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Black & White on White paper
188 pages

ISBN-13: 9781511956390
ISBN-10: 1511956399

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18 Questions and Answers

About the Torah

Aron Katsenelinboigen

18 Questions and Answers About the Torah

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ISBN-13: 978-1511956390

Alternative Versions of a Single Dedication

To my grandfather, Rabbi Yitzhak Katsenelinboigen (1876-1941),
even though I am not sure he would have liked this book.

To my grandfather, Rabbi Yitzhak Katsenelinboigen (1876-1941).
A non-dogmatic thinker, I believe he might have found some affinity
with a general tenor of this book.

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Acknowledgments

I am grateful to Cynthia Anderson, Judy Casanova, Valery Chalidze, Mikhail Epstein, Neil Gillman, William Kauffman, Samuel Klausner, Joseph Lakhman, Michael Levins, Ann Matter, Eugene Mayburd, Kenneth Mischel, Mikhail Sergeev, Vladimir Shlapentokh, David Teutsch, Jeffry Tigay, Lazar Trachtenberg, Efraim Urbach, and Herbert Wentz whose expertise helped me in writing this book. Many thanks to Paul Kleindorfer, the Chairman of the Department of Operations and Information Management (formerly The Department of Decision Sciences) at the Wharton School of the University of Pennsylvania. His support for this project is much appreciated. Special thanks to Elizabeth Voitko and my sons, Gregory and Alexander, who helped to polish the text of the manuscript because my English hardly merits a Nobel Prize for Literature. Last but not least, my thanks to V. Ulea (Vera Zubarev) for the many years of conversations and fruitful cooperation on the subject of the Torah and related topics. The unusual ability of this fine young lady to grasp poetry, literary criticism, movie-making, and philosophical issues, coupled with our intellectual compatibility, has made our wide-ranging discussions highly provocative. Our collaboration has had an enormous impact on this book. Her influence on its content is ubiquitous, even though I rarely mention her name in the context of specific topics. And may Ulea share all of my thanks with her husband Vadim and her son Mikhail.

Introduction

The analysis of holy books that form the foundations of modern religions is of great interest because these books present *holistic* ideologies (*Weltanschauung*). Such ideologies cover all aspects of human existence, ranging from the most fundamental questions of creation of the universe to the problems of daily life. Analysis of holy books, in my opinion, could also foster the development of new ideas in the field of decision-making. In turn, advances in decision-making theory could be fruitfully applied to a number of theological problems, so this reciprocal relationship between decision-making theory and theology could be mutually beneficial. I have chosen to examine only one holy book (among many, each of considerable size) – the Old Testament and its core section, the Torah (Pentateuch). I use the term "Torah" in the narrow sense to refer to the Five Books of Moses that form the basis of Judaism. The broad definition of the Torah would also include the Jewish sacred literature and all the relevant commentaries and interpretations. I want to emphasize that in speaking of God's actions, I shall always mean the way these actions are described by the authors and editors of the Torah. Avishai Margalit stated it quite wisely in his review of the book *The Prophets: Who They Were, What They Are* by Norman Podgoretz (Free Press, 2002) who, in turn, was commenting on another book, *History of the Religion of Israel*, by Yehezkel Kaufmann (New York: Ktav Pub. House, 1977):

I believe that Kaufmann misconceived what he was doing, although he was doing something of great importance. He did not, as he thought, describe what the historical Israelites actually believed. Instead he gave an impressive account of the beliefs of those who wrote or edited the Bible, wherever and whenever this occurred. (Analogously, one could give an impressive account of the beliefs

expressed in War and Peace, yet also be mistaken in maintaining that it is an account of the actual beliefs of the Russian people during the Napoleonic Wars.)

I think that the authors and editors of the Torah did not only express their own views, but revealed the underlying mind-set of “earthly” Jews throughout their history, for whom the ideas in the Torah have always been relevant, albeit to varying degree. (Analogously, in my view, Leo Tolstoy in *War and Peace* gave an impressive account of the typical beliefs of the Russians during the Napoleonic Wars.) I have tried to apply to the field of Torah studies certain methodological principles that I have discovered. If my ambitious endeavor is at all successful, it may also prove beneficial to the analysis of other holy books, perhaps in their entirety.

Multiple approaches to the analysis of the Torah

We have at least three basic approaches. The most typical approach interprets a given text within the framework of well-established theology. Certainly these interpretations contain many great ideas with practical applications to liturgy, customs, etc. The second approach aims to bring broad new theological ideas to the analysis of the Torah, whatever the ontological roots of these novel ideas may be. Rationally inclined individuals tend not to accept the books of the Torah, nor the stories presented in them. They regard these stories as flights of imagination starkly at odds to modern scientific theories. All the same, there have been attempts to “align” holy books with modern science. These attempts have focused not only on certain isolated events recorded in holy books [for example, the books by Nathan Aviezer (1990) and Andrew Goldfinger (1999)] but also on the general methodology adopted in these books. (For example, combining Jewish holy books with Aristotelian logic by Maimonides (1135-1204); the application of *Process Philosophy* elaborated by Alfred Whitehead (1861-1947) to the study of the Bible, etc.) The third approach is based on revising certain text of the Torah, for example, rejection of the passages that strongly condemn homosexuality. The present book follows, for the most part, the second and third approaches. I introduce new philosophical ideas, such as the degree of indeterminism and its core – the category of a *predisposition*, to the interpretation of the ancient text. I may also reinterpret the text by positing, for example, that God is asexual, or that “Thou shall not *murder*” is a more accurate rendition of the

respective commandment than “Thou shall not *kill*”.

Historical Flashback

My interest in exploring new approaches to the analysis of the Torah is not recent. My book *Selected Topics in Indeterministic Systems* (1989) includes a large chapter titled “One Possible Interpretation of the Interpretations by the Authors of the Torah of the Plans and Actions of the Creator.” (pp. 259-330) Hereafter, I shall refer to this chapter simply as *Chapter*. The guiding premise of the *Chapter* is the notion of an *evolving God* and related set of ideas. Being a novice in this field at the time of the *Chapter’s* writing, I was not familiar with the concept of *Process Theology* derived from *Process Philosophy*. The majority of Jewish scholars with whom I had discussed the *Chapter* had traditional training and was primarily preoccupied with *Halacha* rather than theology, so they had ignored *Process Philosophy* and *Process Theology* entirely. While a handful of others knew of *Process Theology* they relegated it to the periphery of biblical studies because they assumed that it belongs entirely to Christian theology and was therefore heretical and undeserving of mention. In fact, *Process Philosophy* “presents a general metaphysical scheme for understanding reality as a whole.” (Sandra Lubarsky (1996), p.3) Sandra Lubarsky and David Griffin (1996) have published a marvelous collection of articles written by a group of Christian and Jewish scholars dedicated to the application of process philosophy to Jewish theology.¹ The Wikipedia² describes process theology in the following way:

Process theology is a school of thought influenced by the metaphysical process philosophy of Alfred North Whitehead (1861-1947).

One precept of process theology is that God is not omnipotent. The universe is characterized by process and change that are carried out by the agents of free will. In fact, free will characterizes everything in the universe, not just the human beings... God cannot force anything to happen, but can only influence the exercise of this universal free will by offering possibilities. God contains the universe but is not identical with it (panentheism)... Because God contains a changing universe, God is changeable over the course of time (i.e., God is affected by the actions that take place in the universe). People do not experience a subjective (or personal) immortality, but they do have an objective immortality in that their experiences live on forever in God, who contains all that was...

The original ideas of process theology were developed by Charles Hartshorne (1898-2000), and were later expounded upon by John B. Cobb and David Ray Griffin. While process theology first was adopted by some liberal Protestant

Christians, it soon influenced a number of Jewish theologians, including British philosopher Samuel Alexander (1859-1938), and Rabbis Max Kaddushin, Milton Steinberg and Levi A. Olan, Harry Slominsky and to a lesser degree, Abraham Joshua Heschel. Today some rabbis who advocate process theology or a related theology include Rabbis William E. Kaufman, Harold Kushner, Anton Laytner, Nahum Ward, Donald B. Rossoff and Gilbert S. Rosenthal.

Following the publication of the *Chapter* my research priorities had shifted and for a number of years my interest in theology waned. In the mid-nineties I did draw on my interpretations of the Torah in a paper presented at the seminar on the design of a twenty-first century corporation (it was held at the Wharton School of the University of Pennsylvania under the auspices of Professor Jerry Wind).

For many years, specialists in the field did not extend any formal recognition to the *Chapter*, but privately I received sporadic feedback from a number of religious scholars. My dear friend Maurice Friedberg, Professor of Slavic studies at the University of Illinois in Urbana-Champaign, submitted the *Chapter* to two of his colleagues from the University who are Old Testament specialists - Wayne T. Pitard, Professor of Religious Studies and Director of the Program for the Study of Religion, and Gary G. Porton, Professor of Religious Studies, History, and Comparative Literature, and the Drobny Professor of Talmudic Studies and Judaism. Professor Friedberg wrote in his letter to me that the impressions of these two Professors were essentially identical. They both said that the author is ignorant of much biblical scholarship and therefore, occasionally, reinvents the wheel; but nonetheless, he had produced a most interesting study of a key Biblical text. Both of them found my arguments to be well reasoned and said that my application of the tools of modern social sciences to biblical narrative resulted in an impressive number of intriguing insights. Because biblical scholarship traditionally relies heavily on secondary sources – an approach that my manuscript ignored – they could not think of a publisher who would print my manuscript. I want to note that I have somewhat narrowed down my ignorance of biblical scholarship in writing the present book, as many references to secondary sources will confirm. Nevertheless, the biblical scholars who have read my *Chapter* found my ignorance of secondary sources most intriguing and conducive to fresh insights, a phenomenon that Russian literary scholars call *ostranenie*. Professor Friedberg added that he, personally, shares this opinion.

Herbert Wentz, Professor of Theology at the University of the South (Sewanee), had also expressed appreciation for my venture into theology in a letter to me as well as in the course of several conversations.

I resumed my forays into theology in the late nineties when, with Rabbi Neil Gillman's help, I became acquainted with the concept of process theology. Actually, I discovered the main tenets of this concept earlier on my own. As I examined the Torah from different perspectives suggested by process theology, I came up with fresh insights into some well-known problems in the field. As soon as I became acquainted with process theology, I submitted my *Chapter* to the *Center for Process Studies* in Clermont, California, which focuses on process theology. It was very kind of John Cobb and Judith Casanova - two leading members of the Center, to read the *Chapter* and provide positive feedback. Judith Casanova, the editor of the journal *Creative Transformation*, had suggested that I compress the *Chapter* into an article and submit it to her journal. I did just that and the article appeared in the Summer 2000, Volume 9, Number 4 edition of *Creative Transformation*. I also contacted Rabbi William Kaufman, one of the leading scholars in the field of process theology; he too spoke positively of my writings, though with some reservations.

I also resumed my contacts with marvelous Rabbi Neil Gillman and familiarized myself with his writings that overlap with my research of the Torah. I closely studied his book (2000), at the end of which Rabbi Gillman writes,

I hope that this book will be read, taught, and studied. However, it will fulfill its ultimate purpose if it impels you, its reader, to reach into yourself, come in touch with your own religious experiences, create your own images - the less conventional the better - and put them on paper, and share them with your family and friends. (p.186)

I must confess that, at least with me, Rabbi Gillman has achieved the ultimate purpose of his book by inspiring my own research. All of this encouraged me to further expand the ideas of the *Chapter* to a full-length of a book.

18 QUESTIONS

My project is based on a set of questions. This is not particularly novel. There are a number of books based entirely on the discussion of a set of questions, or to be more precise, on a set of "101

Questions and Answers” about holy books. There is Raymond Brown (1990), John Haught (2001), and Roland Murphy and O. Carm, (1996) to mention just a few. The first book deals with the general problems of the Bible with emphasis on the New Testament and the disparate attitudes of Catholics and Protestants toward the New Testament. The other two are similar to my own project and I shall refer to them later in my book, albeit briefly, for the following reasons: Haught's work is on Darwin's contribution to evolutionary theory and thus lies quite far from my area of interest. The book by Murphy is concerned mainly with the structure of the Torah and with such questions as 'Who wrote the Torah and what was the role of Abraham?' which I do not address at all. In any case, each of these three books was written for the general public.

My book is based on a set of more specific questions and aims at a scholarly audience. Certainly there are other books written from this perspective, but they tend to explore fairly general topics, such as the possibility of discovering God or discerning God's image, God's uniqueness, God's role as a father, mother, or redeemer, etc. Of course, these books explore questions that overlap with the ones I pose, and books by Alan Dershowitz (2000), Neil Gilman (2000), and Leon Kass (2003) are particularly noteworthy in this regard. The difference between my book and similar books, in terms of form, is the way the questions are posed.

While I combine all my questions in one place, other authors spread their questions throughout their books. I deliberately bundle the questions together in order to underscore their conceptual unity, in contrast to a dispersal of questions which signals an eclectic approach (I shall elaborate upon this point later on in the book).

In writing the book, I first had to enlarge the set of questions set forth in the *Chapter*. There are now 18 questions that I shall refer to throughout the book as *18 questions*. At first glance, this list of questions may seem haphazard or *messy*. *Webster's Dictionary* defines "mess" as "a disorderly or confused collection or mass of things." But in fact the *18 questions* are subject to an organizing principle: they have been selected based on my belief that I can provide fresh insights into each question using my unifying concept of *predispositioning* (outlined in Chapter 2).

I will also try to validate the novelty of my approach in the section titled *Structure of the Book*, which is part of this *Introduction*.

The *18 questions* are formulated below, not necessarily in the order of their importance.

- 1) Could an evolutionary and a creationist approaches to the development of the Universe be **complimentary**?
- 2) Did God have a **final goal** that guided God as the creator of the universe?
- 3) Why didn't God create the universe **instantly**? Why did it take six days?³
- 4) Why didn't God state in detail His **plan** or **program** for the creation of the universe, given that this is a protracted process?
- 5) Why did God act in **stages**, while articulating the purpose of each stage?
- 6) Is God an entity that has **feelings**, or does God make only **rational** decisions?
- 7) Is God an entity that possesses **gender** or is God asexual?
- 8) Why was it necessary for God to evaluate the **results** of own work during the first six days of creation?
- 9) Is "good", being the "local" criterion for the evaluation of the intermediate results of Creation, equivalent to "**beauty**?"
- 10) Why is it said in Chapter 1 of Genesis that God created Man and Woman simultaneously, but in Chapter 2, that God created **Woman from Man**? And the related question, "Why did God create Woman from Man?"
- 11) Are human beings the **crown** of the creative universe?
- 12) Why is God willing to engage in a **struggle** with Man (Jacob) and accept **criticism** from Man (Moses)?
- 13) Why does God forbid Adam and Eve to eat from the **Tree of Knowledge**?
- 14) Do **good** and **evil** coexist in God?
- 15) Can the Creator with the power to foresee everything **destroy** own creations?
- 16) What prompted God to impose **unconditional demands** upon the conduct of the Jews, including the Ten Commandments, while at the same time, making these demands **conditional** (situation specific) with respect to rewards and punishments?
- 17) Why does God, who sees the wickedness of the serpent and who distinguishes between clean and unclean flesh, tell Noah **to take all the animals** and save them from the flood so that they can multiply afterwards?

18) Could the preservation of the Jewish nation be secured outside the **Promised Land** as stated in the Torah?

All these questions are well known and have brought forth a vast amount of literature on the subject. Still, I dared to encroach upon this well-tilted field. Scientific “accuracy” of the Torah texts being examined is one issue that is not relevant to my book. Rather, my goal is to bring new insights to these *18 questions* and do so primarily within the framework of my concept of indeterminism and its key category of *predisposition*. The role of predisposition in systems development is well illustrated by the positional style of play in chess. (I will briefly discuss this in Chapter 2) Special attention is paid to this particular case of indeterminism - predisposition, because it is so pivotal to my work, and the analysis of the *18 questions* revolves around the concept of *predisposition*. I should make one additional remark concerning my indeterministic approach to the analysis of the Torah, namely that I fully realize the subjective nature of my approach.

Let me quote from Daniel Fuller (1992):

In approaching the study of the Bible, we are naturally concerned to grasp what the writers themselves were trying to communicate in the books they wrote or formed from materials already at hand. But a big obstacle in accomplishing this goal is the presuppositions each of us readers has, for everyone already has something of a belief system in place. Yet, if we study the Bible simply to have it reinforce convictions we already have, we gain little from our efforts. Therefore we should do our utmost to set aside previous ideas relevant to a text so that new understandings have a chance to illumine our minds, To be sure, none of us can distance ourselves completely from our presuppositions. But we must make the strongest possible effort to hold them at bay. (p. 99)

The spirit of indeterminism that permeates the Torah does not preclude a deterministic perspective on certain episodes contained in it. The legitimacy of such a view is corroborated by a number of scholars who approach the Torah from a classical deterministic perspective. I have a strong suspicion that the basic epistemology of the authors of the Torah, *the people who collected* the legends and the stories about the events and social institutions and put them into this holy book, was rooted in an intuitive *indeterministic* vision of the development of the universe. I would add one more speculative argument in favor of this indeterministic vision of the universe and Man’s place in it on the part of the authors of the Torah. At the time

the Torah was written, 3500-4000 years ago, the relative significance of the right and the left hemispheres of the brain in human cognition was very different from what it is today. In my view the authors of the Torah accomplished much of their thinking using images, which involved the right hemisphere of the brain. (as opposed to purely logical thinking which involves the left hemisphere) It is believed that in the last 3000 years, especially after the advance of the Aristotelian logic, the left hemisphere of the brain has been significantly enriched. The right hemisphere has progressed too but to a lesser extent.

Nahum Sarna (1966) writes about the Torah’s narrative:

It should be obvious that by the nature of things, none of these stories can possibly be the product of human memory, nor in any modern sense of the word scientific accounts of the origin and nature of the physical world. Biblical man, despite his undoubted intellectual and spiritual endowments, did not base his views of the universe and its laws on the critical use of empirical data. He had not, as yet, discovered the principles and methods of disciplined inquiry, critical observation or analytical experimentation. Rather, his thinking was imaginative, and his expressions of thought were concrete, pictorial, emotional, and poetic. Hence, it is a naive and futile exercise to attempt to reconcile the biblical accounts of creation with the findings of modern science. Any correspondence which can be discovered or ingeniously established between the two must surely be nothing more than mere coincidence. Even more serious than the inherent fundamental misconception of the psychology of biblical man is the unwholesome effect upon the understanding of the Bible itself. For the net result is self-defeating. The literalistic approach serves to direct attention to those aspects of the narrative that reflect the time and place of its composition, while it tends to obscure the elements that are meaningful and enduring, thus distorting the biblical message and destroying its relevancy. (pp. 2-3)

STRUCTURE OF THE BOOK

There are two parts to the book. Part I examines the first 11 questions that mainly address the creation of the universe. It could be said that this part deals with the *anatomy* of the universe, with God as its creator. The second part takes up questions 12 through 18 that concern the functioning of the created universe – its *physiology*. Each part is divided into chapters with 7 chapters in total.

Let me now present a synopsis of the novel perspective that I bring to each chapter.

In Chapter 1, *The Creation of the World*, I explore the development

of the *entire universe as a creative process* which involves the organic as well as the inorganic world. The first original idea in this chapter has to do with my attempt to portray the evolutionist and the creationist approaches to the development of the universe as *parallel*, meaning that they are different *modes of representation of the same process*. This approach has precedence in the history of science. For example, the extremal principle in mechanics that presents the motion of the planets as following an optimal course of least action was, at one time, regarded by religious scholars as a confirmation of the existence of God as the creator of the universe. On the other hand, representation of planetary motion as a system of differential equations, which suggests a cause-and-effect approach, was recognized as being more scientific. It took the genius of Leonard Euler (1707-1783) to prove that these two approaches are, in fact, two different modes of representing a single process and that they are mutually isomorphic.

Secondly, I explore some well-known characteristics of God based upon my own as well as other people's ideas. For instance, I examine the Torah in terms of the idea of an evolving God that was borrowed from *Process Theology*. (where it was developed mainly as a logical category)

The other novel aspect of Chapter 1 is the interpretation of God as a *creator* rather than a *wizard* - the distinction proposed by Vera Ulea (2003). In her fairytale, she devotes many pages to this distinction linking it to the duration of development of an object: the creator acts over a prolonged period of time, while a wizard performs miracles instantaneously. There are two other novel ideas in this chapter. The first is my view of God as a complex entity that *combines feelings and rationality*. Feelings as values allow for quick decision-making, but feelings are not well balanced or comprehensive. Rational decisions are more comprehensive but require more time and might not be applicable to fast-running processes. That is why a complex entity synthesizes feelings and rationality using each where appropriate. On occasion, this synthesis is even beyond the reach of God.

Secondly, I recognize God as an *asexual entity*. Sexes are relevant to complex "reproducible" living creatures. (relatively simple creatures multiply via fragmentation, division or spores) Assuming God is an irreproducible entity that exists forever and has no beginning and no

end, it does not make sense to apply to God the category of sexes.

Chapter 2 *The Development of the Universe* contains a number of original ideas all revolving around the *Janus effect*. It states that a creative project can be initiated either from the beginning or from the end, and that in both cases a clear connection between the points of departure and arrival may be lacking. This leads to the concept of the *spectrum of indeterminism*. Usually, a degree of determinism is expressed as a dichotomy – determinism versus indeterminism; in this context, probability is irrelevant to the degree of indeterminism and concerns only the degree of *uncertainty*. (See more in my book *The Concept of Indeterminism & Its Applications; Economics, Social Systems, Ethics, Artificial Intelligence & Aesthetics*. Westport: Greenwood Publishing Group, 1997.) The notion of the spectrum of indeterminism lays the groundwork for the new *method of predispositioning* that is used extensively in my analysis of the many events described in the Torah. Predispositioning is addressed using the *multidimensional systems approach*, i.e. functional, structural, operational, and genealogical. For instance, from the functional perspective predisposition is cast as a category that impacts the future while avoiding the need to *forecast* the future. The structural approach regards predisposition as a *set of material and relational elements treated as independent variables and integrated by unconditional values* (more on unconditional values in comments to chapter 5). The operational approach helps to distinguish between the notions of *unexpected outcomes* and *mistakes*. A *mistake* assumes that there exists a rule governing the proper course of action. A *mistake* occurs when negative consequences result from the actions of someone who does not know the rule or ignores it. An *unexpected outcome* implies that the creator has no way of knowing the consequences, since there was no rule for determining the best course of action. These definitions help us interpret God's actions as directed at eliminating the unexpected outcomes that arise in the course of development of the universe, rather than God correcting self-made mistakes. When God's "revisions" are explained along these lines, God still remains omnipotent, but in the sense of being able to recognize and correct *after the fact* previously unforeseen results of own actions. The operational approach introduces the role of *subjectivity* in forming and evaluating predispositions; my view of subjectivity is the following: subjectivity arises when one is not able to uncouple the evaluation of

some situation from the nature of the “agent” who has to execute (implement) this assessment.

To explain creation of a predisposition, I propose a new interpretation of the concept of position in chess. (following Claude Shannon’s algorithms and the measurement of aesthetic value by George Birkhoff)

The method of predispositioning falls outside the traditional methods of forecasting the future and is highly applicable to the process of creation as depicted in the first chapter of the Torah – there is no explicit mention of God’s final goal or plan and no predictions as to the future of the world being created. This is somewhat analogous to biological evolution in that evolution unfolds in sequential steps without a plan (program) or a final goal. Still, one conclusion suggested by the reading of the Torah is that God, along with creating predispositions, exhibits a *general tendency* toward increasing *negentropy*. While this idea (rising *negentropy*) has been previously proposed, the novelty of my approach lies in a new definition of negentropy as a function of *two independent variables – order and complexity*. This definition was first advanced by Jamshid Gharajedaghi in reference to living systems and was subsequently developed by myself as a general system phenomenon.

Chapter 3. *Category of Predisposition in the Torah*. The material components of a predisposition are illustrated in a fairly novel way by the story of the emergence of *two sexes*. I shall skip the controversy over the order in which the sexes appeared (who was first, male or female). It seems to me (see my book *Evolutionary Change; Toward a Systemic Theory of Development and Maldevelopment*. Newark: Gordon & Breach Publishing Group, 1997) that biological reproduction has evolved from fragmentation and spores (a specialized reproductive cell) to two kinds of specialized reproductive cells that were originally housed within a single self-fertilizing body (e.g., African Snails). Subsequently, there emerged specialized hosts - male and female, with each body housing a special kind of a reproductive cell as well as the auxiliary equipment for procreation.

As far as the operational components of a predisposition, I stress the *parity between God and Man* as a key feature of Judaism. One of the “instruments” that increased God’s power enormously was the creation of Man in God’s own image, after God’s likeness (Genesis, 1:26). Man was chosen to rule over a segment of God-made set of

objects, namely the living creatures known at the time. On the other hand, inorganic matter – the sea, the sun, the moon, the stars and the sky, was not subservient to Man. In spite of Man's limited capacity to dominate the environment, his role is important enough for God to establish *parity* with some Men whom God had chosen and made a *covenant* with. There are two basic preconditions for the covenant between God and Man to make any sense. First, God must admit own limitations, and second, God must admit the greatness of Man. In this covenant, the parity between God and Man is reinforced by the *partial* or *limited* parity in their physical as well as intellectual power. The authors of the Torah provide examples of this. The story 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 is unable to overcome Jacob. The authors of the Torah also describe a number of concrete situations that testify to the *intellectual comparability* of God and Man. When God is angered by the disobedience of the Jewish people during their wanderings in the desert and decides to destroy them and replace them with a new nation originating from Moses' offspring, Moses protests and persuades God to preserve the people; and God acquiesces to Moses's remonstrances. (Numbers, 14:11-20) My interpretation of the covenant makes a case for introducing a number of changes to the liturgy, changes that would radically underscore the greatness of Man and bring a deeper understanding of the need to impose limitations on authority. (see, for example, Deuteronomy 17:14-20)

My analysis of the various types of covenants suggests a deductive scheme that explores the relationships between the participants in a transaction from the point of view of their rights and obligations. Also discussed in this chapter is a novel interpretation of the term "good" in Torah’s evaluation of the stages of creation. With each stage viewed as a predisposition, *beauty* becomes a proper equivalent of good. (See more in my book *A Conceptual Understanding of Beauty*. Lewiston, NY: The Edwin Mellen Press, 2003.) I also distinguish two aspects of evaluation of a result: 1) comparison of the envisioned outcome (state) with the actual one, and 2) assessing the impact of the current state upon the future. I assume (I think reasonably so) that at each moment God's creative abilities are limited, and God is therefore unable to ensure complete match between the envisioned outcomes and the actual ones. In other words, according to the

authors of the Torah, although God completes whatever God has set out to do for that day (or part of that day), God is not certain that what has been created will completely conform to what was in God's mind in the beginning. Therefore, God must evaluate the work at the end of each day (or part of the day).

Chapter 4. *Good and Evil in the Torah*. This chapter presents a number of novel ideas. The first explores the question of why God *naturally* does both good and evil. The answer is twofold: God's limited ability to foresee the future and, on occasion, God surrendering to emotions at the expense of rationality.

The next novelty in this chapter is predicated upon the analogy between the separation of God and Devil and the *zone melting* process. The latter is an industrial method of separation by melting, in which a series of molten zones traverses a long ingot of impure metal; the molten region melts impure solids at its front edge and leaves a wake of purer material solidified behind it as it moves through the ingot. The impurities are segregated in the melt and concentrate at one end of the ingot. This analogy explains the pitfalls of separating God and Devil because this separation invites a powerful temptation to bring about a utopian world by eliminating evil that is represented by a small group of people (capitalists, Jews, Armenians, etc.).

Another novel idea in this chapter concerns the interpretation of the danger of eating from the *Tree of Knowledge*. The danger arises as a result of a conflict between the unexpected negative outcomes of human actions and Man's lack of ability to rectify these outcomes. The final novelty in this chapter addresses a profound understanding on the part of the authors of the Torah of the *danger of innovations* on the part of ordinary people. I developed a 2x2 matrix that juxtaposes the source of novel ideas (God or Man) against the entity that implements these ideas (God or Man). This analysis reveals that a positive attitude towards novelties in the Torah is confined to novelties that come from God, even if implemented by Man. The Torah expresses a predominantly negative attitude towards novelties that originate with Man and are implemented by Man.

Chapter 5. *Morality, Instrumental Values, Ethics, and Law*. The key novelty in this chapter is based on my concept of the *degree of conditionality of values*. Housed between two extremes - fully conditional values and fully unconditional values - is a spectrum of values like unconditional, semi conditional, etc. Moral and instrumental values

gravitate toward the unconditional and the conditional poles of this spectrum respectively. The Torah is very rich in *both moral as well as instrumental values (laws)* (as compared to the Egyptian *Book of the Dead* that contains only moral values (chapter 42) and the Babylonian codex that is limited to Hammurabi's laws).

The next novelty in this chapter has to do with the need for both moral and instrumental values. Moral values are more than just guidelines for laws (instrumental values); they also represent *strategic constraints* imposed upon *local decisions* that help prevent unintended negative consequences inherent in an uncertain future. I also propose in this chapter a new interpretation of *conscience* as a global internal value implanted in human beings and one that makes them a microcosm, i.e. a proper autonomous being.

Chapter 6. *Manifold and Singular Variety in the Torah*. At each stage of creation God deals with a *manifold*, i.e. a set containing objects of undifferentiated value. It is only the entire set of objects created at each stage that is evaluated. The situation changes drastically following the creation of the universe. God discovers that, while a *class of things* (e.g., species) that was created is good and can be of use in the future, some of the "*singles*" in each class are bad and need to be eradicated. It is at this time that God begins to deal with the set of created objects in a way that may be described as the creation of a *singular variety* where all individual specimens in a class are differentiated by their value. In other words, in qualitative terms, God preserves (in line with a *strategic constraint*) every class of beings, i.e. the *manifold* of entities, that had been created. The only change God made was in the proportions between single entities in each class; e.g., the Flood changed the ratio of clean and unclean animals as well as peoples (only Noah's lineage was saved). These changes were *tactical* in nature and supported the creation of a *singular variety*.

Chapter 7 *A Manifold and a Singular Variety (Continued)*. This chapter introduces a novel take on the creation of a Jewish state. The Torah emphasizes that all Jews should be gathered in the Promised Land and the creation of the state of Israel represents an essential step in fulfilling this objective. Israel, however, is situated in a dangerous environment surrounded by hostile Muslim countries. Moreover, it is militarily dependent on a super power that pursues its own self-interest. Given these circumstances, it might make sense (without ceasing a major effort to preserve Israel) to allocate some

resources to the development of alternative ideas of a Jewish state. One such idea might be a state sited upon an *artificial island in open sea*. There exist various projects for artificial islands, with some projects already implemented and some in the process of implementation. (see, for example, the island *Libertarian Paradiso* that is in the process of construction by a group of believers in the utopia outlined by Ayn Rand. They built this island in Florida and shipped it to the Caribbean Sea, some 120 miles from the Caymans. An article titled "Libertarian Paradiso" describing this project was published by Alex Heardin in *The New York Times Magazine*, August 9, 1998, pp.29-30) As a matter of fact, there is a design bureau in Israel (headed by an engineer Yuri Bak) that is working on a project to construct large artificial islands.

As this *Introduction* draws to a close, I want to make the following remark. I fully realize that a book on the Torah written by an amateur looks bizarre in the context of voluminous literature produced on the subject over the centuries by Jewish and Christian scholars. I decided to write the book anyway; this is not the first time that I have invaded a discipline that had already been thoroughly investigated. I refer the reader to my intrusions into the concepts of determinism-indeterminism (my books 1992 and 1997a), biological evolution, including the nature of cancer (1997b), and beauty (2003). I undertook these adventurous steps because of my belief that the indeterministic method of analysis that I propose could shed new light on these well-explored topics. I leave to the professional readers to answer for themselves the question "Are the thoughts expressed in these books valid, or are they just hot air blown off by a charlatan?" One excuse for my intrusion into the aforementioned disciplines is that I have not found my ideas expressed either in specialized literature or in my discussions with a number of experts.

In any event, I share Robert Fulford's (1992) opinion concerning the intervention of non-professionals into well-established disciplines. In speaking about the book "The Death and Life of Great American Cities" by Jane Jacobs (along with other examples of this kind), Fulford says:

Not only did she attack the most sacred beliefs of city planning, but Ms. Jacobs also helped to subvert an even more powerful orthodoxy: academic credentialism, a religion whose central doctrine states that no analysis of a subject of consequence can be taken seriously unless the writer has professional

credentials, preferably at the doctoral or postdoctoral level. This idea was then relatively new. The writing of serious books by nonspecialists, on subjects ranging from geology to linguistics, had been central to Western culture in the last century and the first decades of this one. In more recent times, however, specialists have pushed amateurs to the margins; the uncredentialed writer may now easily be dismissed as a popularizer or a publicist, some one who absorbs the ideas of specialists and then simplifies them, or oversimplifies them, for the public. In retrospect it becomes clear that some of the most powerful books of any given period have been written in defiance of credentialist assumptions. From this distance we can see that the period that gave us "The Death and Life of Great American Cities" was especially rich in this kind of writing. The first half of the 1960's produced a cluster of significant books written by authors who were not officially learned or were stepping boldly outside their specializations. They are not of uniform quality and not all of them are as readable today as Ms. Jacobs's book is, but they show similarities of background and effect. (p.28)

¹ Process thought has been explored by theologians and philosophers of religion virtually since its inception in the 1920s, However, for much of this period almost all these thinkers were Christian. In recent years, however, a number of Jewish theologians and philosophers of religion have become interested in process thought. (ed. S. Lubarsky (1996), p.1.)

Jewish scholars began to take interest in *Process Theology* sometime between 1930 and 1955 as this trend gained prominence. The pioneer in this field was Max Kadushim who published a book on the subject in 1938.

² *Wikipedia* is a free encyclopedia written collaboratively by the readers of the respective website. The site is a WikiWiki, meaning that anyone can edit any article right now by clicking on the *edit this page* link that appears in every Wikipedia article. The project was started January, 2001. There are 143,914 articles being worked on in English, and in addition, there are many more articles written in other languages. Every day, hundreds of contributors from around the world make thousands of edits and create dozens of new articles.

³ To reiterate when I speak of God's actions, I shall always mean the way they are depicted by the authors of the Torah.

Chapter One

Creation of the Universe

Let us deliberate upon the process of creation of the universe - both the universe as a whole, as well as its constituent parts. The pace of change varies among different parts of the universe; some parts are deemed relatively stable as compared to other parts where change is more rapid.

