithms for finding optimal solutions employ the Monte-Carlo method in conjunction with rigid procedures which lead to a monotonic but slow progress in the value of the objective function to be optimized.

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tend to merge: in both cases Man is unable to formulate any rational hypothesis as to the structure of the mechanism of creation.¹⁴

The possibility of uncovering certain order in the creation of the universe (still an ongoing process) raises the question of the criterion used in selecting a particular alternative from the ones available within the constraints of the system. Formulation of such a principle was examined in part 1 of the book. I implore the reader to look over that chapter since the present chapter employs many definitions introduced in part 1. Based on the definitions from part 1 I shall consider some feasible interpretations of the criterion of development of the universe which perhaps guided the authors of the Torah.

In dealing with religions, we should distinguish between the criterion of development as it pertains to God and as it pertains to people. What I mean is that God has goals of his own different from those of the people. The interests of the people are just one particular aspect of the overall process of development of the universe carried out by God.

I know of no religion which states God's criterion of development explicitly. What distinguishes religions (just like secular ideologies) is primarily the way the criterion of development is formulated with respect to the people. Differences among religions also crop up when we reconstruct the criterion used by God to develop the universe. Here, my attempt is limited to the reconstruction of the criterion of development as possibly understood by the authors of the Torah.

Inquiring into Torah's holistic depiction of God as a creator, two things impressed me most. First, lack of a final, global goal on the part of the Creator (in a sense of a final state of equilibrium toward which the system should move). Second, God does not assign any final, global goal to the people. In other words, the process of creation lacks any eschatological structure.

Nevertheless, absence of a global goal as a state, i.e. lack of goal-oriented telological approach in no way implies that God's actions are of random nature (same is true of the behavior of the people). We find an explicit statement in the Torah of the need for God to have a global, ordered and directed course of action.

So, what exactly did the authors of the Torah regard as the purposefulness of God's creation? First and foremost, the idea of increasing variety and its order; in

¹⁴This is the case in biological science with respect to creationists and classical Darwinian doctrine of evolution with the emphasis upon random mutations.

terms of definitions introduced in part 1 - the growth of negentropy. There is reason to think that authors of the Torah viewed the aesthetic criterion which is based on increasing diversity of objects as well as their level of organization as the criterion used by God in creating-developing the universe. Now, I would like to elaborate upon this concept with reference to two 'sections' of the Torah.

Hypothetically, the Torah could be divided into two unequal sections. The first section, which is the smaller of the two, includes the first two chapters of "Genesis". It is primarily devoted to the description of the rapid growth of the set of objects, i.e. the creation of the basic structures of the universe. The problem of organizing this diversity in the course of its development is left largely unresolved. The second part which which comprises most of the Torah (and this holds equally true for The Old Testament as a whole) is primarily devoted to designing mechanisms of organizing this diversity of objects; here, extensive growth prevails over intensive development.

Authors of the Torah were quite unambiguous in distinguishing the events described in these two sections. There is a break after the first six days of creation characterized by the intensive development of the manifold. Thereafter, the emphasis shifts to the organization of this diversity and its extensive growth.

"And on the seventh day God ended his work which he had made; and he rested on the seventh day from all his work which he had made

And God blessed the seventh day, and sanctified it: because that in it he had rested from all his work which God created and made." (Genesis, 2:2-3).

This interruption signifies a transition from a period of mostly intensive development to a period of organization and extensive growth of the created diversity. This sort of separation of events into two stages proposed by the authors of the Torah - the stage of creation of the universe and the stage of its operation, is reminiscent of the distinction made by the medical scholars between anatomy and physiology. Many other fields witness the same classification. It reflects an attempt on the part of the scholars to separate the formative stage of various material structures from the mechanisms of operation of the aggregate. Anatomical structures are relatively more stable, so their segregation from the physiological ones makes a lot of sense from the temporal point of view. This isolation of "anatomy" and "physiology" is not totally sound if we view the process of development in its entirety - a process which witnesses new structures being formed. Here, physiology is not reducible to the preservation of the existing structures but surely incorporates

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their development as well as the creation of new structures. Moreover, an approach which combines "anatomy" and "physiology" allows us to understand the distribution of resources necessary to maintain the existing system as well to create new structures.¹⁵ This perspective on the problem gains significance once we recall that the process of creation of new basic structures, a process characteristic of the creation stage, is still going on. The process may be of random nature or it may even be directed by God. For now this distinction is not important. What is important is that these processes are not under Mans control. The structures which arose due to these processes are different from those created by Man. There are plenty of examples of structures belonging to the first category: spontaneous birth of new stars, viruses, etc. Discovery of these phenomena owes itself to a broader and deeper understanding of the observable world using sophisticated man-made instruments. But limited to his innate abilities to directly observe the world over a time span short enough to be within his comprehension, Man has indeed not discovered any new structures. Therefore the created structures seemed rather sufficient and stable for the functioning of the universe.

¹⁵Katsenelinboigen, A., Ovsienko, Iu., Faerman, E., Methodological Problems of Optimal Planning of Socialist Economy. Moscow: CEMI of the Academy of Science of the USSR, 1966.

Chapter 2. Growth of negentropy at the stage of creation of the universe.

We know two versions of creation described in the Torah and told in the first and the second books of Genesis. The two accounts possess certain similarities: both presume growing differentiation among objects during the creation of the world; i.e. the stage of creation features primarily the creation of different objects: earth, heaven, flora, fauna, and Man are all created at this stage.

We also know that these two versions of creation are to a certain extent in conflict with each other. In the first account, the creation of the world terminates with the creation of Man (Genesis, 1:27), and in the second one, the creation of at least of the world of living beings opens with the creation of Man (Genesis, 2:7). No plants were in existence before man for "there was not a man to till the ground".

The two versions of creation also differ in the completeness of their accounts. Unlike the first version, the second one does not mention the creation of light or heavenly bodies. At the same time, the second version contains a detailed description of the creation of a woman from mans rib (Genesis, 2:20-24), while the first one has but a brief mention of the creation of a man and a woman (Genesis: 1:27).

Whatever the account of creation, we could assume that God created an autonomous system capable of developing toward greater negentropy. Creation of such an autonomous system could be regarded as an implementation of a certain program charting the creator's actions. In any case, the first account of creation, at least in terms of its structure, does not basically contradict even the evolutionary theories of development of the universe from inorganic substances to plants, animals, and man.

Definite successiveness of events in the creation of the world, i.e. indication of some things being formed on the basis of others, is described in the following way. First, the most basic aspects of creation: space and time.

Matter from which the world was to be created was given to God: earth covered with water. But it was formless: "and the earth was without form, and void; and darkness was upon the face of the deep. And the Spirit of God moved upon the face of the waters." (Genesis, 1:2).

Recognition of the formlessness of matter relative to which, i.e. over which, moves the Spirit of God can be interpreted as an a priori introduction of the basic

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concept of space endowed to God by the authors of the Torah. Another category important to the Creator is time - developed "a posteriori" as soon as the first day of creation. In the first day God divides light from darkness. The concept of time is defined by the periodicity of night and day. A unit of time - a day, represents the union of night and day; i.e. it is defined by the presence of light and darkness (Genesis, 1:5).

My speculations concerning the division of light and darkness during the first day of creation used to introduce the concept of time are confirmed by the account of the next two days with light and darkness having no direct impact over the newly created objects. Functional (lighting) purposes were served by the celestial bodies of varying brightness - the sun, the moon, and the stars which were created only on the fourth day (Genesis, 1:14-18).

Now let us look at the order in which things were created following the division of darkness and light.

The next one and a half days witnessed the creation of all basic non-organic (meaning non-living) structures upon which or from which all other structures appearing in the last three and a half days of creation were formed.

Thus, God creates the Heaven on the second day (Genesis, 1:6-8/ and the Earth and the Seas in the beginning of the third day. (Genesis, 1:9-10). The latter must have followed the creation of Heaven for the water was gathered: "...Let the waters under the heaven be gathered unto one place..." (Genesis, 1:9). We can assume that the first line of the Torah "In the beginning God created the heaven and the earth." (Genesis, 1:1/ refers not to the first day, but to the second or the beginning of the third day of creation, i.e. to the first stage of creation. It is interesting to note that God called the dry land the Earth (Genesis, 1:10/ although earth as such already existed prior to the creation of the universe (Genesis, 1:2).

The overall account of creation of the universe presented in the first chapter of the book of Genesis reveals a common feature of such "new objects" as earth - meaning land, heaven, and seas, i.e. homogeneous objects, is that they were all created by spatial separation of resources already in existence, i.e. land and water. Subsequent creations, especially plants, animals, and Man represent complex

heterogeneous structures; still the exact methods, i.e. the "technology" used in creating them is unknown.¹⁶

Indeed, new complex structures begin to form in the second half of the third day. The earth and the sea serve as generative substance as well a place of habitat. Complex structures include plants, animals, Man, and heavenly bodies. Here, authors of the Torah explicitly state that water gave birth to fishes and reptiles: "And God created great whales, and every living creature that moveth, which the waters brought forth abundantly, after their kind..." (Genesis, 1:21). Similarly, God creates flora from the earth in the second half of the third day (Genesis, 1:11-12) and living creatures during the fifth-sixth day (Genesis, 1:24-25).

On the other hand, certain considerations support the notion that authors of the Torah could have endowed God with a non-program like method of creation of such an autonomous system. This means that God created some structures lacking any rigid connection with subsequent stages. The fourth day of creation confirms this idea. That day

"God made two great lights; the greater light to rule the day, and the lesser light to rule the night: he made the stars also." (Genesis, 1:16).

Since vegetation was created on the third day and animals on the fifth day, creation of the lights on the fourth day represents an interruption.¹⁷ I want to note in passing that the creation of the lights on the fourth day raises the question of why the time allotted for creation of the universe was not reduced by parallel work: all the preconditions for the lights were already present during the first days.

Non-programmatic results of creation can be two-fold. In one case all the created objects comprising the future system are initially random; subsequently they may be integrated. Another way is for each object to be created independently of other objects but the Creator being guided by the potential of these objects for future development, their predisposition toward future integrability.

Arguing for the second approach to non-programmatic creation of the universe, we can advance some ideas regarding the use of the judgment "good"

¹⁶ These considerations apply equally well to the second version of the creation of the universe. The only exception here is the division of the sexes which is given a "technological" explanation: a woman being created from the rib of a man. (Genesis, 2:21-22).

¹⁷ Its is feasible for plants to have been created before the sun with as of yet unformed general source providing the light, still undivided, needed by the plants.

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invested onto God by the authors of the Torah after God completes some stage of creation. These considerations pertain only to the first account of creation since the second account pronounces no judgements regarding the results of creation.

Generally speaking, the concept of an evaluation incorporates two aspects. One reflects the need to compare the envisioned image with the actual one. The other aspect arises from the need to establish the impact of the result upon future development. Such multi-faceted use of evaluations takes place under programmatic as well as non-programmatic methods of creation.

Under programmatic method judgement "good" reflects primarily the semblance between the envisioned image and the actual one. A reasonable supposition is that God had prior knowledge of all the requirements to be imposed upon the created objects. Here, we could assume without contradicting ourselves that at each given moment of time God is limited in his creative abilities and is therefore unable to insure complete affinity between the envisioned and the actual outcomes. Under these circumstances, evaluation of the results was based primarily on a meticulous verification of the actual outcome and its subsequent endorsement with a "stamp of quality". This brings to mind an analogy with quality control at a plant. With a worked out technological sequence (program), each operation (or a series of operations) is followed by a quality control check of the product to see if it conforms to the drafts, specifications and quality standards because of uncertainty of whether the quality of the materials, equipment, or worker qualification is sufficient to ensure the desired result. Judgements under a programmatic approach incorporate the other purpose served by evaluation, namely the significance of the end-result of a given stage for future development. Its significance was established beforehand when selecting the course of action at a given stage; judgement "good" confirms the results of these actions at the completion of the stage.

Aesthetics has no place in the programmatic method due to all its characteristics described above.

But we could proceed by making a reasonable assumption that creation of the universe as presented in the Torah is non-programmatic. Here, the criterion used to judge an object denotes the extent of its predisposition toward future integration. How the integration will actually proceed is not at all known. The criterion used here is beauty.

So, under a non-programmatic method, judgment "good" springs directly from aesthetic consideration reflecting the need to evaluate what has been created under the conditions of incomplete/inconsistent relations among the objects. Similar phenomenon occur when we try to assign an aesthetic value to an object in an "interrupted flow of time" or when we try to compare it aesthetically to other objects "in broken up space". Here, the aesthetic approach does not rule out a comparison between the envisioned and the actual results: these two principles may be combined. In other words, the judgment "good" can be used in making aesthetic judgements reflecting the impact of created structure upon the future as well as in comparing the envisioned result with the actual one.

Moreover, the exigency of combining these two methods is greater under the aesthetic approach. Since in the beginning of creation the plans of the Creator are judged aesthetically this approach gives greater leeway in the implementation of this method in view of the relative fuzziness of the aesthetic evaluation. Therefore the results of creation can deviate substantially from the envisioned image.

Now let us look at Torah's use of the judgement "good" pronounced upon the completion of each stage; evaluation encompassing the entire work of the six days was "very good" :

"And God saw every thing that he had made, and, behold, it was very good. And the evening and the morning were the sixth day." (Genesis, 1:31).