Looking at the universe from this perspective, the pace of change in inorganic, organic, and social systems is quite disparate. For us, the physical world (especially the macro world) is the most unchangeable realm, the social one - most dynamic, and the biological ones are in between. It should be noted that the process of creation unfolds in all parts of the universe. The continual development of the physical universe is perhaps best expressed by the renowned physicist Richard Feynman (1965):

“[T]he Universe is expanding with time and that means that the gravitational constant is changing with time, and although that is a possibility, there is no evidence to indicate that it is a fact” (p. 30)

In fact, the Big Bang theory at the macro level and the various concepts of change at the micro level imply the creative nature of the inorganic matter.

The concept that minerals undergo development – and even transform into various forms of life – has found a number of proponents among a group of scholars from Jerusalem University. If demonstrated to be valid, this concept could serve as an example of the evolution of the inorganic world. A member of this group, Isaac Lapidus (1996), outlines this concept:

The earth surface (and also the planets, meteorites, the cosmic dust, etc.) are combined from strata that contain various minerals (even the simplest ones may contain such elements as silicon, oxygen, aluminum, magnesium, iron, etc.). The most widespread group of minerals is aluminosilicates that contain magnesium, iron, water, and such. These additives are usually present in the mineral's structure as ions, i.e. charged particles. In these complex natural polymer-like compounds it is also possible to consider the presence of structural ions as a text and search it using various analytical methods to find small and large scale order in the real structure of the minerals.

There is currently a wealth of scientific research in this field and the puzzle of the mineral's code was addressed by the author of this article at the end of the seventies.

It is evident that in the beginning of the formation of life on the planet there existed a certain succession that continued the processes of earth's formation, that shaped its geochemical signature with a certain structure of minerals (and their real structure!), all the way to the simplest living beings that formed the initial biosphere. In the formation of primitive life some minerals could play the role of concentrators of amino acids. As early as in the end of 60-ies scholars came to a conclusion that, for various reasons, the best candidates for this role are stratiform aluminosilicates – clayey minerals. The study of their structure and characteristics have shown that the structure of clay's minerals can easily absorb different substances changing the original internal structure and gaining new characteristics. It was also discovered that clays really could concentrate different kind of organic compounds, and in particular amino acids, and, after a complicated process, to catalyze on its surface the formation of proteins-ferments. (p.6)¹

The creative nature of the organic universe has been well described by Henri Bergson (1944). The creative nature of the social sphere is self-evident.

Within this framework, the creation of the universe can be viewed as a continuous process. The so-called *Gaia* hypothesis proposed by James Lovelock (2000) is one manifestation of this universal vision of a creative universe that features the operation and interaction of inorganic and organic worlds.

This comprehensive process of creation of the universe, as presented in the Torah, can be provisionally split into two processes - the formation of basic structures, including human beings, and the functioning of these structures following the creation of human beings. Before we analyze these creative processes as expounded in the Torah, I would like to make some general comments that address the two versions of creation of the universe.

TWO VERSIONS OF CREATION IN THE TORAH

Before I discuss the two versions of creation as presented in Chapter 1 and Chapter 2 of *Genesis*, I want to first comment on the first three verses of Chapter 2 of *Genesis*:

And the heavens and the earth were finished, and all the host of them.

And on the seventh day God finished his work which he had made; and he rested on the seventh day from all his work which he had made. 3. And God blessed the seventh day, and hallowed it; because that in it He rested from all his work which God in creating and made.

It is widely held that these first three verses of Chapter 2 actually belong at the end of Chapter 1. Nathan Aviezer (1990) writes:

Since the Sabbath marks the completion of the biblical account of the creation, one would expect these verses to be placed in the end of the first chapter. The interesting explanation is that these three verses were placed at the end of the first chapter—exactly where they belong—in the Jewish division of the Book of Genesis into chapters (see, for example, the Koren edition). The Catholic Vulgate, however, placed these three verses in the second chapter, and the chapter division of the Bible as found in the Vulgate has long been in virtually universal use; it is found in almost all present-day Hebrew texts and, of course, in English translations of the Bible, both Jewish and Christian. (p.125)²

One can also argue on behalf of keeping these three verses in Chapter 2. One key argument is articulated by Daniel Fuller (1992):

Because it would seem, at first sight, that the high point of creation ... with the creation of the first man and woman. God's words "and it was very good" (1:31), when heretofore it was simply said, "God saw that it was good," imply that some sort of climax has been reached. (p.106)

Key parts of the second version of creation include a description of creation of different trees (Genesis 2:9), of living creatures (Genesis 2:19-20), of area for the Garden of Eden (Genesis 2:8, 10-14), of man and woman (Genesis 2: 7, 21-25), and the prohibition against touching the Tree of Knowledge (Genesis 2:16-17). In other words, parts of Chapter 2 can be viewed as *methods* of creation of “*anatomical objects*,” specifically of Man and Woman, and of their relationship with each other and with God.

The reason I include in the *18 questions* question 9) “Why does the Torah contain **two versions** of creation of the Universe?” is because I believe I have something new to add to this subject. Let us start with the controversy over the interpretation of the link between

Chapter 1 and major parts of Chapter 2. As Leon Kass (2003) writes:

[W]e may be able to counteract two opposing but equally misleading biases about this story: the prejudice of some pious readers and the prejudice of many biblical scholars. The pious readers, believing that the text cannot contain contradictions, ignore the major disjunctions between the two creation stories; they tend to treat the second story as the fuller, more detailed account of the creation of man (and woman) that the first story simply reported. On the other side, the scholars, though keenly aware of the differences in the two stories, have little interest in relating their content and meaning; practitioners of source criticism, they focus on the differences to prove that the two accounts came from different sources—the so-called P (Priestly) and J (Yahwistic) documents—that were subsequently redacted or compiled. (p. 55)³

In my opinion, parts of Chapter 2 are intended to *remedy* the older versions of creation of the universe. A collection of the myths of creation from different cultures compiled by Mircea Eliade (1974), along with other sources, seems to corroborate this hypothesis. Study of the myths in Eliade's collection reveals that most myths belonging to primitive cultures combine somewhat *poorly developed succession of events* with details regarding the *means* employed by the creators. By contrast, the first version of creation in *Genesis* presents a protracted, well-organized succession of events and avoids any clues as to the means of creation. Demonstrating the similarities between the second version of creation in *Genesis* and the myths of creation in primitive cultures are the following passages from the second chapter of *Genesis* and the myth of creation in a primitive culture:

No shrub of the field was yet in the earth, and no herb of the field had yet sprung up; for the Lord God had not caused it to rain upon the earth, and there was not a man to till the ground; but there went up a mist from the earth, and watered the whole face of the ground. Then the Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul. And the Lord God planted a garden eastward, in Eden; and there He put the man whom He had formed. And out of the ground made the Lord God to grow every tree that is pleasant to the sight, and good for food; the tree of life also in the midst of the garden, and the tree of the knowledge of good and evil. And a river went out of Eden to water the garden; and from thence it was parted, and became four heads. (Genesis 2:5-10) And the Lord God said: 'It is not good that the man should be alone; I will make him a help meet for him. (Genesis 2:18) And the Lord God caused a deep sleep to fall upon the man, and he slept; and He took one of his ribs, and closed up the place with flesh instead

thereof. And the rib, which the Lord God had taken from the man, made He a woman, and brought her unto the man. (Genesis 2:21-22)

What follows is a passage describing the beliefs of the Uitoto of Colombia, South America. It was taken by Mircea Eliade (1974) from the book by Paul Rodin.

In the beginning there was nothing but mere appearance, nothing really existed. It was a phantasm, an illusion that our father touched; something mysterious it was that he grasped. Nothing existed. Through the agency of a dream our father, He-who-is-appearance-only, Nainema, pressed the phantasm to his breast and then was sunk in thought. Not even a tree existed that might have supported this phantasm and only through his breath did Nainema hold this illusion attached to the thread of a dream. He tried to discover what was at the bottom of it, but he found nothing. 'I have attached that which was nonexistent,' he said. There was nothing. Then our father tried again and investigated the bottom of this something and his fingers sought the empty phantasm. He tied the emptiness to the dream-thread and pressed the magical glue-substance upon it. Thus by means of his dream did he hold it like the fluff of raw cotton. He seized the bottom of the phantasm and stamped upon it repeatedly, allowing himself finally to rest upon the earth of which he had dreamt. The earth-phantasm was now his. Then he spat out saliva repeatedly so that the forests might arise. He lay upon the earth and set the covering of heaven above it. He drew from the earth the blue and white heavens and placed them above. (Eliade, p.85)

Another example relevant to our discussion is taken from the book by Nahum Sarna (1966):

Now if we note that the word (here translated "dust" is used quite often in biblical Hebrew as a synonym for clay, we may recognize at once a theme frequently encountered in Scripture. Here, again, we are confronted with a familiar motif, the shaping of man out of clay. In Enuma Elish man is created from the blood of the rebellious Kingu. But in the Epic of Gilgamesh of which we shall learn more in the next chapter, the goddess Aruru "washed her hands, nipped off clay" and fashioned it into Enkidu. An Old Babylonian myth, paralleled in an Assyrian version, explicitly describes the creation of the first men from clay. That this motif is of very great antiquity may be shown by its presence in a Sumerian composition of the third millennium B.C.E. Conforming to the same conceptual pattern are the Egyptian paintings which depict the god Khnum sitting upon his throne before a potter's wheel busily fashioning men. (p. 14)

A second example is borrowed from the book by Nahum Sarna (p.6).

Marduk, the chief god of Babylon, created Man upon the request of other gods so that they be relieved of menial labor. In the second version of creation in Genesis, Adam, the first man, also does menial labor, but for God. While similarities between the second biblical version of creation and the myths of primitive cultures abound, the biblical version is distinct, unique and original in comparison to the religions in neighboring countries.⁴ These distinguishing characteristics have been analyzed in a number of books, in particular the book by Nahum Sarna. (pp.14-16).

The biblical Creation account is non-political and non-cultic. This playing of the cosmological theme in a relatively minor key in biblical literature points up other basic distinctions between Genesis and Enuma Elish. The former has no political role. It contains no allusion to the people of Israel, Jerusalem or the Temple. It does not seek to validate national ideals or institutions. Moreover, it fulfills no cultic function. The inextricable tie between myth and ritual, the mimetic enactment of the cosmogony in the form of ritual drama, which is an essential characteristic of the pagan religions, finds no counterpart in the Israelite cult. In this respect too, the Genesis story represents a complete break with Near Eastern tradition. (Sarna, p.9)

What follows is the discussion of the creation of the universe based on the first Chapter of Genesis.

Two perspectives on the evolving universe

There are two contrasting approaches to the problem of development. One could be termed *naturalist (evolutionist)* approach, championed by Darwinists and atheistic cosmologists in particular. It represents the scientific mindset. The other approach to the development of the world could be called *creationism*. Moreland & Reynolds (1999) distinguish three major branches of creationism: *young earth creationism, progressive creationism (old earth creationism)* and *the fully gifted creation (theistic evolution)*. The first two branches of creationism are distinguished by the span of time in which the universe was created - fairly recently, as in biblical times (measured in several thousand years) versus over a long period of time, measured in billions of years, respectively. *Theistic evolution* is distinguished by its focus on God's intervention in the process of development. As Howard Van Till mentions (in Moreland & Reynolds, 1999), *theistic evolution* characterizes God's involvement in the process of creation as happening either via miraculous intervention or "God's giving of being to a creation that is richly gifted with all of the capabilities to organize and transform itself into new forms necessary to make possible the continuous evolutionary development envisioned by the majority of natural scientists today" (p.162).⁵ One key

shortcoming of the first two versions of creationism is the dogma of fixity and complete constancy of species cited in the Torah.⁶ As discussed later in the book, a number of biblical scholars, e.g., Leon Kass, challenged this dogma. Moreover, the term creationism is sometimes defined to refer to the creation of *human beings* by God,⁷ the creation of the universe by God from *nothing*,⁸ etc. (not the timeline of creation of the universe at large). As I understand it, *creationism*, in all its various guises, features one invariant, namely God's participation in the creative process. I will use this term to associate creationism with the idea of *creation as a protracted evolving process*. I will also make use of the concept of *young earth creationism* because it resembles the Torah's version of creation and also leaves room for me to speculate about some fundamental methods of creation. It is commonly assumed that the creationist and the evolutionary approaches are polar opposites and that creationism lacks scientific proof.⁹ While there are marked differences, these two approaches share some basic features.¹⁰ Both assume that the Universe evolved in a protracted multistage process. Whereas the Torah postulates a discrete process (the creation of the world in several days), evolutionists usually advocate in favor of a continuous process of creation. However, even evolutionists introduce discreteness as N. Eldridge and Steven Gould (1972) do in their concept of punctuated equilibrium. It may be argued that the hidden assumption of punctuated equilibrium is that changes are continuous, because major changes occur via the accumulation of minor changes. To frame creation as a discrete process with abrupt changes is closer to the structure of creation as presented in the Torah. Even though the Torah presents each stage as lasting only one day, it does not discredit the general idea of a multistage discrete process of creation. Moreover, some Talmudic scholars, both ancient and contemporary, recognize a day as a phase (period) in the creation of the universe. A good account of this problem is presented in the book by Nathan Aviezer (1990).¹¹

Before I embark upon the analysis of the evolutionist and creationist approaches I want to make a digression to discuss the difference between the *mode of representation* of a process and the *mechanisms* that support the process. There is much confusion about the *mode* of representation of a system (in its most rigorous form, the mathematical model of a system) and the mechanisms underlying the

system's operation. The history of science is replete with examples of this misapprehension often resulting in serious conflicts.

A few examples will serve to clarify my point. In the eighteenth century a peculiar situation (well described in 1960 book by Lev Polak) arose in physics following the formulation of the extremal principle by Pierre Maupertuis (1698-1759). The proponents of equilibrium models, previously formulated by Isaac Newton (1643-1727), thought they were describing a world of cause and effect with no God. The advocates of the extremal principle insisted that God had created the entire world to conform to a particular optimality criterion: that of *least action*. Considering that at the time there was no separation of church and state in Europe, this kind of ideological interpretation of the world was not without peril for scientists who were deemed atheists. It took decades before Leonard Euler (1707-1783) recognized the affinity of these two approaches to the study of the physical world. Following his explanation of the two theories as mathematically different modes of representation of the same problem, the conflict subsided. The separation of church and state had eventually brought the discussion out of the realm of interpretation of the physical world and into the realm of science. But even to this day, some professors in Catholic universities maintain a heightened interest in the extremal principles of mechanics. In fact, the Catholic Church has shown interest in the application of this principle to other fields including economic systems, as evidenced by a two-volume set of the proceedings of the scientific conference on economic problems held in Rome from December 7th to the 13th, 1963 by the Pontifical Academy of Sciences (Study Week..., 1965).

Many prominent economists from different countries participated in the conference; all of them were involved, in one way or another, with the problem of *state control of the economy*. Even the Holy Father himself appeared before this gathering and gave a speech. The mode of representation of an economic system has ideological underpinnings and affects one's attitude toward the problems of centralized control. The ideological dilemma is whether to have a free market or state control over the economy. When it comes to formal models of the economy, proponents of centralized control prefer a *global* optimization model, while market advocates prefer *local* models (e.g., so-called Pareto optimality model) where multiple participants conduct exchanges, using prices, in a way that maximizes the utility

function of each participant subject to some general constraints (e.g., inadmissibility of improving one individual's utility function by diminishing the utility function of even a single participant).

The development in the 1960s of mathematical economics in the Soviet Union proceeded based primarily upon global optimization models. These models were perceived by the powers that be as appropriate for a planned socialist economy and in line with a Marxist-Leninist worldview. Because economic science in the West had mainly employed local optimization models, Soviet ideologists were convinced that these models reinforced market economy and were an outgrowth of bourgeois ideology. It has been proven that, under fairly reasonable assumptions, a Pareto optimality model can be transformed into a global optimization model (Debreu, 1959) and that this transformation is invariant to the mechanism of operation of the economic system. Paul Samuelson, winner of a Nobel Prize in economics, has interpreted the market as an optimization mechanism for the economy as a whole (Samuelson, 2001).

Given these examples from physics and economics, I came to the conclusion that ideology plays a dual role in shaping representations of a system. On the one hand, ideology is fertile ground for all kinds of heuristic constructs that aid in the development of the various modes of representation. Ideology allows the scholar to focus on a particular approach and penetrate deeply into the essence of a given mode of representation. Two centuries ago, Maupertuis's religious ideas inspired him to formulate the extremal principle in mechanics. Profound faith in the ideology of centrally-planned economy helped Kantorovich develop the concept of optimal planning (for which he won the Nobel Prize in 1975) while he was an active member of the Communist Youth League in the late 1930s.¹²

On the other hand, ideology acts as blinders, limiting the scholar's vision. Instead of finding common ground among the various modes of representation and integrating them in order to deepen one's own approach, ideological commitment may drive a scholar to resist alternative concepts. The resulting ideological struggle is probably not conducive to scientific progress. As scientists come to understand various modes of representation and the scope of their applicability, there is less ideological stratification and infighting. However even if one group fails to impose a single uniform vision there is always a struggle over the extent to which different modes are used. Once a

new mode appears, there is a drive to limit the authority of earlier methods and their proponents have to acquiesce to a redistribution of resources over all sectors or even to reduced allowance for their own ideas.

Back to our main topic, the development of the world is characterized by two modes of representation: evolutionist and creationist. The well-established connection between these two paradigms, while not eliminating ideological tension, may mollify it. The message of Pope John Paul II to the Pontifical Academy of Sciences on the relationship between Revelation and theories of evolution (1997d),¹³ (even though his message concerns only life and not the overall process of creation), can help reduce friction between the Darwinians and the proponents of God's creation (at least for the members of one of the greatest branches of Christianity, the Catholic Church). Pope John Paul II stressed in his presentation the need for the Church to be acquainted with scientific progress, especially in the fields related to the origin and evolution of life. He mentioned that Pope Pius XII in his Encyclical *Humani generis* (1950) had already stated,

[T]here was no opposition between evolution and the doctrine of the faith about man and his vocation on condition that one did not lose sight of several indisputable points. Today, almost half a century after the publication of the Encyclical, new knowledge has led us to realize that the theory of evolution is no longer a mere hypothesis. It is indeed remarkable that this theory has been progressively accepted by researchers, following a series of discoveries in various fields of knowledge. The convergence, neither sought nor fabricated, of the results of works that was conducted independently is in itself a significant argument in favor of this theory.

In summary, the process of development as performed by a creator could be viewed simply as one possible mode of representation. Such an approach allows for the interpretation of the evolutionary process as being implemented by a rational creator. Furthermore, this approach allows one to see the stages of the creation of the universe as they are represented in the Torah in a new light, namely as predispositions for development. This point will be discussed in detail later on in the book.

WHO IS GOD?

The question of "Who is God?" is extensively discussed in the

literature.¹⁴ As Neil Gillman (2000) writes,

To answer the question "Who is God?" is to study the twists and turns of the complex metaphorical system that Jews have used to try to make sense of the world and their lives, as this system winds its way through the generations. (p.16)

The general approach to God espoused by Mordecai Kaplan (1962) seems to me to be quite adequate:

It is sufficient that God should mean to us the sum of the animating, organizing forces and relationships, which are forever making a cosmos out of chaos. This is what we understand by God as the creative life of the universe. (p.76)

My more detailed presentation of God is, to a great extent, similar to the characterization of God set forth in *Process Theology*¹⁵ enhanced by a number of novel ideas outlined in the *Introduction*.

In any event, one definite conclusion that we reach from reading the Torah is that the universe aspires toward *development*, not idleness, nor even to maintaining the status quo. The notion of an evolving universe raises the question of the forces that drive this development. In one way or another all religions treat God or gods as these driving forces. Pantheism is very interesting in this respect, for it allows for an internal mechanisms of change within each object.¹⁶ God, being the creator of the world and a participant in the workings of life on earth, is the leitmotiv of the Torah.

God as the Creator

Vera Ulea devoted many pages in her fairytale (2003) to the characterization of *creator* versus *wizard*. The distinguishing feature is the duration of the process of development of an object: the creator's act is protracted, while that of a wizard is instantaneous. Her analysis is so original that I decided to include a long excerpt from her story in the endnotes, and I do hope it will be rewarding for the reader.¹⁷ This distinction between a creator and a wizard provides to one of the *18 questions*: "Why didn't God create the universe **instantly**, why does it take Him six days?" A creative process carried out by a *creator* is necessarily protracted and, by definition, cannot be accomplished instantly.¹⁸

Interesting in this regard is a short passage from a booklet by Griffin & Deegan (1987) that raises a similar question, but uses the phrase *all at once*.

[I]f God is all-wise and all-powered, God would have been able to create the world in its present form all at once, just as the creationist says. Why would God take fifteen or twenty billion years to do what could have been done in a week? Theists generally suppose that human beings are the only species with any real value, and that the rest of the universe was created as a stage for the divine-human drama. Why would God take so long to get to the main act? Even theists who are not so anthropocentric assume that a world with human and other complex forms of life contains much more value than a world with no life, or only simple forms of life. If God is interested in promoting value, why did God take so long to bring forth the more complex forms of life, instead of creating them at the beginning? The facts suggest that the force that created our world was not all-wise, in fact that it is not wise at all, but an unconscious, blind force which works by random trial and error in accordance with the basic laws of the universe. (pp. 13-14)

The rather simplistic answer to the above question is the following: God did not create the world instantly because he was either not mighty enough or not wise enough, and as a result, he acted in a random fashion guided by trial and error. This approach reflects a familiar dichotomy in the theories of creation: the methods of creation are either fully complete and consistent, or they are random. It seems to me that there is an important spectrum of methods that lies between these two extremes. One of these methods is the creation of predispositions in stages that are assigned valuations and that guide further development (this method will be discussed later on in book). In the section titled "Let there be!" of Nahum Sarna's book (1966), the author expresses a similar idea that God's deeds ought not be confused with magic:

It has been maintained that this notion of the creative power of the word is known to us from elsewhere in the ancient Near East. But the similarity is wholly superficial, for wherever it is found it has a magical content. The pronouncement of the right word, like the performance of the right magical actions, is able to, or rather, inevitably must, actualize the potentialities which are inherent in the inert matter. In other words, it implies a mystic bond uniting matter to its manipulator. Worlds apart is the Genesis concept of creation by divine fiat. Notice how the Bible passes over in absolute silence the nature of the matter—if any—upon which the divine word acted creatively. Its presence or absence is of no importance, for there is no tie between it and God. "Let there be!" or, as the Psalmist echoed it, "He spoke and it was so," refers not to the utterance of the magic word, but to the expression of the omnipotent, sovereign, unchallengeable will of the absolute, transcendent God to whom all nature is completely subservient. Such a concept of God and of the process of creation added

a new dimension to human thought and marked a new stage in the history of religion. It emancipated the mind from the limitations of mythopoetic thinking, and it liberated religion from the baneful influence of magic. (p.12)

God As an Evolving Entity

The prevalent view of God is that God is *omnipotent, omniscient, and omnipresent*. I share the key idea of *Process Theology* that God is an evolving entity. Superimposed upon the metaphysical principle of an *incomplete* and *inconsistent* universe is the *ongoing* process of development. Over the course of this process God continues to evolve on the basis of experience of running the world.¹⁹ This approach does not preclude a *locally* perfect world, i.e. completeness and consistency in certain parts of the world or the possibility of God being an absolute for some interval of time. I do recognize the merits of a contrary metaphysical concept which presumes the world created by God to be complete. I have in mind one version of this concept proposed by Gottfried Leibnitz. Any scholar operating within the metaphysical framework of a complete universe strives to reveal the perfection implied by this concept and this has led a number of scientists, who are also theologians, to develop rather original physical theories. The case in point is the aforementioned mechanics of planetary motion that was worked out by the great French scientist Pierre Maupertuis. He judged the celestial world created by God as being perfect and assumed that God, as an absolute, was guided by the criterion of optimality based on the principle of least action. Subsequent mathematical development of this "theophysical" optimization concept had a profound impact upon the discovery of the extremal principle of variational mechanics (see K. Polak, 1951). Nonetheless, for the purposes of my expose, I will assume that the basic metaphysical principle guiding the authors of the Torah is rooted in the concept of continual development of an incomplete world by an evolving creator.

God as a complex entity that combines rational thinking with feelings

The article titled "Anthropomorphism" in the *Jewish Encyclopedia* reveals the extensive discussion throughout the history of Judaism of the anthropomorphic traits intrinsic to God, particularly God's feelings. There is disagreement among the Jewish authorities as to whether God experiences emotions like Man. Here I shall bypass this

discussion and instead focus on my own position based on my paper written in collaboration with Dan Giacomo and Mona Weissmark (1986). I understand feelings as a general systems phenomenon which, in the broad sense, can be termed a self-acting autonomous object. Feelings represent values, i.e., *attractors*, whose function is to move an object in a certain way and a certain distance. Feelings are located in the informational segment of an object and seem to possess the following characteristics.

Feelings as attractors express, in a condensed form, characteristics of an object, i.e., they embody a specific attitude to external and internal actions and objects. They are individualized, i.e., they belong to a given object. They are fixed, or at least evolve very slowly, because they are adapted to a particular environment (external and internal). They are fixed in specialized cells of an object. They are meant to be used mainly for specific, isolated events.

The structure of feelings is represented by biological drives, vibrations, and emotions that correspond to the *basic needs* of an object, to the organization of its internal structure, and to the *relations* with other objects, respectively. The term *vibrations* used above is a generalization of the term *pain*. The significance of this generalization is detailed in the endnote.²⁰

This substrate termed feelings varies greatly from object to object. In living systems, feelings could be based on living cells; in artificial objects like computers - on inorganic cells; in God feelings could be of an unknown origin. Certain characteristics of feelings permit an object to make decisions comparatively faster than using the so-called rational mechanism that requires the inclusion and coordination of multiple events. By the same token, these same features limit the effectiveness of feelings in situations where the environment undergoes rapid change. In this case, rational thinking elaborates new values appropriate for the new environment. Alternatively, rational thinking can adjust valuations that are spontaneously formed by feelings. So, in order to make effective decisions, a complex, self-acting object combines feelings and rational thinking. In the Torah, God does not explicitly express his feelings in the process of creating the world but the evaluations of daily results using the term "good" can be construed as an implicit synthesis of rational thoughts and feelings. As the world evolves, God's decisions are not based upon purely rational judgments. God also makes decisions based on

feelings, for example smell (which is analogous to biological drive) or anger (which is analogous to emotions).

God as an asexual entity

Rabbi Neil Gillman in his book (2000) devoted an entire section to the gender of God (pp.83-86.) The accepted theological view follows the text of the Torah literary, i.e., God is of the masculine gender. *Process Theology* posits:

the positive aspects of these "masculine" attributes can be retained without their destructive implications, provided they are incorporated into a revolutionized concept of God into which the stereotypically feminine traits are integrated. In the integral result, the so called masculine traits are changed qualitatively. (Cobb&Griffin, 1976, pp. 61-62)²¹

This view of God's gender has gained currency thanks to the feminist movement and there is an abundance of literature on this subject. Of special note is the book by Judith Plascow (1990).

It seems to me that arguing about the gender God is pointless. As discussed in my book (1997b), the evolutionary process (which features increasingly complex forms of life), is accompanied by increased complexity in the methods of reproduction. Simple organisms possessing only somatic cells multiplied by fragmentation. A great leap in evolution occurred with the emergence of life forms possessing specialized reproductive cell – a spore. The next great step featured the split of the reproductive cell among two sexes – egg and sperm, each with a specific function. The two kinds of reproductive cells can be housed in a single body where self-fertilization takes place. This type of creature is termed a full hermaphrodite (e.g., an African Snail). Subsequently there emerged specialized body "containers", male and female, that house sperms and eggs respectively as well as possess other characteristics that support the reproductive process.²² The psychological difference between male and female sex are predicated upon their respective roles (in a broad sense of the word) in the process of reproduction, including the upbringing of the newborn. So, the emergence of sexes is a consequence of the increasingly sophisticated methods of reproduction. Assuming God is not a reproducible entity and "multiplication" is foreign to God, any term associated with gender is not applicable to God.

We are now in a position to explore the methods of creation and

development of the universe as portrayed in the Torah.

¹ Comment on this quote is in order. To the best of my knowledge, during the years when Isaak Lapidus developed the aforementioned ideas, a Russian scholar Arkadii Zhabin (1980) also worked on the concept of the evolution of minerals. I was unable to compare the work of these two scholars. I merely want to call attention to the work of other scholars on such innovative concepts as the evolution of the inorganic world.

² Daniel Fuller (1992) comments on the insertion of these three verses in different chapters:

“The present chapter divisions for both the Old Testament and the New Testament were not decided upon until 1205. At that time Stephen Langton, a professor in Paris engaged in editing a Latin version of the Bible, introduced them to make it easier for people to locate a passage. In 1330 his system was then adopted by the Jews for a new hand-copied manuscript of the Hebrew Old Testament, and in 1516 these same chapter divisions were used in the first Hebrew Bible printed. The verse divisions in the Old Testament had been inserted much earlier (c. A.D. 200), to make it easier for a scholar reading the Hebrew text in a synagogue to know where to stop so that the sentence just read could then be translated into Aramaic, the spoken language of the Jews since their return from exile in Babylon six centuries earlier.” (pp. 102-103)

³ Similar view is expressed by Robert Sacks (1979) who actually prompted the aforementioned ideas expressed by Leon Kass (see Kass, 1988, p.39):

“We are now about to begin a second account of Creation. As we shall see, these two accounts differ in fundamental ways. In many ways they simply contradict each other. These two accounts are of prime importance for modern Biblical scholarship. Modern scholars understand Genesis to be the weaving together of several earlier accounts, and they understand it to be their task to unravel them.” (p. 48)

⁴ See, for example, Nahum Sarna’s (1996) writings on the uniqueness of the biblical vision of creation:

“The Hebrew cosmology represents a revolutionary break with the contemporary world, a parting of the spiritual ways *that* involved the undermining of the entire prevailing mythological world-view. These new ideas of Israel transcended, by far, the range of the religious concepts of the ancient world. The presence of this or that biblical motif or institution in non-Israelite cultures in no wise detracts from its importance, originality and relevance. The germ of the monotheistic idea may, indeed, be found outside of Israel; but nowhere has monotheism ever been found historically as an outgrowth or development of polytheism. Nowhere else in the contemporary world did it become the regnant idea, obsessive and historically significant. Israel's monotheism constituted a new creation, a revolution in religion, a sudden transformation. The same observation applies to the phenomenon of apostolic prophecy, of the prophet on a mission, now known to have existed in the ancient town of Mari. Did the latter play any role in the reshaping of society? Did this episode, like Israelite prophecy, leave an

indelible mark on human thinking, behavior and institutions? To raise these questions is to point up the extent to which the Near Eastern parallels project Israel's originality in ever sharper focus.” (p.xxviii)

⁵ “Since issues in the origin of life are not religiously or methodologically neutral (for one's views on this question have profound implications for one's entire worldview), the theistic evolutionary compromise is religiously dangerous, or so say many special creationists.” (Moreland & Reynolds, 1999, p.15)

⁶ Ernst Mayr writes in his book (1982):

“The attitude toward species changed drastically after the Reformation. The fixity and complete constancy of species now became a firm dogma. A literal interpretation of Genesis required the belief in the individual creation of every species of plants and animals on the days prior to Adam's creation. The species, thus, was the unit of creation.” (p. 255)

Mayr reveals the lengthy hold that this rigid dogma exercised over scholars in various fields (e.g., the famous botanist Carl Linnaeus), namely the rejection of an evolutionary vision of creation of living creatures that presupposes change in the set of species that appear in the Torah.

⁷ Quoting Encyclopedia Britannica:

“**Creationism** *also called Creation Science, or Scientific Creationism, counterrevolutionary*, fundamentalist theory or doctrine that postulates that matter, the various forms of life, and the world were created by God out of nothing. **Creationism** grew as a result of the advancement of **evolution** that was evident after the publication in 1859 of Darwin's *Origin of Species*.”

⁸ Quoting The Harper Collins Dictionary of Religion (1995), “[C]reationism [is] an American movement teaching that humanity was created by a discrete act — implicitly or explicitly divine — and did not evolve from other forms of animal life.”

⁹ Most people tend to see the first chapters of Genesis and the theory of evolution as irreconcilable. On one side, we have scientists and philosophers of science who hold that the teaching of evolution has made "plumb unbelievable" the teachings of the book of Genesis, especially about the special status of man: "[I]t is obviously impossible to square any evolutionary account of the origin of species with a substantially literal reading of the first chapters of Genesis." On the other side, we have Protestant fundamentalists, who, taking the same view of the challenge, declare the teachings of evolution to be false. No longer content with just citing chapter and verse, some of them would like to prove it scientifically. In recent decades, they have given birth to a new movement, so-called "creation science" or "scientific creationism," which aims both to embarrass and refute the theory of evolution and to find scientific evidence supporting the account of the origins of the world, life, and man provided by their own particular reading of Scripture. I should say straight out that I reject the enterprise of "creation science." There is simply no way scientifically to gather the kind of evidence wanted, and the quality of reasoning in the few publications I have seen is appalling. True, certain discoveries may yet raise difficulties for the orthodox theory of the *how* of evolution, inducing much-needed modesty and open-mindedness among the high priests of science. But such difficulties could hardly challenge the basic *fact* that

evolution has occurred, much less constitute evidence for special creation less than 6,000 years ago. If the Bible is to be harmonized with scientific findings, creation science is not the way." (Kass, 1988, p.29-30)

¹⁰ To recap: creation, according to Genesis 1, is to bring order out of primordial chaos, largely through a process of progressive separation, division, distinction, differentiation. If there is to be a world, there must be well-defined and distinguishable entities; if there are to be *living* beings, capable of self-perpetuation, each individual must belong to a kind or species that, by and large, breeds true, i.e., after its kind. (More on this below.)

At this level of generalization, the biblical account is perfectly compatible with the fact of a slowly evolving cosmos, with life arriving late, beginning in the sea and only later emerging on earth, progressively distinguished into a variety of separated kinds.

Further, since the separations, actually made or appearing in the world, were all beforehand *makeable*, one might even conclude that the biblical creatures—or at least the broadly possible *kinds* of creatures—were present *potentially* in the world, even before they were called forth into being (that is, created).

With this addition, one sees how one might find in Genesis 1 a doctrine of evolving or unfolding creation, or, conversely, how *certain* evolutionary accounts of the emergence of living forms are compatible with the Bible's account of a graded and sequential unfolding of the cosmos, through progressive acts of separating out implicit or at least latent possibilities.

True, evolution through the unfolding of latent possibilities is not the same as evolution through the natural selection of accidental variations—it is more Lamarckian than Darwinian. But leaving aside such questions of mechanism, "creation" and "evolution" might be perfectly compatible, at least in principle; everything depends on what is meant by each notion. I do not yet fully understand these notions; and I rather suspect that evolution *solely by natural selection*—orthodox Darwinism—cannot be simply squared with the biblical account. But if the question is to remain open for further reflection, we need to challenge some common assumptions that usually lead people to see evolution and creation simply as opposed.

First, *evolutionists deny the primacy and even the intelligibility of natural kinds or species*. Some of them ridicule as "typological" or "essentialist" thinking the focus on natural species, characteristic not only of Genesis 1, but also of common human experience. Evolutionary theory, like natural science in general, shares the Bible's teaching regarding the intelligibility of the cosmos, but the intelligibility it seeks comes in the form of universal laws of natural change, rather than the specific forms of the separable natural beings.

Indeed, the whole point of Darwin's researches was to discover the natural processes by which new species emerge from preexisting species, through decent and modification. (Kass, 1988, p.37-38)

¹¹ As a matter of fact, the version of creation presented by the Koran is analogous to that in the Torah. Some translations of the Koran into English replicate the part about the six days of creation. See A. Arberry's translation, "It is He that created the heavens and the earth in six days." (Quoted from Eliade, 1974)

(This same phrase with a slightly changed sequence of words at the start of the sentence is used in the translation of the Koran that was put on the Internet - <http://quran/al-islam.com>. Meanwhile, in some other translations of the Koran the same surah and verse 57:4 is translated differently: the word *day* is replaced by the word *period*. For example, one translation (Koran, 1983) reads "He it is who created the heavens and the earth in six periods.")

¹² In spite of being a devotee of socialism, Leonid V. Kantorovich faced great problems launching his ideas. His book (1959), written in 1942, had to wait 17 years to be published. During this period, he was on the verge of being arrested a few times for attempting to apply his concept. The ideological reason for such a delay was the following: Soviet Marxists define a socialist economy as based upon at least two key characteristics. First, it should be a *planned economy* and, second, its operation should be based on the *labor theory of value*. Kantorovich fulfilled the first condition but, implicitly, he shares the Western theory of *marginal utility* to set prices. Later, Kantorovich tried to prove that the prices deduced from his theory are in line with the labor theory of value, but these were deceptive tricks. (See more in the Chapter "Nobel and Lenin Prize Laureate L.V. Kantorovich: The Political Dilemma in Scientific Creativity" in my book 1990.)

¹³ Pope John Paul II in his message wisely underscored the role of plurality in the theories of evolution. He said, "And, to tell the truth, rather than the theory of evolution, we should speak of several theories of evolution. On the one hand, this plurality has to do with the different explanations advanced for the mechanism of evolution, and on the other, with the various philosophies on which it is based. Hence, the existence of materialist, reductionist and spiritualist interpretations."

¹⁴ At the beginning of the fifties Russell Ackoff, known in his youth for espousing leftist views, needed government clearance. The Joseph McCarthy committee called him to a hearing where he was asked by an investigator, "Do you believe in God?" Ackoff replied, "Please, give me a definition of god, and I will answer..." Silence...

¹⁵ The following long excerpt from the book by John Cobbs and David Griffin (1976), two leading scholars in the field of *Process Theology*, will familiarize the reader with the conceptualization of God in this field.

"Process theology speaks about God. Whitehead and Hartshome have both used the word "God" frequently and without embarrassment. However, they have been conscious that what they have meant by the term is philosophically and religiously opposed to much that has been meant by "God" in metaphysical, theological, and popular traditions. Their use of the conventional word for unconventional purposes continues to offend many theists and atheists alike. We follow them in their usage; and we hope that the explanations in the book will show why we do so and that this practice is justified. But to make clear that many of the common connotations of the word do not fit with our meaning, we single out five in advance for rejection. Anyone who supposes that these are essential to the meaning of the word "God" will then be fore-warned that we speak of a different reality. (The contrasting doctrines of process theology are explained in Chapter 3.)

1. *God as Cosmic Moralist*. At its worst this notion takes the form of the image of

God as divine lawgiver and judge, who has proclaimed an arbitrary set of moral rules, who keeps records of offenses, and who will punish offenders. In its more enlightened versions, the suggestion is retained that God's most fundamental concern is the development of moral attitudes. This makes primary for God what is secondary for humane people, and limits the scope of intrinsic importance to human beings as the only beings capable of moral attitudes. Process theology denies the existence of this God.

2. *God as the Unchanging and Passionless Absolute.* This concept derives from the Greeks, who maintained that "perfection" entailed complete "immutability," or lack of change. The notion of "impassibility" stressed that deity must be completely unaffected by any other reality and must lack all passion or emotional response. The notion that deity is the "Absolute" has meant that God is not really related to the world. The world is really relate to God, in that the relation to God is constitutive of the world—an adequate description of the world requires reference to its dependence on God—but even the fact that there is a world is not constitutive of the reality of God. God is wholly independent of the world: the God-world relation is purely external to God. These three terms—unchangeable, passionless, and absolute—finally say the same thing, that the world contributes nothing to God, and that God's influence upon the world is in no way conditioned by divine responsiveness to unforeseen, self-determining activities of unworldly beings. Process theology denies the existence of this God.

3. *God as Controlling Power.* This notion suggests that God determines every detail of the world. When a loved one dies prematurely, the question "Why?" is often asked instinctively, meaning "Why did God choose to take this life at this time?" Also, when humanly destructive natural events such as hurricanes occur, legal jargon speaks of "acts of God." On the positive side, a woman may thank God for the rescue of her husband from a collapsed coal mine, while the husbands of a dozen other women are lost. But what kind of a God would this be who spares one while allowing the others to perish? Process theology denies the existence of this God.

4. *God as Sanctioner of the Status Quo.* This connotation characterizes a strong tendency in all religions. It is supported by the three previous notions. The notion of God as Cosmic Moralizer has suggested that God is primarily interested in order. The notion of God as Unchangeable Absolute has suggested God's establishment of an unchangeable order for the world. And the notion of God as Controlling Power has suggested that the present order exists because God wills its existence. In that case, to be obedient to God is to preserve the status quo. Process theology denies the existence of this God.

5. *God as Male.* The liberation movement among women has made us painfully aware how images of deity have been deeply our sexually one-sided. Not only have we regarded all three "persons" of the Trinity as male, but the tradition has reinforced these images **with theological doctrines such as those** noted above. **God** is totally active, controlling, and independent, and wholly lacking in receptiveness and responsiveness. Indeed, God seems to be the archetype of the dominant, inflexible, unemotional, completely independent (read "strong") male. Process theology denies the existence of this God." (pp. 8-10)

¹⁶ For Charles Hartshorne (1948, p.89-90) *pantheism* should to be distinguished from *panentheism* that also assumes that God exists independently.

¹⁷ "Is Isebuta a country of powerful creators?"

"No, not only. Isebuta is about diversity. Different types of creators live there – powerful and less powerful. Diversity is its strength. It makes this country rich and powerful."

"Are all creators young?"

"No, they are of different ages, but all of them possess a youthful mind."

"A youthful mind?"

"Yes. This is the main condition for the creator. Only a youthful mind can produce fantasy, see novelty, and be open to changes..."

"But how does a creator create?" Betsy asked. "What kind of force assists a creator in realizing his intent? Is it magic?"

"Magic? Oh, no, no!" Mr. Gravio suddenly became very agitated. "You cannot, should not, and must not compare a creator to a wizard! Wizards are fiction, soap bubbles, a fabrication, an invention of an idle mind!" Mr. Gravio became so angry that the air around him reached a feverish pitch. Betsy noticed some cracks on the woody furniture.

"Please, please calm down," she begged. "I agree with everything you've said. They don't exist, they don't!"

"Well, they do exist," Mr. Gravio suddenly blurted out and became calm. "But they are no more significant than magicians in a circus."

"How come?" Betsy asked with precaution.

"Simply because all their magic is nothing but trickery. And why is it so? Because magic never reaches the core of the phenomena. Magic forces cannot produce anything that will last. That which appears as a result of magic cannot develop. Nor can it generate new things."

"Really? But what forces then are responsible for real creation?"

"Divine ones. Yes! Creators appeal only to divine forces."

Mr. Gravio looked at Betsy to make sure that she understood. Betsy nodded at him, letting him know that she followed him, and he continued.

"Creators, therefore, deal with depths. They interact with the *essence*. Wizards, on the contrary, touch the *surface*. They produce illusions, imitations."

"And how do they do that?"

"By drugging livitta."

"Livitta? What's that?"

"Oh, this is the soul the world – the living matter from which the entire universe had been created."

"And the wizards destroy it? How come?"

"Well, numerous magic devices have been elaborated, such as spells, incantations, exorcism, and the like. With the help of them, wizards enchant livitta and it hallucinates, thus producing ill, weak fantasy that doesn't last - like Cinderella's dress. But this short term manipulation may cause long-term harm."

"Are you saying that all types of magic are dangerous?"

"Yes, that's exactly what I'm saying. Unlike magic transformations that are done in the blink of an eye, the process of creation requires time. Yes, Betsy, it

takes time until the imaginable becomes a real part of this world. It's impossible to create anything in a second because all things in the world are connected, and any new entity should establish relationships with others in order to keep the universe in balance. For that, time is required. Therefore anything that is created instantly doesn't last. Wizards are producers of momentary things, and they are harmful, even the good ones."

"Even the good ones? But I've always thought..."

"You were deluded. It wasn't your fault, though, because like many other people you were not aware of the truth."

"What truth?"

"The truth about the harmful nature of magic. Yes, any magic is harmful because it produces something that has no connection with the rest of the world, something that will eventually vanish as a smock. The wizards, however, don't think this way. They are preoccupied with their momentary goals, unable to see the larger picture. Therefore, they don't really care what damage could be done to *livitta* as a result of their momentary victories."

"But what happens with the living matter?"

"Oh, each time they proceed, it becomes ill and exhausted like soil that has too many chemicals in it. After a while it loses its creative potential and becomes numb and not responsive. Then the wizards abandon it and find another spot."

THE CURSE OF BEING A WIZARD

"Magic – whether it's black or white – is bad. It gradually destroys you," Mr. Gravio continued. "In the beginning it looks very exciting. It seems that you have power over the world. Alas! The feeling doesn't last long. As soon as a freshman wizard learns all possible tricks, he gets bored. He feverishly searches for an audience in front of which he may perform, but it's not easy because the world is flooded with all sorts of wizards and there is a great struggle for a client. Besides, not everyone would agree to deal with a wizard – most people want to rely on their own ability and skills."

"Really? I thought that people would love to use magic to make their dreams come true. Isn't it the most desirable thing in the world, to achieve your goal?"

"No, the most desirable thing in the world is to keep developing. Development preserves one from stagnation and boredom. Only the immature mind would crave immediate achievements."

"Then wizards must feel lonely for the most part of their life."

"Sure they do. Unlike creators, they always require spectators. Even a single spectator would do. Indeed, have you ever heard of a wizard that would stay aloof and perform his magic only in front of himself?"

Betsy laughed. She suddenly pictured such a wizard who entertained himself day and night.

"No, I've never heard of such a thing," she said.

"Of course you haven't, because wizards are not self-sufficient, and this is their biggest problem. Life for them is like the action movie – full of external struggle, intrigues, and conflicts. But put them alone in a silent room and let the autumn look through its windows, and they would be the poorest creatures in the entire universe. Silence and meditation don't work for those who require action. By the

way, creators call all types of wizards turners."

"It sounds very ironic," Betsy noticed.

"Sure it does! Creators have a different life style. They are self-contained and independent"

"Yes, I know," Betsy said, remembering hours that she spent alone over the counter.

"Most importantly," Mr. Gravio continued, "all turners are cursed: the living matter placed the curse of certainty on them."

"The curse of certainty? What is that?"

"Oh, this is the worst torture one can only imagine! Turners are not allowed to explore the unknown. Their final goals are determined – they know in the beginning what their manipulations will bring them. Turners must know three things before they start their magic: the end, the means, and the rules. Without it, no turner would ever begin his magic. Compare this to a creator who may only have a very general idea about his creation if at all."

"Really? Don't the creators know about what they will have in the end?"

"Never. And this is the danger and the beauty of any creation. Creators may know only what they *want to* achieve, but never what they *will* achieve."

"How do turners learn to become turners?"

"Oh, there are numerous schools and books that teach witchcraft, black magic, and the like!"

"Are there similar schools for creators?"

"No, there aren't. Creators go to a regular school and learn regular things. There is no such school that can teach one how to become a creator. Take for example writers, or artists. They study what everyone does. There are a lot of people who know how to write or draw well. Some of them are even graduated from the school of arts. Not all of the students, however, will become artists!"

"Very interesting... I'm just curious, are there any other types except for creators and turners?"

"Yes, of course. Everything in between, we call 'makers.' Makers have no special power that would allow them to become turners or creators, but they have good learning skills and can do any job as long as it doesn't require some subjective qualities. For example, they cannot turn one thing into another because, in addition to knowing the rule, one should also possess a special power of influencing *livitta*."

"I've learned so many interesting things today!" Betsy exclaimed. "In our town you wouldn't learn anything like this..."

¹⁸A brief comment on this question is in order. The most common formulation of this question includes the words *all at once* instead of *instantly*. The words *all at once* could be used to indicate a short period of time such as the six days of creation, and thus suggest a protracted process. To emphasize the polar opposite of a protracted process I use the word *instantly*.

¹⁹ Deeply explored by Charles Hartshorne (1984), a leading figure in process theology, the idea of an evolving God does not contradict the statement that God is perfect.

²⁰ Vibrations are responsible for transmitting information about the degree of order in the structure of an object.

The term vibration derives from the common elements shared by various mechanisms. Vibrations are produced by the periodic discharge of receptors that are responsible for irregular changes in the structure of an object.

Positive and negatives vibrations are distinguished. Pain is a negative vibration that is generated by an oscillatory process of pain fibers. Positive vibrations are physical sensations that are associated with the soundness or well-being of the structure of an object.

The positive vibrations could be called *daint*. This word comes from the Latin *dignitas*, worthiness. In common usage, daint means something that arouses favor or excites pleasure. (The term *pain* comes from the Latin *poena*, penalty or payment.)

²¹ The authors elaborated upon this statement on pp. 62, 134-136. One comment deserves special attention:

“The process dipolar notion of deity has some affinity with the Taoist notion of the Tao, in which the "feminine" and "masculine" (yin and yang) dimensions of reality are perfectly integrated.” (p.62)

²² The existence of different types of hermaphrodites, so well documented by Anne Fausto-Sterling (1993), perhaps corroborates the hypothesis of the gradual transition of full hermaphrodites to distinct sexes.

Chapter Two

Development of the Universe

There is a well-known saying: “God works in mysterious ways!” I shall be defiant and ponder the methods underlying God’s creativity.

Commonly held approach to the creation of the universe.

This approach is generally based on two assumptions. The first assumption is that God has a *final goal*, and the second is that God possesses a *program* to attain the goal. God's final goal may even be eschatological in nature, assuming that the universe God has created is a stationary system. I did not find in the Torah any explicit reference to a final goal, but some Jewish scholars, notably Neil Gilman, have found eschatology in the Jewish religion.

God's redemptive power is the centerpiece of Jewish eschatology (from the Greek: eschaton = last things; logos = discourse), the umbrella term for the body of teaching that describes the events that will occur at the end of days, at the culmination of history as we know it. Jewish eschatology is a singularly complex and imaginative body of teachings because it purports to discuss events that no human eyes have ever witnessed. This doctrine also evolved throughout Jewish history. In its fully developed form, dating from the talmudic period, it describes events that will take place in three dimensions: a universal dimension (events that will affect the entire cosmos), a national dimension (affecting the Jewish People), and an individual dimension (affecting each individual). In one way or another, each of these scenarios describes God as the initiator of the drama. All eschatologies stem from one common impulse: the sense that things as they are now are deeply flawed. The redemptive scenarios then proceed to describe how at the end of time God will transform the flawed into the perfect. All speak of a God who saves, rescues, and delivers people or, ultimately, the cosmos as a whole, from an imperfect state. (pp. 168-169)

The idea of redemption as God's ultimate aim was developed, for the most part, by Christian theologians, notably Jonathan Edwards (1703-1758), and more recently Oscar Cullmann (see his 1968 book).¹ I do not object to the idea that redemption is one of God's aims in the post-creation universe, but in order to speak of the purpose of God, one should take into account both the process of creation of the universe as well as the functioning of the universe. The concept of redemption is relevant only to the functioning of the universe.

I take a *program* to mean a protracted sequence of stages that are *completely* and *consistently* linked; a *plan*, on the other hand, denotes a protracted sequence of stages characterized by *disjointed* relations among the stages.² I failed to find in the Torah any explicit reference to the design of a program or a plan by God, but a number of scholars do characterize God's activities as planned. For example, Robert Sacks (1979) writes,

[W]e must consider the general plan for Creation as a whole. On day one light was called into being; on day two the sky was made and the water divided. The third day was devoted to the appearance of dry land together with the production of the plants. On day four the sun, moon, and stars will be made, and on the fifth day the denizens of the sky and the water will come to be, while day six is given to the land-dwelling beings, including man. ...In addition to this general plan which relates the first three days to the last three days there is a general transition from simple motion to motion of a more complicated character. Enough has been seen so far concerning the order of Creation to reach some answer to our original problem of why the words and it was good had to be deferred from the second day to the middle of the third day. Simple and elegant as the above plan is, not even God was capable of completing the seas before making the dry land since the limits of the sea are the same as the limits of the land. Unlike many mythological accounts, the author does not imply any great and tragic necessity against which God must struggle. The difficulty is nothing more than a simple problem of topology. However, it is a problem which even God Himself must face, and the plan cannot be fulfilled in its simple and most immediate sense. (p.39)

In my opinion, the authors of the Torah do not explicitly portray God as someone who possesses a plan or a final goal. In the absence of final goal or a plan, with God conducting a protracted process limited to stage-specific goals, it is reasonable to raise the following question: "How are the intermediate goals set?" In addressing this question we shall examine the methods of creation in general, and in protracted systems in particular. Classical methods including dynamic

programming (R. Bellman, 1957) are quite adequate in solving a class of problems where we can start to iterate at the end (the final state) and proceed to link the final state to the current state in a complete and consistent manner by means of a fixed program. This linking can be achieved even if the initial information is given in terms of probabilities based on statistical observations of frequency distribution. By the same token, if there is an applicable law or a rule, one is able to commence the process at the beginning (the initial state) and advance till a signal to terminate the procedure is reached. For example, when composing, a writer (poet) may have a final goal, which is best encapsulated by the term *closure* (Smith, 1968). Guided by closure, the creator organizes the total structure of the work and, in the *extreme case*, he or she does so in a complete and consistent manner. On the other hand, a writer may proceed without having any concrete, fixed, *a priori* final goal; he or she finds the *beginnings* and develops them, eventually arriving at the final destination (E. Said, 1975). The writer does not stipulate this destination in advance. Moreover, the writer may suffer from the realization that if he follows the plausible behavior of the protagonist, he would be compelled to kill the protagonist in the end. In any case, starting at the beginning is predicated upon the presence of law that drives the author to the destiny state.

But what if "the time is out of joint?" (*Hamlet*, Act 1, Scene 5). What is the proper course of action when it is impossible to set a complete and consistent process of creation, especially in the absence of a final goal? Given such constraints, one key step is to elaborate a *course* of development.

Course of creation and development of the universe as portrayed in the Torah

Nahum Sarna (1966) explores in a very interesting way God's role in directing the creation of the universe as presented in the Torah:

One of its seemingly naïve features is God's pleasure at His own artistry, the repeated declaration, after each completed act of creation, that God saw how good ...But this naiveté of idiom cloaks a profundity of thought that marks off the mood of Hebrew civilization from that of Mesopotamia in a most revolutionary manner. The concept of a single directing Mind behind the cosmic machine, with all its ethico-moral implications, emancipated Israel from thrall to the vicious cycle of time. In place of a fortuitous concatenation of events, history has become purposeful and society has achieved direction. A strong

streak of optimism has displaced the acute awareness of insecurity. The all-pervasive pagan consciousness of human impotence has given way to a profound sense of the significance of man and the powers he can employ. ... This basic belief in the essential goodness of the universe was, of course, destined to exert a powerful influence upon the direction of the religion of Israel and to affect the outlook on life of the people. (p.18)

It seems to me that the phenomenon known as *entropy* encapsulates in the most generalized form the course of development of any dynamic system.³ The prevailing view is that growing entropy is intrinsic to a *closed* systems and, conversely, the principal characteristic of development in *open* systems is an increase in the degree of order, i.e. the growth of negentropy (Bertalanffy, 1968). A closed system can also move towards greater negentropy, provided it possesses mechanisms of self-perfection (this may turn out to be equivalent to the openness of the system, as far as the inflow of new energy is concerned). In other words, the growth of entropy is associated not only with the closedness of a system, but also with the fixed nature of the rules that govern the interactions among its elements. In this context *development* really implies a change in the rules of interaction. Noteworthy is the idea of entropy as it relates to the process of creation of the universe. Leon Kass (2003) works with this idea in a very interesting way, although it is not a fundamental concept in his framework. (I assume so because he does not even include "entropy" in the *index* of his book). Assuming that creation increases the degree of order, Kass emphasizes the impact of initial entropy upon creation:

Life and freedom are only the most obvious principles of disordering and change. A scrupulously close look at the text suggests even more fundamental principles of change. First, there is the formless, watery chaos out of which everything came to be. How well does it accept form and order? Are all its native entropic tendencies abolished by the process of separation to which it is subjected? Or does its chaotic character persist beneath the forms of the world, making any order unstable? Does Genesis 1 subtly teach what was once known as the recalcitrance of matter? (p.49)

To answer the above questions we need to delve into the murky (but crucial to my expose) concept of entropy.

One frequently overlooked aspect of entropy-negentropy is the degree of *diversity* of a system. Note that in the introduction to his book (1954), Norbert Wiener describes the growth of entropy as involving not only an increase in chaos, but also an increase in

uniformity.

As entropy grows, the universe and all closed systems in the universe, tend to deteriorate and lose their distinctiveness, to move from the least to the most probable state, from a state of organization and differentiation in which distinctions and forms exist, to a state of chaos and sameness. Wiener did not elaborate upon the idea of entropy as a function of two independent variables: order and diversity. For Wiener, as far as I understand his message, these two variables are clustered and not separated. Jamshid Gharajedaghi (1985) constructed the negentropy function in the context of living systems as a function of two variables: complexity (diversity, differentiation) and order (integration), i.e., Gharajedaghi treated the two variables - complexity and order - as a two-dimensional structure rather than as a dichotomy within a one-dimensional structure. There is a range of values that each of these parameters can assume, and though each one can vary independently of the other, development implies some sort of coordinated change in each variable. Equating greater differentiation with an increase in complexity and growth of integration with an increase in order, Gharajedaghi (1985) notes,

"[M]ovement toward complexity and order is the essence of the negentropic processes in living systems" (p.40).⁴

To sum up, entropy is represented as a function of two variables: differentiation (diversity, complexity) and integration (order).

This approach to entropy generalized to apply to any system (based on the conception of a creative universe), ensures infinite development because it focuses on the direction or course of development rather than exclusively on the end goal. In other words, this approach underscores the structures of development rather than the final state.

I now want to elaborate upon the structure of development in the context of a complex network of God's and human actions.

Predispositioning: the principal method of creation and operation of the universe

Janus Process

Let us examine a simple case of a system comprised of production chains for making various kinds of final goods. As man evolved, there emerged multistage production chains linking natural resources

and final products. These production chains were, for the most part, disconnected and relatively short. This changed when intermediate products evolved to be highly versatile, and the tangle of production chains was transformed into a unified network.

As long as this network remained relatively simple, a change in any one of its nodes could be completely and consistently traced directly to the end result (the final product). With respect to a system which yields consistent and complete links between initial and future states, change can originate both at the end and at the beginning. This means that the process of development is driven by a well-defined practical objective, namely, the creation of new products or technologies that are integrated in the overall network in a mostly complete and consistent manner. At some point a “question” arose that marked a revolution in the history of human development: “Why not proceed in a parallel fashion, taking any arbitrary node as a starting point, even if a change in this node cannot be completely and consistently linked with the final outcome?” However, this parallel development exacts a heavy toll since initially, the potential worth of any given undertaking may be entirely unclear and the effort performed at some initial node may lead to a dead end. To illustrate the predicament I will digress to talk about the so-called *Janus process*.

Janus, the Roman god of beginnings and transitions, has two faces looking in opposite directions: a face on the front of his head and another on the back. Thus, the Janus process denotes a process where changes in the system are triggered both at the *end* and at the *beginning*. More than any other system, the history of mathematics has demonstrated such double-ended development (see my book 1997b). At one end was the need to solve practical problems; at the other was the aspiration to explain the harmony of numbers and geometric figures as such. Contrary to the pragmatic Egyptian mathematicians, the Greek mathematicians, like Euclid, Pythagoras, and their followers, professed purity of mental constructs and aloofness from reality. The “purist” approach certainly produces difficult dilemmas in mathematics, namely how to assess the “merits” of some unsolved problem that starts at the beginning (as opposed to a pragmatic purpose).

A famous example of this situation is Euclid's *fifth postulate*, which for centuries seemed to be a minor academic issue. It was only in the nineteenth century that a number of mathematicians seriously

addressed this problem. Its solution had a revolutionary impact on mathematics and its applications, e.g. shaping the mathematical apparatus for Einstein's relativity theory (a general overview of Euclid's fifth postulate may be found in the book by Voldemar Smilga, 1970).

In a disjointed protracted system starting at the beginning raises the critical problem of selecting the criteria to use to judge the validity of the initial steps. It is important to point out that one typical mistake that occurs at this stage is to measure the value of the objects that commence at the “beginning” using the same criteria as those used in assessing the objects that develop from the “end”. In fact, there is some confusion about how to properly evaluate some nascent result in science or in art (for example the attitude toward functional analysis in mathematics in the early decades of the twentieth century; evaluation of atonal music). The primary candidates for judging initial stages of development are oftentimes *probabilistic methods*, which are based on *fixed* and *repetitive* events. However, even if the authors of the Torah possessed an intuitive notion of probability,⁵ previous experience in determining the frequency of a given event would be required in order to make this sort of determination. In the Torah, God probably lacked such experience, because God was creating the world for the first time and there is no intimation of God having any previous experience in creating other worlds.

This leads to the following question: how to evaluate intermediate results that are *unique*? One course of action is the creation of *predispositions* evaluated in terms of *beauty*.

Predispositions

The concept of predisposition that I have developed over the last thirty years is based on my understanding of the categories of *determinism-indeterminism* and the *degree* of determinism. (See my books 1997b and 2003.) The key element that defines determinism-indeterminism is the *program* that transforms system's inputs into outputs. The degree of indeterminism depends on the potential possibility to deviate from this program. In the case of complete determinism, the program that links inputs and outputs is *unavoidable*. That is why even if the output is indeterminate, the system could still be deterministic if the process of interaction between inputs and outputs is fixed (as in quantum mechanics, for example).

The degree of indeterminism can be calibrated depending on the potential to deviate from the program. The stages of indeterminism correspond to *combination*, *predisposition*, *chaos*, *mess*, and *mishmash*.

Mishmash could be defined as an entity that consists of indistinguishable components (potato mishmash is different from a set of potatoes that have been used to prepare the mishmash.)

Mess is defined by Webster's Dictionary as "a disorderly or confused collection or mass of things."

Chaos exhibits some regularity, as manifest by fractals, strange attractors, and Feigenbaum numbers.

A *combination* assumes a narrow, well-defined goal and an unavoidable program that completely and consistently links the goal with the initial conditions.

Let us also introduce the concept of multidimensionality. It is a system's category that is highly helpful in illustrating a predisposition within the framework of a multifaceted analysis of n object.⁶ Among these facets are: *functional*, *structural*, *operational*, *operatorial*, and *genesis*. The above facets of a system are well-known in the field, but typically, they have been applied in a one-dimensional manner, meaning that one of them is held to be an independent variable that is controlled, while all other facets are dependent variables. The systems approach assumes that all these aspects are independent variables (multidimensionality presumes that if one aspect is fixed, others still retain a certain degree of freedom). By embedding an object in such a multidimensional space, one can better capture the object in its entirety and rise above a one-sided view. Unnecessary arguments among scholars in the same field frequently arise as a result of each of them viewing the system from one single perspective (i.e. one-dimensionality).

As shown in the ensuing discussion, a system can first be dissected through its multidimensionality and then aggregated. At this point, let us apply the multidimensional approach to the concept of predisposition.

From a *functional* perspective, a predisposition can be construed as a structure that characterizes the impact of a given stage upon future development. To be more specific, from the functional point of view, a predisposition should: 1) channel the environment along a certain general course, for example, aggressive or defensive, extrovert or introvert; 2) channel the impact of unexpected outcomes to benefit

the system; 3) minimize the damage from unexpected outcomes and mistakes.

From the *structural* point of view, predisposition is based on the concept of a *position*. It consists of a set of material and relational objects, both as *independent variables*. In their tangible form, these objects form the set of *initial* components. Measuring the components of a given position is accomplished by means of *dual* variables. The latter represent unconditional values, or more precisely, the values represent degree of unconditionality. I will elaborate upon these values in Chapter 5 (in the context of ethics in the Torah).

The *operational* dimension refers to the formation of a predisposition as an intermediate stage in a disjointed system; formation, which makes it possible to link in some way past, present, and future. The technique to form a predisposition could be termed *predispositioning*. This method assumes a deep *dissection* of a system's state into its constituent components (detailed in the description of the structural aspect of a predisposition). One hurdle here is the "taboo" against dissecting a system's state, because of the possibility of losing the holistic, or synergetic effect. To solve this problem, we need a new approach to disaggregation, one that allows us to reassemble the components and preserve the holistic effect. The key features of this procedure are as follows. First, one finds the material and relational elements that comprise a given stage; and second, one measures them in unconditional values. Much progress has been made in developing new mathematical methods for disjointed systems. These methods emerged under the guise of *heuristic programming* and *satisficing solutions* (the latter, in Herbert Simon's works). Notable in this context are computer chess programs, which are based primarily upon exhaustive (brute force), disjointed, incremental search (C. Shannon, 1950). However, a general formalized concept that incorporates predispositioning has not yet been developed.⁷

An *operatorial* aspect emphasizes *subjectivity*. I define *subjectivity* as the overall evaluation of a predisposition by an operator. This operator (evaluator) cannot be detached from the operator who actually implements this predisposition (in chess, this means that one who evaluates the position cannot be separated from the one who has to play it).

From the point of view of *genesis*, the formation of a predisposition in a mature system represents a non-Markov process, because the past trajectory of development impacts future situations. The development of beauty can be viewed as a general, non-Markov process, because it takes into account the impact upon the present state of the future, as well as of the past.

Let us look at the game of chess to illustrate the role of predisposition. It is impossible (in the general case) for a chess player to link in a complete and consistent manner the current move with the final outcome of the game (this would require processing 10^{120} possible positions that can appear during the game, and doing so in the absence of algorithms that can find an optimal solution to the game within a reasonable period of time). As a result, players conduct much of the game from start to finish without knowing the full consequences of a given move. This uncertainty makes the formulation of an intermediate goal (pursued by a given move) the key factor of move selection and numerous ingenious techniques have been devised to deal with this problem, especially in the middle game. One such technique is the combinational style, which was prevalent until the end of the nineteenth century. In modern chess the positional style of play is the prevalent style for the middle game. The philosophy of the positional style is actually based upon a deep understanding of the indeterministic nature of development (i.e. absence of a fixed procedure). Therefore, a master of the positional style forms his position in such a way as to contribute to the future prospects of his position (while the course of the game cannot be fully predicted). The evaluation of a position had been formalized by Claude Shannon (1950) using a weight function. The function f for some chess position P could be formed as follows: $f(P) = 200(K - K') + 9(Q - Q') + 5(R - R') + 3(B - B' + N - N') + (P - P') - .5(D - D' + S - S' + I - I') + .1(M - M') + \dots$, where K, Q, R, B, N, P are White's extant king, queen, bishops, knights, and pawns; D, S, I = doubled, backward, and isolated white pawns; and M = White's mobility (measured, for example, by the number of legal moves available to white pieces). The letters followed by an apostrophe (K') refer to black pieces. The coefficients 200, 9, 5, 3, and 1 are the widely accepted semi-conditional valuations of the respective chess pieces; the coefficients .5 and .1 are the rough-and-ready valuations of positional parameters proposed by Shannon. The better the position,

the more it helps a player to *induce* the environment in the most favorable way. Also, a strong position may *successfully* adapt to all kinds of unforeseen situations or, at least, *reduce the harm* that they may cause. The positional style does not negate the combinational style. A mature position becomes “pregnant” with combinations which may be relatively simple to find in a short number of moves.⁸

I certainly do not claim that the positional style could fully explain all the problems raised by the Torah. My method of analysis applies to a select set of questions and is meant to enlarge the *manifold* of different approaches to the unsolved problems in this field.

Before we discuss the formation and evaluation of the stages of creation in the Torah I want to make one more digression into the computation of aesthetic value by a well-known U.S. mathematician George Birkhoff (1884-1944). Birkhoff's (1956) formula for the aesthetic measure M is a function of two variables: $C = \text{complexity}$ and $O = \text{order}$. Birkhoff writes,

The typical aesthetic experience may be regarded as compounded of three successive phases: (1) a preliminary effort of attention, which is necessary for the act of perception, and which increases in proportion to what we shall call the complexity (C) of the object; (2) the feeling of value or aesthetic measure (M) which rewards this effort; and finally (3) a realization that the object is characterized by a certain harmony, symmetry, or order (O), more or less concealed, which seems necessary to the aesthetic effect. (pp. 2185-2186)

To illustrate his ideas, Birkhoff uses a convex polygonal tile. The measure of its complexity is determined by the number of sides and the degree of order, as well as such parameters as repetition, similarity, contrast, equality, symmetry, balance, and sequence. Formal representation of Birkhoff's rule is as follows: $C = ra + sb + tc + \dots$, where a, b, c = indices of tension of adjustments A, B, C (that take place r, s, t (times) that the nervous system must perform for the “material” objects to be perceived). These indices have a negative sign, because perception here is impossible without sustained interest. $O = ul + vm + wn + \dots$, where l, m, n = indices of tone of feelings that correspond to various types of associations L, M, N repeated u, v, w times. Feelings could be positive, negative, or indifferent. Ambiguity, undue repetition, and unnecessary imperfection produce clearly negative feelings.

The parallels between Birkhoff's evaluation function and Shannon's function are obvious. The components that comprise

complexity correspond to the *material* components, and the components that comprise *order* are the same as the *positional* components. Feelings in Birkhoff's evaluation function play the same role as the values in Shannon's weight function.

Predispositions As Goals

In the Torah, creation of the universe is presented as a multistage process with a broad spectrum of stage-specific methods of operation. One such method is the creation of predispositions or stages that are assigned certain valuations and provide direction for further development. God varied the structure of a predisposition. In the general case, predisposition includes both material and relational components. However, in some situations only one of these types of elements is mentioned by the authors of the Torah.