God makes the judgement "good" as early as the first day when evaluating his work of the same day - the creation of light (Genesis, 1:4).

The work performed on the second day - the creation of the heaven - is not evaluated by God that same day (Genesis, 1:6-8). But on the third day, God makes his judgement twice. The first time is after the creation of the land and the sea (Genesis, 1:10). It is unclear whether this judgement applies to the one and a half days or just to the first part of the third day of creation. Based on general considerations, i.e. authors of the Torah allowing for all of God's work to be the subject of evaluation (Genesis, 1:31), I am inclined to think that they meant the one and a half days. Also it makes sense to evaluate the heaven, the land, and the seas as one single entity, as something complete. This is precisely the explanation advanced by Rashi concerning the judgement made on the third day.

God evaluates his work for the second time during the third day after the creation of the herbs, the grass, and the trees which appeared that same day (Genesis,1:12).

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On the fourth and the fifth days, God evaluates his work that same day (Genesis, 1:18,21). Finally, on the sixth day God makes an independent judgement of the work done in the first half of the day, i.e the creation of land animals (Genesis, 1:25). The results of the second half of the day - the creation of Man are not judged individually (Genesis,1:26-28). The lack of judgement of the work accomplished in the second half of the sixth day is rectified by the overall evaluation of everything created so far made at the end of that same sixth day (Genesis, 1:31).

All this allows us to interpret the judgement "good" used to assess the results of creation as meaning "beautiful".

This interpretation of God's creation in terms of beauty is accepted by a number of scholars with whom I have discussed this matter.

Professor E.E. Urbach, a member of the Israeli Academy of Sciences and Humanities wrote to me in a private letter dated July 8, 1979:

" The Greek word "kalos" has in the classical period the meaning "beautiful" (outward form), but it was also used to express quality, morality, honour etc. The sources are given in the Greek dictionary of Liddel and Scott. I want to add just a significant example: the verse Num. 24.6 " " was rendered in the Greek translation of the Septuagint by 'ὡς χαλοι'. Similar development can be noticed in Hebrew. While in biblical Hebrew the word stands for 'beautiful,' it becomes in Mishnaic Hebrew to mean also quality and goodness. There are many examples in the Hebrew dictionary of Ben-Yehuda. In one case /Babylonian Talmud Shabbat 108a/ the Greek word is used in the sense of a 'fine argument.' "

I also want to quote from another letter written to me by H. Wentz, a professor at the Department of Religious Studies, Southern University, Sewanee, Tennessee, USA:

"I was very interested in your suggestion that the Hebrew word TOB in Genesis 1.4, etc. might mean 'beautiful' instead of (or in addition to) 'good', as it is usually translated. So, I began to look into a few things and came up with a couple of interesting points, which I thought I might pass along to you. First, the Septuagint translators in the 3rd century B.C. chose the Greek word KALOS for the Hebrew TOB throughout the first chapter of Genesis. I had never noticed this before and was excited by it sine the primary meaning of KALOS is 'beautiful'. I should have imagined that the Greek word AGATHOS would have been used. A colleague in our Greek Department tempered my excitement by pointing out that KALOS and AGATHOS are largely interchangeable at the time of the translation of the Septuagint and by warning that not very much by way of interpretation could be hung on the use of

KALOS. However, KALOS does not have the ethical overtones of AGATHOS or, at least in many cases, of 'good'; it (KALOS) is the word, so he said to me, that an artist might normally use in reference to a completed work of which he was proud and by which he would imply 'just what I wanted to make, 'fine', 'beautiful', and hence, in one sense of the word, 'good'.¹⁸ Second, the Hebrew word TOB in its various uses in the Old Testament has a variety of connotations, just as 'good'. I thought I was right about this on Saturday when we talked, but I checked my sources yesterday. The ethical flavor of 'good' can be attached to TOB but I think it would be correct to say that the ethical flavor is perhaps more often missing (as with the Greek KALOS): TOB can mean pleasant or agreeable to the senses, as in Esther 2.2,8, where Esther and other women are being described and physical beauty is the subject; it also can have the sense of 'advantageous' as in Job 13.9 or Psalm 133.1 (which, by the way, is the motto of The University of the South and can just be seen in the seal at the top of this page, in its Latin form); it has the sense of fruitful or fertile in Exodus 3.8 and the sense of valuable (as of economic value) in Leviticus 27.1 (& throughout chapter) or Proverbs 31.18. Third, my Hebrew lexicon referred me also to the Arabic cognate, the verb TABA and a number of derived forms, all of which are related to ideas like pleasant, delightful, delicious, sweet, ripe - - e.e. largely sensuous in their connotation. (I know very little Arabic, and the point is probably irrelevant in any case; but it is nonetheless interesting that this cognate does not have the strong ethical overtones which often attach to 'good' and instead seems to be more in line with the 'beautiful' you proposed for the Hebrew word.) In summary, you are obviously on safe ground in reading TOB as at least pointing in the direction of 'beautiful'."

Let us come back to my interpretation of the term "good" as meaning "beautiful". The aesthetic category of "beauty" extended to the creation of diversity. Even if we adopt my interpretation of the creation of the universe from the standpoint of beauty the term "beautiful" applies only to individual objects (as was the case on each individual day of creation) or to the entire work as was the case at the end of the sixth day. Nevertheless, a sufficiently developed manifold comprised of a large number of objects can be assigned aesthetic characteristics applicable to some subset of objects. Although Torah contains no explicit evaluations of a group of objects appearing in the course of creation, the actual description of this process urges one to search for these aesthetic concepts. Here, I would like to quote another passage from the aforementioned letter of professor H. Wentz:

¹⁸Author's footnote. This interpretation of kalos agrees with my earlier remark that during the second day of creation which ends with the creation of the Heaven, God makes no judgement of his work. But on the third day after the creation of the land and the sea God refers to his entire work when He pronounces the judgement "good".

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" Another thing I wanted to mention, which I expect you might well have seen for yourself but nonetheless worth mentioning, is the way that the six-day sequence in Genesis 1 is developed by its author both in the straight/forward progression from light to mankind and also in the internally balanced development of the creations of the first three days as they are further developed and expanded in the second three days,

with your themes of 'differentiation' and 'integration'¹⁹made even more prominent. The light of the first day is developed in the two lamps of the fourth day. The vault or firmament of the second day is developed in the inhabitants of the air or space under the vault (birds) and the inhabitants of the remaining water (fish) of the fifth day. The third day's dry land becomes an integrated whole with the creation of the plants, and these are in turn developed on the sixth day in the creation of the inhabitants of the dry land (animals), which are presided over and integrated into a whole by the men and women (cf. the naming of the animals by the man in chapter 2, about which we spoke). Perhaps all this is more aesthetic than anything else, but it is a delightful feature of the account that I like to point out when I lecture on Genesis 1."

Thus, the creation of the universe during the first six days can be viewed as growth of negentropy - the number of different objects grows and the set becomes more and more organized. The set is ordered through the creation of the potential evaluated in aesthetic terms. The criterion of beauty, both at the level of individual objects, their groupings, and the universe as a whole, could have been used implicitly, if not by all authors of the Torah, perhaps by the disciples of the first version of creation of the universe.

¹⁹Author's footnote. Meaning the dimensions of negentropy in the new sense of the word which the authors of the Torah possibly had in mind.

Chapter 3. Criterion for measuring the growth of negentropy at the stage of operation: expanding the set of objects

§1. Preservation of the diversity of objects

First, concerning the structuring and growth of the set of objects created during the first six days of creation.

Extensive growth prevails following the creation of the universe. At the same time, intensive development also takes place, i.e. qualitatively the created diversity is kept intact and, in fact, slowly expands.

Consider first the preservation of this diversity of objects which may arise for opposite reasons: a system with all its constituent elements related in a programmatic-like fashion or a situation where the relation between past, present, and future events is unknown.

Let us examine the first case. Crucial here is the presence of certain classes of objects since each class fulfills some particular function important for the operation of other objects in the system. It is quite possible that the authors of the Torah thought of ecological harmony in the world - the interrelationships and mutual dependence among different living organisms.

Diversity of objects could also be significant from the standpoint of a non-programmatic approach, i.e. a case manifesting uncertainty in the dynamics of future development. Changing conditions may cause one class of objects to decrease and another to increase in size so the universe as a total ecological system will have ample opportunities for further development. The important point is that every single class of objects is needed for further development of the system - there are no classes or subclasses of objects that are absolutely good and should therefore be developed exclusively or that are absolutely bad and should therefore all be destroyed completely. Individual objects comprising a class or even a subclass may turn out to be bad, but never the entire class. In fact, frequently individual objects turn out bad from local (short-term) perspective, i.e. in terms of their performance in under certain conditions.

Whatever guided the authors of the Torah (perhaps, as far as the creation of the universe is concerned, by a non-programmatic method), the Torah is founded

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upon the idea of preserving diversity. The legend of Noah illustrates this idea very clearly. God speaks to Noah:

"And of every living thing of all flesh, two of every sort shalt thou bring into the ark, to keep them alive with thee; they shall be male and female.

Of fowls after their kind, and of cattle after their kind, and of creepeth thing of the earth after his kind, two of every sort shall come unto thee, to keep them alive." (Genesis, 6:19-20).

Subsequently, God's modifies his demands. In particular, the Torah speaks of clean and unclean beasts and birds:

"Of every clean beast thou shall take to thee by sevens, the male and his female: and of beasts that are not clean by two, the male and his female.

Of fowls also of the air by sevens, the male and the female; to keep seed alive upon the face of all the earth." (Genesis, 7:2-3).

The two accounts of life being saved are contradictory.²⁰ In one case - when a pair of each kind of animal, clean or unclean, is saved we are dealing with a manifold, i.e. a set comprised of objects indistinguishable in value. The other case, where the number of clean and unclean animals is different, represents a variety superimposed with differentiation upon the value of different animals. But in both cases, the set of living objects as a whole is kept qualitatively intact.

The attitude toward the serpent also supports this idea of the need to preserve diversity. According to the authors of the Torah, the serpent was the most subtle of all the land animals created by God (Genesis, 3:1). The serpent made a lot of trouble for God. It challenged God by seducing Adam and Eve created by God in his own image. Nevertheless, God does not erase the serpent as a species but only puts a curse on it:

"...upon thy belly shalt thou go, and dust shalt thou eat all the days of thy life..." (Genesis, 3:14).

The above applies to Man as well. There are individuals or even entire groups of people that are bad, but the human race as a whole is spared by God.

It is interesting to note in this connection that the authors of the Torah avoided simplifying their description of the manifold of living creatures by splitting it into two groups: one would include all species of animals that are absolutely good and should therefore be rewarded, and another group containing all evil animals which should be destroyed. Instead, their concept is rooted in the preservation of

²⁰Potok, Ch., "The Bible Inspired Art", The New York Times Magazine, October 3, 1982.

different species of animals with individual people or groups of people being punished by people or by God directly without wiping out the entire race.

Moreover, individuals who are blessed by God are not totally "pure" but possess certain "impurities" as well.

For instance, Abraham lied or, to be more precise, told half-truth when he introduced his wife as his sister. In reality, she was his stepsister on the father's side (Genesis, 20:12). The first time Abraham did this was when he came to Egypt (Genesis, 12:13). Abraham gained a lot as result of his lie. Sarah was taken into the Pharaoh's house and Abraham received many large and small cattle, many menservants and maidservants, etc. (Genesis, 12:15-16). Nevertheless

"... the Lord plagued Pharaoh and his house with great plagues because of Sarah Abraham's wife." (Genesis, 12:17).

He did damage to a man who did not do any harm to Abraham (Genesis, 12:18-20). Abraham repeated this same lie to Abimelech, the king of the Philistines who did not hurt him in any way either. And if Abimelech had slept with Sarah from not knowing her real status (Genesis, 20:3) he could have been punished severely by God (Genesis, 20:9).

Whereas in the above cases Abram lied because of the fear of being killed so that his beautiful wife could be taken away from him (Genesis, 12:12; 20:11), the lie he made to his two young men whom he had taken along on the journey to sacrifice one son Isaac to God was unnecessary. On the third day of their journey, upon seeing the place of the sacrifice Abraham tells his young men:

"And Abraham said unto his young men, Abide ye here with the ass, and I and the lad will go yonder and worship, and again to you." (Genesis, 22:5).

Abraham had no apparent reason to lie that they both, Abraham and Isaac, will come back.

At the same time, according to the authors of the Torah, one of the moral obligations of a Jew is not to lie (at least not to another Jew). (Leviticus, 19:11).

Similar to what happened to Abraham happens to his son Isaac when he settles in Gerar with his wife Rebekah. He lies to local residents saying that Rebekah is his sister for the same reasons Abraham lied about Sarah (Genesis, 26:27). Only by accident does Abimelech discover that Rebekah is Isaac's wife (Genesis, 26:28) which prevents the people of his country from committing a sin by sleeping with Isaac's wife (Genesis, 26:29).

An open, selfish lie becomes part of life for Jacob, the son of Isaac. Following his mother's suggestion, Isaac lies to his old father so that the father

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would bless him, Jacob, and not his brother before he (the father) dies. Jacob's scheme is successful because his father is blind. Jacob pretends to be Esau, whom his father loves more and to whom he wants to extend his blessings (Genesis, 27).