Let us focus on the *time* dimension. In describing the overall course of creation and development of the universe, the authors of the Torah delineate various stages (steps) set up by God. These stages vary in duration with each stage having its respective goals. I distinguish two modes of formulating a goal. One stipulates the time allotted for the attainment of a goal - this is the predominant method in the Torah. The other mode specifies the desired state; the actual amount of time needed to attain the goal is an unknown variable.⁹ Note that even when the time period set aside for a particular stage is not specified in the Torah, it may follow from the text that this stage requires a process of considerable duration. In this case I shall classify this stage as long-lasting stage.

The duration of some, but not all stages, is explicitly stated in the Torah. The ones of indefinite duration may still yield an order of magnitude of the time required for their completion. (It would be interesting to explore which goals were assigned a time interval and which were not.) This taxonomy of stages is illustrated in Figure 2.1 in the form of a 3x3 matrix. One dimension denotes the duration of a stage and the other the specificity of the goals to be achieved. Although each variable is continuous, we partition them into three intervals.

Figure 2.1 Relationship between Stage Duration and Specificity of Goals assigned to this stage

Duration of a Stage	Specificity of Goals		
	General	Semi-general	Specific
Long	Reproduction of human beings (Genesis,1:28) God's promise to preserve the created diversity (Genesis, 8:21-22) 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)
Mid-term	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 in the table are taken from the Torah (some will be discussed in detail). One cell is empty. A reader familiar with the Torah can fill in this empty slot.

Let us now discuss individual stages (in terms of time) that are identified based on the essential parameters peculiar to the respective stage. The duration of a stage may range from hundreds of years to decades, years, months, or days. The history of the Jewish people, as written in the Torah, does not follow a strict durational hierarchy, i.e. a short stage may be followed by a long stage. For instance, Abraham did not have any children with his wife Sarah. God tells Abraham that in one year's time he will have a successor "that shall come forth out of thine own bowels" (Genesis, 15:3). When God promises a one

hundred year old Abraham and his ninety year old wife Sarah that they will bear a son by the name of Isaac "at this same time in the next year," (Genesis, 17:21) God performs a miracle. At the same time, the authors of the Torah, referring to God, speak of the Jews coming to the Promised Land only after one hundred 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 Abraham, 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: "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).¹⁰ According to the authors of the Torah, when God sets specific goals, even remote ones, he does not state a specific program to achieve 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. For example, to "move" the Jews to Egypt in order to save them from starvation, God exercises foresight through the sale of Joseph to the Egyptians (Genesis, 45:5-8). When the time comes, God, in the opinion of the authors of the Torah, sets a specific goal of getting the Jews out of Egypt and delivering them to the Promised Land. The immediate reason for God's decision was the desperate situation of the Jews in Egypt. Some events last for months. 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, 3:7-9, also see 2:24-25). 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 beforehand. God eventually does achieve his goal of delivering the Jews out of Egypt with the gold, silver, and clothing of their neighbors (Exodus, 3:22). I would like to note that the authors of the Torah considered all the goals set by God as having been *achieved*. At the same time, the path toward the goal is neither clear nor smooth.

We are now in a position to undertake a detailed analysis of the

creation of predisposition, including Torah's valuations based on the criteria of beauty.

¹ As Daniel Fuller (1992) writes,

"At least two theologians in the Western church, however, have rebelled against the timelessness in which the Bible's teaching has traditionally been summarized. In 1739 Jonathan Edwards (1703—58), a revivalist and America's greatest theologian to date, set forth the outline of a different kind of theology in a series of sermons entitled "A History of the Work of Redemption."

In order to see how any design is carried on, we must first know what it is. To know for instance, how a workman proceeds, and to understand the various steps he takes in order to accomplish a piece of work, we need to be informed what he *intends* to accomplish; otherwise we may stand by, seeing him do one thing after another, and be quite puzzled and in the dark, because we see nothing of his scheme. Suppose an architect, with a great number of hands, were building some great palace; and one that was a stranger to such things should stand by, and see some men digging in the earth, others bringing timber, others hewing stones, and the like, he might see that there was a great deal done; but if he knew not the *design*, it would all appear to him confusion. And therefore, that the great works and dispensations of God which belong to this great affair of redemption may not appear like confusion to you, I would set before you briefly the main things designed to be accomplished [in this great work, to accomplish which God began to work presently after the fall of man, and will continue working to the end of the world, when the whole work will appear completely finished].

Edwards hoped to be able to rework these sermons into a system of theology, but his untimely death prevented this. His son, however, put them together so as to have some continuity, and in his introduction to them, he stated that his father "had planned a body of divinity, in a *new* method, and in the form of a *history*."

I intend to follow Edwards's plan for writing theology: to set forth a coherency of biblical teaching by understanding the steps God took to attain his purpose in redemption. Thus this chapter commences an exposition of the history of redemption with an inductive study (as explained below) Genesis 1:1-2:3 that raises the question, "Why did God create the world?" From that point we move to the Fall (Gen. 2-4-4-26), the Flood (5:1-11:26), the call of Abraham (11:27-25:18), and on through the other crucial steps leading to the goal of redemption reached in Revelation 21 and 22." (pp.102-103)

² Henry Mintzberg (1994) wisely distinguishes between planning and programming employing slightly different terms:

"Planning systems were expected to produce the best strategies as well as step-by-step instructions for carrying out those strategies so that the doers, the managers of businesses, could not get them wrong. As we now know, planning has not exactly worked out that way.

While certainly not dead, strategic planning has long since fallen from its pedestal.

Strategic planning, as it has been practiced, has really been *strategic programming*, the articulation and elaboration of strategies, or visions, that already exist." (p.107)

³ One side comment. John Cobb and David Griffin write in their book (1976):

“The evolutionary direction was toward increased centralization. Whitehead describes the animal with a central nervous system, and hence a series of presiding occasions, as a "monarchical society.””(p.87)

It seems the process of evolution unfolds in a more sophisticated fashion. Assembling individual living structures into complex organisms or even groups of organisms (centralization) is accompanied by another trend - the top components of these organisms and groups exhibit decentralization. For example, the brain of complex creatures has two hemispheres which communicate in a horizontal way, i.e., they lack a centralized governing organ. So the statement by Whitehead that the animal with a central nervous system is presiding as a "monarchical society" is not correct. Moreover, democracies, even the ones that incorporate the institution of monarchy (like England, Sweden, Japan, etc) exhibit at the top level a system of horizontal relationships among different institutions - legislative, executive, judicial branches, etc.

⁴ Unfortunately, Gharajedaghi's concept of entropy is limited to living systems. Physical systems, in his opinion, develop in a one-dimensional fashion towards greater complexity of the structure of matter, while biological evolution evolves towards greater complexity as well as greater order.

I believe physical systems evolve in a two-dimensional fashion as well, both towards greater complexity and greater order. The fact that the "evolution" of order in the physical universe remains less explored is another issue.

⁵ Let me remind the reader that it was only in the seventeenth century that Blaise Pascal (1623-1662), the great French mathematician, physicist, religious philosopher, and master of prose, lay the foundation for the modern theory of probability.

⁶ To the best of my knowledge, key research on this systemic principle was conducted by Jamshid Gharajedaghi in his work from 1980-ies and further explored in his book (1999). I shall elaborate upon this principle by adding two other dimensions, marked by an asterisk (*).

⁷ I know only of a single daring attempt – which is far from complete – to formulate a rigorous mathematical procedure to compute transformation of predispositions. It was proposed by the British mathematician Ron Atkin (1972*a*) and was called *connectivity*.

⁸ I read somewhere that chess grandmaster David Bronshtein made very provocative comments on the *evergreen (immortal)* game played in 1851 by the famous combinational player Adolph Anderssen (1818-1879) and Lionel Kieseritsky (1806-1853). Bronshtein had shown that the use of the positional style for the analysis of this game enormously detracted from its sophistication and made the combination rather trivial.

⁹ This kind of setup is known as an optimization problem with a floating upper limit of integration.

¹⁰ Here, 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 am not sure whether these dates are in contradiction with each other, whether they represent a

reasonable mistake in forecasting, or whether they have to do with different periods during which the Jews stayed in Egypt.

Chapter Three

Category of Predisposition in the Torah

The process of creation and operation of the universe, as expounded in the Torah, is generally reminiscent of the positional style. At each stage of creation God creates a predisposition for future development. Each stage contains every kind of *material* component that God has created (e.g., light, darkness, sky, trees, animals, human beings). Each stage also features various *relational* components (e.g., time, space, the dominance of human beings over the organic world, the inability of human beings to control the inorganic world). During the creation of the universe, the Torah focused mainly upon the material components; during the subsequent operation, the emphasis shifted to relational components. The evaluation of each stage of creation is performed by means of *beauty*, and the general course of creation and development of the universe could be expressed in terms of greater beauty (negentropy). Let us now examine the structure of a predisposition as presented in the Torah, including its evaluation via beauty.

THE SET OF MATERIAL OBJECTS

Unknown sources of creation of living creatures

Chapter 1 of the book of Genesis presents the first version of creation of the universe. The Torah mentions many different types of inorganic and organic objects that were created in the first six days, and in particular, it talks about human beings. Yet, absent among the living creatures are angels and cherubim, both of which are quite similar. Appearance-wise, wings distinguish cherubim from angels, who have no wings. In terms of function (as will soon be explained)

cherubim and angels overlap as a safeguard mechanism. While angels are represented as living beings, cherubim are portrayed mainly as decorative images. The genesis of both of these creatures is unclear.¹ We learn from multiple appearances of angels in the Torah (Genesis 16:7, 16:9, 16:10, 21:17, 22:11, 22:15, 24:7, 24:40, 31:11, 32:1, 48:16; Exodus 14:19, 23:20, 23:23, 33:2; Numbers 20:16, 22:22-27, 22:31, 22:32, 22:34, 22:35; Deuteronomy 32:27) that they are basically messengers sent by God to inform people about His decisions for the purpose of leading the people in the proper direction. For example, "And when the morning arose, then the angels hastened Lot, saying 'Arise, take thy wife, and thy two daughters that are here; lest thou be swept away in the iniquity of the city'" (Genesis, 19:15). Here is another example: "Behold, I send an angel before thee, to keep thee by the way, and to bring thee into the place which I have prepared" (Exodus, 23:20). Only once does the Torah portray an angel in the role of a guard: "And the ass saw the angel of the Lord standing in the way, with his sword drawn in his hand; and the ass turned aside out of the way, and went into the field; and Balaam smote the ass, to turn her into the way" (Numbers, 22:23). The cherubim are mentioned several times (Genesis 3:23-25, Exodus 25:17-22, 26:1, 26:31, 36:8, 36:35, 37:7-9, Numbers 7:89). The Torah speaks about them primarily as images in relationship to the tabernacle and the veil. For example, "Moreover thou shalt make the tabernacle with ten curtains: of fine twined linen, and blue, and purple, and scarlet: with cherubim the work of the skillful workman shalt thou make them" (Exodus, 26:1). And in the context of the veil: "And thou shalt make a veil of blue, and purple, and scarlet, and fine twined linen; with cherubim the work of the skilful workman shall it be made" (Exodus, 26:31). The Torah mentions the cherubim in the context of the Garden of Eden once; their role is to physically symbolize the protectors of God's sanctuary: "So He drove out the man; and He placed at the east of the Garden of Eden the cherubim, and the flaming sword which turned every way, to keep the way of the tree of life" (Genesis, 3:24). Another question about the set of living creatures raised in the first chapter of the Torah concerns the *extension* of this set.

[T]he account in Genesis, contrary to popular belief, does not claim the eternity or fixity of the species. On the contrary, Genesis asserts—along with modern science—the non-eternity of the species: like the entire visible universe,

each species had a beginning in time. More importantly, there are several subtle indications in the biblical text that invite us to think that God's created order is, in fact, subject to considerable change, on its own.

Consider, for example, the fact that at the start God's creatures all had their distinct place or habitat: sea, air, or land. Where, then, were the amphibious ones? Did God not make frogs and crocodiles? Could they be later creatures, evolving out of an exclusively watery niche? Since frogs and alligators were surely known to the ancient Israelites, is the text perhaps raising questions about the propriety of beings that cross boundaries and upset the distinctions that constitute the order of the world? In fact, in *Leviticus*, all such ambiguous creatures are declared unclean.

The possibility of organic change is more strongly supported by explicit evidence from *Genesis 1* itself. After the creatures have all appeared, God speaks to man about food. (p.48)

And God said:

'Behold I have provided you with all seed-bearing plants which are on the face of all the earth, and every tree which has seed-bearing fruit; to you I have given it as food. And to every living being of the earth and to everything that creepeth upon the earth which has a living soul in it, I have given every green herb as food;' and it was so. (*Genesis 29-30*)

Leon Kass (2003) made the following comment on the above passage from the Torah:

*In this subtle way, the text hints that the harmonious and ordered whole contains within it a principle—life, or, if you will, appetite, and eventually omnivorousness and freedom—that threatens any original order of the whole. Life is, in principle, destabilizing; man is so in spades. God's created order is not immune to change—indeed, as subsequent chapters relate, by the tenth generation all the earth (including the animals) has become corrupt and has erupted into violence and fury (*Genesis 6:7, 11-12*); the return through the flood to the watery chaos of the beginning completes the dissolution into chaos that life—and freedom—itsself had wrought. (p.48-49)*

Is it possible to create beings superior to human beings?

Leon Kass (1988) makes an interesting observation regarding human beings' past:

Genesis 1, read with the fine print, provides this teaching as well. Man may have powers that resemble divinity, but he is also at most merely an image; man, who, quite on his own, is prone to think of himself as a god on earth and to lord it over the animals, is reminded by the biblical text that he, like the other creatures, is not divine. Though brought into being by a special creative act, man appears on the same day as the terrestrial animals; though in some respects

godlike, man belongs emphatically to the world of animals, whose protective ruler he is told to be. Man is the ambiguous being, in-between, more than an animal, less than a god. This fact—and it is a fact—makes man a problem, as the Bible, even in this celebratory chapter, subtly teaches. (p.34)

Corroborating Kass's interpretation that "man belongs emphatically to the world of animals" are passages of the Torah that describe the ability of animals to behave similarly to people. For example, animals and people can use a mutually comprehensible language to discuss certain crucial problems, which may touch upon God's deeds in the most direct way.

The serpent, using its ability to communicate with Man, talks Eve into violating God's taboo on eating from the tree of good and evil; thus God's power is diminished (*Genesis, 3:1-5*). At the same time, by dealing with humans directly, animals can play a very positive role by serving as intermediaries between God and Man. The 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*).

The Torah does not mention the possibility of creating a new species that is above human beings. It seems that the *sons of God* are just a special group of people: giants. Although the Torah makes no mention of their intellectual abilities, it states that they were born from a sexual union between common women and beings from the province of the spirits (*Genesis, 6:2,4*). This interpretation is given in the various translations of the Torah. For example, it is repeated in the *King James* translation into English, in the Russian translation with commentaries published in Vilna (1914), and in the translation whose general editor was Professor Herman Branover (Jerusalem-Moscow, 1993). There is, however, another interpretation of the term *sons of God*. According to the English version of the masoretic text of the Bible (1955), the word "giant" is given in the original Hebrew language as *Nephilim*. The Jewish Encyclopedia (1901-1906) associates this word with fallen angels. So, Man may not be the crowning or the end point of development of the universe, and just as Man appeared, so may a new species above Man emerge in the future.

These views are articulated by Friedrich Nietzsche (1976) in Zarathustra's 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 beasts 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? Be bold, 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!

How does one create an "overman"? There are at least three options: one is to continue the course of creation by God; the other is the biological evolution; and the third is by artificial means. Let us touch upon the third option.

Radical forms of human evolution are quite feasible, and they might not necessarily be rooted in biology. For example, improvements might be achieved by combining artificial and natural organs; here, Man has come a long way compared to other animals. Man has created powerful devices to improve his extremities (arms, legs) and to be able to do things for which he lacks specialized parts (like flying). Man has also started to develop artificial devices capable of improving or even replacing internal organs, e.g., kidneys and heart. It seems that this process of substitution is boundless, and eventually, a man made up entirely of artificial internal and external parts could be created. This new type of artificial man really represents a new species, since he will reproduce based upon principles completely unlike those that support human reproduction. One name for this new species is *Kiberhomo*, which is a combination of cybernetic technology and human structures.

Perhaps the most effective way to create a new species is to invent new principles completely unlike those that govern human development. Such a species could be created by Man as an artificial entity existing outside of Man. Man-made technology could eventually evolve into a self-developing autonomous system that is considerably more complex and more organized, as well as possesses superior creative powers.

Two questions arise in this connection: 1) Is an artificial system capable of formulating its own goals? 2) Can Man assign goals and constraints to this system so that the side-effects of its operation will not cause him too much suffering? There is no clear-cut answer to these questions. People who espouse the so-called "Western" system

of values continue to develop artificial systems that are capable of being superior to Man. They assume that the point of irreversibility, in terms of the welfare of mankind, is still very remote. In this context, the disciples of Western civilization, no matter what *local* benevolent goals they advocate, are following the teachings of Zarathustra in a *global* sense:

"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." (Nietzsche, 1976, p.27)

These ideas moved me to accept the following interpretation of the Torah: Man was created by God in order to augment God's greatness. We can further surmise that Man can increase his own power and become close to God in terms of his abilities. The legend of destruction of the Tower of Babel serves to confirm God's fear of the growing might of human beings; but let us stop here, for these deliberations fall far outside the scope of the Torah.

Sex of living creatures

The Torah mentions that human beings have two sexes (Genesis 1:27). As far as the sexes of other creatures, no mention is made in the first or the second chapters of Genesis. It is only in connection with the flood that the Torah explicitly mentions sexes; God said 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" (Genesis 6:19). The two sexes of humanity are referenced in the Torah's two versions of creation: Chapter 1 and Chapter 2 of Genesis. These two versions of creation differ greatly in depicting the origins of the first man and first woman. According to the first version both sexes had been created simultaneously: "male and female, He created them" (Genesis 1:27). The second version starts with the creation of a male, and a female is created later from that male.

"[T]he Lord God formed man of the dust of the ground, and breathed into his nostrils the breath of life; and man became a living soul." (Genesis 2:7)

And later the Torah states:

"He took one of his ribs, and closed up the place with flesh instead thereof. And the rib, which the Lord God had taken from the man, made He a woman, and brought it unto the man." (Genesis 21-22)

These two versions of creation of man and woman allude to some general theories regarding parallel versus sequential creation of the two sexes, and in particular, who was made from whom: Was man made from a woman, or vice versa? My answer (see my book 1997b) is based on the view of the evolutionary process as leading to greater biological complexity. Simple creatures possessing only somatic cells multiply by fragmentation. A major evolutionary step occurred with the emergence of creatures having a specialized reproductive cell: the spore. The next milestone is associated with the division of the reproductive cell into two sexes: an egg and a sperm, each with their respective functions. The two kinds of reproductive cells may be housed in a single organism with self-fertilization (a full hermaphrodite, e.g., an African Snail). At some point, specialized bodies to hold these cells emerged - male and female that house the sperms and eggs respectively. They also possess other features that support the reproductive process. The existence of different kinds of hermaphrodites, so well described by Anne Fausto-Sterling (1993), seems to support the hypothesis that full hermaphrodites gradually evolved into separate sexes. Here, I would like to mention an original bible-based explanation by Robert Sacks (1979) for the emergence of male and female. In a very general form, it expresses the idea of a man who possesses both male and female traits and who is subsequently split into two sexes.

The attempt to find a helper from among the animals failed. Man was in need of a helper that he could see with his own eyes as being something apart from himself and standing in front of him. This would imply that Man understood himself to be alone in the sense of lacking something and in need of another. But God was able to find that other only within Man himself. Man did indeed have everything that was required and had been made perfect. Like God he was a complete whole, containing both male and female, but he was unaware of that perfection. God was forced to take something away in order to return it in a more visible form. This would explain why it was only on second thought that God decided that it was not good that man should be alone. There is a story in the Midrash to the effect that the first man was five hundred feet tall and could see from one corner of the earth to the other, or as we would say, he had a view of the whole. The Rabbis meant that the original and single Man was intended to be a complete and self-sufficient being like God Himself. (p. 56)

The concept of emergence of two kinds of reproductive cells and their subsequent separation into two distinct bodies is not generally accepted in biological science. To this day, the aforementioned

problem captured in the biblical account of the sequential appearance of two sexes remains open. Scholars continue to discuss the sequence in which males and females appeared, as evidenced by the following except from an article by David Crews (1994):

Numerous studies of lower vertebrates clearly demonstrate that the organizational concept we have outlined here offers an incomplete picture of animal sexuality. I propose that a slightly broader view could encompass all vertebrates. I look beyond the kind of genetically determined sexuality encompassed in the organizational concept toward a more comprehensive, evolutionary view of sexuality. That view builds on the notion that males most certainly evolved only after the evolution of the first self-replicating (and hence female) organisms.

In the organizational concept the female is the default sex and the male the organized sex, imposed on the female by the action of hormones. In my alternative scenario, the female is the ancestral sex and the male the derived sex. Consider hermaphroditic fishes. Douglas Y. Shapiro of Eastern Michigan University has found that fish species that are born male and become female nevertheless pass through a modified ovarian stage before developing testes. To me, such observations suggest that males may be more like females than females are like males. Given that every male must contain evolutionary traces of femaleness, biologists might be well served to focus less on the differences between the sexes and more in terms of the similarities. (p.114)²

Finally, the two-gender paradigm of creation of living creatures in the Torah is very different from the description of sexes in the religions of the surrounding states. Nahum Sarna writes (1966):

This notion of creation by the divine ("Male and Female He created Them" A.K.) will presents us with yet another radical departure from paganism. In polytheistic mythologies creation is always expressed in terms of procreation. Apparently, paganism was unable to conceive of any primal creative force other than in terms of sex. It will be remembered that in Enuma Elish, Apsu and Tiamat represent respectively the male and female powers which, through the "commingling of their waters" gave birth to the first generation of gods. The sex element existed before the cosmos came into being and all the gods were themselves creatures of sex. On the other hand, the Creator in Genesis is uniquely without any female counterpart and the very association of sex with God is utterly alien to the religion of the Bible. When, in fact, Genesis (1:27; 5:2) informs us that "male and female He created them," that God Himself created sexual differentiation, it is more than likely that we are dealing with an intended protest against such pagan notions. (pp.12-13)

If the definition of sex is to be based upon the direct participation

of individual partners in the act of “bonding” through which a zygote forms, then most theories of sexual types allow for only two sexes. The reason I call attention to this particular assumption is because it provides a broader view of the problem of mating and the sexes. Other conditions being equal, mating is optimal for bringing about the union of functionally distinct organisms because it minimizes the required number of such organisms. While mating sacrifices population size (compared to fragmentation) the “quality” of the combinations that are actually produced may ultimately prove more conducive to the development of the species. To take this idea a step further other mechanisms of “union” involving more than two organisms can be construed.

Allow me to digress into the political sphere. By analogy with “multi-sexual reproduction”, a political system which gives birth to new social institutions calls for a profound separation of powers with possibly three (or more) “sexes”. The first sex, a counterpart of the legislative branch, would elaborate programs for strategic development having long-term implications. The female's eggs have the privilege of playing this role. By analogy with the executive branch, the second sex would elaborate tactical programs within the framework established by the first sex. The male's sperm fulfill this role. Presumably, the task of adapting to the current environment, i.e., “operative management,” is carried out by the organism using whatever means it has at its disposal (e.g. food reserves, organs responsible for adjusting to temperature fluctuations, etc.). Finally, the third sex, i.e. the “judicial branch” in our analogy, would verify that the programs followed by the other two sexes are in line with the fundamental programs of development. This prevents the birth of organisms that violate the basic tenets of development. The idea of *prevention* in biological evolution is quite plausible, because it is unlikely that “quality control” over new biological structures is performed exclusively by hindsight, i.e., through natural selection.

These speculative thoughts on “multi-sexual reproduction” and the “judicial function” of the third sex actually originated some time ago. In 1984, I was invited to give a talk on this subject at a “crazy ideas” seminar held at the Benjamin Franklin Research Institute in Philadelphia. My book (1997b) presents a detailed discussion of the aforementioned ideas. Since its publication, I have learned that such a third sex does exist in nature (Morell, 1996). Biologist John Werren

from the University of Rochester has found that the bacteria living in the guts of a female of three wasp species destroy male DNA from other species in order to keep cross-species mating from producing offspring.³

RELATIONAL COMPONENTS

The set of relational components that emerges in the process of creation of the universe is relatively poor. They include, along with time and space, the subordination of all living creatures to Man.

And God said, 'Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the fowl of the air, and over the cattle, and over all the earth, and over every creeping thing that creepeth upon the earth.' (Genesis 1:26)

The richness of relational components is revealed mainly when the Torah speaks of the subsequent operation of the universe. First, I want to illustrate these relational components with two examples: incest and the parity between God and Man. I shall then proceed to generalize relational parameters.

Incest

The first example deals with *incest*. In the beginning, the Torah is not critical of incest - Adam and Eve commit incest because Eve was made from Adam's rib. It is also unclear how Cain's children came about. It was either from his mother or from his sisters (assuming the sisters existed; but the Torah does not mention any sisters). In any case, it was incest.

One blunt case of incest involves Lot and his virgin daughters. Their future husbands refused to leave the city in spite of the warning that the city will be destroyed:

He (Lot) dwelt in a cave, he and his two daughters, And the first-born said unto the younger: 'Our father is old, and there is not a man in the earth to come in unto us after the manner of all the earth. Come, let us make our father drink wine, and we will lie with him, that we may preserve seed of our father, And they made their father drink wine that night. And the first-born went in, and lay with her father; and he knew not when she lay down, nor when she arose. And it came to pass on the morrow, that the first-born said unto the younger: 'Behold, I lay yester-night with my father. Let us make him drink wine this night also; and go thou in, and lie with him, that we may preserve seed of our father. And they made their father drink wine that night also. And the younger arose, and lay with him; and he knew not when she lay down, nor when she arose. Thus

were both the daughters of Lot with child by their father. And the first-born bore a son, and called his name Moab — the same is the father of the Moabites unto this day. And the younger, she also bore a son, and called his name Ben-ammi—the same is the father of the children of Ammon unto this day. (Genesis 19:30-38)

The Torah explicitly sets laws prohibiting intercourse between people who are close relatives, by blood or otherwise:

None of you shall approach to any that is near of kin to him, to uncover their nakedness; I am the Lord. The nakedness of thy father, and the nakedness of thy mother, shalt thou not uncover: she is thy mother; thou shalt not uncover her nakedness. The nakedness of thy father's wife shalt thou not uncover: it is thy father's nakedness. The nakedness of thy sister, the daughter of thy father, or the daughter of thy mother, whether born at home, or born abroad, even their nakedness thou shalt not uncover. The nakedness of thy son's daughter, or of thy daughter's daughter, even their nakedness thou shalt not uncover; for theirs is thine own nakedness. The nakedness of thy father's wife's daughter, begotten of thy father, she is thy sister, thou shalt not uncover her nakedness. Thou shalt not uncover the nakedness of thy father's sister: she is thy father's near kinswoman, Thou shalt not uncover the nakedness of thy mother's sister; for she is thy mother's near kinswoman. Thou shalt not uncover the nakedness of thy father's brother, thou shalt not approach to his wife: she is thine aunt. Thou shalt not uncover the nakedness of thy daughter-in-law: she is thy son's wife; thou shalt not uncover her nakedness. Thou shalt not uncover the nakedness of thy brother's wife: it is thy brother's nakedness. Thou shalt not uncover the nakedness of a woman and her daughter; thou shalt not take her son's daughter, or her daughter's daughter, to uncover her nakedness: they are near kinswomen; it is lewdness. And thou shalt not take a woman to her sister, to be a rival to her, to uncover her nakedness, beside the other in her lifetime. (Leviticus 18:6-19)

(In Leviticus 21: 2-5, many of these bans are repeated in a condensed form).

The Parity Between God and Man. Let us begin with some general comments regarding the kinds of relationships that exist among entities.⁴ These relationships embody the rights and the obligations of the participants and are depicted in a deductive scheme below (for the case of a single participant).

The cells of the matrix are embodied by various “protagonists” in the Torah.⁵ Abraham belongs to 11. At the time of the Garden of Eden, God belonged to 12 and Adam to 21, meaning that the relationship between God and Adam was based on God’s rights without obligations and Adam’s obligations without rights. While not

stated explicitly this arrangement can be read from Adam’s role in the Garden of Eden “to dress it and to keep it” (Genesis 2:15.) and God’s behavior as the ultimate landlord.

Figure 3.1 Rights and Obligations for One Participant

Rights	Obligations	
	Yes	No
Yes	11	12
No	21	22

Generalizing this scheme gives us to a 4x4 matrix involving the interaction of two participants, in this case God and Man, as each is represented in the previous matrix. To help the reader better understand the gamut of relationships between God and Man in Figure 3.2 (16 possible combinations), I will examine the category of *covenant* and its depiction in the Torah. One common assumption is that the participants in a covenant have both rights and obligations, but this is not necessarily so.

Figure 3.2 Relationships Between Rights and Obligations for God and a Man

God	Man			
	Combination of Rights and Obligations			
Combination of Rights and Obligations	Yes-Yes	Yes-No	No-Yes	No-No
Yes-Yes	11-11	11-12	11-21	11-22
Yes-No	12-11	12-12	12-21	12-22
No-Yes	21-11	21-12	21-21	21-22
No-No	22-11	22-12	22-21	22-22

The Oxford English Dictionary defines a *covenant* as

A mutual agreement between two or more persons to do or refrain from doing certain acts; a compact, contract, bargain; sometimes, the undertaking, pledge, or promise of one of the parties.

The Torah bears out this definition of a covenant calling it ברית.⁶ After the flood God spoke to Noah, “This is the token of the covenant, which I have established between me and all flesh that is upon the earth.” (Genesis 9:17) The meaning of this covenant is “neither shall all flesh be cut off any more by the waters of a flood; neither shall there any more be a flood to destroy the earth.” (Genesis 9:11.) This is the case of combination 11-12 above, i.e., a covenant where only one side (in this case, God) has rights and obligations, and the other party has only the right to accept retribution from God. The broader definition of a covenant embraces combination 11-11, i.e., it presumes that both participants have rights and obligations. The following passage from the Torah describes one of the encounters between God and Abraham.

And I will establish my covenant between me and thee and thy seed after thee in their generations for an everlasting covenant, to be a God unto thee, and to thy seed after thee. And I will give unto thee, and to thy seed after thee, the land wherein thou art a stranger, all the land of Canaan, for an everlasting possession; and I will be their God. And God said unto Abraham, Thou shalt keep my covenant therefore, thou, and thy seed after thee in their generations. This is my covenant, which ye shall keep, between me and you and thy seed after thee; Every man child among you shall be circumcised. (Genesis 17: 7 -10)

The mutual rights and obligations between God and Jews are further expanded in the Torah, as illustrated with the following examples.

In the book *Exodus* the Torah says:

Now therefore, if ye will obey my voice indeed, and keep my covenant, then ye shall be a peculiar treasure unto me above all people: for all the earth is mine: (Exodus 19:5)

And more in *Leviticus*:

But if ye will not hearken unto me, and will not do all these commandments; And if ye shall despise my statutes, or if your soul abhor my judgments, so that ye will not do all my commandments, but that ye break my covenant: I also will do this unto you; I will even appoint over you terror, consumption, and the burning ague, that shall consume the eyes, and cause sorrow

of heart: and ye shall sow your seed in vain, for your enemies shall eat it. (Leviticus 26: 14-16)

A thorough examination of a *covenant* reveals a comprehensive set of potential relationships between the participants, first and foremost, parity in mutual criticism and mutual acceptance.⁷ Alan Dershowitz (2000), referring to Anson Laytner’s book *Arguing with God* by (Northvail, NJ: Aronson, 1990), presents an interesting example:

Rabbi Levi Yitzchak of Berdichev, an eighteenth-century Hasidic master who actually filed a religious lawsuit (a din Torah) against God for breaking His covenant with the Jewish people.” (p.13)⁸

This line of inquiry invites analysis of the *biological basis* underlying the relationships among living creatures.

Ethological research (e.g., Konrad Lorenz's, 1966) suggests that the basic relational “mechanism” is inherited and includes such traits as *parity* versus *subordination*. These traits are observed among humans as well as animals. It seems that the relations intrinsic to the Jewish mentality indicate *parity* between the Jew and the authorities. Furthermore Judaism is likely to be in agreement with the Jewish mentality, since it is highly improbable that there would not be a strong correlation between the mentality of a given ethnic group and its chosen religion. The most sacred source of the Jewish faith, the Torah, suggests that man is comparable to God as the master of the universe. I believe the following passages from the Torah will corroborate my statement regarding the Jewish attitude toward authority. The authors of the Torah conceptualized Man as having been created in God's image and after God's likeness. God is presented not as a static force that is omnipotent, omniscient, and omnipresent, but rather, as an evolving entity. Man, endowed with creative powers and free will, actually augments God's power. It is by the people and through the people that God carries out the development of the universe following its initial creation.

In fact, the role of Man is so vital that God stands apart with some chosen people and concludes a *covenant* with them that is of mutual benefit.⁹ According to the covenant, God promises to multiply the nation that is to spring from Abraham, promising to make Abraham the father of many peoples; in return a Jew agrees to obey God's command that all Jewish men should be circumcised:

And when Abraham was ninety years old and nine, the Lord appeared to Abraham, and said unto him,

I am the Almighty God; walk before me, and be thou perfect. And I will make my covenant between me and thee, and will multiply thee exceedingly. And Abraham fell on his face: and God talked with him, saying,

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 Abraham, but thy name shall be Abraham; for a father of many nations have I made thee. And I will make thee exceeding fruitful, and I will make nations of thee, and kings shall come out of thee. And I will establish my covenant between me and thee and thy seed after thee in their generations for an everlasting covenant, to be a God unto thee, and to thy seed after thee. And I will give unto thee, and to thy seed after thee, the land wherein thou art a stranger, all the land of Canaan, for an everlasting possession; and I will be their God. And God said unto Abraham, Thou shalt keep my covenant therefore, thou, and thy seed after thee in their generations.

This is my covenant, which ye shall keep, between me and you and thy seed after thee; Every man child among you shall be circumcised. (Genesis 17:1-10)

A sufficient condition for a genuine contract between man and God is for God to acknowledge own imperfection and the greatness of Man, and for God to recognize Man as an independent and indispensable force. Moreover, the contract becomes more credible once some kind of equality, both physical and intellectual, is established between the two parties. To ensure credibility, it may prove expedient for the God-Creator to grant Man basic autonomy while imposing upon Man certain constraints. The following excerpts from the Torah support the presence of sufficient conditions for a genuine contract between God and Man. Man's physical strength is affirmed in the legend of Jacob's struggle with God (Genesis 32:24-32). God was unable to overcome man and could only inflict a minor wound: "and the hollow of Jacob's thigh was strained" (Genesis 32:26). God said to Jacob, "Thy name shall be called no more Jacob, but Israel; for thou hast striven with God and with men, and hast prevailed" (Genesis 32:30). "Jacob called the name of the place Peniel: 'for I have seen God face to face, and my life is preserved'" (Genesis 32:31). Jewish authoritative sources disagree as to the nature of the being involved in the struggle with Jacob. According to Mordecai Kaplan (1962):

"The story of Jacob's wrestling, as told in the book of Genesis, still has something of the primitive flavor; the mysterious being with whom Jacob wrestles is a god, an elohim, perhaps YHWH Himself."

But to Hosea (Hosea 13:4,5)¹⁰ *elohim* is not a God, but an angel. (p.4) In any case, even conceding Jacob's adversary was not God but an angel, I interpret the passage to articulate Man's ability to physically compete with a heavenly force.

The authors of the Torah allude to Man's intellectual capacity in the story of Adam who becomes God's intellectual equal after tasting from the Tree of Knowledge. Unlike God, Adam is mortal, and God banishes Adam from the Garden of Eden so that he will not taste from the *Tree of Life* and become immortal. 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 from the tree of life, and eat, and live for ever" (Genesis 3:22). The authors of the Torah tell other stories that affirm the intellectual parity of God and Man. God becomes enraged at the disobedience of the Jewish people during their sojourn in the desert and decides to annihilate them and replace them with another nation that will originate from Moses. Moses argues with God and persuades God to preserve the people:

And the Lord said unto Moses: 'How long will this people despise Me? And how long will they not believe in Me, for all the signs which I have wrought among them? I will smite them with the pestilence, and destroy them, and will make of thee a nation greater and mightier than they.' And Moses said unto the Lord: 'When the Egyptians shall hear—for Thou broughtest up this people in Thy might from among them—they will say to the inhabitants of this land, who have heard that Thou Lord art in the midst of this people; inasmuch as Thou Lord art seen face to face, and Thy cloud standeth over them, and Thou goest before them, in a pillar of cloud by day, and in a pillar of fire by night; now if Thou shalt kill 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 pray Thee, let the power of the Lord be great, according as Thou hast spoken, saying: The Lord is slow to anger, and plenteous in loving kindness, forgiving iniquity and transgression, and that will by no means clear 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 until now.' And the Lord said: 'I have pardoned according to thy word...' (Numbers 14:11-20)

An analogous story is found in Exodus 2:1-14. A reader interested in this subject may find relevant discussion and examples in Neil Gillman's book (2000), pages 38-40.¹¹ The Jewish attitude that God is, in a sense, an equal combined with defiance toward and rejection of idols — all of these traits are manifest in the Torah through a highly critical attitude toward the leaders of state. In other words, this trait of the Jewish ethnos is not limited to the relationship with God, but also informs Jews' attitude toward their environment, including their leaders. Evidence for this can be found in the sermons addressed to the Jews during their plight in the desert, e.g. the future king of the Jews once they arrive in the Promised Land:

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 round 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 put a foreigner over thee, who is not thy brother. Only he shall not multiply horses to himself, nor cause the people to return to Egypt, to the end that he should multiply horses; forasmuch 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)

An alternative system of values that stands in opposition to the Jewish mindset might be based on two extremes: the subordination of man to the forces governing him (be it God, a leader, or both) or the superiority of man over the forces of the universe. Most religions and ideologies profess the former; in fact, I know of no other religion which claims any sort of parity between man and God. A system of values that proclaims man's superiority over the forces of nature corresponds to the communist ideology in its pure form. However, the actual implementation of communist ideals is oftentimes accompanied by the institution of an authoritarian regime, which is prone to transform into an ideology directed at subjugating man to

the forces governing him. Such an ideology is fundamentally alien to the core beliefs of the Jews. There are several other peculiarities of Jewish mentality. For example, there is not a single case in the Torah when a Jew sacrifices his own life for the sake of some idea.

A Select Set of Relationships in the Torah

Let us now generalize a subset of relational components as they are represented in the Torah. I shall compare pairs of contrasting relational components and the tendency of this relationship to "gravitate" toward one of the extremes (the one that is underlined).

Simultaneity - successiveness. The creation of the world in six days; the many stages by means of which God persuades the Pharaoh to let the Jews out of Egypt.

Divergence - convergence. God not striving to reach an ultimate goal; God constantly expands his sphere of influence, for instance by creating many different nations, including great ones, and even a chosen nation.

Parity - preponderance. God and Man are portrayed as equal partners and make a contract with each other. As far as people are concerned, strongly emphasized is the need to limit the king (Deuteronomy 17:14-20) and stipulate the conditions when slaves ought to be freed.¹²

Inquisitiveness - traditionality. The search for novelty involves not only finding new, more suitable land, but also making new, original decisions; for example, a decision is made upon leaving Egypt to go by way of a desert rather than through the lands inhabited by aggressive Philistines. As a result, 40 years are spent wandering in the desert before a new generation reaches the Promised Land.

Sensitiveness - unresponsiveness. God being sensitive to offerings and sacrifices, like those from Noah, for instance; the fortitude of the Jews in the face of hardship during their stay in the desert.

Turbulence - monotonousness. The world evolves in a monotonous way for the most part, except during certain periods, like the flood or the destruction of Sodom and Gomorrah.

Reversibility - irreversibility. The destruction of something is followed by the creation of favorable conditions for its revival, like the flood or the practice of atonement on the day of Yom Kippur for previously committed sins.

Jumpiness - smoothness. Preferring jumpiness to a calm and slow life in one place; for instance, the migration to Egypt during the

famine and the speedy exodus from Egypt

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

Replaceability - irreplaceability. Replaceability of the people, i.e., not allowing them to become immortal (specifically, the expulsion of Adam and Eve from the Garden of Eden to prevent them from tasting the fruit of 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 that would descend from Moses.

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

Contiguity - angular contiguity. Sharing a common heritage, following the many commandments and statutes.

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

Wander-loving - sedentary. A desire to live in different regions while at the same time possessing one's own land.

Versatility - one-sidedness. The ability of God and the Jewish people to alter the environment to suit their needs, e.g. while they were in Egypt or while wandering through the desert.

Superfluity - exhaustibility. Showing the ability to achieve set goals, growth, and satisfaction, e.g., becoming a populous nation, achieving a successful exodus from Egypt while still maintaining enough strength for future accomplishments.

Empathy - self-centeredness. The ability to put oneself in another's position, for example, when God intends to destroy the disobedient Jews, Moses takes into account the views of the Egyptians regarding the possible consequence of God's actions.

Interdependence - self-sufficiency. The idea of mutual support; the combined efforts of God and Man as well as among people themselves.

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

Compatibility - incompatibility. Throughout the Torah, the conditions of compatibility between God and Man (the covenant

between them is one example); also, the compatibility among the Jews themselves (in particular, the relationship between Joseph and his brothers) and the compatibility between Jews and other people (in particular, the Jewish migration to Egypt)

Historicism - "markovness." ("Markovness" is a term honoring the famous mathematician Andrey Markov. Markov assumed that in a certain class of problems, the future does not depend on the past, but only on the current state.) Emphasis on traditions, e.g. remembering the exodus from Egypt (see Exodus, 13:3-16).

Maturity - rawness ("greenness"). This pertains to the emphasis on the youth of mankind. For instance, after the flood, the authors of the Torah attribute the following words to God: "for the imagination of man's heart is evil from his youth" (Genesis, 8:21).

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

Permeability - closedness. The desire to preserve the Jewish people as a nation that has descended from Sarah and Abraham; also, very limited proselytism.

Helpfulness - unhelpfulness. Helping other people, e.g., helping Egypt during the famine, while at the same time, having no desire to rule over the entire world, etc.

Diversity - uniformity. Growing number of different nations; the advent of new objects.

Order - chaos. Developing ways to integrate a society.

EVALUATION OF A PREDISPOSITION

I shall try to interpret the various ways in which the Torah evaluates stages of creation. God pronounces the judgment *good (tov)* on the very first day when evaluating his work - the creation of light (Genesis 1:4). God does not evaluate the work (creation of the heavens) performed on the second day (Genesis 1:6-8). On the third day, God pronounces the judgment *good* twice. The first time is after the creation of the land and the sea (Genesis, 1:10) and the second time is after the creation of the herbs, grass, and trees (Genesis 1:12).¹³ On the fourth and the fifth day, God evaluates the work performed on those days as *good* (Genesis 1:18, 21). Finally, on the sixth day, God makes an independent judgment of *good* of the work done during the first part of the day, which is the creation of land animals (Genesis 1:25). The result of the second half of the day, the creation of Man, is not judged as such (Genesis, 1:26-28). This is resolved by

the overall evaluation of *very good* made at the end of the sixth day and encompassing everything created thus far (Genesis 1:31).

With regard to the last point, Leon Kass (1988) makes the following comment:

After nearly every act of creation, God looked at the creature and "saw that it was good." There are two striking exceptions: neither the firmament (or heavens), on Day Two, nor man, on Day Six, is said to be good. What bearing, if any, might these omissions have on the place and status of human beings?

Now one might say that there is no need to see or say that man is good; after all, he is made in God's image and that might make man "better" than good. Moreover, once human beings are present, the whole is said to be very good: does this not imply that each part—man especially included—is good? Perhaps. But what if the omission were intended and meaningful? On what understanding of "good" might it be simply true that man, as created, cannot yet be said to be good?

...A moment's reflection shows that man as he comes into the world is not yet good. Precisely because he is the free being, he is also the incomplete or indeterminate being. More pointedly, precisely in the sense that man is in the image of God, man is not good—not determinate, finished, complete, or perfect. It remains to be seen whether man will become good, whether he will be able to complete himself (or to be completed).

Man's lack of obvious goodness, metaphysically identical with his freedom, is, of course, the basis; of man's moral ambiguity. As the being with the greatest freedom of motion, able to change not only his path but also his way, man is capable of deviating widely from the way for which he is most suited or through which he—and the world around him—will most flourish. (p.34)

Let me elaborate on the term *good* as used in the Torah's account of creation. Generally speaking, *evaluation* encompasses two aspects. One reflects the need to compare the envisioned image with the actual one. The other reflects the need to calibrate the impact of the result upon future development. Such two-pronged use of evaluation is employed by different styles of creation. Leon Kass (1988) writes about this use of *good*:

"Good" as used throughout Genesis 1 cannot mean morally good; when "God saw the light that it was good," He could not have seen that the light, 'was honest or just or law-abiding. The meaning of "good" seems rather to embrace notions like; — the following: (1) fit to the intention; (2) fit to itself and its work, i.e., able to function for itself and in relation to the unfolding whole; and, especially, (3) complete, perfect, fully formed, clear and distinct and fully what it is. A being is good insofar as it is fully formed and fully fit to do its proper work. (p.34)

The concept of a developing God suggests an alternative view: at each given moment, God is limited in his creative abilities, and is therefore unable to ensure that the envisioned outcome and actual outcome will coincide. God's evaluation is based primarily on a careful verification of the actual outcome and its subsequent endorsement with a *certification stamp*. This brings to mind an analogy with quality control at a factory. Subject to an established technological sequence (program), each operation (or series of operations) is followed by a quality control check to verify that the intermediate result conforms to specifications; simply knowing the quality of the materials, equipment, or workers' qualifications may not be sufficient to ensure the desired result. The other purpose served by the judgment *good* is to assess the contribution of a given stage to future development. Whatever style of creation is used, the term *good* reflects a positive view of the contribution made by some intermediate or final result upon the overall process of creation. The issue here is the actual style of creation employed. If God was to create the universe using a combinational style, it would imply that the judgment *good* is sufficient to ensure a complete and consistent link between inputs and outputs. Alternatively, assuming (as I do) that God employed a positional style via the daily creation of predisposition for future development, the pronouncement of *good* could be captured by the term *beauty*.¹⁴ This does not preclude the term *good* from being used to acknowledge affinity between the envisioned and the actual outcomes. The view that beauty and good are interchangeable was typical of the Greeks (Ross, 1998a).¹⁵ As a matter of fact, "neither the Old Testament nor the New Testament has any theory of the beautiful" (Interpreter's Dictionary of the Bible, 1962, vol. 1, p. 371).¹⁶

Yehudah Abrabanel, also known as Leone Ebreo, wrote a famous book *Dialoghi d'Amore*. In the paper Malka Rabinowitz wrote as part of her independent study with me, she elaborated upon Abrabanel's statement:

Abrabanel tries to merge Jewish and religious ideas with the philosophy of Renaissance Platonism. He combines the Jewish concept of love of G-d with an aesthetic idealization of the world. "For the first time in the history of Jewish thought there was a philosopher who awarded space to aesthetic reflections (which had never played an important role in Judaism) and who set out to explicate and define the concept of beauty (Levy, 1993). " (p.38).

Jewish thinkers had probably shied away from this topic because there was alarm raised by the Talmud that the study of aesthetics would detract from the study of the Torah. Kaufmann Kohler & Emil G. Hirsch (1901) affirm this point:

“To the speculative theory of the beautiful the Jews cannot be said to have contributed fruitful thoughts. In the economy of the humanities this field fell to the inheritance of the Greeks.”¹⁷

I want to highlight the *interchangeability* of the terms good and beauty in the Torah and I will use the term beauty instead of good in interpreting the creation and operation of the universe. The term beauty is conducive to approaching this topic from the point of view of predispositioning. The interchangeability of the two terms is mentioned by a number of sources. For example, the *Interpreter’s Dictionary of the Bible* (p.371) mentions several different Hebrew words related to beauty. One is the adjective “good”, which also means handsome, fair, beautiful, and goodness. The Septuagint, the Greek translation of the Old Testament by Jewish authorities, uses the word *καλος* (*kalos*), which means beauty in Greek, for the Hebrew word *good*.

Professor Efraim Urbach (1912-1991), former President of the Israeli Academy of Sciences and Humanities, called my attention to the possible interpretation of the word *good* in the Torah as *beauty*. In a private letter dated July 8, 1979, which he has allowed me to publish, he wrote,

While in biblical Hebrew the word פֶּיִר 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 kalos used in the sense of a “fine argument.”

I would also like to quote from another private letter that was written to me by Herbert Wentz, a professor at the Department of Religious Studies of Southern University in Sewanee, Tennessee, USA and dated March 7, 1983.

I was very interested in your suggestion that the Hebrew word TOHV 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 TOV 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 TOV 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): TOV 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 TAVA and a number of derived forms, all of which are related to ideas like pleasant, delightful, delicious, sweet, ripe -- e.g., 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 TOV as at least pointing in the direction of 'beautiful'.

A number of scholars have consented to the use of *beauty* in the evaluation of the stages of creation and went on to generalize this idea and treat the *direction* (sometimes called the *purpose*) of development as an attempt to increase beauty. For example, John Haught (2001) posits a question: “According to process theology, what is the purpose of this evolving universe?” and answers it in the following passage:

For a process to be called purposeful it must be oriented toward the realization of a value. And so, in its aiming toward beauty, which has

traditionally been seen as a "transcendental" value, the universe shows itself to be purposeful. What gives significance to evolution and to this whole universe-in-the-making is that the general orientation of cosmic process has been one of bringing about aesthetic intensity, a value that needs no justification beyond itself. Certainly there is more to cosmic purpose than this. But our universe can justifiably be called purposeful if it is oriented, at least in a general way, toward actualizing instances of beauty. Today, in view of the reports we get from all of the sciences, there can be no serious doubt, at least when we take a long view of things, that the natural world has worked its way up from mere simplicity to vital complexity, from monotonous to more interesting versions of ordered novelty. Ours is a universe of emergent beauty. And even though this beauty is perishable, the fact that cosmic evolution has brought it about at all is enough to render suspect the confident modern claims that we live in a pointless universe. We might even say that the universe is shaped by an "aesthetic cosmological principle." It is hard not to suspect that the universe has been lovingly "set up" from its beginning so as to allow for an ongoing process of emergent beauty, with all of the risk of tragedy and loss that aesthetic fragility entails. The renowned physicist Freeman Dyson has recently written that the universe follows a "principle of maximum diversity." By this he means "the laws of nature and initial conditions are such as to make the universe as interesting as possible." On the basis of Whitehead's metaphysics we might broaden Dyson's happy intuition: the point of this evolving universe is to maximize beauty and, along with beauty, the possibility of subjective enjoyment. This is a world that can glorify and give joy to its Creator as well as to the many creatures in it. (p.140)

In concluding this chapter, I would like to draw attention to the reciprocal relationship between two kinds of beauty: beauty that emerges as the result of the activities of a creator and one that exists within the creator himself. George Tavard devoted his book (1991) to a remarkable Mexican poet who went by her religious name Sor Jana Inés de la Cruz (1648-1695). In addition to being a poet, she was a playwright, a defender of women, and a theologian. De la Cruz emphasized beauty as the major attribute of God:

"No one, however, before Juana Ines, had chosen beauty, the fourth transcendental, as the chief attribute of God, as the focus of thought, and as the point of view from which God should be, in the words of St. Anselm, "that than which nothing greater can be thought." (p.196)

According to De la Cruz,

As the paradigm for every authentic visitation from God, the annunciation would then introduce all the faithful to a new vision of God. Only the beautiful can receive beauty. Only the beautiful can perceive beauty. Only uncreated beauty

can create beauty. Artistic activity is therefore always a graced participation in the divine act of creation. Aesthetic theory and reflection are always meditations on the divine attribute of beauty. (p. 200)

This concept of beauty in the Torah will be further discussed in the next chapter. I have yet to clarify the meaning of good and evil, and in particular, the implications of *devil's beauty*.

¹ As Nahmanides (Moses b. Nahman), one of the greatest biblical scholars, writes in his commentaries (1960) on Genesis:

"If you ask about the creation of angels who are not corporeal, this is not stated explicitly in the Torah. The Rabbis have explained (Gen. R. 1.3; Midrash Thillim Ch. 24; 86 and 104. Pirge de R. Eliezer 4. See also Kasher Ch.1 par. 264—The view in the Midrashim mentioned as opposed to that of R. Judah in Zohar Hadash 6, that the angels were created before heaven and earth. See also Yeçirâh Ch.6 Mishna 12; Bahya loco) concerning them that they were created on the second day, in order that you may not say that they helped in the creation of the world. But it you will be privileged to understand the secret of the word 'brê'shûth' and why scripture did not commence 'God created in the beginning' (in order to start the scriptures with the name of the Lord), you will know that in the way of truth (i.e., of Kabbalah, which is designated the "Teaching of Truth.") the text while recording the lower creation also hints at the higher (i.e., While speaking ostensibly of the creation hints also at the Creator.). The word 'brê'shûth' hints at (the sephirah) 'Wisdom', which is the head of all beginnings, as I have stated (Being the head of the sephiroth). Therefore it is translated in the Targum *Yerushalmî b'hokehnta*" (in wisdom); and the word is crowned with a crown on the 'beth' ('Beth' being the second letter refers to the sephirah 'kêthèr,' the first of the sephiroth.)." (p.36; ix)

² Natalie Angier strongly contends in her article (2003) that males are derived from females.

³ This arrangement is discussed in my paper (1997c).

⁴ These comments owe much to our discussions with Valery Chalidze.

⁵ The cells in the matrix correspond to different types of people as manifest in their relationship with each other: 11 - an individualist (not to be confused with a selfish person); 12 - an anarchist; 21- a slave; 22 - a hermit.

⁶ Vladimir Shlapentokh (in a private conversation) distinguished rights and obligations that are presented *explicitly* or *implicitly* in various covenants. In his opinion, even covenants based upon one-sided explicit obligations usually imply implicit obligations upon the other side. This is a provocative point of view for it motivates the search for hidden obligations.

⁷ "The God of Genesis makes a covenant with humans, thereby obligating Himself to justify what He prescribes—at least most of the time. The Bible reflects the development of law from unreasoned *chok* to justified *mishpat*. Abraham's argument with God over the fate of Sodom and Gomorrah—the first instance in religious history of a human challenging God to be just—marks an important

watershed in the development of democracy. These and other stories of justice and injustice had a powerful effect on my young mind. They encouraged me to view the world in a skeptical and questioning manner. If Abraham could challenge God, surely I could challenge my teachers. When my high school principal refused me permission to take a state wide exam for a college scholarship on the ground that no one with my low grades stood a chance of winning, I challenged his action and won both the opportunity to take the test—and the scholarship itself.” (Dershowitz, 2000, p.6)

⁸ In his book (2000) Allen Dershowitz illustrates the behavior of Rabbi Levi Yitzchak of Berditchev with a great sense of humor.

“The most famous postbiblical exemplar of chutzpah against heaven was the eighteenth-century Hasidic master Rabbi Levi Yitzchak of Berditchev, who repeatedly invoked God's contract in challenging God's injustice toward his covenantal partners. On one occasion he threatened to expose God's promises as "false." On another he sued God and threatened to refuse to cooperate with plans to keep the Jewish people in exile. On one Yom Kippur, a simple tailor sought forgiveness from the great rabbi for having talked disrespectfully to God. The rabbi asked him what he had said, and the tailor told him:

I declared to God: You wish me to repent of my sins, but I have committed only minor offenses: I may have kept leftover cloth, or I may have eaten in a non-Jewish home, where I worked, without washing my hands. But you, O Lord, have committed grievous sins: You have taken away babies from their mothers, and mothers from their babies. Let us be quits: May You forgive me, and I will forgive You.

The great rabbi looked at the tailor and replied: "Why did you let God off so easily?" It is this argumentative tradition that Abraham initiated when he challenged God's justice toward the Sodomites.” (pp. 74)

⁹ This phenomenon takes place in market economies when small-scale companies act as subcontractors to large corporations. In principle, a large firm could eliminate a small one by buying it or driving it out of business. But a major firm is sometimes better off leaving the R&D to small independent enterprises, because the research environment and the approval process in a multilevel hierarchical corporation can sometimes be detrimental to innovation.

¹⁰ This is the title of the book written by Hosea, a Hebrew prophet of 8th century B.C. A new translation of this book into English was published in 1980.

¹¹ *Babylonian Talmud, Baba Mezia 59a-59b* tells the famous story of the relations between God and the Jews that shows the greatness of human beings:

“On that day, Rabbi Eliezer used all the arguments in the world. He produced powerful arguments to justify his position that the oven should be considered unreconstructed and not susceptible to ritual impurity. But the Sages did not accept his arguments, and insisted that the oven was susceptible to ritual impurity. After Rabbi Eliezer saw that he was not able to persuade his colleagues with logical arguments, he said to them: 'If the Halakhah is in accordance with me, let this carob tree prove it.' The carob tree immediately uprooted itself and moved one hundred cubits--and some say four hundred cubits--from its original place. The Sages said to him: 'Proof cannot be brought from a carob tree.' Rabbi Eliezer then

said to the Sages: 'If the Halakhah is in accordance with me, let the channel of water prove it.' The channel of water immediately flowed backward, against the direction in which it usually flowed. The sages said to him: 'Proof cannot be brought from a channel of water either.' Rabbi Eliezer then said to the Sages: 'If the Halakhah is in accordance with me, let the wall of the House of Study prove it.' The walls of the House of Study then leaned and were about to fall. Rabbi Yehoshua, one of Rabbi Eliezer's chief opponents among the Sages, rebuked the falling walls, saying to them: 'If Talmudic scholars argue with one another in their discussions about the Halakhah, what affair is it of yours?' The walls did not fall down, out of respect for Rabbi Yehoshua, nor did they straighten, out of respect for Rabbi Eliezer, and indeed those walls still remain leaning to this day. Rabbi Eliezer then said to the Sages: 'If the Halakhah is in accordance with me let it be proved directly from Heaven.' Suddenly a heavenly voice went forth and said to the Sages, 'Why are you disputing with Rabbi Eliezer? The Halakhah is in accordance with him in all circumstances!' Rabbi Yehoshua rose to his feet and quoted a portion of a verse (Deuteronomy 30:12), saying, "The Torah is not in heaven!"

The Gemara interrupts the Baraita and asks for a clarification: 'What did Rabbi Yehoshua mean when he quoted the Scriptural verse that “the Torah is not in heaven?”’

Rabbi Yirmeyah said in reply: 'Since God already gave the Torah to the Jewish people on Mount Sinai, we no longer pay attention to heavenly voices that attempt to intervene in matters of Halakhah. For You, God, already wrote in the Torah at Mount Sinai (Exodus 23:2), “After the majority to incline.” From this verse we learn that Halakhic disputes must be resolved by majority vote of the Rabbis. God could not contradict His own decision to allow Torah questions to be decided by free debate and majority vote.

The Gemara relates that generations later Rabbi Natan met the Prophet Elijah. (Several of the Talmudic Sages had visions of Elijah the Prophet, and discussed Halakhic questions with him.) Rabbi Natan asked Elijah about the debate between Rabbi Eliezer and Rabbi Yehoshua. He said to him: “What did the Holy One, blessed be He, do at that time when Rabbi Yehoshua refused to heed the heavenly voice?” In reply, Elijah said to Rabbi Natan: “God smiled and said: ‘My sons have defeated Me, My sons have defeated Me!’” God's sons “defeated Him” with their arguments. Rabbi Yehoshua was correct in his contention that a view confirmed by majority vote must be accepted, even where God Himself holds the opposite view.”

¹² Christianity (with the exception of several Protestant sects) tends to emphasize *predominance* in the relations between God and Man, and especially so in civil coexistence between a leader and his subordinates. While Christianity lays the foundation for the relationship between God and Man as well as among people, it places emphasis on feelings, especially *love*, more so than on formal rules. Certain consequences of this approach are well stated by John Cobb and David Griffin (1976):

“Insofar as the notion that divine love is persuasive is accepted, the exercise of persuasive influence becomes intrinsically rewarding. It takes on that aura of extra importance that has too often been associated with the feeling of controlling

others. This change has implications in all our relations, from one-to-one I-thou encounters to international relations. It does not mean that coercive control could be eliminated, but it does mean that such control is exercised as a last resort and with a sense of regret rather than with the thrill that comes from the sense of imitating deity.” (p.54)

Meanwhile, this emphasis on feelings (considering that brutality is an intrinsic part of human nature), failed to prepare many Christians to stand up to evil, especially evil carried out by authority.

¹³ An original point of view is voiced by Richard Friedman (2001) regarding the double evaluation of the work performed by God on the third day of creation.

“Rushi suggested that is because the task of the division of the waters was begun on the second day but not finished until the third. But, in that case, one might still ask why the task had to be thus split between two days. The reason why the second day’s work - the formation of the space, with water above and below – is not pronounced “good” may rather be that God will later choose to break this structure (in the flood story, Gen 7:11). The double notice that “it was good” on the third day may be because (1) the formation of land and (2) the land’s generation of plants are each regarded as creations worthy of notice.

This explanation is based on Masoretic Text (MT). The Greek text (Septuagint), on the other hand, includes the words “And God saw that it was good” on the second day as well. It may be that these words were simply omitted from the MT by a scribe whose eye jumped from the first two letters of this line (Hebrew ו) to the beginning of the next line (“And there was evening...”), which begins with the same two first letters (ו). This is called haplography.”

¹⁴ As a matter of fact, the term *beauty* could play a key role in the realm where theology and science converge. This thesis is the subject of the book by Thomas Dubay (1999). I appreciate the attempt to link theology and science via beauty. This book is not discussed here because I disagree with the author who thinks that beauty is objective. Subjectivity is critical to my conception of beauty. (See my book (2003))

¹⁵ The well-known German philosopher Friedrich Schelling (1775-1854) wrote:
“The universe is formed in God as an absolute work of art and in eternal beauty ... beauty in which infinite intention interpenetrates infinite necessity.” (1989, p. 31)

¹⁶ Christianity, and Catholicism and Orthodoxy in particular, is highly aware of the concept of beauty and its application to art. Even theism is partial to this subject. Along with rational elements, religious insights have been used to judge beauty in mathematics. As William Anglin (1997) writes:

“Yet another area in which theism has implications for the philosophy of mathematics is that of mathematical beauty. One implication of theism is that a proof should be judged beautiful, not merely in terms of the various marks of beauty— brevity, unification, excitement, and so on— but also in terms of the extent to which it expresses the divine. For the theist, a proof is beautiful insofar as it leads the soul to a closer acquaintance with the Logos, or Reason, of God.

Another implication of theism is that the most elegant line of research is also the most promising one. This is because God clothes with beauty only those things

which also reveal his truth. There may be truth without beauty, but there is never beauty without truth.” (p.187)

¹⁷ The application of aesthetics to theology was highly developed in Christianity. (See, for example, the book by John Milbank, et al (2004)). However, these developments are generally foreign to Judaism because they concern topics that are irrelevant to Judaism, like the relation between God and an icon, the soul and the flesh, Christ’s beauty, etc.

¹⁸ Author'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 pronounces no judgment on his work. But on the third day, following the creation of the land and the sea, God refers to the overall work when He pronounces the judgment "good".

Chapter Four

Good and Evil in the Torah

That good and evil are common to our world is nothing new. As Alfred Whitehead wrote,

As soon as high consciousness is reached, the enjoyment of existence is entwined with pain, frustration, loss, tragedy. (Quoted from Kaplan (1962), p. 28)¹

A myriad of texts by countless authors is devoted to the subject, proposing various explanations and solutions. My focus will be on certain aspects that are related to the Torah and to which I hope to bring a bit of insight.

Good and evil as part of a single entity

There is the broad question about the relationship between the categories of good and evil as they pertain to God: do both good and evil exist within God? In many religions, these two categories are segregated and assigned to different entities. In Judaism, they are usually presented as intrinsic to God and to each living creature, but in different proportions. Many scholars have fruitfully explored this conception. Martin Buber (1953) devoted an entire book to the subject of good and evil in Judaism as compared to Zoroastrianism, which postulates separate gods for good and for evil. In his book (2000), Neil Gillman explicitly mentions the unity in God of good and evil in reference to Isaiah's verse 45:7 that says: "I am the Lord ... I make peace, and create evil."

Similar ideas have been mentioned by Alan Dershowitz (2000):

In sharp contrast [to the New Testament and the Koran, A.K.], the characters in the Jewish Bible—even its heroes—are all flawed human beings.

They are good people who sometimes do very bad things. As Ecclesiastes says: "There is not a righteous person in the whole earth who does only good and never sins." This tradition of human imperfection begins at the beginning, in Genesis. Even the God of Genesis can be seen as an imperfect God, neither omniscient, omnipotent, nor even always good. He "repents" the creation of man, promises not to flood the world again, and even allows Abraham to lecture Him about injustice." (p.2)

The notion that God internalizes both good and evil is rejected by a number of prominent Jewish theologians, among them Mordecai Kaplan (1962):

For to ascribe anything that is evil, whether relative or absolute, to God is to violate the logical law of identity. None of the theodicies has ever proved convincing. The very idea of a God requiring justification is self-contradictory. The argument that whatever may appear evil to us may, from an objective standpoint, be good is just so much wasted breath, because to the extent that anything is evil, even if it be mistakenly regarded as such, it is evil and nothing else. That it is a means to the good, or that objectively considered it is no longer evil, in no way detracts from the fact that, according to the traditional theologies, it is necessary to conceive God as having to make use of means that are evil and of being the author of experiences that are subjectively not good. Historically considered, however, rabbinic teaching on the subject of evil is to be viewed as intended primarily to counter the religions that affirmed a dualistic conception of reality. According to that conception, the evil in the world was not intended as a means to the good or as part of a unitary plan in which it was subservient to the good. The dualistic religions regarded evil as coordinate in power with the good, as being the manifestation of a principle no less divine than goodness. By proclaiming its God as the author of both good and evil, the Jewish religion did not solve the question of evil, but it took an important step in the direction of a truer conception of God whereby He is identified solely with the good. The duty which Jewish religion imposes upon the Jew to bless God for the evil as well as for the good should be interpreted as implying that it is our duty so to deal with the evil in life as not to permit it to negate our belief in God. We should so identify ourselves with the divine in the world as to greet in the evil an occasion for reaffirming the reality of the divine. Evil is chaos still uninvaded by the creative energy, sheer chance unconquered by will and intelligence. (pp.72-73)

I do not share Kaplan's view that God performs only good deeds. If it were possible to assess means independently of the ends, we could distinguish between good means and bad means. Instead, as in the act of confession, we may judge the means we had employed as bad and admit to this. This process provides closure and protects us from enduring further mental turmoil (I will elaborate upon this topic

in connection with Jewish ethics as presented in the Torah). The approach to good and evil undertaken by many Jewish authorities represents a radical departure from an attempt to explain all good as having originated from God and all evil as the doing of the Devil. Furthermore, this approach disrupts the picture of a utopia where God has defeated the Devil once and for all. The authors of the Torah resist the temptation to make a distinction between God and Devil. The Devil has no place in the Torah, and therefore, no attempt is shown to eliminate all evil in the world by destroying the Devil. As the late Professor Boris Moisheson noted in a private conversation, the last point, strictly speaking, hinges upon one's 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 passage create room for disagreement over its interpretation. *The Holy Scriptures* (The Masoretic Text, 1955) reads,

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 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)

.Meanwhile, *The Holy Bible* (King James Version) reads,

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)

With regard to the term Azazel, in Septuagint, a Greek translation of the Old Testament, Azazel stands for a scapegoat (*The Encyclopedia of Religion* Vol. 13, 1987, p.92). K. Steinberg's commentaries on the Russian translation of the Torah (1914) present many interpretations of the "Azazel" phenomena. Steinberg writes,

Azazel', according to some, (Targ Jerus, Saadiab, Ibn Ezra) is a 'terrible precipice'; others (Akilas, Zerah, Theodosius) believe that the word זע אזל 'azzel' means a 'departing goat.' (Aquila, Cimakh, Feodosij.) More precisely,

'Azazel-el' (god Azaz) is the name of a major Egyptian horned deity Isis - local idolaters tried to convince 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 (Leviticus 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."

The *Jewish Encyclopedia* states under the rubric Azazel:

according to Talmudic interpretation, the term "Azazel" designated a rugged mountain or precipice in the wilderness from which the goat was thrown down, using for it as an alternative the word (גזל) (Yoma vi. 4). An etymology is found to suit this interpretation. "Azazel" (עזאזל) is regarded as a compound of "az" (עז), strong or rough, and "el" (אל), mighty, therefore a strong mountain. This derivation is presented by a Baraita, cited Yoma 67b, that Azazel was the strongest of mountains.

Therefore, interpreting "Azazel" as a particular location abolishes the notion of a devil from the Torah altogether. Moreover, the pathos of the Torah is the supremacy of one God who has no entities equal to him, and the representation of the forces of evil as separate entities is 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 is a vestige, a leftover of beliefs long past. Another candidate in the Torah for the role of a devil is the serpent, but as Nabum Sarna (1966) wisely explained, the serpent does not play this role.