In fact, righteous individuals noted by God bear the sin of a lie, a lie committed not for the sake of saving one's life. Blessed by God, they succumb on occasion to the sin of drunkenness. The story of Noah getting drunk is characteristic in this respect (Genesis, 9:22). It seems that Jacob the forefather was also drunk after the wedding for he could not distinguish between his beloved bride Rachel and her older sister Leah on the nuptial bed (Genesis, 29:20-25).

Authors of the Torah also tell a story of a terrible sin of incest committed by a righteous man while very drunk. The two daughters of Lot got their father drunk for two nights in a row and were then impregnated by him. Perhaps the daughters' behavior is justified since they lived alone in a cave with their father after surviving the destruction of Sodom and probably had trouble getting married. But a virtuous man getting so drunk he does not know whom he is sleeping with. (Genesis, 19:30-38).

Even Moses sins before God and is punished in spite of being so close to God that God sometimes accepts his advice. But because Moses has sinned, God forbids him to enter the promised land and decrees his death (Deuteronomy, 32:48-52) although Moses' eyesight has not weakened and his strength has not diminished (Deuteronomy, 34:7).

So the forefathers are portrayed as real human beings who combine righteousness with improbidity. But vices are not taken to extreme - bad deeds are not intentional and they do not involve murder, etc. - the crime should not be severe. It seems that hard people such as the Jews at a time of Abraham and his clan accepted this kind of behavior on the part of these righteous people as proper and deserving of God's commendation.

Again, I want to emphasize the fact that the authors of the Torah saw all righteous men as possessing both good and bad qualities. They do not condemn these men for their sins, they merely tell about them. This attitude toward righteous men in the Torah is quite different from the portrayal of saints in the Christian

religion or of the heroes in countries with totalitarian ideologies which claims to manifest the absolute truth.²¹

Thus, the multilateral actions of God and Man stem from inner harmony and, at the same time, a struggle among themselves and within each one. The perfection of God, of Man, of everything surrounding them and their simultaneous imperfectness are the source of future development. In other words, rather than endowing God and Man with just good traits, the authors of the Torah created a dialectical image of God and Man which organically combines their strength and weakness. The authors of the Torah saw the root of evil in Man in the youthfulness of the human race. These are precisely the words attributed to God following the flood:

"...and the Lord said in his heart, I will not again curse the ground any more for mans sake; for the imagination of mans heart is evil from his youth; neither will I again smite any more every thing living, as I have done." (Genesis, 8:21).

This approach represents a radical departure from an attempt to explain all good as originating from God, all evil as the work of the devil, and picture a utopia where God has defeated the Devil once and for all. The authors of the Torah resisted the temptation of distinguishing between God and the Devil. The Devil has no place in the Torah, so no attempts to eliminate all evil in the world by destroying the Devil are made.

As prof. B. Moishazon noted, the last point, strictly speaking, depends on the interpretation of certain passages in the Torah. The passage in question describes the ritual of shifting one's sins onto a goat on the day of atonement.

Different translations of this part of the Torah serve to substantiate possible disagreements in its interpretation.

"And he shall take the two goats, and set them before the Lord at the door of the tent of meeting. And Aaron shall cast lots upon the two goats: one lot for the Lord, and the other for the Azazel. And Aaron shall present the goat upon which the lot fell for the Lord, and offer him for a sin-offering. But the

²¹Christian saints always perform noble deeds or attain sainthood by overcoming evil deeds. Soviet Communist ideology, especially during Stalin's time, portrayed each man canonized as a saint as being absolutely virtuous, of never committing any unsightly acts, anythings bad. The constellation of saints includes Ivan the Terrible, Pushkin, Lenin, and the reigning leader himself along with his myrmidons. (Even an instructor from Central Committee of Communist Party of the Soviet Union, as long as he was still in office, was not subject to public criticism, neither for his past nor his present actions).

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goat, on which the lot fell for Azazel, shall be set alive before the Lord, to make atonement over him, to send him away for Azazel into the wilderness." (Leviticus, 16:7-10).²²

"And he shall take the two goats, and present them before the Lord at the door of the tabernacle of the congregation. And Aaron shall cast lots upon the two goats; one lot for the Lord, and the other for the scapegoat. And Aaron shall bring the goat upon which the Lord's lot fell, and offer him for a sin offering. But the goat, on which the lot fell to be the scapegoat, shall be presented alive before the Lord, to make an atonement with him, and to let him go for a scapegoat into the wilderness." (Leviticus, 16:7-10).²³

Steinberg's commentaries to the Russian translation of the Torah presents practically all feasible interpretations of the "Azazel" phenomena. Steinberg writes:

'Azazel', according to some, (Targ. Jerus., Saadiah, Ibn Ezra) is a 'terrible precipice'; others (Akilas, Zemah, Theodosius) believe that the word 'az-zel' means a 'departing goat'.²⁴ More precisely, 'Azaz-el" (god Azaz) is the name of a major Egyptian horned deity Isis - local idolaters tried to talk the Israelites into worshipping him when the latter were fleeing from Egypt (Exodus, 12:38). That is why idol Azazel is here the opposite of God; by the drawing of lots, the last goat is driven into the desert to mark the elimination of this idolatrous practice among the Israelites. And that is why this passage is followed by the commandment to make offerings only at the tent of meeting in order to avoid sacrifices to hairy creatures who forever tempt people (Exodus 17,3-7). References to Azazel (goat-god) are made also in the mystical book of Noah (Genesis, 5:24) and by latter gnostics, and, according to Seetzen, by modern-day Arabs of the Sinai Peninsula who use it as the name of the tempter angel."²⁵

So interpreting "Azazel" as some particular location abolishes the notion of a devil from the Torah altogether.²⁶ There is no controversy if "Azazel" is an Egyptian Goddess. Problems arise if "Azazel" is rendered as demon of the wilderness,²⁷ a "fallen angel" who is, in fact, the devil or the Satan.

²²The Holy Scriptures (The Masoretic Text), Philadelphia: The Jewish Publication Society of America, 1955.

²³The Holy Bible (King James Version), London: Collins' Clear-Type Press

²⁴In Septuagint, a Greek translation of the Old Testament, Azazel stands for a scapegoat. The Encyclopedia of Religion, Vol. 13, New York: Macmillan Publ., 1987, p.92.

²⁵Pentateuch by Moses, Vilna, 1914.

²⁶Another authoritative source - Encyclopedia Judaica gives similar interpretation.

²⁷The Encyclopedia of Religion, Vol. 4, New York: Macmillan Publ., 1987, pp. 284-285.

It seems to me that the pathos of the Torah is the supremacy of one God having no entities equal to him and representing the forces of evil, a scheme characteristic of Zoroastrianism and to a large extent, Christianity, especially Manichaeism. Even if Azazel is a Demon, for the authors of the Torah he was a vestige, a leftover of beliefs long past.

Lack of the notion of a devil in the Torah or its insignificance anyway, is critical in guiding of a Jew. Acknowledging independent existence of the Devil means the Devil could reside inside a man (as is the case in Christianity). But then one might want to eradicate the Devil from Man's body in order to save Man's soul. This "ousting" of the Devil is sometimes accompanied by the destruction of the flesh - burning of the body performed by the Inquisition, for instance.

Accepting Devil's independent existence may also breed a desire to find him in some relatively small group of people who are thought to possess him. Elimination of this group of people promises to free the human race from all its ills once and for all. The concept of a Devil assuming human shape can be substantiated by rational reasons as well. In different countries the Devil was manifested by Jews, Armenians, or capitalists. It was important to unmask this group and promise the coming of a golden age after the group is eliminated. I call this method of dealing with evil the method of "zone smelting". One of the ways of getting pure metal is subjecting it to a multi-stage melting process: as the metal passes various zones all the impurities collect at one place, at the end of the sheet. This end is then cut off and what remains is just pure metal.

So Torah makes explicit the idea of preserving the manifold of God created objects, combining good and bad not only in different objects, but in the same object as well.

Just as the authors of the Torah stress the need to preserve the entire diversity of objects, they strongly advocate extensive growth of many of them as well. This is evident in the numerous calls for people (Genesis, 17:6), as well as animals (Genesis, 8:17), cattle and others (Genesis, 30:43) to multiply.

§2. Limited growth of the diversity of material objects.

Now I want to discuss the intensive development of the diversity of objects focusing on the subset comprised of material objects. In relation to the period

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following the stage of creation, this set of objects can be called a limited diversity. The definition is based on an answer to the question of "Why, according to the authors of the Torah, were new material structures comparable to the ones formed in the beginning not created on a broad basis following the stage of creation?" As far as I know, the Torah speaks of the creation of a very limited number of new "anatomical" structures comparable in complexity to the ones created by God in the beginning. These include clothing [akin to the appearance of a new species having a body cover] (see Genesis, 3:7,21), construction of the Tower of Babel (Genesis, 11:1-9), and manna being a new kind of plant (Exodus, 16:15,31).

True, the Torah does describe new methods of action and new technologies, but using only well-known material objects greatly strengthened by God. Their purpose is to destroy elements unwanted by or even harmful to God, i.e. they must work selectively (although it seems that undesirable side effects are possible). These technological methods which utilize previously created material objects strengthened by God include the flood (Genesis, 6:17), the rain of brimstone and fire used in the destruction of Sodom and Gomorrah (like the eruption of a volcano). (Genesis,19:24), swarms of flies, hail, locusts, darkness etc. used to punish the Pharaoh (Exodus, 8-11), and parting of the earth which subsumed Korah and its surroundings. (Numbers, 16:24-34). In modern terms, these methods represent a mild version of meteorological, bacteriological, and even geological warfare.

At the same time, the Torah does not mention cross-breeding, or any widespread practice of developing new kinds of plants and animals. In fact, it is stated in the Torah:

"Ye shall keep my statutes. Thou shalt not let thy cattle gender with a diverse kind: thou shalt not sow thy field with mingled seed: neither shall a garment mingled of linen and woollen come upon thee." (Leviticus, 19:19).

New technological devices capable of evolving into structures comparable in power to Man or animals are not mentioned in the Torah (not to speak of the structures superior to man such as midieval Golem). Perhaps, there are deep reasons for rejecting the role of new technologies and means of their implementation in the development of the universe.

As early as 1941, a well-known sumerologist from the University of Pennsylvania Arno Poebal advanced an interesting hypothesis that the Sumerians were the ancestors of the Jews. This hypothesis was tested by another noted sumerologist from the University of Pennsylvania, Professor Samuel Kramer. He

discovered a number of linguistic parallels confirming Poebal's hypothesis.²⁸ But whatever the case may be, S. Kramer thinks it most definite that the "prejews" absorbed and assimilated much of the Sumerian lifestyle.

Also keep in mind that Sumer is presently considered to be the cradle of modern civilization, a country which gave birth to many modern institutions - from the first schools to the world's first aquarium. Just in the table of contents of S. Kramer's book²⁹ we find 39 such innovations: each chapter of the book is devoted to one innovation.

Also, Sumer had a rather advanced industry, agriculture and trade. People made use of various technological methods introduced from the outside (metallurgy, for instance) as well as those they seem to have discovered themselves: potter's wheel, wheel carriage, and the sail boat.³⁰ Fine art also flourished in Sumer, especially sculpture and architecture. Mathematics was the most advanced area of science.

Moreover, in the opinion of a distinguished mathematician from Columbia University Boris Moishezon, who is elaborating a very original theory of the pre-biblical history of the Jews and whose work takes account of the most recent discoveries in archeology, linguistics, history, etc., even before the Sumer came into existence, people who could be thought of as "prejews", were in the epicenter of technological progress. For instance, they achieved great success in metallurgy, developing new metal alloys from heterogeneous substances as well as new metal products.³¹

²⁸Kramer, S., The Sumerians. Chicago, Chicago University Press, 1963, pp. 297-299.

²⁹Kramer, S., History Starts in Sumer. Philadelphia: University of Pennsylvania Press, 1981.

³⁰Kramer, S., The Sumerians. Chicago, Chicago University Press, 1963, p. 290.

³¹"About 12000 years ago, the life of the people underwent drastic changes. First houses and fortified settlements appeared, as well as jewelry and stone vessels. People began to develop agriculture and raise cattle. The archaeologists called these milestones the "neolithic revolution." Presently, the neolithic revolution is associated with the so called Natufian culture which evolved on the territory of Israel. The first city-metropolis "Jericho" was also situated there.

Our present day knowledge of the neolithic and subsequent cultures indicates that their development evolved continuously both in space and in time. New centers came into existence and disappeared afterwards, but eventually the neolithic revolution covered larger and larger territory. First, it was Northern Mesopotamia and the southern region of Anatolia, then it extended to western Anatolia, Greece, and the Balkans, then to the region beyond the Caucasus, Western and Northern Iran, Southern Turkmenia and Southern Mesopotamia. At about the seventh millennium B.C., Anatolia and Mesopotamia were inhabited by people

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Perhaps long-term awareness of the potential power of technological progress combined with the knowledge of the advanced Sumerian culture, both general and technical, frightened the Jews by its unpredictability.

We can interpret the part of the Torah which describes the expulsion of Adam and Eve from the Garden of Eden for tasting the fruit from the tree of knowledge of good and evil from this perspective (Genesis, 2:17). The serpent corrupts Eve, and she and Adam taste the fruit from the tree of knowledge (Genesis, 3:6). What do they discover after eating the fruit? Their nakedness (Genesis, 3:7). In other words, they discover that they can use only those things which were created by God. Innovations were taboo since creation is impossible without differentiating the value of the objects. Being created in the image and likeness of God, after coming to know good and evil, people began to create independently making new things on their own. The first such item was clothing. They

"...sewed fig leaves together, and made themselves aprons." (Genesis, 3:7).

who had ceramics and possessed rudimentary knowledge of metallurgy. These cultures belonged to the so called Haliolithic era. Progress radiated from this area to the west, south, and east.

The next archaeological period is called the bronze age (4000 B.C. to 1200 A.D.). Its cultural centers were undoubtedly in Gassul - the Beersheba culture and in Northern Syria, in Sumer, and in the Caucasus afterwards. We get a similar picture if we analyze the archaeological and the written data from the so called iron age (about 1200 B.C.)

Besides the continuity of the development (in space and in time) initiated by the Neolithic revolution, archaeologists have also uncovered a lot of long-term connections and similarities between cultures rather distant from each other. They have discovered that a number of very important changes and innovations that took place in different cultures occurred simultaneously. Sometimes, it seems that freedom of choice and random events play a role in the progress of mankind only locally. As a whole, this process seems to be coordinated and directed. This almost mystical feeling can be rationalized once we assume some sort of compatibility and interrelationships among some stable segment of the active part of the population hidden behind these inanimate archeological evidence.

The forementioned evidence of the ancient sculpture, the deformed skulls dating back as far as the neolithic era, and anthropological connections between various centers of metallurgy, all point in one direction: the stable segment of the population taking part in the process of cultural evolution during the neolithic and subsequent eras, the people responsible for the compatibility and innerconnections among various cultures belonged to the anthropological group known as the Armenoids. Moreover, armenoid like images of kings and gods, skulls deformed in an "armenoid like" fashion associated with nobility make an even stronger assumption quite feasible. In very ancient times (about 10000 B.C.), armenoids were associated with the upper class, at least in the cultural centers of the central part of the Near East and their spread basically coincides with the growth of this center." (Moishezon, B., "Puzzles of Ancient Civilizations", *Narod i Zemlia*, No.1, 1984, p.226).

Although the original cloth was very simple and covered but a small area of the body it was probably quite sufficient for the garden of Eden. Only after Adam and Eve were expelled from the garden of Eden did God make new, more durable clothes for them:

"Unto Adam also and to his wife did the Lord God make coats of skins, and clothed them." (Genesis, 3:21).

These clothes probably covered a greater part of the body and were fit for more severe conditions than those in the garden of Eden. So, when changing conditions necessitate the creation of new objects, God again assumes the initiative. He provides the creative impulse and He brings it to life not allowing people to create new objects on their own.

The fact that people who had evolved very sophisticated cultures proving they are capable of technological advancement later became afraid of its consequences is largely confirmed by the history of ancient Greece, China, and India.³²

Prof. Moishezon called my attention to a certain isomorphism between the structure of the legends of Pandora's box and Eve. Pandora was the first woman on earth, same as Eve. She was created by Hephaestus by the will of Prometheus. There was a box in her husband's home containing sorrows and joys (according to some versions there was also hope on the bottom of the box). Overflowing with curiosity, Pandora violated the prohibition and opened the box. Out came plagues which disseminated throughout the world.

Another ancient Greece myth is the myth of Prometheus. Perhaps, it symbolizes the danger of Man discovering the use of fire: and in those times, the destructive power of fire could be compared (of course, with certain provisions) to the present day danger of atomic power.³³

³²More on this in my article "On Variety of Ideologies", Quarterly Journal of Ideology, Vol. iii, 1980, No. 1, pp. 9-22.

³³Of course, the severe punishment inflicted by Zeus upon Prometheus could be interpreted in a variety of ways. The above interpretation, which is one of many, explains Prometheus' punishment as a result of giving Man something possessing not only good qualities but also great destructive capability. Another noteworthy interpretation comes to us from Aeschylus. In one (which survived) of his three plays devoted to Prometheus, Aeschylus attempts to explain Zeus' actions as a consequence of Prometheus acquiring too much power and independence after he helped Zeus overcome the Titans. In such cases, it is customary for the ruler desiring absolute power to get rid of those powerful allies who helped him gain power.

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The fact that in China, more than 2000 years ago, there was a split between the followers of Confucius and anti-Confucians regarding technological innovations, for instance the shadoof in the well, indicates that ancient people understood not only the advantages, but also the drawbacks of technological progress.³⁴

Since halting technological progress altogether was rather difficult, the civilized countries of the time tried to place it in the custody of the most responsible and competent people. First of all, these were priests, for priests had extensive contact with God, in whose name the ban on the creation of new things was declared. Prior to the advent of Buddhism, India had achieved a high stage of technological development. Control over technological innovations rested with the priests.³⁵

My analysis of technological innovations mentioned in the Torah follows a two-dimensional Matrix-Table 3. One axis represents the cause of the innovation and the second specifies its actual doer. Each dimension involves God and Man. It is interesting to note in this respect that the authors of the Torah almost always specify both the cause of the innovation and the one who introduces it. In a few cases, a technological device is described without attributing it to any particular inventor, it is mentioned as already existing.³⁶ For instance, a knife (Genesis, 22:6), a sword (Exodus, 17:13), a spear (Numbers, 25:7). Sometimes, the country of the object's origin is given: for instance, the wagons sent by the Egyptian pharaoh for Jacob and his sons at a time of Joseph's triumph (Genesis, 46:5).

Table 3 reveals that according to the authors of the Torah control over the technological progress manifested itself in the fact that God was the one providing the creative impulse for the innovation much of the time; the actual implementation could have been carried out by man. It was basically considered ill-advised for a man not blessed by God, or even for someone blessed by God but who violated some of God's bans, to provide both the impulse for the innovation and the means for its implementation.

³⁴Schweitzer, A., *Kultur und Ethic*. Munchen, 1960.

³⁵Gorbovskii, A., *Puzzles of Ancient History*, Moscow: Znanie, 1966.

³⁶Perhaps a thorough analysis of these innovations in conjunction with archeological data will provide clues to the question of which technological innovations were introduced by the Jews and which were borrowed from other people.

Table 3. The genesis of technological innovations mentioned in the Torah

The vehicle of the creative impulse	The source of the creative impulse	
	God	Man
God	Skins clothing for Adam and Eve (Genesis, 3:21) The flood (Genesis, 6:17) Rain made of brimstone and fire (Genesis, 19:24) Manna (Exodus, 16:15,31) Swarms of flies, etc. send upon Egypt (Exodus, 8-11) Parting of the earth and the consumption of Korah and its surroundings God (Numbers, 16:24-34)	
Man	Noah's Ark (Genesis, 6:14-16) Sanctuary (Exodus, 25-27,30) Clothing for the priest (Exodus, 28)	Aprons made by Adam and Eve (Genesis, 3:7) Bricks and slime for building the town and the tower of Babel (Genesis, 11:3) Rods with pilled strakes in them for making cattle of a particular color. (Genesis, 30:37)

The table shows three cases from the Torah of Man representing both the source of the creative impulse as well as the means of its realization. Two of these innovations were disapproved by God. I have already talked about one of them - the clothing made by Adam and Eve themselves. The second case is the building of the Tower of Babel by nations descending from the sons of Noah.

"And they said one to another, Go to, let us make brick, and burn them throughly. And they had brick for stone, and slime had they for mortar." (Genesis, 11:3).

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But since God did not want the town and the tower of Babel to be built He interfered in the builders' plans and mixed their languages so that they could not understand each other.

So, according to the authors of the Torah it was primarily through God himself that new technological innovations pleasing to God could be introduced. I know of only one case where both the creative impulse for the innovation and the means of its implementation came from Man, and the authors of the Torah considered this invention as pleasing to God. This is the device invented by Jacob to increase his herd. It is described in the following passage:

"And Jacob took him rods of green poplar, and of the hazel and chestnut tree; and pilled white strakes in them, and made the white appear which was in the rods.

And he set the rods which he had pilled before the flocks in the gutters in the watering troughs when the flocks came to drink, that they should conceive when they came to drink." (Genesis, 30:37-38).

"And it came to pass, whensoever the stronger cattle did conceive, that Jacob laid the rods before the eyes of the cattle in the gutters, that they might conceive among the rods.

But when the cattle were feeble, he put them not in: so the feebler were Laban's. and the stronger Jacob's." (Genesis, 30:41-42).

Although this invention has "Lysenko-like" overtones, it would still be interesting to test it. I do not know if this has ever been tried or not.

As Table 3 indicates most of the innovations (objects or technologies) involve God as the source of the creative impulse and Man as means of their realization. The essence of these innovations is described in Table 3 so no further elaboration is needed.

So, as I have mentioned many times already, during the period following the creation of the universe, the growth of the set of material objects - in a sense of creation of qualitatively new objects, is very slow. The authors of the Torah put the thrust of development upon the extensive use of the already existing means. Innovations and new ideas appear sporadically and they are presented as single unique objects. The authors of the Torah did not even attempt to generalize the experience gained from the creation of these objects, something which is necessary in order to develop and construct new objects on a systematic basis.

§3. Changes in the diversity of living things

Following the period of creation, the class of living objects undergoes a change in a sense of the importance of the elements comprising this class starting to be evaluated. Diversity of living creatures created by God is differentiated further and the significance of each object becomes more apparent.

It seems that animals are saved because they will be needed by Noah and his descendants. Further differentiation in their importance takes place when more clean than unclean animals are saved from the flood. (Genesis, 7:2).

As far as people are concerned, God, according to the authors of the Torah, begins to distinguish their importance when He selects righteous men. Although God becomes disillusioned with all living things and Man in particular He decides to save Noah for

"...Noah found grace in the eyes of the Lord." (Genesis, 7:2).

As the variety of people undergoes extensive growth and things become more complicated, if only because of the growing number of people, the authors of the Torah again start to pay attention to the intensive development of life on earth - the appearance of different nations. These nations can be compared to different species (orders) of animals.

In other words, as the human race evolves it undergoes differentiation with different nations being formed. Here, the growing diversity among people is linked to the construction of the Tower of Babel which God does not want to be built.

"And the Lord came down to see the city and the tower, which the children of men builded.

And the Lord said, Behold, the people is one, and they have all one language; ...

Go to, let us go down, and there confound their language, that they may not understand one another's speech.

So the Lord scattered them abroad from thence upon the face of all the earth..." (Genesis, 11:5-8).

The period of Abram already witnessed different nations inhabiting the earth; just to mention those with whom Abram came in contact: Chaldeans (Genesis, 11:31), Canaanites (Genesis, 12:6), Egyptians (Genesis, 12:12), Perizzetes (Genesis, 13:7), Amorites (Genesis, 14:13), and others.

At the same time, God continues to expand the diversity and tells Abram that many different nations will spring from his descendants.

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"As for me, behold, my covenant is with thee, and thou shalt be a father of many nations.

Neither shall thy name any more be called Abram, but thy name shall be Abraham; for a father of many nations have I made thee." (Genesis, 17:4-5).

Nevertheless, all these different people represent a manifold since no priorities among them are established.

Authors of the Torah ascribe subsequent development of the manifold of different nations to its transformation into a singular variety through the introduction of singular points. These singular points are great nations descending from Abraham. Authors of the Torah also point out that God promises Abraham to make a great nation from the descendants of Ishmael, son of Abraham and Hagar, who is an Egyptian servant to Abraham's wife Sarah.

"And as for Ishmael, I have heard thee: Behold, I have blessed him, and will make him fruitful, and will multiply him exceedingly; twelve princes shall he beget, and I will make him a great nation." (Genesis, 17:20).

Further on, the Torah comes back to state that a great nation will descend from Ishmael.

"Arise, lift up the lad, and hold him in thine hand; for I will make him a great nation." (Genesis, 21:18).

The creation of different nations is accompanied by the appearance of a still more powerful entity - the chosen people taken from the set of singular points represented by great nations. As told in the Torah:

"Now the Lord had said unto Abram, Get thee out of thy country, and from thy kindred, and from thy father's house, unto a land that I will shew thee:

And I will make of thee a great nation, and I will bless thee, and make thy name great; and thou shalt be a blessing:

And I will bless them that bless thee, and curse him that curseth thee: and in thee shall all the families of the earth be blessed." (Genesis, 12:1-3).

Authors of the Torah reiterate on several occasions God's promise to create a great chosen nation from the descendants of Abraham and his wife Sarah. God vows this nation to have as many people as there is dust of the earth (Genesis, 13:16). Another time God spoke to Abraham:

"...Look now toward heaven, and tell the stars, if thou be able to number them: and he said unto him, So shall thy seed be." (Genesis, 15:5).

God's promise to make the descendants of Abraham the chosen people does not mean the most populous people. This is stated explicitly in the Torah:

"The Lord did not set his love upon you, nor choose you, because ye were more in number than any people; for ye were the fewest of all people." (Deuteronomy, 7:7).

The descendants of Abraham are the chosen people because it is only with them that God establishes a covenant.

"But my covenant will I establish with Isaac, which Sarah shall bear unto thee at this set time in the next year." (Genesis, 17:21).