This reptile figures prominently in all the world's mythologies and cults. In the Near East the serpent was a symbol of deity and fertility, and the images of serpent-goddesses have been found in the ruins of many Canaanite towns and temples. This tradition probably explains why the serpent is introduced in our story as simply one of "the subtler than any beast of the field which the Lord God had made" (Genesis 3:1). It is not an independent creature; it possesses no occult powers; it is not a demoniacal being; it is not even described as evil, merely as being extraordinarily shrewd. This reduction of the serpent to natural, insignificant, demythologized stature, is further pointed up in the difference between God's dialogues with Adam and Eve and his monologue to the serpent. God does not interrogate the serpent, and the voluble reptile utters not a sound in the presence of the Deity. The role of the creature is that of seducer, laying before the woman the enticing nature of evil and fanning her desire for it. The use of the

serpent symbolism in this situation has most likely been conditioned by the place of the serpent in the old cosmic combat myth... (p.26)

In the Torah, the idea of a God as totality that internalizes both good and evil is extended to Man as an individual. Individuals who are blessed by God are not totally "pure". For instance, Abraham lied or, to be more precise, told a half-truth when he introduced his wife as his sister. In reality, she was his stepsister on his father's side (Genesis, 20:12). The first time Abraham did this was when he came to Egypt (Genesis, 12:13). Abraham benefited much as the result of this 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). Abraham caused damage to a man who did him no harm (Genesis 12:18-20). He repeated this same lie to Abimelech, King of the Philistines, who did not hurt him either. Had Abimelech slept with Sarah, not knowing her real status (Genesis 20:3), he could have also been punished severely by God (Genesis 20:9).

Whereas in the above cases Abraham lied for fear of being killed (Genesis, 20:11), the lie he told to the two young men, whom he took along on the journey to sacrifice his son Isaac, was completely unnecessary. On the third day of their journey, upon seeing the place of the sacrifice, 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 so as to assure them that both he and Isaac would come back.

Isaac faces a similar predicament when he settles in Gerar with his wife Rebecca. For the same reasons that Abraham lied about Sarah, Isaac lies to local residents by saying that Rebecca is his sister (Genesis, 26:27). It is only by accident that Abimelech discovers that Rebecca is Isaac's wife (Genesis, 26:28), thus preventing the people of his country from committing a sin by sleeping with her (Genesis, 26:29). An open, selfish lie becomes part of life for Isaac's son Jacob. Following his mother Rebecca's suggestion, Jacob lies to his father Isaac to ensure that before Isaac dies, he will bless him rather than his brother Esau. 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).

At the same time, according to the authors of the Torah, one of the moral obligations of a Jew is not to tell lies, even though this tenet is not included in the Ten Commandments. Rather, it is revealed in Leviticus in the verse that reads, "[D]on't steal nor lie to one another" (Leviticus, 19:11).

Martin Buber makes interesting comments about this statement in *Leviticus* and I refer the reader to pp. 7-14 of his book (1953).

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

The authors of the Torah also tell a story about the terrible sin of incest that was committed by a righteous man while extremely 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 finding husbands, but a virtuous man getting so drunk that he does not realize who he is sleeping with is another matter altogether (Genesis, 19:30-38).

Even Moses sins before God and is duly punished; this, in spite of being so close to God that God, on occasion, accepts his advice. Because Moses had sinned, God forbids him to enter the Promised Land and decrees his death (Deuteronomy, 32:48-52); still, much later Moses retains his eyesight and the strength of a young man (Deuteronomy, 34:7).

So, the biblical forefathers are portrayed as real human beings who exhibit righteousness as well as impropriety, but their wickedness is not taken to the extreme (for example, they do not commit murder). It seems that hardened people, such as the Jews at the time of Abraham and his clan, accept this kind of behavior on the part of these righteous people as being proper enough 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 recount them. The 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, where the saints embody absolute virtue.²

Thus, the reciprocal acts of God and Man stem both from inner harmony as well as a struggle between them (as well as amongst Men themselves). The scenario that supports future development incorporates the ongoing *perfection* of God, of Man, and of their environment; at the same time, this scenario implies their *imperfectness*. In other words, rather than endow God and Man with just positive traits, the authors of the Torah create a dialectical image of God and Man that organically fuses their strengths and weaknesses.

To sum up, the unity of good and evil in God and in Man is critical in guiding a Jew. Postulating independent existence of the Devil could mean that the Devil lives within Man (as is the case in Christianity). One might then 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 (for instance by burning the body, as was done by the Inquisition).

Accepting the Devil's independent existence may also fuel a desire to uncover the Devil in some relatively small group of people deemed to be possessed. Elimination of this group promises to free the human race from all its ills once and for all. The concept of a Devil who takes on human form is oftentimes rationalized with logical arguments. In different countries and at different times, the Devil has been incarnated as Jews, Armenians, capitalists, and so on. It was imperative to unmask this group and to promise the coming of a golden age once this group is purged. I call this method of dealing with evil *zone smelting*. One technique used to obtain pure metal is to subject it to a multistage melting process. As the metal passes through the various zones of the tunnel furnace, all the impurities collect in one place toward the edge of the plate. This section is then cut off and what remains is purified metal.

Devil's beauty

Development of a predisposition is greatly enhanced by diversity. However, highly dangerous entities emerge out of this diversity that can reverse the course of development and cause destruction. At this point development and the process of integration are predicated upon a sophisticated balance between good and evil, beauty and

ugliness. When good elements prevail over evil ones, the result can be judged as good, and the beauty that accompanies it can be termed *divine beauty*.

As Walt Whitman (1819-1892) writes in a letter from March 19, 1863,

He [President Abraham Lincoln] has a face like a hoosier Michael Angelo, so awful ugly it becomes beautiful, with its strange mouth, its deep-cut, criss-cross lines and its doughnut complexion. (Bartlett's Familiar Quotations, 1992 ed., p.383)

Conversely, if evil elements prevail, the result could be judged as ugly and is termed *devil's beauty*. The Oxford English Dictionary (1989) defines "*beauté du diable*" [Fr., lit. 'devil's beauty'] as superficial attractiveness or captivating charm. The following examples illustrate this definition: (1936 E. Bowen in Verschoyle *Eng. Novelists* 104) Henry Crawford is more energetic, dashing and unscrupulous. He has a certain *beauté du diable*. (1967 H. McCloy *Further Side of Fear* iii. 41) He studied both photographs. "They can't mean ugly as sin! They must mean *beauté du diable*."

The predisposition underlying devil's beauty contains essential elements that are good and the "audience", being attracted to these elements, underestimates the evil ones. This lapse is fraught with danger and may ultimately lead to the collapse of the entire system. Devil's beauty can be illustrated with real-life or fictional stories. Let me start with real-life accounts. The difference between a murderer and a terrorist serves to illustrate the difference between ugliness and devil's beauty. The ugliness of a robber is beyond doubt, because they ruin other people's life to serve their own selfish needs. Terrorists espouse ideologies that they claim will improve the lot of mankind. They seem to have good intentions, so what is wrong? The answer is the dreadful means they use to attain their goals. Terrorists epitomize devil's beauty.

Consider Robin Hood, perceived by many to be a hero. He takes from the rich and gives to the poor. He holds certain ideals and pursues them with bravery, wit, and charm to the detriment of bloodsucking aristocrats. Many people find these qualities admirable and worthy of imitation, and they regard Robin Hood's behavior as beautiful. Or take the novel *Crime and Punishment* by Fedor Dostoevsky. Raskolnikov, the major protagonist, tries to take the money from a rich pawnbroker and give it to the widows who do not

have enough money to feed their children. However, the means that Robin Hood and Raskolnikov employ are coupled with murder. The means they employ are ugly, and in general, their behavior could be characterized as devil's beauty.

As history attests, predisposition judged devil's beauty is fraught with grave consequences. The Russian communists wanted to create paradise on earth, but to achieve this goal, they robbed banks to fill party coffers and engaged in other activities. What do these cases tell us? They tell us that when the means employed are independent of the goals, it is important to carefully examine one's means. To neglect to do so is highly perilous, as attested to by the following examples.

The first example concerns the fate of the enemies of Thomas More (1477-1535). This man was famous not only as a great utopian but also as the Lord Chancellor of England (1529-1532) during the time of the King Henry VIII. More refused to accept the King as the head of the Church of England. In response, the King organized a false trial and More was sentenced to capital punishment. What happened afterwards to the participants in the trial, including More's beloved disciple who falsely testified against him? All of them died in an unnatural way, except for his disciple who became the Lord Chancellor of England. This story is well portrayed by Robert Bolt (1960), and a great movie was produced based on his book. Leading Russian communists who partook in the October Revolution of 1917 suffered similar fate. All of Lenin's close associates in 1917 disappeared for one reason or another by the mid 1930's. Stalin had murdered most of them. As the only survivor, Stalin replaced Lenin as the leader of Russia.

THE TREE OF KNOWLEDGE

The story of the *Tree of Knowledge* illustrates devil's beauty. Of course, the *Tree of Knowledge* is an amalgam of good and evil, for it allows a person who has tasted from it to distinguish between good and evil in life. As Nahum Sarna (1966) mentioned,

[T]he most remarkable break of all with Near Eastern mythology lies in the subtle shift of emphasis. As far as is known, the "tree of knowledge" has no parallel outside of our biblical Garden of Eden story. Yet it is upon this tree, and not upon the well-known "tree of life," that the narrative focuses its main attention. (p.26)

It seems to me that the Sarna's statement is not completely

correct. Roger Shattuck in his book (1997) noted certain isomorphism between the structure of the legend about the *Tree of Knowledge* and the Greek legend of *Pandora's Box*. In Greek mythology, Pandora (whose name means "all-giving") is the first woman on earth, just like Eve (Eve was so named because she was "the mother of all living".) Hephaestus was ordered by Zeus to create her as a counterbalance to the blessing of fire that Prometheus stole from heaven. Pandora married Epimetheus, the brother of Prometheus. She found a box in his house, but opening this box was prohibited. Overcome with curiosity, Pandora opened the box anyway and out of it came the evils that spread throughout the world. "In classical Western painting, Pandora went on to become an allegorical figure for 'beautiful evil'." (Shattuck, p.15) It seems that the Greeks created the legend of Pandora's Box independently of the story of the *Tree of Knowledge* and at a much later date. In fact, the legend was born several hundred years later because, for a long period of time, the Greeks were not aware of Jewish culture and even confused the Jews with the Phoenicians.³

There are numerous interpretations of the legend of the *Tree of Knowledge*. Martin Buber (1982, pp. 16-18) mentions four of them, but I shall omit them in order to focus on my own interpretation of this legend.

My definition of beauty implies that the *Tree of Knowledge*, as described in the Torah, looks beautiful in the eyes of Eve:

And when the woman saw that the tree was good for food, and that it was a delight for the eyes, and that the tree was to be desired to make one wise, she took of the fruit thereof, and did eat; and she gave also unto her husband with her, and he did eat. (Genesis 3:6)

As the verse states, the material components of the Tree, like the edible fruits, are good; the relational aspects of the Tree, manifest in its appearance, look delightful. The *Tree of Knowledge* also possesses very dangerous material element: the knowledge of good and evil. Generally speaking, this kind of knowledge is highly sophisticated because it combines judgments based on a relatively clear-cut, short-term criteria with judgments based on rather fuzzy, long-range outlook. People, particularly those that lack experience or mature conceptual thinking, are oftentimes tempted to resolve issues in the short term, ignoring the long-range ramifications of their solutions.⁴

The Torah speaks of God's mind-set with regard to the flood that took place much later than the expulsion from the Garden of Eden:

And the LORD smelled a sweet savour; and the LORD said in his heart, I will not again curse the ground any more for man's sake; for the imagination of man's heart is evil from his youth; neither will I again smite any more every thing living, as I have done. (Genesis 8:21)

Moreover, when it comes to long-term solutions, the knowledge of good and evil is linked to uncertainty because it is impossible to know everything in advance. Under such conditions, it is important for the creator to have the knowledge and the might to recognize and possibly remedy a future situation. Human beings, on the other hand, lack such knowledge and might; and for them to become acquainted with good and evil is fraught with great peril.

One could speculate that God recognizes the danger of human beings coming in contact with the *Tree of Knowledge* and warns Eve and Adam (Genesis 3:2-3), prohibiting them from eating its fruit and vowing severe punishment for violating this edict. Nonetheless, the beauty of the *Tree of Knowledge* in the eyes of Eve was so great that it was easy for the serpent to seduce her into eating its fruits and giving them to her husband as well. As forewarned, God severely punishes them for their disobedience.⁵

The reasons for this attitude toward knowledge in the Torah run deep. As early as 1941, Arno Poebel, a well-known Sumerologist, advanced an interesting hypothesis that the Sumerians were the ancestors of the Jews. This hypothesis was tested by Samuel Kramer (1981, pp.297-299), another noted Sumerologist. Sumer is considered to be the cradle of modern civilization. Just the table of contents of Kramer's book (1981) lists 39 innovations and each chapter of the book is devoted to one such innovation. Sumer featured a rather advanced industry, agriculture, and trade. People made use of various technologies introduced from the outside (metallurgy, for instance), as well as those that they seem to have discovered on their own: potter's wheel, wheel carriage, sailboat. Fine art also flourished in Sumer, especially sculpture and architecture. Mathematics was the most advanced area of science.

Boris Moisheson (2001) worked out a very original theory of the pre-biblical history of the Jews that is based on the most recent discoveries in archaeology, linguistics, and history. In his view, even before Sumer came into existence, people who could be thought of

as "pre-Jews" were in the epicenter of technological progress. For instance, they made great strides in metallurgy, developing new metal alloys from heterogeneous substances, as well as developing new metal products.⁶ In any event, aware of the potential long-term ramifications of technological progress the Jews could have been frightened by its unpredictability. Perhaps, all peoples who evolve into sophisticated cultures that embrace technological progress at some point become fearful of its consequences (Katsenelinboigen, 1980). This is largely corroborated by the history of ancient Greece, China, and India.

Another ancient Greek myth (besides Pandora's Box) is the myth of Prometheus bringing fire to the people. Perhaps this myth symbolizes the danger of Man having discovered the use of fire. In those times, the destructive power of fire was comparable to the present day danger stemming from nuclear power.

As Albert Schweitzer writes in his book (1948), the fact that there was a split more than 2000 years ago in China between Confucians 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 downside of technological progress.

Since halting technological progress altogether was extremely challenging, the civilized countries of the time tried to place it in the custody of the most responsible and competent individuals. Priests were one such group (believed to be able to communicate with God). In some religions a ban on the creation of new things was instituted. According to Alexander Gorbovskii (1966), India achieved a high stage of technological development prior to the advent of Buddhism, and control over technological innovations rested with the priests.

The Torah also tells of many innovations. Usually (as discussed below) the innovations originate with God. The Torah does not mention how God's instructions concerning innovations are passed on (in a rational way) to human beings. I could only speculate that the involvement of God in the creation of innovations reflects the need to implement innovations mainly through people close to God and trusted by God.

Technological and organizational innovations in extrovert cultures

Extrovert culture produces great benefits for the human race, with

plenty of consumer goods, medicine, protection from “inner-space” and “outer-space” catastrophes, etc. At the same time, there are at least four perils inherent in an extrovert culture. The first two are: 1) excessive pollution due to massive waste from industrial production, along with the depletion of natural resources, and 2) the threat of a cataclysmic world war resulting from the use of weapons of mass-destruction. Perhaps the aforementioned perils could be prevented by political means, but the next two are inherently bound to technological progress because their side effects are impossible to predict. They are 1) the creation of a new kind of species (via biological and computer experiments) that threatens the existence of mankind due to the difficulty of formulating and instilling into the new specie the necessary constraints, and 2) physical experiments that can potentially spark an unstoppable chain reaction (for example, accelerators for detecting elementary particles). The development of new technologies beyond a certain threshold turns *ugly*, transforming divine beauty into devil's beauty. The perilous nature of the means employed in technological progress could induce those in power to stop, or at least slow down the development of “ugly” technologies for the sake of own survival. Thus, the element of ugliness inherent in innovations could save the world and make complementary the two seemingly contradictory objectives.

In the “post-creation world”, the Torah speaks of a very limited number of new “anatomical” structures comparable in complexity to the objects initially created by God. Innovations by humans were at first taboo, since creation is impossible without differentiating the value of the created object. Having been formed in the image and likeness of God and having come to know good and evil, people began to create independently, making new things on their own.

What do the human beings discover after eating the fruit? They realize their nakedness (Genesis, 3:7). In other words, they recognize that they are limited to things that God had created and so they start to create new things on their own. The first such item is clothing. They “sewed fig leaves together, and made themselves aprons” (Genesis, 3:7). Although the original cloth is very simple and covers only a small area of the body, it is probably sufficient for the Garden of Eden. Only after God expels Adam and Eve from the Garden of Eden does 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). The new clothes probably cover a greater part of the body and are suitable for harsher conditions than those in the Garden of Eden. The new material objects that appear after the six days of creation include: clothing (Genesis, 3:7,21), construction of the Tower of Babel (Genesis, 11:1-9), manna being a new kind of plant (Exodus, 16:15,31), etc.

It is true that the Torah describes new technologies and new processes, but it does so mainly via well-known material objects that have been greatly bolstered by God. The purpose of this is to destroy components that are unwanted by God or that may be harmful to God. The technological methods that utilize previously-created material objects that God has made stronger include: the flood (Genesis, 6:17); the rain of brimstone and fire used in the destruction of Sodom and Gomorrah, which is like the eruption of a volcano (Genesis, 19:24); the swarms of flies, hail, locusts, darkness etc. that were used to punish the Pharaoh (Exodus, 8-11); and the parting of the earth that 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 crossbreeding 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 (not to speak of the structures superior to man, such as medieval Golem) are not mentioned in the Torah. Perhaps, there are deep reasons for downplaying the role of new technologies and the means of their implementation in the development of the universe.

Let us recount God’s actions after the expulsion of Adam and Eve from the Garden of Eden. When new conditions necessitate the creation of new objects, God takes the initiative. God provides the creative impulse, brings it to life, and does not allow people to create new objects on their own. This suggests some general principles for analyzing the post-creation development of material objects and methods of operation (“technologies”). This scheme is presented in Figure 4.1 as a two-dimensional matrix. One axis represents the

originator of the innovation and the other axis - the actual doer. Each dimension involves God and Man, because each can serve as an originator as well as an agent of implementation. It is interesting to note that the authors of the Torah almost invariably identify both the initiator of the innovation and its executor. In a few cases, a technological device is described without attributing it to any particular inventor; rather, it is mentioned as already existing, for instance, a knife (Genesis, 22:6), a sword (Exodus, 17:13), and a spear (Numbers, 25:7). Sometimes, the object's country of origin is given, for instance, the wagons sent by the Egyptian pharaoh for Jacob and his sons at the time of Joseph's triumph (Genesis, 46:5).

The matrix reveals that, according to the authors of the Torah, control over technological progress manifests itself primarily in God being the one providing the creative impulse for the innovation; the actual implementation can be carried out by Man. It was basically considered ill-advised for a man who is not blessed by God, or even for someone who is blessed by God but who has violated some of God's bans, to provide both the impulse for the innovation and the means for its implementation. Figure 4.1 shows three cases where Man represents both the source of the creative impulse as well as the means of its realization. In one case, the creation of the aprons (Genesis 11:3), God was indifferent. In the second case, the building of the Tower of Babel by nations descending from the sons of Noah (Genesis, 11:3), God becomes furious. Since God did not want the Tower of Babel to be built, He interferes in the builders' plans and mixes their languages so that they cannot understand each other.

Figure 4.1 The Technological Innovations in the Torah

The executor 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 of brimstone and fire (Genesis, 19:24)	
	Mana (Exodus, 16:15, 31) Swarms of flies, etc. sent upon Egypt (Exodus, 8-11)	
	Parting of the earth and the consumption of Korah and its surroundings (Numbers, 16:24-34)	
Man	Noah's Ark (genesis, 6:14-16)	Aprons made by Adam and Eve (Genesis, 3:7)
	Sanctuary (Exodus, 25-27,30)	Bricks and slime for building the town and the tower of Babel (Genesis, 11:3)
	Clothing for the priest (Exodus, 28)	Rods with pilled strakes in them to make cattle of a particular color (Genesis, 30:37)

I know of only one case in which the creative impulse for the innovation as well as the means of implementation originated with Man *and* the authors of the Torah considered this invention to be

pleasing to God. This is the device invented by Jacob to grow 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, when so ever 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 attempted). According to the authors of the Torah, it is primarily through God's impulse that new technological innovations that are pleasing to God are introduced and most of the innovations (objects or technologies) involve God as the source of the creative impulse and Man as means of its realization. As mentioned previously, the post-creation universe witnesses a very slow growth in the set of material objects (in terms of qualitatively new objects). The authors of the Torah emphasize *extensive* use of *already existing* instruments. Innovations and new ideas appear sporadically, presented as single, unique objects. The authors of the Torah do not even attempt to generalize the experience that is gained from the creation of these objects, something that is necessary in order to design and construct new objects on a systematic basis.

On the other hand, the authors of the Torah focus on the far-reaching development of the various methods of *organization* following the creation of the universe. These methods include different institutions that govern the relationship between God, Nature, and Man. The Torah abounds with such innovations.

One example of the relationship between God and Man comes from the grain reserves used to save Egypt from famine (Genesis, 41). God does not directly instruct Man (here represented by the Pharaoh and Joseph) what to do. Joseph is a man who believes that God has imbued him and the Pharaoh with 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).

Here, Man is the interpreter of the ideas conferred by God to the Pharaoh while the Pharaoh is asleep (Genesis, 41:25, 28, 32). Man is also the one who carries out the advice given by God to Joseph regarding the situations described in these dreams.

Here is another example. The idea of a hierarchical system for governing the Jews following the exodus from Egypt is presented by the authors of the Torah as follows: the idea is suggested to Moses by his father-in-law, and Moses carries 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 may est 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)

All of these examples point to the aforementioned principle of creation of innovations (in the realm of material things). The second

2x2 matrix, Figure 4.2 juxtaposes the source of the impulse for creation (God or Man) with the source of implementation (God or Man).

Again, we see the great role of God as the originator, even when Man is the executor.

The Torah does not censure innovations, but demonstrates a deep understanding of the *danger of creation of novelties* by ordinary people.

Figure 4.2

Socio-organizational Innovations in the Torah

Executor	The source of the creative impulse	
	God	Man
God	Tablet writing (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 pertaining to religious and moral conduct (Exodus, 34; Leviticus, 19) Moses' instructions 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 to establish a hierarchy to govern the Jewish people during their stay in the dessert (Exodus, 18:13-26)

Source of good and evil

The source of evil is two-fold. The first kind of evil is exogenous and comes from the environment (e.g., earthquakes, hurricanes, etc.), animals and humans fighting each other due to their conflicting values (which could be positive or negative depending on

circumstances.) In fact, certain values are fixed and act as independent variables that are expressed in such phenomenon as *unmotivated behavior*. To the latter belongs such an evil phenomenon as *sadism*. The second source of evil emanates directly from God. If we assume that God is an absolute that performs only good deeds and is not a sadist, then God has no inclination to do evil. If, however, we assume that God is limited and creates only a predisposition for future development, it is reasonable to conclude that God cannot foresee all the results of His own actions, some of which may turn out to be disastrous. Moreover, if we also assume that God has feelings, we should accept that they may be either positive or negative. Feelings are conducive to making quick decisions (often via reflexes) because they require less time than rational decisions. And, of course, time plays a crucial role in a rapidly evolving situation that might not allow for a purely rational response.⁷ However acting on a feeling may produce negative results because one can overlook adverse consequences. So a combination of feelings and rationality may prove an optimal choice. Unfortunately, a happy marriage of feelings and rationality is seldom possible, and the former usually prevails.

It seems to me that the flood unleashed by God was, on the one hand, a result of evil behavior of living beings, and on the other – an indication of God's inability to predict all the consequences of human actions and a largely emotional response on His part to this lack of foresight.

And God saw that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was only evil continually. And it repented the LORD that he had made man on the earth, and it grieved him at his heart.

And the LORD said, I will destroy man whom I have created from the face of the earth; both man, and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them. (Genesis 6:5-7)

Being in a more serene mood, God analyzed the ramifications of the Flood and deemed these acts to be wrongful and promised never to repeat them.

And Noah builded an altar unto the Lord; and took of every clean beast, and of every clean fowl, and offered burnt offerings on the altar.

And the Lord smelled a sweet savour; and the Lord said in his heart, I will not again curse the ground any more for man's sake; for the imagination of

man's heart is evil from his youth; neither will I again smite any more every thing living, as I have done. (Genesis 8: 20-21)

¹ Some interesting comments concerning the meaning of good and evil have been made by John Cobbs & David Griffin, the followers of Alfred Whitehead, in the section titled *Why So Much Evil in the World?* of their book (1976, pp. 69-75).

² Christian saints always perform noble deeds or attain sainthood by overcoming evil deeds. Soviet Communist ideology, especially during Stalin's time, portrayed each man who was canonized as a saint as being absolutely virtuous, of never committing any unsightly acts or doing anything bad. Enshrined in this constellation were Ivan the Terrible, Pushkin, Lenin, and the reigning leader himself, along with his myrmidons. (Even an ordinary instructor of the Central Committee of Communist Party of the Soviet Union, as long as he was in office, was not subject to public criticism for his past or present conduct.)

³ I am grateful to Professor Martin Oswald for his comments about the legends of the Jews and the Greeks.

⁴ See Isaac Asimov's book (1970); in more generalized terms, the uncontrollability of mankind's own creations is articulated in William Wymark Jacobs' story (1975).

⁵ Birth pains are primarily the result of the disproportionately large size of the embryo's head (as compared to other parts of the body). Women's birth organs have not changed much. The greater part of post-natal injuries in an infant (which do heal themselves within 48 hours) have to do with skull deformation during birth. It would be interesting to compare the size of the vagina of female marsupials with the size of the embryos and the female vagina of non-marsupials.

⁶ "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 successive cultures reveals that their development evolved continuously both in space and in time. New centers came into existence only to disappear later, 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 who had ceramics and possessed rudimentary knowledge of metallurgy. These cultures belonged to the so called Haliolitic 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 this inanimate archeological evidence.

The aforementioned 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 inner connections 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." (Moisheson, 1984, p.226)

⁷ Typically, construction site regulations recommend an intuitive reaction to the fast falling objects rather than the elaboration of a rational decision.

Chapter Five

Social Values: Morality, Instrumental Values, Ethics, and Law

One conception, particularly strong in Hasidism (see Menachem Schneerson (1990)), is that the Torah communicates social values that apply to all people.¹ While not presented in the Torah in an explicit form like the *Ten Commandments*, this set of values is taken out of the Torah and organized in a certain form as interpretations of the Torah. These values are known as *The 7 Noahide Commandments*. The internet article (<http://www.asknoah.org>) presents a condensed version of this code.² Below I will discuss the Torah's depiction of social values that are of particular relevance to the Jews.

THE DIVERSITY OF SOCIAL VALUES

Definitions

As distinct categories, "moral" and "ethical" are not well defined. As *Merriam-Webster's Dictionary of Synonyms* attests (1984, p.547), the terms *ethical* and *moral* are often treated as interchangeable. The boundary between *moral* and *instrumental values* is not very clear either. The meaning of law is more unambiguous. Webster's dictionary defines law as "all the rules of conduct established and enforced by the authority, legislation, or custom of a given community, state, or other group." In order to remedy this confusion in terminology, I will introduce my own understanding of the categories of morality, instrumental values, and ethics, and agree to the aforementioned definition of a law.

I define moral and instrumental values based on my concept of the *spectrum of conditionality of values*. At one extreme are *fully conditional*

values predicated upon a combination of four conditions: (1) driving forces, (2) some initial resources, (3) rules of interaction that allow resources to be transformed into outputs, (4) a procedure capable of integrating the first three preconditions in a consistent and complete way. In other words, when the goal and the starting conditions of a problem are well-defined and when there exists a program that completely and consistently links the goal with the starting conditions, the values that emerge in the course of solving the problem are fully conditional. In strict mathematical terms, these values are the *Lagrange multipliers* that appear in the process of solving an optimization problem. In his analysis of optimality problems in economics, Leonid Kantorovich (1965) called these values *objective-determined valuations*. The other extreme case is *fully unconditional values*, i.e., values that are completely undifferentiated. When the value has a positive or negative sign independent of the given circumstances, this indicates *unconditional* (but not fully unconditional) value. Assertion that the value of a human life is infinite could be used to illustrate this class of values.

Between these two extremes lies a wide spectrum of values. Valuations presented in the Torah are not binary (conditional/unconditional), but exhibit *degree of conditionality* that covers a broad range. Extremes are manifest in moral statutes (the unconditional judgments) and by laws or customs (conditional judgments). *Semi-conditional* evaluations gravitate toward morality (I will elaborate upon this shortly). Laws are rules for administering rewards and punishments and are fixed within a code. They are *almost conditional*. Some laws represent conditional judgments made by individuals appointed to make determinations in situations that are not accounted for in the law.

Let us simplify this spectrum of values and reduce it to a dichotomy comprised of two groups of statements: *unconditional* and *conditional*. This is done in order to clarify the definitions of moral and instrumental values. *Morality* belongs to the first group and *instrumental values* belong to the second. Instrumental values are usually embodied in laws or customs, even when the conditions for judging an act are not fully identified for a given situation. As a result a judge often makes a decision that takes into account attenuating circumstances of a given case in order to form fully conditional values.

One more comment regarding the spectrum of conditionality of values described in the Torah. The comment addresses the link between the degree of conditionality and the strength of judgments (see Figure 5.1).

Figure 5.1 Degree of Conditionality and Strength of Valuations 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 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 the flesh (Leviticus, 21:5) Thou shalt not let thy cattle gender with a diverse kind; thou shalt not sow thy field with two kinds of seed; neither shall come upon thee a garment of two kinds of stuff mingled together (Leviticus, 19:19)

Ethics, in my opinion, deals with *meta* principles for developing the spectrum of values. *Ethics* refers to a meta conception that encompasses the numerous factors upon which morality and instrumental values are based. It also integrates values of varying degree of conditionality (values that are employed in a wide range of

situations). There is a slew of ethical principles, and we might even talk about *meta-ethical* principles that inform ethical principles, but this is beyond the scope of this book. A whole movement in sociology has emerged to examine social processes, such as an exchange (see, for example R. Hinger and D. Willer, 1979) - processes that play a crucial role in shaping our ethical framework.

The Torah broadly states an ethical principle governing an *exchange*:

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

Advocating fair exchange, the Torah prohibits any type of exchange that results in a gain for one party (with no loss) and a loss for another (with no gain). At the same time, the Torah abounds with stories of people being blessed for doing good deeds for their neighbor.

Over time, other ethical principles came to challenge the one stated above. A number of religious ideologies, Confucianism in particular, have stressed the ethical principle “do unto others as you would have others do unto you.” A prominent Jewish thinker Hillel (60? B.C.–10 A.D.) believed that this principle is at the core of Judaism, and he remarked that everything else is mere commentary (Talmud, Tract. Sabbath, 31a). Eventually, this principle came to be known as the Kantian imperative.

Global and Local Social Values

Generally speaking, to support social interaction, it is sufficient to have endogenous values for each individual (*local endogenous values*). However, the process of human interaction entails *global exogenous values*, which embody the environment in its totality. In other words, global values characterize the holistic features of a given system and belong to the domain of *morality*; they make possible for individuals to operate in a way that conforms to the requirements of the system as a whole. Prices (*global exogenous values*) in the economic realm, along with individual utilities (*local endogenous values*) are analogous to the aforementioned parameters of social interactions. Moreover, along with endogenous local values and exogenous global values, an individual maintains the endogenous global moral values, known as *conscience*. This interpretation of conscience is reflected in our

language.³ The Latin *conscientia* is composed of two parts: *con*, communality, and *scientia*, knowledge emanating from the environment. The same is true of English, con-science; French, conscience; German, Ge-wissen; Greek, sun-esiz; and Russian, so-vest (sovest'). It would be interesting to examine the etymology of this word in other languages. The theory that emerged during the Renaissance, which deems man a microcosm, embodies the notion that the universe is mirrored in the individual.⁴ This theory also lays the foundation for the recognition of human personality. The concept of conscience expresses the idea that the awareness of other people's feelings is reflected in an individual's self-awareness. Thus, an individual may, under certain conditions, make the best possible choice by using global and local endogenous values and take into account the interests of other members of society without recourse to the exogenous system of values. We might say that one's conduct is based on the Tetra principle, i.e. one's conduct embraces, along with the initial elements (the physical characteristics of an object) and their local endogenous and global exogenous values, a fourth component, namely *conscience*, which is based on endogenous global values.

Biblical Hebrew does not have a special term for conscience. It seems that the Hebrew word **מוֹצֵן** (*matspan*), which is an appropriate term for conscience, originated later during the medieval period. Nonetheless, the Torah is explicit in stating the first three elements of the Tetra principle, and implicit in affirming the category of conscience. In translations under the supervision of Jewish authorities, this term is expressed, for example, as the "simplicity of my heart" (*The Holy Scriptures*, Genesis 20:5). Meanwhile, in one of the general translations of the Torah, the *New International Version* (1990), the term conscience is used explicitly in the same verse, Genesis 20:5: "Did he not say to me, 'She is my sister,' and didn't she also say, 'He is my brother?' I have done this with a clear **conscience** and clean hands."

Communication of Morality

Morality is conveyed in different ways, via *verbs* and *nouns*,⁵ depending on the *scope* of the elements that are taken into account. Morality can be conveyed via *verbs* that denote actions (killing, murdering, stealing, etc.) that take place among the adults, between

children and parents, etc. As soon as these actions are evaluated, even in the dichotomous manner of the Ten Commandments, they become rules for interaction (actions become either forbidden or permitted), i.e., they transform into moral statements.⁶ This kind of approach is typical of the ethics of some religions, and it is explicitly expressed by early Christian Evangelists.⁷

Judaism also confers moral statements via *nouns*. For example, the acquisition of material wealth is combined with proper relational elements, i.e., with the means to attain wealth and the way in which wealth is to be used (e.g., to help other people). Here, the formula for evaluating an individual's moral stature is based on the sum total of appropriately weighted material and relational components.

Let me now elaborate on the conditions that define the moral predisposition in the context of *verbs* and *nouns*. The use of a *verb* to describe moral predisposition takes place when the number of conditions that accompany an action is relatively small, and the verb encapsulates all of them. For example, consider such actions as *killing* and *murdering*. In both cases, the material components (nouns) are the same: a living body has been "transformed" into a dead body. In both cases, the individual responsible for this transformation has damaged his or her own psyche (noun) because this action has undermined the deep instinct to avoid killing members of one's own group. The difference between the verbs *kill* and *murder* reflects such relational components (nouns) as *intentions*. In a number of ethical systems, like the Judeo-Christian one, *murder* presumes that the intention of the person who does the killing is to take the life of a person who does not have the intention to destroy the life of the killer. Such judgments are applied to bandits, terrorists, and so forth. In some ethical systems, like communism and racism, the extermination of people who do not have any intention of killing others is justified as a precondition for bringing happiness to all of mankind; this act is carried out in the name of improving the well-being of a certain class (in the framework of the communist ethics, the proletariat) or a certain race (as in Nazism). In Judaism, if killing is in response to people recognized as murderers, then the "perpetrators" are not regarded as murderers. This applies to soldiers, executioners, and individuals exercising self-defense. In certain ethical systems (e.g. some sects in India), any act that takes the life of another person is considered immoral.