In another place in the Torah Moses speaks to the Jews:

"For thou art an holy people unto the Lord thy God: the Lord thy God hath chosen thee to be a special people unto himself, above all people that are upon the face of the earth." (Deuteronomy, 7:6).

Although the creation of the chosen people increases variety in a sense of extending the range of priorities, it does not transform the set of all nations into a singular variety where the chosen people represent the ruling class. There is nothing in the Torah about chosen people becoming rulers of the world. The Torah does not call for the Jews to rule over other peoples. The role of the chosen people is a difficult and delicate matter which has been discussed in numerous books. But I just want to emphasize the fact that Jews were not meant to become the rulers of the world no matter what their role as the chosen nation was destined to be.³⁷

At this point, I want to say a few more words about the structure of the diversity of nations including the Jews. Viewing God as the creator of the entire universe his concerns should rest with the development of the whole. At the same time, God has His chosen people. Thus, an important question of the relationship between the chosen people and the human race as a whole arises. General considerations would lead us to assume that under these circumstances God would care more about the human race as a whole, especially as long it does not hurt the interests of the chosen people. In case they are hurt, God would attempt to rectify the situation while preserving the whole in all its variety. Here, God will try to punish only those "disturbing the peace" of the chosen people, rarely destroying the entire population which these offenders come from.

³⁷It seems to me that the idea of subjugation is generally foreign to the Jewish people. As I have said, the relationship between God and a Jew presumes a certain degree of parity. An example of such special point as a monarch can serve to illustrate the above statement. The institution of monarchy is oftentimes associated with a singular point which transforms social manifold into a singular variety. When Torah discusses the problem of the king in the future Jewish state it emphasizes the need to prevent the king from usurping all the power - the need to limit him as much as possible. See Deuteronomy, 17:14-20.

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But the manner in which the authors of the Torah integrate different nations is rather simple. It resembles anarchy with different nations fighting each other. For example, the Torah does not have a developed system of moral code governing the relationships among various peoples. Sacred tablets given to the Jews govern the relationship between God and the Jews, among Jews themselves, and between Jews and other people. But Torah contains no moral statutes for other peoples. In principle, we can view the moral code bestowed upon Noah as pertaining to all different nations. But since presented through the Torah this code does not apply to people who do not accept the Torah.

Therefore, I would be willing to say that authors of the Torah did not focus their attention on establishing the rules for governing the relationships among different peoples (or people's relationship with nature). Torah's rather elaborate scheme for organizing the manifold of the world as a totality and the Jewish people in particular, is not applied nearly as extensively in establishing the rules of conduct among different peoples.³⁸

³⁸Within the framework of the general methodology used previously in our analysis, a number of ideas come to mind regarding the relationships among countries where this manifold is in danger of being destroyed. These considerations can be quite helpful in analyzing present day situation in the world.

The biggest manifestation of the existence of different nations is the existence of many autonomous states. From the global perspective of the human race as a whole these countries represent a manifold since they are all equal in their right to exist. Nevertheless, in view of the destructive power of the modern weapons, conflicts between countries can lead to the destruction of mankind, degeneration of the manifold. One extreme method to salvage the situation is to form a world government infused with enough power to prevent individual countries from becoming strong enough to conquer other countries, i. e. to turn manifold into a singular variety.

It is rather impossible to form this type of government as a coalition of superpowers if one of them seeks to expand on its accord. So, in view of these conflicts among superpowers, the world government could be represented by one single country. This country would have to have absolute weapon, i.e. a weapon which would protect a given country from destruction and, at the same time, be capable of destroying other countries. If some one country takes possession of an absolute weapon it would be in a position to give an ultimatum to other countries to disarm. It will be able to rule the world. An ultimatum may become a reality because in the world of today with all its lethal weapons, the desire to rule the world may be dictated by the need to survive and not from any expansionistic aspirations.

Thus, by subjugating all other countries the supreme power can establish a regime which will prevent the destruction of mankind. But this solution to the problem poses another danger to our manifold. The victorious country can shrink this manifold by making other countries serve its own interests and imposing its own way of life upon other countries. This would lead to total unification converting these countries into a monofold. Here, I am not even

Chapter 4. Growth of negentropy at the stage of operation: expansion of the diversity of integrating objects.

§1. General Remarks.

Our discussion has shown that the number of different material objects increased following the creation of the world. Nevertheless, authors of the Torah focus their attention on the intensive development of different methods of structuring the created world. These methods include institutions for developing mechanisms of operation as well as a system of values which governs the relationship between God, Nature, and Man.

Methods of ordering the manifold can be analyzed within the framework of the systems approach from four points of view.

From the functional point of view, innovations are introduced in order to integrate an individual with God who represents the entire universe as well as with nature and other people. The importance of this aspect will become clear when we examine other approaches to classifying innovations.

From the structural point of view, innovations can be grouped into rules of rational conduct, moral statutes and laws of organization. Torah abounds with such innovations. For example, a rule calling for some reserves to be put aside during bumper-crop years was one such organizational novelty. As a result, Joseph was able to achieve prosperity for Egypt, get rid of the famine during the years of poor harvest and increase Egypt's wealth through the sale of grain to neighboring countries. (Genesis, 41).

The ten commandments and hundreds of moral statutes also represent moral norms and laws.

Moses introduced a hierarchy in the government of the Jewish people during their stay in the desert - another innovative organizational set up (Exodus, 18:13-26).

speaking of the danger of the ruling country destroying the world in some gamble venture in outer space.

Luckily, there is a spectrum of possibilities between these two extreme alternatives of saving/destroying the world. One important structure belonging to this spectrum is a limited variety. We could have coalition of countries strong enough to prevent aggression from any one country. At the same time, neither country would be powerful enough to conquer the world and establish its supremacy.

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From the process point of view, innovations represent different ways in which God, Man, and Nature can interrelate. Coercion based on the subjugation of Man to God or to a king - vertical mechanisms, is one way; another way presumes equality between God, Man, and Nature - horizontal mechanisms.

As already noted above when I spoke of God's limitedness as it is described in the Torah, the relationship between God and Man is basically a horizontal one founded upon the contract between more or less equal partners. Authors of the Torah tried to extend a rather similar set up to the political structure determining the relationship between the rulers and the people. Interesting in this respect is the premise made in the Torah regarding the king of the Jewish people.

"When thou art come unto the land which the Lord thy God giveth thee, and shalt possess it, and shalt dwell therein, and shalt say, I will set a king over me, like as all the nations that are about me;

Thou shalt in any wise set him king over thee, whom the Lord thy God shall choose: one from among thy brethren shalt thou set king over thee: thou mayest not set a stranger over thee, which is not thy brother.

But he shall not multiply horses to himself, nor cause the people to return to Egypt, to the end that he should multiply horses: for as much as the Lord hath said unto you, Ye shall henceforth return no more that way.

Neither shall he multiply wives to himself, that his heart turn not away: neither shall he greatly multiply to himself silver and gold.

And it shall be, when he sitteth upon the throne of his kingdom, that he shall write him a copy of this law in a book out of that which is before the priests the Levites:

And it shall be with him, and he shall read therein all the days of his life: that he may learn to fear the Lord his God, to keep all the words of this law and these statutes, to do them:

That his heart be not lifted up above his brethren, and that he turn not aside from the commandment, to the right hand, or to the left: to the end that he may prolong his days and his kingdom, he, and his children, in the midst of Israel." (Deuteronomy, 17:14-20).

The relationship between Man and Nature is a vertical one: the subordination of the earth, flora, and fauna to Man was proclaimed at the stage of creation (Genesis, 1:28-29). As far as the heaven is concerned, its relationship with Man is mutual independence: the "heaven" behaves according to its ways and Man has no influence over it. At the same time, the heaven can act in ways beneficial to Man (for instance, the lights replacing each other in the course of the day).

It is also worth looking at "organizational" innovations from the point of view of their genesis. By analogy with Table 4, we distinguish the role of God and Man in introducing and actually implementing an innovation.

So according to the authors of the Torah, the laws, moral statutes, and especially the ten commandments bestowed by God were handed down to Moses to be just announced to the Jewish people (Exodus, 34:27; Leviticus, 19). Here, Moses merely fulfills the will of God.

Table 4. The genesis of socio-organizational innovations in the Torah

Executor	The source of the creative impulse	
	God	Man
God	Tablet writings (Deuteronomy , 10:4)	Arguments advanced to persuade God to save the Jewish people (Numbers, 14: 11-20)
Man	Reserves of grain in Egypt (Genesis, 41) All the rules and bans regarding religious and moral conduct (Exodus, 34; Leviticus, 19) Moses' directions on choosing the king once the Jews arrive to the Promised Land (Deuteronomy , 17:14-20)	Ways of appeasing the angered God (Numbers, 16: 44-48) Jethro's idea of establishing a hierarchy in the government of the Jewish people during their stay in the desert (Exodus, 18:13-26)

The relationship between God and Man is more complicated in the case of grain reserves used to save Egypt from the famine (Genesis, 41). God does not tell Man, in this case Joseph, directly what to do. Joseph is a man who believes that God imbued him and Pharaoh with his, God's ideas.

"And Pharaoh said unto Joseph, I have dreamed a dream, and there is none that can interpret it: and I have heard say of thee, that thou canst understand a dream to interpret it.

And Joseph answered Pharaoh, saying It is not in me: God shall give Pharaoh an answer of peace." (Genesis, 41:15-16).

In other words, here Man is as an interpreter of the ideas which God gave to the Pharaoh when the latter was asleep (Genesis, 41:25,28,32). Man is also the

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executor of the suggestions given to Joseph by God regarding the situations described in these dreams.

Finally, the idea of a hierarchical system to govern the Jews after their exodus from Egypt was presented by the authors of the Torah in the following way: the idea was suggested to Moses by his father-in-law and Moses carried it out without any direct assistance from God.

"And it came to pass on the morrow, that Moses sat to judge the people: and the people stood by Moses from the morning unto the evening.

And when Moses' father in law saw all that he did to the people, he said, What is this thing that thou doest to the people? why sittest thou thyself alone, and all the people stand by thee from morning unto even?

And Moses said unto his father in law, Because the people come unto me to inquire of God:

When they have a matter, they come unto me; and I judge between one and another, and I do make them know the statutes of God, and his laws.

And Moses' father in law said unto him, The thing that thou doest is not good.

Thou wilt surely wear away, both thou, and this people that is with thee: for this thing is too heavy for thee; thou art not able to perform it thyself alone.

Hearken now unto my voice, I will give thee council, and God shall be with thee: Be thou for the people to God-ward, that thou mayest bring the causes unto God:

And thou shalt teach them ordinances and laws, and shalt shew them the way wherein they must walk, and the work that they must do.

Moreover thou shalt provide out of all the people able men, such as fear God, men of truth, hating covetousness; and place such over them, to be rulers of thousands, and rulers of hundreds, rulers of fifties, and rulers of tens:

And let them judge the people at all seasons: and it shall be, that every great matter they shall bring unto thee, but every small matter they shall judge: so shall it be easier for thyself, and they shall bear the burden with thee.

If thou shalt do this thing, and God command thee so, then thou shalt be able to endure, and all this people shall also go to their place in peace.

So Moses hearkened to the voice of his father in law, and did all that he had said." (Exodus, 18:13-26).

So, just like technological innovations, organizational ones are, for the most part, characterized by the initiative originating from God and the actual realization being performed by Man.

I now want to examine parameters of integration such as the evaluations given in the Torah regarding human actions toward God, Nature, and Each Other.

§2. "Exchange relationships" in the Torah

Our analysis of the judgements pronounced in the Torah is based on the notion that exchange among Men, Man and God, and Man and Nature constitutes the core of society. Here, exchange should be understood in a broad sense of the word. Something taken away from an individual represents a degenerate case of exchange since all that a person forced to give something up (from whom something was taken) gets in return is negative emotions; similar considerations apply to nature when people take things from it destroying the ecological balance. The ten commandments govern not only the relationship between God and Man but also the relationships among people. Various rules of kosher foods given in the Torah can be interpreted as preventing an exchange with Nature where what has been taken away from nature is not compensated by the health or strength of Man whom nature must serve. Many rules in the Torah are concerned with a fair exchange among all members of society based on parity. An individual who violates these rules of fair exchange is punished by losing part of his gains with the offended party receiving an "equivalent amount of gain" - psychological compensation. The notion of

"...if a man cause a blemish in his neighbor; as he has done, so shall it be done to him; Breach for breach...eye for eye, tooth for tooth " (Leviticus, 24:19-20),

is a clear manifestation of an attempt to ensure complete fairness of "exchange" between the offender and the offended.

Advocating fair exchange, Torah prohibits any type of an exchange which results in just gains for one party and just losses for another. At the same time, Torah abounds with stories of people being blessed for good deeds they have done unto their neighbor.

Above considerations do not mean that judgements which arise in the course of exchange ignore the mediators in the relationship between people, God, and Nature. Crucial here is that these evaluations, having incorporated the various intermediaries, in the end lead to an equivalent (fair) exchange.

Note that judgements made in the Torah pertain to actions (verbs), not to individual elements (or nouns in general). Evaluations of actions can be more sophisticated than evaluations of elements since the former can account for the gap in the value of the input and output elements.

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We will introduce new types of evaluations used in the Torah which should allow us to make these relationships of exchange more concrete

§3. Evaluation of personal and collective actions.

Judgements pronounced in the Torah reflect personal and collective responsibility of the Jews. Within the latter category, we should distinguish between "spatial" and "durational" responsibility. Responsibility over time refers to the responsibility born by the "population" for an individual; responsibility over space reflects responsibility of the inhabitants of a particular geographic region, the entire nation. Under the collective responsibility, everybody is punished equally in spite of the fact that individual conduct may not warrant the same severe punishment. At best, only the righteous ones are spared. All others receive a harsh punishment. This is how Torah presents the destruction of all the inhabitants of Sodom and Gomorah with righteous Lot and his family being spared. There are other examples.

It is also interesting to distinguish those collective judgements which apply only to a particular "population". Torah contains a thorough analysis of many of them. It may be helpful to look at them from the standpoint of a more general question of the term of the punishment/reward. Will the punishment extend over for a short period of time, a significant part of a person's life - his whole life perhaps, or will it persist even after his death? Take a culture which believes body and soul to be distinct and that the soul leaves the body to enter the afterlife. Then future punishment/reward can be administered through such institutions as hell/heaven, reincarnation, or nirvana.

The concepts of a soul or an afterlife do not exist in Judaism as it is presented in the Torah. Punishment/reward of an individual is carried out via future generations. This is evident in the punishment proclaimed in the name of God

"...visiting the iniquity of the fathers upon the children unto the third and fourth generation..."

as well as the rewards also given out in the name of God

"...unto thousands of them that love me, and keep my commandments."
(Exodus, 20:5-6; repeated in Deuteronomy, 5:9-10).

Rational explanations for this kind of punishment/reward, hinging on a strong assumption that one generation is not responsible for the deeds of its predecessors, were also attempted. People affected by one's actions are primarily his close ones.

The ones affected most are the person's children, grandchildren, and great grandchildren, i.e. three or four generations because they are in a position to absorb more by imitating their parents. Perhaps, it is necessary for three to four generations to pass before the aftermath of a bad deed on the part of the parents, even if it is not brought up, dies out completely. After that, memory of it should have not affect future generations. Memory of a good deed should not be limited to three or four generations but should pass on to future generations. The prestige associated with a name of the one who has done good deeds may carry over to his descendants and their belonging to a certain family may play a significant role in their lives.

§4. Unconditional Evaluations.

One aspect of our analysis of the judgements pronounced in the Torah, both personal and collective judgments of actions, which should be distinguished is the conditional-unconditional nature of these judgements; i.e. we need to consider conditional and unconditional evaluations. Authors of the Torah devoted much space to these two classes distinguishing two kinds of relationships between people: one based on unconditional demands imposed upon one's conduct and the other based on conditional rules. Here, the term unconditional refers to demands that are independent of the circumstances; conditional demands imposed upon an individual account for the respective circumstances.

It seems to me that unconditional judgements represent an analytical tool which helps shape mans beautiful conduct. Remember that the evaluation of the beauty of the work of the first six days of creation was merely stated, its (judgement's) constituent structure was not revealed. Same attitude prevails at the early stages of the functioning of the universe when the conduct of righteous men (Noah, for instance) is judged. Subsequent development unmask the constituent components of good and evil which characterize mans conduct but the sum total of this evaluation is not revealed. We could assume that the overall value would be precisely a reflection of the beauty of mans conduct.

Among the unconditional demands stated in the Torah are the ten commandments inscribed on the tablets (Exodus,20:1-17), reiterated in (Deuteronomy, 5:6-21): "Thou shalt not steal ", "Thou shalt not murder", etc.

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The Torah also contains other unconditional rules a Jew must obey. The book of Leviticus describes many unconditional constraints placed upon the Jews. Among these unconditional statutes are:

"...neither deal falsely, neither lie one to another". "Thou shalt not curse the deaf, nor put a stumbling block before the blind, but shalt fear thy God: I am the Lord." "Ye shall do no unrighteousness in judgement : thou shalt not respect the person of the poor , nor honor the person of the mighty: but in righteousness shalt thou judge thy neighbor." "Thou shalt not avenge, nor bear any grudge against the children of thy people, but thou shalt love thy neighbor as thyself: I am the Lord." "Ye shall do no unrighteousness in judgement, in meteyard, in weight, or in measure."

At the same time, the Torah also presents many conditional rules which particularize the unconditional statutes including the ten commandments. For instance, unconditional "Thou shalt not steal" is made more specific depending on whether a human being (Exodus, 21:16) or an animal is stolen (Exodus, 22:1), whether an animal is still alive (Exodus, 22:4), etc.

Both conditional and unconditional demands are assigned respective evaluations which differ in the extent of the suggested reward/punishment.

A preliminary outline of the above discussion is presented in table 5. It gives examples of unconditional (weak conditional) and conditional (strong conditional) demands along with strong/weak measures to reward/punish for following/violating these rules respectively.

Evaluations presented in the Torah are not binary (conditional/unconditional) but can be distinguished in terms of the degree of conditionality. Evaluation in the Torah cover a broad spectrum reflecting the degree of conditionality with extremes represented by moral statutes - unconditional judgments and laws (customs) - conditional judgements. Semi-conditional evaluations gravitate toward morality which I shall elaborate upon below; laws encompass rules of reward/punishment fixed within the code as such - rules that are almost conditional, as well as conditional judgements which could be made by individuals whom the law has granted the right to correct these judgements according to the circumstance not accounted for in the law.

Table 5. Degree of conditionality and the strength of judgements pronounced in the Torah.

Degree of Conditionality	Strength of evaluation	
	Strong	Weak
Strong	Ten Commandments (Exodus, 20)	Thou shalt not utter a false report (Exodus, 23:1) Ye shall not afflict any widow or fatherless child (Exodus, 22:21)
Weak	A Man also or a woman that divineth by a ghost or a familiar spirit, shall surely be put to death; they shall stone them with stones; their blood shall be upon them (Leviticus, 20:27) And the daughter of any priest, if she profane herself by playing the harlot, she profaneth her father: she shall be burnt with fire (Leviticus, 21:9)	They shall not make baldness upon their head, neither shall they shave off the corners of their beard, nor make any cuttings in their flesh (Leviticus, 19:27) Thou shalt not let thy cattle gender with a diverse kind; thou shalt not sow thy field with two kinds of seed; neither shall there come upon thee a garment of two kinds of stuff mingled together (Leviticus, 19:19)

It seems that most of the moral judgements delivered in the Torah are of semi-conditional rather than unconditional nature since they do incorporate the relevant circumstances. For instance, the commandment not to steal reproves theft but not acquisition of secrets from an enemy. I shall elaborate upon this point with respect to another commandment "Thou shalt not murder."

Not murdering and the respective negative evaluation of the act is semi-conditional unlike an unconditional demand not to kill. According to the principle of not murdering, a man who has killed an innocent person is judged negatively and is considered a criminal; a soldier who has killed an enemy soldier is considered a hero. At the same time, any act of manslaughter may be judged negatively within some ethical code and thus receive an unconditional evaluation.

These considerations are manifested in the various translations of the Torah. For instance, The Holy Scriptures according to the Masoretic text, a new translation,

Philadelphia: The Jewish Publication Society of America, 1955, translates the commandment as "Thou shalt not murder". In The Holy Bible commonly known as the authorized (King James) version, The Gideons International, 1983, the commandment is translated as "Thou shalt not kill".

Unconditionality of judgement concerning homicide is part of a more general problem of means and ends, of possible independence of means from the ends. Relatively simple case is killing for personal gains. As far as I recall, one gifted Soviet historian L. Batkin once noted that Shakespeare's work was perhaps a response to the then widely known in England views of Machivelli. Shakespeare exposed how good means, and murder in the struggle for power in particular, can lead to the downfall of the victors. Perhaps the strongest statement in this respect is Shakespeare's drama "King Lear" in which foul means lead to a spiritual collapse of the person when he is left one on one with his conscience.

Condemnation of murder in the literature goes far beyond the disapproval of selfish motives. In the Queen of Spades, Pushkin condemns German for murdering the old woman whose secret he wanted to use to ennoble his family. Impressed with Pushkin's concept, Dostoevsky developed it further in his "Crime and Punishment". Dostoevsky denounces the idea of killing a dirty old woman who is a pawnbroker in the name of giving her money to the hundreds of widows with starving children. "Brothers Karamazovs" takes this idea even further condemning the possibility of sacrificing a new born child to be laid at the foundation of a crystal palace all of whose inhabitants would be happy for eternity. Still, Dostoevsky believed it was necessary to help the Serbs kill Turkish soldiers in the Slav's struggle for independence from the Muslims. It seems the argument between Dostoevsky and Tolstoy is largely over the interpretation of the commandment in question. Tolstoy was opposed to any kind of manslaughter. It is not by chance that he was close to Gandhi and they even carried on a correspondence. It would be hard to imagine Dostoevsky in the same role!

The difference between unconditional and semi-conditional evaluations will become more prominent if we use the same example of "Thou shalt not kill" and "Thou shalt not murder" to illustrate the conduct of man depending on the precept he accepts.

In an extreme case, one who follows "Thou shalt not kill" will allow himself to be killed before he kills another. These views are shared by one of the Hindu

sects in Sri Lanka (Ceylon). I believe a former prime minister of Ceylon Solomon Bandaranaike (1899-1959) belonged to this sect. He did not allow himself to kill the attacker and died from the hand of a murderer. But what happens if one who adheres to this notion does kill somebody, perhaps kills a murderer in self-defense; naturally, it is assumed that the bounds of self-defense were not violated. Nevertheless, this person has transgressed a moral statute. A reader might respond: what the use of treating his act as a transgression if demands imposed upon an individual are exorbitant? Who is willing to sacrifice his life so as not to kill the attacker? Even according to law this man would be acquitted. Attitude of different people toward military victory is a good indicator of this dilemma. A follower of the unconditional "Thou shalt not kill", one who regards all homicide as a moral transgression will go to all length to avoid killing. If he and those sharing his beliefs are threatened by an enemy they will do everything in their power to prevent a war. But assume bloodshed is inevitable. They can allow the enemy to capture them and then try to assimilate the conquerors into their culture; history of India witnessed such cases. But suppose adherents of unconditional evaluations decide to defend themselves for they cannot hope for the enemy to absorb their culture. They defend themselves heroically and achieve victory. What now? If they are consistent in their beliefs, they will mourn the death of people, whether their own or of their enemy. This attitude is exhibited by some Iroquoias tribes who would, following a victory, sit in the woods for two weeks mourning the dead. Semi-conditional judgement of "Thou shalt not murder" may result in parades with victors proudly demonstrating the "scalps" of the defeated enemy.

§5. Conditional Evaluations.

We can distinguish between "conditional" and "almost conditional" evaluations. Almost conditional evaluations are typical of a judicial code and its laws since it allows for the correction of the circumstances to be made by the one who pronounces the sentence. Torah, for the most part, contains almost conditional evaluations thus presupposing the presence of individuals involved in the ruling hierarchy - judges who must specify the law according to the circumstances.

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So what is the role of conditional evaluations presented in the Torah? I will attempt to answer this question within the framework of the systems approach with respect to conditional evaluations pertaining to punishment.

From the functional point of view, conditional evaluations of the guilty party should accomplish the following: a) isolate the criminal from society; b) make the guilty party compensate for the damages; c) deter the criminal from breaking the law in the future; d) discourage other people from taking a chance and breaking the law.

It is rather difficult to pinpoint the role of each of these factors in each particular case and even more importantly, to tie them together in a non-contradictory manner. The fact that Torah takes all these objectives into account in passing conditional judgements is obvious. Just compare the amount of the loss with the amount of compensation in all the different cases of theft: the amount of compensation can be much greater than the size of the loss (for example, see Exodus, 21,22).

From the structural point of view, conditional evaluations specify the circumstances which determine their "severity". For instance, payment for a stolen ox depends on whether this ox was sold or whether it still alive and in the possession of the thief (Exodus, 22:14).

From the point of view of a process, the principle question regarding conditional evaluations is whether all the conditions formalized in the law to determine the punishment are sufficient or whether there is a need to introduce other considerations not stipulated in the judicial code and thus belonging to the realm of the intuition of the judge or the jury. The Torah emphasizes formal methods to determine the extent of the punishment. It seems to me that subsequent interpretations of the Torah and the development of the judicial system in general were meant to introduce additional informal rules to the judicial process. The problem of formal and informal rules to set the punishment is one of the most difficult problems in jurisprudence. In isolation, each of these methods suffer from serious flaws. Significant factors can easily be missed if we stick to the formal rules comprising the judicial code: although invariants may exist, it is still very difficult to specify all the conditions a priori. On the other hand, if the judgment is based on informal rules, there is a threat of the punishment depending on the grace of the judge with all the arbitrariness associated with this approach.

From the standpoint of genesis, conditional evaluations reflect the degree of objectivity in uncovering the violation: for example, whether or not there were witnesses, etc. It says in the Torah:

"At the mouth of two witnesses, or three witnesses, shall he that is worthy of death be put to death; but at the mouth of one witness he shall not be put to death." (Deuteronomy, 17:6).

Also crucial from the point of view of the genesis are the motives behind the violations. For example, the attitude towards intentional and unintentional acts can be quite different.