Inconsistency of Moral Statements

There are many statements in the Torah that relate to morality (see my definition above). The Ten Commandments hold a place of particular importance among other moral statutes. Other sections of the Torah contain many unconditional statutes, for example Exodus, Leviticus, and Deuteronomy. Chapter 19 of the book of Leviticus presents such unconditional statutes as “Neither shall ye deal falsely, nor lie one to another” (11); “Thou shalt not curse the deaf, nor put a stumbling-block before the blind” (14); “Ye shall do no unrighteousness in judgment: thou shalt not respect the person of the poor, nor favor the person of the mighty; but in righteousness shalt thou judge thy neighbor” (15); “Thou shalt not take vengeance, nor bear any grudge against the children of thy people, but thou shalt love thy neighbor as thyself” (18). There are inconsistencies in the unconditional valuations presented in the Torah, even amongst the Ten Commandments.

For instance, the commandment "Honor thy father and thy mother" may come in conflict with the commandment "Thou shalt not murder" in case the parents instruct their offspring to commit murder. It seems to me that the inconsistencies among unconditional evaluations can be explored within the framework of a three-level hierarchy between God and Man. This is consistent with my previous statements about the contractual relationship between God and Man, for Man is free to choose whether or not to follow the proposed agreement. A two-level hierarchy features God and Man. A three-level hierarchy includes another force, one that an individual person would also have to obey. In this case, I mean the parents. The Torah prescribes that a given individual must obey not only God's statutes, but also his parents. One commandment explicitly states "Honor thy father and thy mother" (Exodus, 20:12). Within a two-level hierarchy, the priorities that govern the commandments are well defined. For instance, the Ten Commandments have higher priority than other unconditional statements presented in the Torah. A three-level hierarchy yields other methods of resolving conflicts among the commandments. This comes to the fore when reconciling, say, "Honour thy father and thy mother" and other commandments. One view is that the commandments bequeathed by God apply 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 the orders of

parents if they conflict with another commandment. The responsibility for violating a commandment rests with the offspring. This framework presupposes that the persons involved possess a high level of culture that instills in every individual competence and responsibility for his actions. Another principle that operates within the same paradigm is based upon a model in which the top level delegates all the power to the second level, and the second level, in turn, bears complete responsibility for determining the reward or punishment that is to be bestowed upon the third level. This type of arrangement does not rule out a scenario where the first level will take on the complaints lodged by the third level against the second level.

The aforementioned inconsistencies are not resolved in the Torah itself. A consistent system of priorities calls for a holistic, deductive model to be constructed. However, such a model defies construction, since it is impossible to determine the true “eternity term” (or very long term) criterion of human development and to integrate this criterion with all the possible events. The conflicts among unconditional commandments are resolved in the interpretations of the Torah. The solutions are based on the idea that any request to fulfill a commandment that violates other commandments is not allowed. As a matter of fact, a rule was established that identifies the party responsible for violating a commandment. In the case in question, the individual who commits the murder is held responsible. This perspective on the issue of responsibility for murder has important implications in the military. In many armies, a soldier must obey his superior's orders even if these orders conflict with the law. Only afterwards can a soldier file a complaint questioning the officer's order. In the Israeli army, if a soldier follows an order that violates the law, he will be punished for violating the law, even though he was ordered to do so. The officer issuing the unlawful order will be punished as well, but to a lesser extent.

DEGREE OF CONDITIONALITY OF VALUES

Murder and Killing

Let us take a look at the social values with respect to the commandment "Thou shalt not murder." In human society, the notion of development may lack a clear direction. Even when the general direction is settled upon, a great diversity of situations arises

producing a wide spectrum of attitudes with respect to this commandment (it is not even possible to prove that human society should exist at all). If we accept the above tenet, human values become fully unconditional, and so, with respect to people, anything is permissible.

There are exceptional cases of fully unconditional values placed upon a human life, given that the value of any single individual's body is not critical. This situation is observed in certain tribes of New Guinea, where murder is considered insignificant. The spirit of the murdered person remains, and the members of the tribe (family) may communicate with it during nightly visits (Lundqvist, 1958).

When society evaluates human life in a codified manner – for instance, when a person is condemned to death for committing certain acts under certain conditions – this implies fully conditional values. Housed between the two extremes of fully conditional and fully unconditional values are intermediate stages of conditional, semi-conditional, and unconditional values. Each stage is defined by the set of assumptions (or parts thereof) that is selected from among those that are required to form fully conditional or unconditional values.

In my inquiry into morality, I would like to focus on unconditional and semi-conditional values that are of great practical importance.

Ten Commandments embody primarily semi-conditional valuations. In fact, for most of the *Ten Commandments* I could put forward a corresponding commandment characterized by unconditional values. For example, the semi-conditional directive “Thou shalt have no other gods before Me” corresponds to the unconditional “Thou shalt not accept authority.” “Thou shalt not murder” is semi-conditional; “Thou shalt not kill” is unconditional. The same is true of the pairs: “Thou shalt not steal” and “Thou shalt not take the property of others,” i.e., the commandment not to steal reproves theft, but not the acquisition of secrets from an enemy.

So, murder and its respective negative valuation are semi-conditional, unlike the edict not to kill, which is unconditional. The principle that prohibits murder regards a man who has killed an innocent person negatively and a criminal; a soldier who has killed an enemy soldier is considered a hero. However, there exist ethical frameworks that judge any act of manslaughter negatively, thus

assigning an unconditional valuation to the act.

All known civilizations regard the preservation of human society as a given. This is justified by the inherent will to live (e.g. the difficulty of committing suicide) and the propagation of the human race. Thus, the general valuation of a human being belongs in the positive octant. It is unconditional (be it positive or negative) and the life of each individual is invaluable. Despite our inability to conclusively define the value of an individual, we can say that each person is valuable in an unconditional way. Operationally speaking, it follows that there is a leveling with respect to the individuals' value. People strive toward an ideal where unconditional valuations are concentrated in the positive octant, rather than toward fully unconditional valuations. This gives rise to social doctrines that preclude gain for some people to the detriment (a loss) of even a single person (e.g. Pareto-optimality). Even if these doctrines are rarely put into practice, their impact is manifest in the idea of each person being equal before the law. When it comes to the distribution of scarce resources, there are major hurdles in implementing the notion that all people are of equal value, if only because not all people are equally productive. This gives rise to differentiation based upon the individual's “importance”. This differentiation takes place under varying degrees of completeness of the set of rules. For example, interaction among people is governed by semi-conditional values, as in the evaluation of soldiers, officers, and generals based on their ability to act independently from the prevailing conditions and military procedures. Under certain circumstances, a semi-conditional valuation is introduced with respect to human life (see Jeffrey Williamson, 1984). It is employed by insurance companies and by engineers when they assess the hazards of new technologies. A war situation illustrates fully conditional value of a human being: an officer has to make a decision as to whose life is to be sacrificed in order to achieve the set goal. As one might imagine, the spectrum of human values is vast and its integration is a highly formidable task.

Murder and Killing (continuation)

I have mentioned the attitude toward murder held by some tribes in New Guinea as an example of *fully unconditional values*. Now, I would like to focus on the relation between *unconditional* and *semi-conditional* values as applied to the act of taking a life. The difference in these two approaches is manifest in the various translations of the

Torah. For instance, *The Holy Scriptures* (1955), a new translation based on the masoretic text, translates the commandment as “Thou shalt not commit murder.” In *The Holy Bible*, commonly known as the authorized (King James) version (1983), this commandment is translated as “Thou shalt not kill.”

Jeffrey Tigay (1996) examines this discrepancy and sternly notes that such a translation of the commandment is overly broad. Indeed, **רצח** (*ratsah*), the Hebrew word for *murder* is distinct from *kill*ing, for which there are other terms, such as **גדה** (*harag*) and **התז** (*hemit*). “Kill” obviously encompasses the widest range of meanings and entails the taking of a human life in any form. Interpreted broadly, the term could be applied to all living creatures. Without claiming a precise definition of murder, I only want to note that the term implies, at the very least, that the taking of a life be a willful act aimed at improving one's own lot or that of another party.

In literature, the condemnation of murder goes far beyond the disapproval of selfish motives. As far as I recall, the gifted Soviet historian Leonid Batkin once noted that Shakespeare's work is possibly a response to Machivelli, whose views were widely known in England at the time. Shakespeare exposed how the use of evil means (and murder in particular) in the struggle for power can lead to the downfall of the victors. Perhaps the compelling statement of this principle is Shakespeare's drama "King Lear" in which foul means led to the spiritual collapse of a person when left alone with his conscience. In *The Queen of Spades*, Alexander Pushkin condemns Herman, the leading protagonist, for murdering an old woman whose secret he wanted to use to ennoble his family. Impressed with Pushkin's concept, Dostoevsky develops it further in *Crime and Punishment*. He denounces the idea of murdering an old woman - a pawnbroker, for the sake of giving her money to hundreds of widows and their starving children. *The Brothers Karamazov* takes this idea even further. It condemns the possibility of sacrificing a newborn child so that its body can be used as the foundation of a crystal palace whose inhabitants would live happily ever after. Still, Dostoevsky believed it necessary to help Serbs kill Turkish soldiers in the Slavs' struggle for independence from the Muslims. It seems that the argument between Dostoevsky and Tolstoy is largely over the interpretation of the commandment in question. Tolstoy was opposed to the killing of any kind. He was close to Gandhi and they even carried on a

correspondence. It would be hard to imagine Dostoevsky in the same role!

Let us proceed with the analysis of the difference between unconditional and semi-conditional evaluations in the context of “Thou shalt not kill” versus “Thou shalt not murder.” In an extreme case, a strict adherent of “Thou shalt not kill” would allow himself to be killed before he kills another. These views are held by one of the Hindu sects in Sri Lanka (the former Ceylon). To the best of my knowledge, the former prime minister of Ceylon, Solomon Bandaranaike (1899-1959), belonged to this sect. He did not allow himself to kill an attacker and was murdered. As he lay bleeding to death, he did crawl over to the murderer and knocked the pistol from his hand before it could be used against his wife, Sirimavo Bandaranaike. She later became the prime minister of Ceylon-Sri Lanka. The reader could reasonably argue that this attitude toward killing is fine when one believes in reincarnation, when the soul moves on to another body after it is released from its current host, and the better one's soul is “preserved”, the better its next body will be. Eventually the soul reaches nirvana and merges with the universal absolute, escaping the suffering that invariably accompanies joy. But what about a person who belongs to modern Western civilization and who assigns significant value to his body? Well, killing can still be avoided, as manifest in nonviolence resistance movements.

Very instructive in this respect is the story of the village of Le Chambon in the south of France. During World War II, the inhabitants of this village, led by their priest André Trocmé, professed nonviolence but still succeeded in saving thousands of people persecuted by the Nazis, notably the Jews. Philip Hallie's wonderful book (1979) details how this movement did not resort to violence, though there seemed to be no other way to attain the movement's objectives. The formidable perpetrators of evil included the Gestapo as well as French collaborators from the Vichy government. Moreover, the inhabitants of Le Chambon had to deal with a marquise who regarded violence as the only way to deal with the German occupation force and French collaborators. Hallie recounts all the hardships associated with the actual implementation of the ideology of nonviolence. The book reveals the incredible preparatory work that was performed by the village priest and the predisposition on the part of the people of this village to heed his

words. Hallie's book presents a convincing case that the practice of nonviolence in such an extreme situation is indeed possible!

However, what happens in other less-localized situations when violence cannot be avoided? In order to answer this question, let us first compare the actions of various tribes of North American Indians. Some Iroquois tribes followed the principle "do not kill." When attacked by an enemy tribe, they tried everything in their power to avoid war. If this was not possible and they were backed into a corner, they would fight. Since they were a powerful people, they usually won. Following a victory, they would sit in the forest and ask the gods to forgive them for spilling the blood of their own people and that of the enemy. It is interesting to compare the Iroquois tribes to other tribes in similar situations. After defeating the attackers, the victorious tribe would celebrate their success with drums, enemies' scalps, etc.

While Judaism is dominated by semi-conditional moral directives, it also takes into account the unconditional values of these directives. For example, in *The Passover Haggadah* (1969), Ernst Goldschmidt notes that pouring a little wine from the cup at the mention of each plague, which looks like deliberate waste, was originally intended to avert ill fortune by safeguarding against immoderate rejoicing. Goldschmidt further notes that Samson Hirsh and Eduard Beneth interpret "this custom as a symbolic tempering of the joy of the evening, in order to show sympathy to the misfortune of the Egyptians" (pp. 40-41). As Irving Greenberg (1988) observes, during the first two days of Passover, the complete Hallel (part of Jewish religious service consisting of Psalms 113-118) is fully recited.

Thereafter, part is omitted—as a mark of mourning for the Egyptians who drowned in the Red Sea. The Egyptians were vicious task masters, yet their pursuing army consisted of sons of Egyptian mothers and fathers. Later generations of Jews felt empathy with the pain of their parental loss. The death of any human being is a sorrow. (p. 58)

Furthermore, the Kohen who has killed – even by accident – cannot officiate in the Temple (Talmud, Tractate Berakhot, 32b).

Moral Values and Instrumental Values

It seems reasonable to posit that instrumental values preclude the need for moral directives. Numerous discussions with theologians have led me to believe that they perceive moral claims only as

providing the guidelines for evaluating the vast body of behavioral patterns. In other words, moral edicts govern the elaboration of conditional social valuations of human actions - so numerous that it is easy to lose one's way when judging them. In my opinion, the role of unconditional values is twofold. As previously mentioned, they can play the role of generic values that determine the range of more flexible conditional values. In addition they can function as *constraints* that are of essence in and of themselves. In other words, moral claims provide *strategic* (global) *constraints* as one deals with a *tactical* (local) problems. Unconditional values prove especially important in cases where the outcome is unclear and where people are tempted to pursue short-term goals. Pragmatically-minded people oftentimes maintain that the individual's first priority is to achieve success. If the means used to attain success will have negative consequences only in the distant future, then for a pragmatist, these consequences are of secondary importance. The pragmatic approach hinges exclusively on whether or not a constraint is codified in a law or if a custom is violated.

Once strategic constraints are introduced, they must be enforced by a reward-punishment (*r-p*) system. The *r-p* system could be short-term or it might persist even after the death of the "perpetrator". The specific practices of an *r-p* system vary among different cultures. In a culture that believes that body and soul are distinct entities and that the soul leaves the body to enter afterlife, a future-oriented *r-p* system can be administered through such "institutions" as hell/heaven, reincarnation, or nirvana. The Torah's treatment of the concept of a soul and an afterlife is subject of an intense debate. Books by Alan Dershowitz (2000) and Steven Nadler (2001) bring up an interesting observation regarding these discussions. I belong to the camp of the proponents of the absence of afterlife, even though the term *sheol* does exist in the Torah. According to the *Jewish Encyclopedia*, the term *sheol* is interpreted

as the place where those that had died were believed to be congregated. Jacob, refusing to be comforted at the supposed death of Joseph, exclaims: I shall go down to my son a mourner unto sheol (Gen. 37: 36)

Even if we accept this interpretation of the term *sheol*, the concept that *sheol* is afterlife is irrelevant to the Torah itself, as confirmed by the types of funerals described in the Torah. In religions like that practiced by ancient Egyptians, the belief in an afterlife was affirmed

by putting into the grave different items that were needed in the afterlife. Nothing resembling this kind of a ritual is to be found in the Torah. To the best of my knowledge, only the Torah professes the *r-p* of an individual to be carried out via *future generations*:

...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)

Jeffrey Tigay (1996) explained this phenomenon in a following way:

This view of divine retribution as extending to descendants corresponds to the concept of family solidarity that was felt strongly in ancient societies, especially those with a tribal background. This view was progressively modified in the Bible in the direction of the principle that individuals should be rewarded and punished only for their own deeds.” (p.66)

This point of view is grounded in evidence. Many ancient peoples living in that region, Persians and Macedonians among them, would execute the criminal's family along with the criminal. In more recent history, a similar approach was taken under totalitarian regimes, most notably in the U.S.S.R. under Stalin, toward those condemned as state criminals. Vengeance against the family of a state criminal apparently was also dictated by the fear that the relatives might seek vengeance for the death of a family member, whom they consider innocent. At first glance, the *r-p* system that follows the death of the perpetrator contradicts the ethical principles in the Torah that state that the guilt of a father does not extend to his children and vice versa:

The fathers shall not be put to death for the children, neither shall the children be put to death for the fathers: every man shall be put to death for his own sin (Deuteronomy, 24:16).

However, there is no real inconsistency in the responsibility of the children for their father's actions (which affect primarily those close to the father). Those directly affected are the children, grandchildren and great-grandchildren (i.e., three or four generations). They are in a position to assimilate their father's sin by imitating their father's conduct. On the other hand, a father might well witness three or four generations of progeny during his lifetime. It is perhaps necessary for three or four generations to pass before the aftermath of a bad deed

on the part of the father, even if this deed is not discovered, dies out completely. After that, the memory of it should have no impact upon future generations. Jeffrey Tigay (1996), making ample reference to authorities on Judaism, writes,

Living to see three or four generations of descendants is as long as one could naturally live. Thus God extends punishment only to descendants the guilty are likely to see in their own lifetimes. This indicates that the suffering of the descendants is intended as a deterrent to, and punishment of, their ancestors, not a transfer of guilt to the descendants in their own right. (p.66)

The prestige associated with the name of a person who has done good deeds may carry over to his descendants and the fact that they belong to an honorable family may play a significant role in their lives.

One form of punishment of an individual for violating strategic constraints is the corruption of personal dignity. This represents destruction of the fertile structures that developed over the course of evolution, and which, in the long run, promote further development. When a violation of moral constraints takes place, a person ought not to *justify* his actions. He should repent, so that his character does not deteriorate further. A moral approach emphasizes repentance for breaking a moral directive. The moral approach can be easily derided, because the posture of “sin and repent, sin and repent, ...” is comical. Morality is not expressed in a single act of repentance, but in the general trend of one's conduct. The morality of a person is reflected in the “first derivative” of his behavior function or, simply, “to what extent do one's transgressions of moral directives decrease over time?” A reasonable assessment of an individual will look at the dynamics of his transgressions, and not at the state of the person's character.

This perspective informs a wide array of issues that are the subject of pointed discussion in the Western world: the acceptability of abortion, euthanasia, suspension of extraordinary medical treatment, etc. Oftentimes these discussions deal with extremes, with one group justifying abortion or euthanasia and the other condemning it. It seems to me that the debate ought to be redirected along the following lines. Repentance for taking a human life is of paramount importance. Justifying such an act destroys individual's biological values, of which the preservation of life is a powerful constituent. If pragmatic considerations do drive one to take such action, this action

ought not to be justified. Rather, it should be viewed as an evil that, given the circumstances, is unavoidable. Moreover, in case this concession to pragmatic considerations involves a financial cost, it should be borne by the individual breaking the moral directive, by a charitable organization, or by other means that do not involve government funds.

Values and Legal Norms

In order to achieve explicit results (legal expression), moral statutes usually pass through instrumental values. This, however, is not requisite. (For detailed investigation of the legal expression of moral norms in Judaism see Sonsino [1980].)⁸ In situations where a commandment is sufficient to determine the legal consequences, the Torah clearly introduces it as the legal benchmark for punishment:

Thou shalt not take the name of the Lord thy God in vain; for the Lord will not hold him guiltless that taketh His name in vain. (Exodus 20:7)

And he that blasphemeth the name of the Lord, he shall surely be put to death; all the congregation shall certainly stone him; as well the stranger, as the home-born, when he blasphemeth the Name, shall be put to death. (Leviticus 24:16)

Honour thy father and thy mother, that thy days may be long upon the land which the Lord thy God giveth thee. (Exodus 20: 12)

And he that curseth his father or his mother, shall surely be put to death. (Exodus 21:17)

Subsequently, these legal norms of punishment were modified and appropriate exceptions introduced with respect to specific circumstances. (This is analogous to linguistics where there are rules and exceptions.) Take, for example, the commandment to observe the Sabbath. The Torah says,

Six days shall work be done, but on the seventh day there shall be to you a holy day, a sabbath of rest to the Lord: whosoever doeth work therein shall be put to death. (Exodus 35:2)

It took a long time until the fully unconditional punishment for violating the Sabbath was amended to become partly conditional. The law allowed one to fight enemies on the Sabbath. At first, this concession was limited to when the enemies had directly attacked the Jews, but it later expanded to enemies making direct preparations for attack. Another exception is food preparation in order to treat a sick

person, because the preservation of human life trumps other constraints.

The commandment “Thou shalt not steal” (Exodus 20:15) does not constitute a general legal norm and the punishment for theft varies. A series of legal statutes in the Torah deals with specific types of theft and respective punishment: “And he that stealeth a man, and selleth him, or if he be found in his hand, he shall surely be put to death” (Exodus 21:16). “If a man shall steal an ox, or a sheep, and kill it, or sell it; he shall restore five oxen for an ox, and four sheep for a sheep” (Exodus 22:1). “If the theft be certainly found in his hand alive, whether it be an ox, or ass, or sheep; he shall restore double” (Exodus 22:4).

What is the role of conditional valuations presented in the Torah? I will attempt to answer this question within the framework of the systems approach as it applies to conditional valuations that pertain to punishment.

From the *functional* point of view, conditional evaluations of a 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) dissuade other people from taking a chance and breaking the law.

It is difficult in each particular case to pinpoint the role of each of these factors, and, more importantly, to reconcile them in a non-contradictory manner. The fact that the Torah takes all the aforementioned goals into account in passing conditional judgments is obvious. One way of isolating a criminal from society is to make him subservient to a master-owner. Consider the case where a thief lacks the means to make restitution. That is, “if he have nothing, then he shall be sold for his theft” (Exodus 22:3). In an extreme case, isolation from society takes the form of a death penalty. The idea of a criminal providing compensation for the harm he has caused is highly developed in the Torah. One example is corporal compensation, in addition to the various material and financial forms of compensation. It stands to reason that such forms of compensation as isolation from society and capital punishment can serve to deter crime, particularly when the required compensation exceeds the original value of the damages (which is oftentimes the case). For example: “If a man shall steal an ox, or a sheep, and kill it, or sell it; he shall restore five oxen for an ox, and four sheep for a sheep” (Exodus

22:1); “If the theft be certainly found in his hand alive, whether it be ox, or ass, or sheep; he shall restore double” (Exodus 22:4).

From the *structural* perspective, conditional values identify circumstances that determine the degree of "severity." For instance, payment for a stolen ox depends on whether this ox was sold or whether it is still alive and in the possession of the thief (Exodus, 22:14).

From the *operational* point of view the conditional values emphasize the need to have two or three witnesses in each judicial case. The Torah states,

At the mouth of two witnesses, or three witnesses, shall be 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)

From the *operatorial* point of view, the principal question regarding conditional evaluations is whether all the conditions formalized in the law (which determines punishment) are sufficient, or whether there is a need to introduce other considerations that are not stipulated in the judicial code, conditions that belong in the realm of intuition of the judge or jury. The Torah emphasizes formal methods for determining the extent of the punishment. Subsequent interpretations of the Torah and the development of the judicial system in general introduce additional informal rules to the judicial process. The *Talmud* provides the deepest expression of this elaboration of the law. The use of formal versus informal rules in setting the punishment is one of the most difficult problems in the *Halacha*. In isolation, each approach suffers from serious flaws. Significant factors can easily be missed if we stick to the formal rules that comprise the judicial code. Although invariants exist, it is very difficult to specify all the conditions a priori. On the other hand, when judgment is based on informal rules, there is grave danger of the verdict being dependant on the grace of the judge with all the ensuing arbitrariness associated with this approach.

From the standpoint of *genesis*, conditional evaluations reflect the degree of *objectivity* in exposing the violation, for example, whether or not there were witnesses, etc. Also, the *motives* behind the violations become highly relevant to the case. For example, the attitude towards intentional versus unintentional acts can be quite different: the death penalty for murder is stipulated in Leviticus 24:17, but exceptions are specified. The Torah mentions special cities of refuge for a person

who has unintentionally murdered someone (Numbers 35:6, 11-15, 25-28; Deuteronomy 19:1-13).⁹

¹ Many thanks to Michael Levins for his help on this subject.

² 1. BELIEF IN G-D: Do Not Worship Idols. The essence of life is to recognize and believe in the Supreme Being, the Creator of the universe, accepting His laws with awe and love. Remember that He is aware of all our deeds.

2. RESPECT & PRAISE G-D: Do Not Blaspheme. Trust and loyalty are crucial in life. Know that G-d is just, but we humans can't comprehend our Creator, Who is infinite. One shouldn't extend his "freedom of speech" to the extreme of blasphemy.

3. RESPECT HUMAN LIFE: Do Not Murder. The edict against homicide protects us from the violent tendencies that may lie within. (Gen. 9:6)

4. RESPECT FAMILY: Do Not Have Forbidden Relations. Wholesome families are a basis of healthy communities and societies. Immorality leads to inner decay. (Gen. 2:24)

5. RESPECT THE RIGHTS OF OTHERS: Do Not Steal. Since our sustenance comes from G-d, we should seek to earn it honestly, with dignity and not through deceit. Theft is forbidden.

6. RESPECT ALL CREATURES: Don't Eat Flesh Taken From a Live Animal. G-d gave humans dominion over the Earth, but we are also its caretakers. We should respect animals and not be cruel to them. This law prohibits meat taken from an animal while its heart was still beating. (Gen. 9:3-4)

7. PURSUE JUSTICE: Set Up Courts of Law. A fair and effective legal system creates a society worthy of G-d's blessing. It brings G-d's ideals for our personal life into a formal order for society, and completes the other six laws. This law encompasses the commandment for education.

³ Yury Koriakindrew my attention to this matter, remarking that the Russian word *sovest'* is comprised of two parts: *so-vest'*.

⁴ Leo Tolstoy wrote, “Conscience is the memory of society, assimilated by a single individual” (Quoted from P. Simonov, 1991, p.168).

⁵ The idea of distinguishing values based on the use of nouns and verbs has found a number of proponents. For example:

“At the very outset of a theory of value, an important semantic question arises in the consideration of whether the meaning of "value" is to be derived from its noun (or in old fashioned language, its substantive) sense, or from its verb (actional) sense. On the one hand, "value" may designate a property or characteristic of an object; this is what I call the noun sense. On the other hand, "value" may designate an act; this is what I call the verb sense. The common idiom uses the word in either way, but a choice must be made by theory. I am sure that sometimes the authors of different value theories argue at cross purposes because "value" means to one of them a property and to the other an act. The semantic problem here is not a question of when value is used as a noun and when as a verb in the syntax of a sentence. Such a question is one of grammar, not of semantics. The present problem is one of designation: if the word in its most general sense—that upon which all specific meanings and derivatives depend—designates an act,

then the verb sense is semantically prior; but if the word most generally designates a property or characteristic, and every other meaning depends on this, then the noun sense is semantically prior. This is regardless of what part of speech the word happens to be in the syntax of any particular sentence. To Dewey, for example, the verb sense seems to be basic. He holds the meaning of "value" to be closely connected with some or several of the following words: prizing, desiring, holding dear, or liking, taking interest in, enjoying, or appraising."⁶ (Lepley, 1949, pp. 6, 68)

⁶ The distinction between *actions* and *rules of interaction* is important in systems where the rules of interaction are not externally defined, (e.g. a society). In artificial systems, like chess, all possible actions are governed by the rules of interaction. All moral values underlying these rules are implicitly incorporated into the rules.

⁷ Then said Jesus unto his disciples, "Verily, I say unto you, That a rich man shall hardly enter into the kingdom of heaven. And again I say unto you, it is easier for a camel to go through the eye of a needle, than for a rich man to enter the kingdom of God." (Matthew 19:23-24; see also Mark 10:24-25 and Luke 18:24-25)

⁸ Rifat Sonsino (1980) proposes a very interesting hierarchical classification of legal formulations found in the Torah. The initial division is two-fold: conditional and unconditional, with the latter also termed *apodictic*. Each group is also subject to more fine-grained classification:

- I. Laws in their conditional form
 - A. "When/if" form
 1. Third person
 2. Second person
 3. Mixed forms
 - B. Relative form
 1. Third person
 2. Mixed forms
 - C. Participial form
- II. Laws in the unconditional form
 - A. Direct address
 1. Positive commands
 - a) Preceptive imperfect, second person
 - b) Imperative
 - c) Infinitive absolute
 2. Negative commands
 - B. Third person jussive
 1. Positive commands
 2. Negative commands (p. 17).

My primary focus is on other types of classifications, which, in fact, do not contradict the one cited above and even overlap with it.

⁹ Professor Hasan Ozbekhan called my attention to the fact that in some countries where criminal law is based on the Koran, the motives behind the crime are not taken into account in passing judgment; the act is punished as such.

Chapter Six

Manifold and Singular Variety

The mathematical concepts of *manifold* and *singular variety* are applicable to many systems (e.g. political, biological, the Torah), even though here, these terms are not used in a strict sense.¹

MANIFOLD AND SINGULAR VARIETY AS GENERAL SYSTEMS CATEGORIES

Definitions

To better understanding the process of creation it is important to identify as a *unit* the set of components comprised of objects and relations among them. It is also important to differentiate among the components without subjecting them to global valuations (limiting them only to local valuations). Such a unit (or entity) could be termed a *manifold*. This entity could be made more structured by assigning priorities to its constituent elements, thus transforming a manifold into a *singular variety*. The integration of manifold and singular variety is a very delicate problem. One approach for reconciling differentiation and integration was proposed by Jamshid Gharajedaghi (1999, pp.92-93). It preserves the diversity of objects in a manifold and proposes a simplified approach to integration based on the uniformity of the constituent elements. Integration of singular variety assumes that a) each object has its own local internal value (e.g., individual's utility function), and b) the presence of global valuations formed for the general "field" that is the system (e.g., prices in an economy). The fact that each object can be explicitly represented by a triplet of parameters, i.e. the physical characteristics of an object, its local value, and global values, allows for the

integration of a singular variety via various vertical and horizontal mechanisms (see my book, 1988). A *pluralistic mechanism* is the leading mechanism for the development and integration of a manifold and singular variety. The operation of a *pluralistic mechanism* can be divided into the following stages: the creation of an expanding *manifold* of components predicated upon the assumption that each component is treated not as final “truth”, but merely as a hypothesis; the *selection* of the more effective components from the manifold that are better adapted for the given environment; *revision* of the value of selected components in terms of their adaptability to the circumstances; and finally, if deemed necessary, the *replacement* of those previously selected components that are judged faulty with new ones taken from the ever growing manifold.

A Manifold and a Singular Variety in Political Systems

In the political sphere a manifold represents the set of political programs that chart various paths of development (since it is impossible to find a complete link between a given program and the future of the country as a whole). The programs are developed by independent organizations that rely on independent sources of financial support. Sustainable multiparty system fulfills this role. Note that a pluralistic mechanism is particularly problematic in countries with a relatively low political culture of the populace. But even in these countries, the question is not whether to introduce a pluralistic mechanism or to ban it. The question is to what extent the scope of a pluralistic mechanism should be correlated with the political culture of the masses and with their participation in the political process. If the political culture of the nation is sufficiently high and the nation possesses deep appreciation of pluralism, then pluralism is compatible with the more inclusive participation of the citizenry. This is true even for extreme situations, as was the case with England during the Second World War or with Israel, which throughout its history has had to face an extremely hostile environment. On the other hand, in many countries, the conflict between pluralism and the participation of the masses in the political mechanism is resolved in a very painful fashion, e.g., the Weimar Republic turned out to be a disaster for Germany, because it had an insufficiently mature political culture of the masses which were allowed to participate in the political mechanism, with the majority of the population voting either for the fascists or for the communists. Incidentally, both of these

parties rejected pluralism.

At the next stage, it is necessary to *select* one single program (or one combination of programs) in order to integrate the social system, for it cannot function according to several programs simultaneously. This represents transformation of a manifold into singular variety. It is outside the scope of the current book to discuss the stages of conversion of a manifold into a singular variety, of revision of the selected program, and, if necessary, of programs’ *replacement*.

As a matter of fact, this principle of integration of a manifold and a singular variety is also helpful in framing the perennial debate between radical liberals and radical conservatives that revolves around the coexistence of various ethnic groups. As racists, radical conservatives not only underscore ethnic distinctions, but also claim the superiority of one ethnos over another based on certain indicators. They go on to generalize and proclaim the universal superiority of one ethnos, urging restrictions or even eradication of inferior ethnic groups. In other words they seek to attain a singular variety while impeding the preservation of the manifold of ethnic groups. On the other hand, liberals who recognize the need to preserve various ethnic groups are unwilling to recognize singular variety, that is, *situational* priorities of one ethnos over another as judged on the basis of certain criteria. In fact, radical liberals contend that the variations among various ethnic groups are fleeting and caused solely by the environment, because the environment propagates and amplifies these differences. Perhaps inadvertently, radical liberals seem to advocate a simplified uniformed manifold of ethnic groups. It seems that we are in a tragic bind when we oppose both radical liberals’ uniformity and radical conservatives’ racism. Once we recognize certain ethnos-specific traits (i.e., the manifold of non-uniformed components), we are in a position to promote the culture of each ethnos and then integrate these groups. The apparent reluctance on the part of liberal circles to recognize certain qualities peculiar to each ethnos (especially of ethnic groups living in the same country) leads to a virtual imposition of the dominant culture upon all other groups. The consequences of such an attitude may be dreadful. The fact that racists spotlight certain ethnos-specific traits is not evil per se. Their vision is flawed because they ignore the fact that the differences are limited, meaning that the variations fail to reflect the full range of qualities intrinsic to a given ethnos. Racists also tend

to exaggerate the importance of certain traits and even falsify facts to validate their claims. The pronounced value judgments that they make are at best situational, for the workings of any given human trait depends on the prevailing circumstances, and a shift in the environment may cause certain traits previously regarded as negative to become positive. The rejection of diversity and the propensity for singular variety also leads to tragic consequences.

A Manifold and a Singular Variety in Biological System

At the initial stage, the manifold of living creatures is formed. This stage supports the propagation of existing as well the creation of new living creatures. Relations among the species are implanted in each individual and expressed through their interaction. For example, carnivores hunt herbivores. The relationship between carnivores and herbivores, between a pike and a carp, cannot be evaluated unconditionally. The relationship may be assigned a negative value (e.g., from the point of view of killing another creature) as well as a positive value (e.g., from the point of view of sanitation – cleansing the environment of sick specimens that may cause an epidemic).