"He that smiteth a man, so that he die, shall be surely put to death. And if a man lie not in wait, but God deliver him into his hand; then I will appoint thee a place whither he shall flee.

But if a man come presumptuously upon his neighbour, to slay him with guile; thou shalt take him from mine altar, that he may die." (Exodus, 21:12-14).³⁹

§6. On the contradictions between unconditional evaluations.

Both unconditional and conditional evaluations in themselves are subject to contradiction. Same holds true between conditional and unconditional evaluations. Torah is no exception.

Now, I would like to advance some ideas to try to resolve the contradictions between the unconditional evaluations presented in the Torah.

Even the ten commandments contain contradictions. For instance, the commandment "Honour thy father and thy mother" may come in conflict with another commandment "Thou shalt not steal": suppose the parents order their child to steal; theft may be necessary to prevent murder, etc.

These conflicts, not resolved in the Torah itself, were subsequently resolved in the Talmudic interpretation of the Torah by establishing the priorities among unconditional evaluations. I do not intend to provide a critical analysis of prescriptions given in the Talmud or any other relevant literature. I want propose some ideas which I hope will shed light on this question.

³⁹Prof. Ozbekhan called my attention to the fact that in countries where criminal law is based on the Koran, the motives behind the crime are not taken into account in the determination of the punishment: the act is punished as such.

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It seems to me that the contradictions among unconditional evaluations can be studied based on the following approach: introduction of a multi-level hierarchy between God and Man. (This is consistent with my previous statements concerning the contractual relationship between God and Man for Man is free to choose whether or not to follow the proposed agreement). A bilevel hierarchy would include God and Man. A three level hierarchy would house another force beside God and Man whom a given Man would also have to obey. Important in this respect is the introduction of Parents. Torah prescribes that a given Man must obey not only God's statutes but also his Parents'. One commandment explicitly states "Honour thy father and thy mother" (Exodus, 20:12).

With a two-level hierarchy the priorities among the commandments are set directly. For instance, "Thou shalt not kill" is placed above "Remember the Sabbath day" since cooking for a sick person is allowed on Saturday. Talmud contains a very thorough investigation of such conflicts.

A three-level hierarchy yields to other methods of resolving the conflicts between the commandments. This becomes significant for resolving the conflict between , say, "Honour thy father and thy mother" and other commandments. According to one method, the commandments bequeathed by God extend directly to all levels, i.e. the principle "my vassal's vassal is also my vassal" is at work. In this case, a son or a daughter must disobey parents' orders if they conflict God's commandments: the responsibility for violating the commandments rests with the offspring himself. This construct presupposes a high level of culture of the people, competence and responsibility of every individual for his actions. Another principle operating within the same paradigm is based on the first level delegating all the power to the second level which, in turn, bears complete responsibility in determining reward/punishment of the third level (not ruling out the possibility of the first level considering the complains of the third level about the second level).⁴⁰

So, as long as conflicts among individual unconditional evaluations arise, priorities must be set. A consistent system of priorities calls for a holistic deductive

⁴⁰Diversity of methods within a hierarchical framework manifests itself in the organization of armies in different countries. In many armies a soldier must obey officer's orders even if they conflict with the law. Afterwards, a soldier may file a complaint about the officer's order. In Israeli army, a soldier who has violated the law in following an officer's order will bear complete responsibility in court for his unlawful actions. An officer issuing such order will also be punished but a much lesser extent than the soldier.

model to be constructed. But it seems such a model defies construction since it is impossible to determine the true criterion of human development for infinity (or a sufficiently long period of time) and even if it does exist, to link it with all the events.

One extreme method of resolving this problem is for each individual to set his own priorities based on belief since their truth as well as falsehood cannot be proved. This problem would thus reduce to the general problem of development, the solution of which presupposes diversity of elements comprising the system. Integration of elements in such a system would be an extremely difficult task. It seems a compromise can be reached by having a diversity of groups with each group abiding by the same set of priorities. Variety of religious groups is a case in point.

The proposed method of integration of evaluations within a single group and the hierarchical scheme can be implemented in a variety of ways. One way is for each group to set its own final goals and introduce respective constraints and then deduce all the evaluations of the constituent ingredients. But this approach may be unacceptable within an indeterministic course of development. In that case, operating within the constraints of the chosen goals or even a course of development, various methods would be used to devise a system of evaluations of essential and relational parameters which have been extensively discussed in the first part of the book and in the section on chess. This information can then be used to form a more compact system of action evaluation.

This approach does not rule out the use of previous experience. It can be incorporated by reexamining evaluations of relational and essential parameters presented in the Torah, making them compatible, and then proceed to synthesize them on the basis of evaluations of actions. Naturally, integration of evaluations is not final. It may conceal, perhaps even unnoticeable, inconsistencies. Still, this would represent a step forward in the development of an ethnic group for it will incorporate the experience it has accumulated. Another reason this approach makes sense is because it seems quite feasible that the evaluations of actions advanced in the Torah were formed directly circumventing deep analysis of the underlying ingredients.

Now I want to illustrate the above concept by reconstructing a number of essential and relational parameters based on Torah's evaluation of some isolated actions as well as the decisions made in certain situations.

§7. Possible values of essential and relational parameters in the Torah.

It seems to me that as far as the essential parameters are concerned, an extremely high value was placed upon human life. The severity of the punishments for killing a person is a direct proof of this. Talmud's subsequent interpretation of the Torah provides more evidence supporting this statement. For example, the commandment prohibiting work on Sabbath can be violated to cook food for a sick person.

Evaluations can also be assigned to such essential parameters as food. For example, keeping kosher is quite important. The fact that this rule was not included in the ten commandments indicates a large gap in the values assigned to human life and to food as essential parameters.

We might also try to reconstruct Torah's evaluations of the relations. Doing so is easier within the spectrum showing the gradations in the values of individual relation, rather than between different relations. Moreover, most of the time we can only speak of the "tendency of a given relation toward one of the extremes" of the above spectrum.

Below, I shall try to substantiate my way of looking at these evaluations presented in the Torah. Tendency of a relationship to "gravitate" toward one of the extremes is denoted by underlining it.

1. Simultaneity - successiveness. The creation of the world in six days; the many stages in persuading the Pharaoh to let the Jews out of Egypt.

2. Divergence - convergence. God not striving to reach an ultimate goal; He is constantly expanding his sphere of influence, for instance the creation of many different nations, including great nations and even a chosen nation.

3. Mutuality - preponderance. God and Man are portrayed as equal partners concluding a contract with each other. As far as people are concerned, the need to limit the king and stipulating the conditions when slaves are to be freed is greatly emphasized.

4. Explorability - traditionness. Search for novelty involves not only finding new more suitable land, but also making new original decisions. For example, a decision made upon leaving Egypt to go by way of a desert rather than the lands

inhabited by the aggressive Philistines; 40 year wondering in the desert with a new generation coming into the promised land.

5. Sensitiveness - unresponsiveness. God being sensitive to offerings and sacrifices, from Noah, for instance. The fortitude of the Jews in the face of hardship - the stay in the desert.

6. Repetitiveness - monotonousness. The world evolves basically in a smooth monotonically way except during certain periods like the flood or the destruction of Sodom and Gomorrah.

7. Reversibility - irreversibility. Destruction of something is followed by the creation of auspicious conditions for its revival; the flood, for instance; atonement on the day of Yom-Kippur from the sins committed previously.

8. Jumpiness - smoothness. Preferring jumpiness to a smooth and slow life in one place - migration to Egypt during the famine and a quick exodus from Egypt.

9. Mobility - stationarity. A constant struggle on the part of the Jews to change their status in the world.

10. Substitutionality - irreplaceability. Replaceability of the people: not allowing them to become immortal (the expulsion of Adam and Eve from the garden of Eden to prevent them from tasting the fruit from the tree of life); contemplating the possibility of destroying the Jewish people for their disobedience in the desert and replacing them with a new Jewish nation descending from Moses.

11. Proximity - remoteness. The creation of Man close to God; "...love thy neighbour as thyself..." (Leviticus, 19:18).

12. Contiguity - angular contiguity. Sharing a common heritage. Following the many commandments and statutes.

13. Mediality - laterality or (centrism - "edgism"). A desire to be in the heart of things; for instance, to live in places that represent the centers of civilization (Sumer, Egypt).

14. Distributory-tributary. A desire to live in different regions while having your own land.

15. Versatility - one-sidedness. Ability of God and the Jewish people to adapt the environment to suit their needs; e.g. while they were in Egypt or while they wondered through the desert.

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16. Saturationness - exhaustibility. Showing ability to achieve the set goals, growth, and satisfaction; e.g. turning into a populous nation; a successful exodus from Egypt still maintaining enough strength for future accomplishments.

17. Reflecticity - irreflecticity (self-centeredness). Ability to put oneself in another person's position. For example, Moses takes into account the views of the Egyptians regarding the possible consequence of God's actions when God intends to destroy the disobedient Jews.

18. Complementarity - self-sufficiency. The idea of mutual support; of combined efforts of God and Man as well as of different people.

19. Cohesiveness - porosity. People being responsible for their actions; rewarding and punishing the whole nation depending on whether or not it follows God's statutes (in particular, see Leviticus, 26).

20. Compatibility - incompatibility. Throughout the Torah, the conditions of compatibility between God and Man (a covenant, for instance), between Jews themselves (relationship between Joseph and his brothers), and between Jews and other people (Jewish migration to Egypt).

21. Historicism - markovness. Emphasis on traditions, e.g. remembering the exodus from Egypt (see Exodus, 13:3-16).

22. Maturity - rawness ("greenness"). Emphasis on the youthhood of mankind. For instance, after the flood authors of the Torah attribute the following words to God: "...for the imagination of mans heart is evil from his youth..." (Genesis, 8:21).

23. Monopolization - influencelessness. One of the main ideas in the Torah is to prevent localized monopolistic control.

24. Permeability - closedness. A desire to preserve the Jewish people as a nation descending from Sarah and Abraham; extremely little proselytism.

25. Exreticity - retentioness. Helping other people, e.g. helping Egypt during the time of the famine; at the same time, no aspiration to rule over the entire world, etc.

26. Diversity - uniformity. Increase in the number of different nations; appearance of new objects.

27. Order - chaos. Elaboration of the means of integrating a society.

Chapter 5. A change in the course of development of the Jewish nation at various stages of its history.

We have considered in generalized terms one possible interpretation of the growth of negentropy as expounded in the Torah. Our basic assumption was that growth proceeded in an indeterministic fashion. Setting a general course of development and its particularization house a spectrum of different criteria which reflect "phase transitions" arising in the course of development.

Such transition may represent a state where manifold and methods of its integration have become so advanced that it is now possible to formulate a more specific, but still rather general course of development.

I want to clarify this point.

At the beginning of creation, authors of the Torah probably viewed the universe as being rather simple and shapeless, chaotic (disordered). So first they had to construct an elaborate "anatomy" of the universe. This may have caused the goals that were formulated to be relatively limited, such as the creation of various objects. Time needed by God to achieve these goals was insignificant - a single day or even part of a day.

Regarding this division of a day, for instance, God, at the beginning of the third day of creation, sets a goal

"...Let the waters under the heaven be gathered together unto one place, and let the dry land appear..." (Genesis, 1:9). After it is attained, God sets another one on that same day

"...Let the earth bring forth grass, the herb yielding seed, and the fruit tree yielding fruit after his kind, whose seed is in itself, upon the earth..." (Genesis, 1:11).

It is reasonable to think that integration of these things subject to the overall course of development directed towards the growth of negentropy proceeded by means of evaluation of the created objects using the criterion of beauty.

A phase transition takes place when a manifold of objects has become "rich" enough to allow a more specific, but still sufficiently general, course of development to be set subject to the growth of negentropy. This transition corresponds with the creation of Man; a concrete course of development (having no constraints on time) is set - an extensive growth of the life on earth for the benefit of

mankind. There is no call for a qualitative (intensive) growth of the manifold as such, neither in the universe as a whole, nor on Earth. If new classes of objects do appear, their purpose to serve the people is made clear in advance.

Indeed, there is the following passage in the Torah describing the end of creation. Having created the man and the woman:

"And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth." (Genesis, 1:28).

This course of development more or less reflects overall development geared toward the growth of negentropy - a criterion discussed above. A call to "Be fruitful, and multiply" signifies increase in the manifold in terms of scale without the creation of qualitatively new objects. On the other hand, Mans dominion over other living creatures denotes the order variable of the negentropy function. A course of development thus defined, although still rather general, limits the scope of development as compared with the first six days of creation. New objects, if they do appear, would have to be beneficial to the people. They will be part of a system which must, in the end, undergo only extensive growth. Of course, there is a "huge gap" between the general call for an extensive growth for the benefit of mankind and a given state. There is still a lot of freedom in pursuing this goal over time. With a large number of intermediate stages between the general objectives and the achieved results, the precise formulation of course of development remains largely unknown.

By analogy with chess analyzed in another part of the book, I would say that the aesthetic method of God's actions in the course of the functioning of mankind manifests itself in the synthesis of positional and somewhat intricate combinational styles.

The quintessence of development of the Jewish people is the unceasing creation of position, i.e. growth of its potential. It seems to me that this, according to the Torah, represents the meaning of life of an individual Jew as well. A Jew is not required to be a hero in a sense of sacrificing himself in the name of other people (there is not one instance in the Torah of a Jew sacrificing himself in the name of anything whatsoever; the notion of self-sacrifice appears later, primarily in the book of Maccabees). Unqualified sainthood is untypical also (this point was discussed above). At periods devoid of any extraordinary events a Jew is basically

supposed to enjoy life by working and resting and multiplying his wealth, i.e. by augmenting the magnitudes of essential parameters. At the same time, a Jew must serve God, perform the necessary rituals and abiding by the unconditional rules of interrelations with other people, i.e. increase the value of his potential. This approach to the meaning of life is completely in tune with the fact that Torah lacks the concept of eschatology (paradise - nirvana - communism). This liberates a Jew from turning life into "hell" for the sake of turning some distant and illusory future into "paradise".

The above does not rule out the possibility that at certain times in the course of development, some particular essential parameter be distinguished and its attainment may be set as a goal. Still, attaining these goals cannot ignore unconditional values of essential or relational parameters, i.e. the moral code.

In chess the weight of material parameters is so large as to allow for positional parameters to be ignored when striving for positions characterized by significant material superiority. It seems real life is more complicated. No matter how important the goal, expressed in essential parameters, is neglecting morality can lead to very unpleasant results in the future including not only demoralization of the people but also the loss of material wealth. Therefore, whatever short-term goals one strives to reach, it is vital that the state following be characterized by the high value of the moral system.⁴¹

Furthermore, formulation of a goal with emphasis upon certain parameters does not presuppose a programmatic-like method of its attainment. The process may develop by creating the potential with special emphasis upon particular parameters, i.e. it may unfold in stages.

Thus, in specifying the overall course of development of the universe, authors of the Torah delineate the stages set up by God in the development of the Jewish people. Each stage pursues its own goals of increasing the value of certain essential parameters; progress of relational parameters applies to all stages, it is a given.

We can distinguish two factors in goal formulation. One refers to the time allotted for its attainment. Time periods of varying durations form something like a hierarchy of stages. This method of goal formulation prevails in the Torah. The

⁴¹I believe that the relativistic morality practiced by the Bolsheviks in gaining and hanging on to power is the major reason for the recent crisis of the Russian empire.

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other variety of goal formulation specifies the desired state; here, the actual amount of time needed to reach it represents the unknown variable.⁴² Torah contains examples of this case as well. Also note that even if the time period set aside for a certain stage is not specified in the Torah but it is evident from the text that it requires a process of considerable duration I included it among the long lasting stages. So the duration of some stages was explicitly stated in the Torah while for others it was not. But the latter still yield to the order of magnitude of the time period required for their completion. (It would be interesting to explore which goals were assigned time and which not).

I want to illustrate these ideas in Table 6 which is in the form of a 3x3 matrix. The axis of the matrix are the duration of a stage and the specificity of the results to be achieved at a given stage. Although each of the two variables in the matrix is continuous, we can split them into three intervals corresponding to stages within the range of each variable.

⁴²This kind of set up is known as an optimization problem with a floating upper limit of integration.

Table 6. Relationship between the duration of the stage and the specificity of the goals it is supposed to achieve

Duration of the stage	Specificity of goals		
	General	Average	Specific
Long	1. Reproduction of people: general course of development following the creation of the universe specified (Genesis, 1:28) 2. God's promise to preserve the created diversity (Genesis, 8:21-22) 3. Creation of different nations (Genesis, 17:4)	God's promise to create great nations (Genesis, 17:20,21:18)	The covenant between the God and the Jews. God's promise to lead the people to the promised land after four generations (Genesis, 15: 16).
Average	The flood (Genesis, 6:5-22; 7:1-24; 8:1-19)	Making Egypt the breadbasket for surrounding peoples (Genesis, 47: 13-14)	Jews wandering in the desert for 40 years (Numbers, 14: 29-35)
Short	Each of the first six days of creation (Genesis, 1:1-31)		The punishment of the Pharaoh for preventing the Jews from leaving Egypt (Exodus, 7-11)

The entries of the table are examples taken from the Torah. I shall discuss some of them in detail. One of the entries in this matrix is empty. A reader familiar with the Torah can fill in this empty slot.

I now want to discuss the above ideas with respect to individual (in terms of time) stages distinguished on the basis of the essential parameters stress at a given stage. The duration of a stage may range from hundreds of years to decades, single years, months, or days.

History of Jewish people as told in the Torah does not follow a strict durational hierarchy, i.e. a short stage may be followed by a long stage.

For instance, Abram did not have any children from his wife Sarah. God tells Abram that in one year he will have a successor "...that shall come forth out of thine

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own bowels..." (Genesis, 15:3). And God performs a miracle when he promises a one hundred year old Abram and his ninety year old wife Sarah that they will bear a son by the name of Isaak "...at this same time in the next year." (Genesis, 17:21).

At the same time, authors of the Torah, referring to God, speak of the Jews coming to promised land only after hundreds of years.

"But in the fourth generation they shall come hither again: for the iniquity of the Amorites is not yet full." (Genesis, 15:16).

"And he said unto Abram, Know of a surety that thy seed shall be a stranger in a land that is not theirs, and shall serve them; and they shall afflict them four hundred years." (Genesis, 15:13).

It is also stated in the Torah that:

"Now the sojourning of the children of Israel, who dwelt in Egypt, was four hundred and thirty years.

And it came to pass at the end of the four hundred and thirty years, even the selfsame day it came to pass, that all the hosts of the Lord went out from the land of Egypt." (Exodus, 12:40-41).⁴³

According to the authors of the Torah, when God sets specific goals, even remote ones, He does not announce a specific program for achieving these goals. He proceeds stage by stage with some stages lasting for decades.

For instance, the final stage of Jewish migration to the Promised Land is to last 40 years. (Numbers, 14:33-34)

Some events last for years. To "move" the Jews to Egypt in order to save them from starvation, Gods exercises foresight through the sale of the son Joseph to the Egyptians (Genesis, 45:5-8).

When time had come, God, in the opinion of the authors of the Torah, set a specific goal of getting the Jews out of Egypt and delivering them to the promised land. An immediate reason for God's decision was the desperate situation of the Jews in Egypt.

Seeing the pain and the suffering of his people God sets the goal:

"...to deliver them out of the hand of the Egyptians, and to bring them up out of that land unto a good land and a large, unto a land flowing with milk and honey..." (Exodus, 2:24:25, 3:7-9).

⁴³Here, we have two dates which indicate the stay of the Jews in Egypt - 400 years (Genesis, 15:13) and 430 years (Exodus, 12:40-41). I do not know whether these dates are in contradiction with each other, whether they represent a reasonable mistake in forecast or whether they have to do with different periods during which the Jews stayed in Egypt.

Here, taking into account the conditions of transversality, the Jews take a lot of things with them upon leaving Egypt. Time set aside for this goal is measured in months.

Again, God proceeds step by step in carrying out the exodus of the Jews. God formulates relatively short-term objectives requiring days (or even hours) never revealing his entire plan ahead of time. And God eventually achieves his goal of delivering the Jews out of Egypt with the gold, silver, and clothing of their neighbours (Exodus, 3:22).

In concluding this chapter, we can note that authors of the Torah considered all the goals, both close and remote, set by God were achieved by God, although the road was neither clear nor smooth.

In place of conclusion

The principle hypothesis of my interpretation of the epistemology of the creators of the Torah is that they sought to portray the overall development of an indeterministic world as a directed creative process. This is the reason for regarding God as an evolving Creator and his work as not strictly programmatic, i.e. lacking complete and consistent knowledge of the consequences of his actions.

This approach provides, from a holistic perspective, a possible answer to the ten questions posed in the beginning of this section regarding certain aspects of the Torah. For the sake of convenience, these questions are reiterated below.

First question: "Why does not God declare a detailed program of creation and development of the universe but rather acts in a hierarchy of stages (substages) each time stating the goal of each stage (and goals of only some substages)?"

Second question: "Which global criterion of optimality guided God as the creator of the universe?"

Third question: "Why is God willing to struggle with Man (Jacob) and accept criticism from Man (Moses)?"

Fourth question: "Why did God not create the universe all at immediately, why did it take Him six days?"

Fifth question: "Assuming creation of the universe required several days, why did God not reduce the number of days by proceeding in a parallel fashion?"

Sixth question: "Why was it necessary, in the opinion of the authors of the Torah, for God to evaluate the results of his work so frequently during the first six days?"

Seventh question: "Can a Creator of infinite foresight destroy His own creations?"

Eighth question: "If God saw the wickedness of the serpent and generally distinguished between clean and unclean flesh, why did He tell Noah to take all the animals along and save them from the flood in order that they may multiply afterwards?"

Ninth question: "If God is omnipotent, omniscient, and omnipresent why does He not prevent evil? Who (what) is responsible for the existence of evil?"

Tenth question: "What prompted God to bestow unconditional requirements upon the Jews including the 10 commandments with rewards and punishments"

assigned accordingly; and why, at the same time, did God make these conditions situation-specific with rewards and punishments assigned for their fulfillment and violation respectively?"

Answer to the first question reflects an indeterministic view of the dynamics of the universe. Under indeterministic conditions, a course of development is chosen, it eventually assumes a more concrete and finally the most specific form in the course of formulation of the task of each particular stage; each stage may emphasize significant essential parameters taken in conjunction with the sum total of the values of relational parameters.

Indeterministic concept of an evolving universe assumes its Creator, if He exists, to be limited since He is unable to devise a complete and consistent program of action which would encompass everything which is taking place in the universe. The two polar assumptions of a Limited and Unlimited God house a multitude of intermediate states which entail the notion of the degree of limitedness. Reducing the extend of limitations is conducive to the perfection of a non-programmatic method of creation. So the assumption of a limited God in no way excludes the possibility of His self-perfection in the course of development or the perfection of the world.

Consequently, the notions of a limited God and God capable of Self-perfection were chosen as God's primary attributes. They play the same role as God's other attributes: eternal being, omnipotence, etc. Qualities of limitedness and self-perfection shed light on the idea of God's other attributes being given not as a priori static states but as dynamic characteristics which evolve in the course of a never ceasing process of creation of the universe.

Limitedness and Self-perfection are requisite attributes for the answer to the seventh question. For instance, the flood can be viewed as a result of God's limitedness in foreseeing the future. Indeed, if God could foresee the consequences of his work for indefinite periods of time, He would never allow the destruction of already created objects, and not only Man but also animals and vegetation. God's inability to foresee the future completely can, in turn, result from his other limitations, for instance, the speed of simulating the process of development. Under these circumstances, any action is impossible as long as the consequences are not known before the entire process is played out. But Torah explicitly asserts God's desire to expand his sphere of influence. It therefore becomes necessary to simulate

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development over some fixed period of time, to risk the possibility of unforeseen outcomes, and make the necessary corrections in the course of development.

Torah supports my hypothesis of a limited and self-perfecting God - the emphasis is upon a lengthy rather than an immediate creation of the universe - question four, and also upon successiveness rather than parallel creation - question five.

Assumption of a limited God capable of Self-perfection is especially significant with regard to the third question. A feasible hypothesis of why the authors of the Torah assumed that God created Man in his image and likeness, gave Man a mind to think, established a covenant with Man, and must deal with Mans physical and mental strength, is because all these things expand God's own might. By delegating some responsibilities to the microcosm of Man, God is able to concentrate on more important global issues. (This situation is echoed in the Torah when presenting the reasons why Moses created a hierarchy of rule during the stay of the Jews in the desert). At the same time, interaction with a force as active as Man permits God to accelerate the process of self-perfection.

Indeterministic view of the world with a limited and self-perfecting Creator in no way implies that the Creator has no influence over the degree of order of the changing universe. This leads us to answer the second question: indeterministic development by no means requires that the final goal and the criterion of its attainment be formulated explicitly; sufficient in an indeterministic universe is to establish a direction of development. It may manifest itself in the growth of negentropy, understood as a function of two independent variables: differentiation and integration. Torah parallels the growth of negentropy as defined above.

Within the framework of the concept of directedness of development of the universe we can hypothesize that differentiation, one of the variables of the negentropy function, manifests itself in the preservation and growth of the manifold of classes of objects. Individual objects of even clusters of objects within a class may turn out to be useless. But the class as a whole must at least be preserved. This idea leads to an answer to the eight question - of the expediency of God's call to save representatives of all classes of clean and unclean animals during the flood.

Manifold of objects is not the only manifestation of differentiation. Individual objects and Man in particular, created in God's image and likeness,

incorporates singular variety as well. Here, we arrive at an answer to the ninth question, of the reasons why each individual Person possesses both good and evil.

Answers to the sixth and seventh questions pertain to the other variable of the negentropy function, namely integration. Indeterministic conditions require the categories of beauty/goodness in order to evaluate the results of local actions. Here, the structure of the aesthetic judgement of the created objects is not revealed during the first six days of creation but merely stated; this is equally true in the beginning of the functioning of the universe when judging the conduct of righteous men. (Noah, for instance). Subsequent development discloses constituent elements of good and evil in characterizing the behavior of man, but the overall value of the judgment is not given. Perhaps, such an overall evaluation is represented by the beauty of one's conduct. Constituent components of good and evil in the Torah are the unconditional evaluations such as the ten commandments. They are directed to solving strategic problems; conditional evaluations in the form of laws aim at resolving primarily tactical problems within the framework of the established strategies.