At the second stage, the manifold of creatures and their interrelations operates in an environment where the creatures' capacity to interact is actually realized. At this stage, the manifold transforms into a singular variety that defines the degree of importance of various creatures within a specific environment from the point of view of their ability to survive. The third stage reveals how well the selected set of living creatures copes (and thus survives) in a given environment. At the fourth stage, the manifold of creatures undergoes a restructuring in the relative proportions of various species (all while continually interacting with the environment). Naturally, there is feedback at work at each stage. The creation of a manifold is the key facet of biological evolution, because it is impossible to determine the future role of a particular creature in different situations, both in space (under different environments) and in time (over long periods of time). Oftentimes the same creatures fulfill a variety of roles depending on the environment. For example, bacteria cause illness as well as provide benefits (e.g. the digestive process). The term virus has a negative connotation because it is associated with disease. But viruses also play a positive role. We know that viruses can cause a recombination of the cell's genetic code in a manner similar to the way a male cell acts upon a female cell. This

kind of recombination can unfold in a very orderly nature and can even lead to transformations that are beneficial in terms of adaptation to a given environment.

As Konstantin Umansky writes (1984),

... one feature shared by all respiratory virus infections is that they are seasonal and correspond to changes in the environment (Fall/Winter and Spring seasons). It is important to note that these outbursts are not "calendar specific" but correspond to the extremum points of the changing environment, i.e., time frames when adaptive reorganization is most urgent, especially so for respiratory organs. These observations lead us to conclude that certain respiratory viruses are factors that partake in the organisms' adaptive acclimatization. (p. 30)

The following well-known case of survival of a certain type of butterfly reveals just how important it is to preserve a manifold in an uncertain and changing environment. In the state of Michigan (USA) and in England there is a kind of butterfly which mutated into white and gray strains. Prior to World War II, the white faction prevailed because the bark on the trees used by this butterfly was light, and predatory birds could not spot them. At the same time, there appeared the more vulnerable gray butterfly. After the War, trees turned gray as a result of unexpected pollution and the gray butterfly turned out to be better adapted. Nonetheless, the white butterfly still made occasional appearance.

The major limitation of biological science is its lack of understanding of the mechanisms of creation of a manifold. Leading theories profess the idea that the creation of something new occurs through the mechanism of random mutations that are caused by such external factors as chemicals, radiation, and viruses. To reiterate, the totality of newly formed creatures forms a manifold, because the value of each cannot be judged from the standpoint of an unforeseeable future. As far as the current situation goes (the current environment), different mutations are characterized by varying degrees of adaptability. The hereditary mechanism works so that the mutations with the greatest chance of survival in a given environment will prevail. A number of biologists (e.g., E.K. Tarasov, 1979) have shown that the probability distribution of mutations following a change in the environment is not totally random, i.e. the process of mutation is somewhat regularized, so that the manifold is, to an extent, ordered. While not denying the enormous role of random mutations, it is reasonable to ask whether this mechanism is always

capable of transforming existing species into new species that incorporate new biological principles. Assuming that random mutations only support small changes, the nascence of new forms of life via continuous, gradual, evolutionary transitions is often topologically impossible.

A feasible hypothesis that addresses this issue is the presence of an *internal mechanism* of change in the structure of the genome that leads to the creation of new forms of organisms. In other words, the genome itself might possess a genetic program to change the “first-level” genetic program which directly encodes the living organism. It is difficult to say how many levels of such genetic programs there are, i.e. programs that change programs that change programs, etc., until we reach the first-level program. In any case, the hypothesis of multilevel genetic programs, even if their number is limited to two, seems reasonable. As I have shown in my book (1997a, Chapter 5), several facts corroborate the forthcoming argument for the existence of an internal mechanism of change. These facts include: the existence of a major group of genes whose role is unclear (the so-called “junk” genes); the existence of regularities in this set of genes; the existence of jumping genes, as discovered by Barbara McClintock; and the ability of a DNA molecule to be an enormously powerful computer (as designed by Leonard Adelman).

INTEGRATION OF MANIFOLD AND SINGULAR VARIETY IN THE TORAH

Preservation of the Manifold of Living Creatures

Whatever guided its authors, the Torah is founded upon the principle of creation and preservation of a manifold comprised of material components and their interrelations. Vital to this manifold are certain classes of objects which fulfill functions required for the operation of other objects in the system. It is quite possible that the authors of the Torah had in mind what today is called the ecological harmony of the world. By this, I mean the interrelationships and mutual dependence among the living organisms.

At first, the value of individual components was not determined, although the manifold as a whole (first six days of creation) was evaluated and declared to be very good (Genesis 1:21). My interpretation of beauty in the Torah as the holistic value of the manifold resembles the interpretation of *inclusive beauty* by Stephen

Ross (1998a):

Beauty here carries a double meaning, inclusive and exclusive. In the exclusive, restricted sense, it pertains to how things appear, their manifestations, and to the joys human beings experience when presented with beautiful things: human bodies, artifacts, natural creatures, and things. Relevant questions here are always what kinds of things are beautiful and what are not, what qualities make something beautiful. In the inclusive sense, beauty pertains to anything worthy of approbation, to human virtues and characters, to nobility and goodness, to hidden things and truths, to the natural and the divine worlds. Almost anything may be regarded as beautiful, and beauty may include almost any quality. In the exclusive sense, it is important to distinguish what is beautiful from what is not. In the inclusive sense, beauty resists binary oppositions, joins disparate and opposing terms. As different as these two meanings may seem today, they have not traditionally been kept distinct. (p.237)

Ross’s statement that “almost anything may be regarded as beautiful” (my italics, *A.K.*) undermines the purity of his concept, because a *strong concept* precludes exceptions. Exceptions ought to be handled either with a broader concept that incorporates the exceptions, or a new concept that explains the exceptions.

Following the creation of the universe, the manifold of created components is transformed into a singular variety where good and bad elements are identified. Interpreting the process of creation as a set of predispositions resolves the proverbial inconsistency, i.e. all objects are good during the first six days of creation, but with time, a split emerges between the good and the bad. Using my terminology, the judgment “everything that God had made, and, behold, it was very good” is based on fully unconditional values. These values are essential from a long-range perspective because the role of any species is unknown in the long term, which makes it crucial to preserve diversity. As the process unfolds and specific circumstances give rise to various degrees of conditionality, rewards and punishments are assigned to different objects (in this case, species). I want to reiterate that the diversity of species has to be preserved as a *strategic constraint*. So, whatever guided the authors of the Torah, this document is founded upon the idea of a developing God who preserves the diversity of species while eliminating certain creatures within a given species.

Now let us take a look at singular variety. Soon after the creation of the universe, God begins to distinguish the values of different living creatures. God implicitly sets a negative valuation to Adam and

Eve after they violate God's restrictions, but this evaluation results in an exile from the Garden of Eden, thereby preserving their lives. This act supports the notion of creation of a singular variety while preserving the manifold. Similar scheme applies to the serpent. For the authors of the Torah, the serpent is the subtlest of all the land animals created by God (Genesis, 3:1) and the serpent creates serious problems for God. It challenges God by seducing Adam and Eve, who were created in the image of God. Nevertheless, God does not erase the serpent as a species but only puts a curse on it by saying, "upon thy belly shalt thou go, and dust shalt thou eat all the days of thy life" (Genesis, 3:14).

The Ark

As the human population exploded God determined that the majority of the people are no good. God became disappointed with people and decided they should be exterminated.

And God saw that the wickedness of man was great in the earth, and that every imagination of the thoughts of his heart was only evil continually.

And it repented the LORD that he had made man on the earth, and it grieved him at his heart.

And the LORD said, I will destroy man whom I have created from the face of the earth; both man, and beast, and the creeping thing, and the fowls of the air; for it repenteth me that I have made them. (Genesis 6:5-7)

Nonetheless God preserves the manifold of living creatures and, in particular, God finds righteous people among the populace, e.g., Noah and his family, Lot and his family. Next, God fine-tunes the singular variety by punishing or even exterminating many living creatures (as was the case with a flood). God employs still other practices to deal with Sodom and Gomorrah (Genesis 14:10) and Admah and Zeboim (Deuteronomy, 29:23).

The legend of Noah clearly illustrates the four steps involved in the integration of a manifold and a singular variety. Following the creation of the universe, a huge manifold of human beings and other living creatures was formed. This manifold, as noted above, had been transformed into a singular variety. While "monitoring" this singular variety, God becomes furious and decides to rectify it by selecting from the manifold only a very limited number of living creatures and exterminating all others, i.e., eliminating the undesirable beings while preserving the manifold comprised of all the species. In other words,

the integration of the manifold and singular variety means the preservation of all creatures as *species* along with the extermination of many *individuals* within each species. To carry out this decision, God chooses righteous people, such as Noah: "Noah found grace in the eyes of the Lord" (Genesis, 7:2). God asks Noah to create an Ark so that Noah, his family, and representatives of all other species will be saved during the flood. 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, of every creeping thing of the earth after his kind, two of every sort shall come unto thee, to keep them alive. (Genesis, 6:19-20)

Later, God again speaks to Noah:

Of every clean beast thou shalt 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)

At first glance the two accounts of life being saved seem contradictory. As the famous writer and scholar Chaim Potok (1989) wrote:

Often I wondered how the biblical editors had regarded the Bible's contradictory material. How had they felt as they read, for example, the two flood stories (the animals brought to the Ark in sevens and in pairs in Genesis 7:2, and the animals brought only in pairs in Genesis 7:9)? I wondered what criteria they had brought to the editing process: I found it all intellectually exhilarating.

In a private conversation, my friend Michael Levins convinced me that there is no contradiction between the two versions of the flood. The first story (Genesis 6:19-20) concerns the *gender of the animals*, i.e., the call to take a pair of each kind of animal - a male and a female (this is actually repeated in the second story, Genesis 7:2). The key aspect of the second story is the *proportions* of different kind of animals (clean and unclean) that have to be saved. As a matter of fact, the commentary to the Torah by Rashi lacks any treatment of these two accounts as contradictory.

In any event, a pair of each kind of living creature, clean or unclean, being saved, creates a manifold (a set comprised of objects indistinguishable in value). The second version, where the number of clean and unclean animals differs, presupposes an implicit difference

in the value of clean and unclean creatures. In either cases, the set of living species as a whole is kept qualitatively intact.

The legend of the Ark gave rise to a lot of literature, including a scientific analysis (Mayr, 1982), and even the story of an attempt to find the Ark on Mount Ararat (Corbin, 1999). The literature also presents comparative analysis of the biblical legend of the ark, the Mesopotamian version of a ship which helps save living creatures during the flood, the character of Noah, etc. The legend of Noah raises at least two questions. First, "Given that God is omniscient, omnipotent, and ubiquitous, how is it that so many bad creatures come into existence?" Secondly, "Why does God choose to destroy the progeny of his own creation rather than simply prevent poor conduct on their part?" The answer to these questions is consistent with the view of God as an absolute, provided God behaves in a "combinational style", i.e. God does know in advance the actions of all subjects and destroys many of them in order to provide a lesson to those who survive. The other conception assumes that God lacks complete knowledge and this creates space for living creatures to exercise *free will* which is not controlled by God. Here, the elimination of the bad specimens can help develop the universe in a positive way. Unfortunately, as the Torah and the history of mankind teach us, the removal of bad beings does not prevent the emergence of other troublesome beings. It is sufficient to mention the case of Sodom and Gomorrah, which occurred after the flood, or the growth of homosexuality in the present times.

So, the creation of a singular variety by God incorporates the diversity of individual creatures and their capacity to perform various tasks. It seems to me that individuals from various "nations" (distinct ethnic identities) differ in the following sense. Each ethnos is composed of individuals with unique mentality. At the same time, there exists in each ethnos a large group of individuals who share similar mentality. This core group of people shapes what is called a "national character." This core could be relatively small, but it is sufficient to preserve the existence and development of a given ethnos. The diversity of individuals within each ethnos creates potential for different kind of conduct under different circumstances, conduct that could be good or bad. *Free will* represents the realization of this potential.

Free Will

Let me clarify the category of *free will*. *Will* is, first of all, the desire of a being to realize its plans in life; hence, *will power* is the measure of this desire. Free will means that a being is capable of adjusting its will power in pursuing its objectives. Lack of free will indicates that will power is fixed, so that any controllable (by the being) change in behavior is ruled out. The last point is important when determining the responsibility a human being bears for his actions. On the one hand, the environment imposes certain restrictions upon an individual - restrictions that are encapsulated in social values (such as thou shall not murder, thou shall not steal, etc.). A given individual may possess other values (perhaps, enjoy killing others), but the liability for one's actions is determined by the individual's capacity to perceive the requirements that are imposed by the environment and to adjust his behavior accordingly. One who is not capable of such adjustment is not held responsible. Indeed, insane people are regarded as not being responsible for their actions precisely because their program of behavior fails to fulfill all or just one of the necessary conditions. The conditions are (1) internalization of external constraints and (2) generation of a proper behavioral response. A given society deems someone a criminal because that individual is considered capable, at least in principle, of altering his conduct according to the dictums of the environment, but fails to do so because his own individual values run contrary to those of society, and it gives him greater satisfaction to fulfill his own values and ignore society's dictates. Punishing the criminal represents the actualization of the potential system of punishment and may prod an individual to curb his own personal values and avoid criminal conduct in the future.

Now I want to elaborate upon the category of *free will* within the framework of the processes (of different types and levels) that govern the behavior of living creatures. First of all, processes differ as to their origin. There are natural processes that are innate, and there are cognitive processes that are acquired throughout one's life. Both types of processes feature different levels of intensity. According to Herbert Simon *behavioral* processes that directly govern one's behavior are denoted as zero-level processes. A first-level process is a process that alters the zero-level process; a second-level process is a process that changes the first-level process, and so on.

Of course, if the process hierarchy is truncated at the first level, and if the first-level process is completely fixed, the zero-level program could also eventually become fully fixed. However, if the hierarchy has at least three levels and if it allows for change-inducing feedback between the various levels, the situation changes dramatically. This hierarchy of processes resembles a system of education: as a result of learning, which is based upon one's own experiences and deliberations as well as those of others, a given-level process induces changes in adjacent-level processes.

In any event, lack of free will results in all kinds of psychological disorders, be it a maniacal pursuit (as manifest in the zero-level program) when one's will power is strong, or complete inability to do anything when will power is weak. In the latter case, any attempt to attain one's goal results in complete physical and mental exhaustion.

Generally speaking, natural processes tend to be more conservative and rigid than cognitive ones, for the former reflect a long history of accumulated experiences of living organisms, acquired through interaction with the environment. Natural programs are largely hereditary and we can observe that many different types of creatures have not perceptibly changed over the millennia.² Cognitive programs, on the other hand, change quite rapidly due to the impact of a fluid, artificial, man-made environment (new kinds of food, tools, weapons, etc). For example, the sensations that we feel when eating are biologically determined and seem to be correlated with our need for different types of foodstuffs. These sensations are not likely to have changed much in the course of human history. Civilization, however, has produced foodstuffs that have a heightened effect on our gustatory sensations, inducing us to eat more than physiologically necessary. The tension between the biologically-determined gustatory sensations and artificially manufactured products causes a full-scale war between intellect and willpower on one side, and biological drives on the other, with the latter often winning over both intellect and willpower. Thus, free will may be viewed as the ability to implement one's zero-level program and to change a program at a given level by altering a higher-level program. The Torah provides examples of free will as exercised by various creatures. Free will with respect to human beings is not mentioned at all in Chapter 1 of Genesis, but judging by the behavior of Adam and Eve, they do possess free will. As far as other creatures are concerned, free will can

even be surmised from the passages that describe the creation of the universe (Chapter 1 of Genesis).

An ingenious interpretation of the Torah imbues plants with free will as well:

And God said, Let the earth bring forth grass, the herb yielding seed, and the fruit tree [emphasized by A.K.] yielding fruit after his kind, whose seed is in itself, upon the earth: and it was so.

And the earth brought forth grass, and herb yielding seed after his kind, and the tree [emphasized by A.K.] yielding fruit, whose seed was in itself, after his kind: and God saw that it was good. (Genesis 1:11-12)

A number of scholars including Or Ahaim, Rumban, and Baal Ahaturim, have pondered the difference between verses 11 and 12 in Genesis 1. God asks for the creation of a fruit tree, and the earth produces just a tree. This disparity can be interpreted as proof that the earth has a *free will*.³

Leon Kass (2003), drawing upon some ideas developed by Robert Sacks (1979), talks about a broad list of entities that, throughout the process of creation, appear to possess free will:

The text speaks twice of each creative act, once to call forth ("Let there be"), once to report the act as performed ("And there was"). Only in the case of the creation of light is the report of the creative act letter-for-letter perfectly identical to the call for the creative act: "Let light be" and "Light be." Only in this case is God's speech precisely and perfectly efficacious in its mode of creative and revealing "letting be." In all other cases, there is a clear difference between command and performance. For example, God asks the earth to "grass grass," but the earth instead "put forth" [totse'] grass (1:11-12)—leading the rabbis long ago to remark that the earth was first in disobedience.

A second example: God, perhaps now mindful of the earth's recalcitrance, later asks the earth to "put forth" [totse'] the terrestrial living creatures (1:24), but it turns out that God has to make" [asah] them Himself (1:25). In fact, resistance to order may be present even earlier: at the very start, after God has fully separated the light from the dark, calling the one Day and the other Night, the text reports that there was evening and there was morning: the separated Day and Night, quite on their own, had drifted partially back together, blurring the boundaries between them. The recalcitrance of matter, like the mischievous propensities of life, promise massive changes, even for God's created order. (pp.49-50)

So, it is possible to explain God's actions as far as the extermination of creatures by imbuing life with free will. However,

such an explanation is cumbersome, for it resorts to an assortment of logical manipulations.⁴

Mistakes versus Unexpected Outcomes

A more elegant approach to God's actions as related to the flood is based on the concept of God as a developing entity who employs a positional style – a style which precludes definitive, fully certain predictions. This style forms the foundation for a possibly incomplete and inconsistent process of creation of predispositions, and this process may be consistent with *unexpected outcomes*. The latter should not be confused with *mistakes*, because “mistake” implies that the creator possesses adequate knowledge of the process, but mishandles its implementation (like a mistake in spelling). Moreover, the idea of God as a developing entity is consistent with such attributes as omnipotent, omniscient, etc., in the following sense: God is able to recognize unexpected outcomes, evaluate them, and on the basis of the created *predisposition*, channel unexpected results along a desirable course.

Let me elaborate upon the story of the flood in the light of the aforementioned approach. Uncovering “wickedness” of many living creatures, including human beings, may represent an *unexpected outcome* for God. God *repents* the creation of Man and animals by unleashing a flood (Genesis, 6:6-7). God bears down upon the life God has created with all of God's destructive power, while channeling God's constructive force to save the righteous Noah and his family and as well as the animals (Genesis, 6:8, 17-22, 7:1-24, 1-19). The destruction inflicted upon the world by God was so great (*an unexpected outcome*) that it made God think of what was accomplished; it made God look deeper into the motives underlying human behavior; and it caused God to change 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 man's heart is evil from his youth; neither will I again smite any more every thing living, as I have done. (Genesis, 8:21)

To make good on God's promise, God establishes a covenant with Noah and his descendants (Genesis, 9: 8-17).

The point I wish to emphasize is that the authors of the Torah did not think of God's fairness as an immutable trait that is *fully* instilled in God. Initially, God is less fair, or, more precisely, God's actions

are more arbitrary, because God does not always realize own limitations and the possible consequences of own actions. God's moral stature grows as God accumulates experience and becomes conscious of own actions.

The flood can be viewed as a result of God's limitedness in foreseeing the future and this brings up a very important problem: “Are limitations intrinsic to God, or are they set by God?”

Neil Gillman (2000) resolved this problem in the following passage:

God accepts Moses' arguments and renounces the punishment (Exodus 32:14). So much for God's vaunted omnipotence! De jure, God has all the power, but de facto, that power is limited by God's public image and by promises God has freely made. This God seems to be a limited God, not by God's own essence but rather by specific extrinsic factors. This is not an intrinsically limited God but rather a self-limiting God. (p.39)

In my opinion God is limited by own essence. Indeed, if God could foresee the consequences of own work for an indefinite period of time, God would not allow the destruction of objects that have already been created (not only of Man, but also of animals and vegetation). The repentance of God over the flood attests to this, and it allows one to surmise that “specific extrinsic factors” are outweighed by the disaster that has occurred. God's inability to completely foresee the future can result from a number of other limitations, such as the speed at which the process of development can be “simulated”. Consequences may be impossible to predict because they are not known until the process reaches a certain point (at which the influence of the initial steps is no longer exerted).

The Torah explicitly affirms God's wish to expand own sphere of influence. It is therefore necessary to simulate development over some fixed period of time and risk the possibility of unforeseen outcomes. The creation of a predisposition for future development allows one to reduce risk and make the necessary corrections as the process unfolds. This practice can be interpreted as God's ability to eliminate undesirable, *unexpected outcomes* rather than God correcting own *mistakes*. As noted above, the notions of *mistake* and *unexpected outcome* are quite different and this is where I differ with a number of scholars who interpret some of God's actions as mistakes rather than unexpected outcomes. Allen Dershowitz's thoughts regarding the

flood (2000) is an example of the interpretation of the flood as a mistake.

... the God of the Jewish Bible is a learning God as well as a teaching God, and perhaps He was wrong in flooding the world. He seemed to have acknowledged His error by "repenting" his decision to destroy the world just as He had earlier "repented" His decision to create man. When God made His covenant with Noah after the flood, He promised never again to bring any floods to destroy the world. Yet He knew that people would turn bad again. Indeed, He expressly promises never to "curse the soil again on humankind's account, since what the human heart forms is evil from its youth"(8:21). Nevertheless, He absolutely precluded Him-self from bringing another flood. This certainty suggests that God may have realized He made a mistake, one He did not want to repeat. When God saw how evil man could be, He had a shock of self-realization: He had created this evil creature in His very own image, so maybe He too has the capacity to do evil—a capacity He must learn to control. Like a person who understands that he needs to make a public promise in order to control his destructive instinct, God bound Himself never to flood the earth again. Even God needs rules. (pp. 65-66)

¹ Here I will provide a simple example that illustrates the accepted mathematical terminology of a manifold and a singular variety. Let us take a circle. Each point on the circumference has a neighborhood that is typically equivalent (homeomorphic) to the same topological structure, namely an open interval on a straight line. Structures of this type will be called a manifold. Now take a curve shaped like a figure eight (8). It has one singular point (point of self-intersection) the neighborhood of which is topologically different from the neighborhoods of other points. This type of structure will be called singular variety. We can think of the figure 8 as being derived from a circle by the following process:



² This is the reason that some theatre directors dress their actors who play ancient Greeks in modern-day costumes, thus emphasizing the unchanging nature of human beings.

³ I am grateful to Ilya Mayzel who called my attention to the above concept.

⁴ This situation reminds me of the interpretation of the planetary system by Claudius Ptolomaeus (2d century A.D.) as a geocentric system and by Nicolaus Copernicus (1473-1543) as a heliocentric system. Both interpretations allow for the calculation of orbits, but the former does so in a cumbersome way while latter in an elegant way.

Chapter Seven

Manifold and Singular Variety

(continued)

Let us proceed with our analysis of the manifold and its integration with singular variety as it evolved following the first six days of creation. This process entails “material” components as well as their interrelations. One important derivative of this process is the formation and integration of numerous nations.

MANIFOLD AND SINGULAR VARIETY OF NATIONS

As the human race evolves, it undergoes differentiation as various nations are formed. Abraham witnessed different nations inhabiting the earth. Nations with which Abraham came in contact include Chaldeans (Genesis, 11:31), Canaanites (Genesis, 12:6), Egyptians (Genesis, 12:12), Perizzetes (Genesis, 13:7), Amorites (Genesis, 14:13), and others. Meanwhile, God continues to expand the diversity of nations and tells Abraham that many new nations will spring from his descendants:

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 Abraham, but thy name shall be Abraham; for a father of many nations have I made thee. (Genesis, 17:4-5)

Subsequently, this manifold of nations is transformed to a singular variety when God assigns priorities to certain nations. These singular points are the *great nations* that descend from Abraham. God vows that the Jewish nation will have as many people as there is dust of the earth (Genesis, 13:16). Along the same lines,

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)

The authors of the Torah also point out that God promises Abraham to make a great nation from the descendants of Ishmael, Abraham's son, 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)

The creation of different nations is accompanied by the advent of a still more important entity: *the chosen people*, taken from the set of singular points that are the great nations. It is written in the Torah,

Now the Lord had said unto Abraham, 'Get thee out of thy country, and from thy kindred, and from thy father's house, unto a land that I will show 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)

In another part of the Torah, Moses speaks to the Jews,

For thou art a 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)

It is notable that God's promise to make the descendants of Abraham the chosen people does not imply the *most populous* nation. 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 establishment of the chosen people amplifies singular variety in the sense of extending the range of priorities. However the chosen people do not represent the ruling class. There is nothing in the Torah about the chosen people becoming rulers of the world and 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 that has been the subject of extensive discussion. I just want to emphasize the fact that Jews were not meant to become the rulers of the world.¹ According to the Torah, the Jews play a special role in the singular

variety of nations: they influence other nations, because they are an example of a righteous nation.

But ye that did cleave unto the Lord your God are alive every one of you this day. Behold, I have taught you statutes and ordinances, even as the LORD my God commanded me, that ye should do so in the midst of the land whither ye go in to possess it. Observe therefore and do them; for this is your wisdom and your understanding in the sight of the peoples, that, when they hear all these statutes, shall say: 'Surely this great nation is a wise and understanding people'

For what great nation is there, that hath God so nigh unto them, as the Lord our God is whensoever we call upon Him? And what great nation is there, that hath statutes and ordinances so righteous as all this law, which I set before you this day? Only take heed to thyself, and keep thy soul diligently, lest thou forget the things which thine eyes saw, and lest they depart from thy heart all the days of thy life; but make them known unto thy children and thy children's children. (Deuteronomy 4:4-9)

I have my doubts as to this role assigned to the Jewish people. In general terms, there is a manifold of different ethnic groups. A given ethnos could be defined by its biological attributes expressed in the *mentality* of its people; the *culture* of an ethnos derives, first and foremost, from the mentality of its people (Lumsden, C., and E. Wilson, 1981). This hypothesis gains credibility if we compare the leading religions practiced by various ethnic groups and presume that a given religion is representative of a particular culture. History reveals that people choose (except, of course, where religion is imposed by force) a religion and tend to keep it. One of the best examples is Judaism. It is highly advantageous for the Jews to convert to the prevailing religion of the host country, but the most influential Jews – the core of the ethnos – shun doing so. It seems to me that their mentality precludes them from changing their religion. Analogous situations took place with the arrival of Protestantism in Catholic countries, etc.

The emergence of the political institution of a *state* (country) promotes the preservation and development of a given ethnos. The existence of many *independent, sovereign* countries serves to reinforce this manifold of ethnic groups. This *manifold* does not rule out its transformation into a singular variety where certain states possess greater power and play a greater role at any particular moment. This results in a paradoxical situation where a *manifold* may actually transform into an unstable singular variety and destroy or shrink itself. As countries seek to improve their lot, certain countries

(perhaps, due to their success) begin to fancy that they are exclusive, with all the ensuing consequences, including the desire to conquer the world and impose what is believed to be the one legitimate world order. The existence of large countries with aggressive ideologies may threaten the manifold itself (to say nothing of its growth). What relational devices have been introduced to regulate the interactions among nations? In principle, the moral code bestowed upon Noah can be regarded as applicable to all nations, because it was established prior to Abraham creating a special relationship with God (which can be viewed as the ascent of Jews as a separate group of people. See more in the beginning of Chapter 5.) Since the aforementioned moral code was given through the Torah, it is not accepted by people who do not follow the Torah. Note also that the “preservation” of mankind could be achieved via its uniformity (cosmopolitanism), i.e., the intermixing of all ethnic groups into a single ethnicity. For better or for worse, cosmopolitanism did not take root as a way to integrate the human race (perhaps because this idea is related to the eradication of the diversity of nations). The leading path of human history, and perhaps one with deep biological roots, has witnessed the perpetuation of the manifold of ethnic groups.

Safeguarding diversity represents a very complex problem, and the means used to achieve this goal hinge on the *compatibility* among the various nations. Before I proceed, I would like to briefly digress on the concept of compatibility, which has not been duly explored as a general systems phenomenon. It was as recent as the twentieth century that major theoretical and practical strides had been made in the field of compatibility in medicine, notably in the classification of blood types so critical for blood transfusion, organ transplant, etc.

Organ transplant (including heart transplant) is substantially more complicated than transfusion. The heart transplant operation is fascinating not so much for its technical merits, but because of the methodology that it employs. The latter embodies a two-step procedure. The first step is donor selection, that is, finding a heart compatible with the host. Since the donor heart may still be rejected by the host organism, the next step is to administer drugs to attune the transplanted organ to the host.

These developments in the field of medicine are informative when dealing with the issue of compatibility of various ethnic groups. Armed with the systems vision of *compatibility*, let us turn our

attention to the complementarity of the various ethnic groups living together in one country. Complementarity is a *two-stage* process: finding the proper “donor” and suppressing rejection-inducing mechanisms. It is essential to distinguish ethnic conflicts that arise from the non-complementarity of ethnic groups from those that result from the denial of ethnic groups that do qualify as donors.

First of all, *non-complementarity* should not be confused with *hostility* that one ethnic group may feel for another. In fact, non-complementarity of two ethnic groups does not necessarily entail mutual hostility (although there is usually no love lost between the two groups). The extent to which members of one ethnic group are non-complimentary, or hostile, toward other ethnic groups varies. While non-complementarity and hostility are correlated, ways of resolving ethnic conflicts are many and diverse. Once non-complementarity of certain ethnic groups is recognized, we can work to attenuate hostility to the level of non-acceptance, opting for a peaceful separation instead of perpetual confrontation. By the same token, an open dialogue may help ease possible tensions arising between complementary ethnic groups. Hostility on the part of the dominant ethnic group toward a minority spans a wide range of attitudes: from the desire to help the incompatible group leave the country with as little suffering as possible; to imposing limitations on the locales where the minority is allowed to live and the occupations the minority is allowed to practice; to a policy of complete extermination. While the liberal perspective recognizes ethnic diversity and the need for the state to protect various ethnic groups, it tends to spotlight traits that are common to all of humanity and to attribute disparities to socio-cultural circumstances. As a result, the liberal approach presumes that there is always a way to make all ethnic groups complementary. Ignoring key differences among ethnic groups only impedes the very formidable task of creating an environment that is conducive to the development and subsequent integration of these groups. The conservative perspective, on the other hand, acknowledges the existence of traits that are common to all humanity, but it underscores distinctions and alleges that complementarity is not always attainable. For instance, the conservative approach may maintain that incompatible ethnic groups should not be allowed to live under one “roof”. Under certain historical circumstances, this emphasis on ethnic differences may

ultimately lead to a value judgment (ranking of various ethnic groups), thus transforming the conservative view into a reactionary view characterized by racism, chauvinism, a call for the subjugation of all ethnic groups to one supreme ethnic group, and ultimately the desire to exterminate the malignant ethnic groups.

Throughout history, *incompatibility* between nations prevails; *compatibility* is rare. As a result, *military strength* is the major lever that safeguards nations. This leads us to the problem of preservation of the Jewish ethnos. I believe that statehood is apparently a necessary (but perhaps insufficient) condition for a stable, long-term protection of an ethnic community inasmuch as it secures the culture (“genetic code”) of society and all the ethnic institutions that stem from it. Lack of statehood could, in certain critical situations, turn out to be fatal to a particular ethnic group, especially with the development of inexpensive means of mass destruction and the imbalance between the strength of armed killers and that of their defenseless victims.

History reveals that without statehood and without their own territory, Jews have repeatedly become targets of oppression ranging from attempts at direct physical annihilation, which have been at times very successful, to expulsion from the host country. The Torah tells a similar story. At first, some rulers invite the Jews to live in their land and create favorable conditions for the Jews, but when the Jews become strong and start to play a prominent role, at best, they are asked to leave and, at worst, attempts are made to exterminate them. Thus, "Abraham dwelt in the land of the Philistines many years as a stranger" (Genesis, 21:34). He lived there in peace under King Abimelech. Then, in the days of famine, Abraham's son, Isaac, came to the land of the Philistines. He was received joyously. Isaac flourished in his affairs.

And Abimelech said into Isaac: 'Go from us; for thou art much mightier than we.' And Isaac departed thence. . . (Genesis, 26:13-17)

The story of Joseph is another example. Joseph's fame is great, and he contributes much to the prosperity of Egypt. When Joseph informs the Pharaoh that his father and brothers have come to Egypt, the Pharaoh welcomes them. The end of this story is well-known. Threatened with annihilation, the Jews succeed in leaving Egypt, overcoming enormous hardships. The "Joseph Model," as Boris Moisheson termed it, is instructive through and through. It has been replayed frequently - just in the 20th century, in Germany,

USSR, and Poland. Who knows where it will flare up next?

There are many reasons for anti-Semitic sentiments, including envy and religion differences. However, it seems to me that the *incompatibility* of Jews with many other ethnic groups is the primary reason for anti-Semitism. Interestingly, the aforementioned feature of the Jewish mentality (e.g., the parity of God and Man), along with other peculiar traits (e.g., there is not a single case in the Torah when a Jew sacrifices own life in the name of some idea) are particularly bothersome to the intellectuals of many countries with a different mentality. This conflict is aggravated in countries that have a Jewish diaspora. There exist certain important domains in society which, if penetrated by foreign bodies with a radically different system of values, pose a grave danger to the “natives”. This stems from the fact that foreigners will be in a position to alter the system of values of the country as a whole (the values of its dominant ethnic group), thereby steering it astray from its indigenous, or “true”, course. These important social spheres include ideology, art, basic science, mass media, education, politics, military, economic leadership, etc. – all areas that are involved in defining society's *genetic code*. The infiltration of the Jews into these spheres is considered most ruinous to the development of the native ethnos, for the Jewish system of values may disrupt native genetic code.

These ideas suggest that the Jews will, for various reasons, be incompatible with a great number of peoples. Understanding the peculiarities of Jewish mentality can help us realize why the creation of Jewish enclaves in many countries is fraught with danger. One well-known solution to preserving the Jews as an ethnic group is to have both a Jewish state and a Jewish diaspora, with the latter settling in countries that are relatively more compatible with the Jews. I share the opinion of those who believe that a Jewish state is needed. I also agree with those who realized as early as the end of the nineteenth century that Jewish state is needed immediately. There was a time when God promised Abraham the Land of Canaan for the great nation that would spring from him, but God said that the time had not come yet, that 300 years was needed "for the iniquity of the Amorites is not yet full" (Genesis, 15:16). The Holocaust demonstrated the validity of the Zionist perspective that the time for the founding of a Jewish state had arrived. I anticipate the question from a perplexed reader: "What is all this discussion about the

creation of Jewish state, since such a state, namely Israel, already exists?" I share the view of those who see Israel as the best solution to this challenge at the present time. However, Israel is not the only possible solution to the problem of Jewish statehood.

Establishing a Jewish state

The establishment of a Jewish state could proceed along at least three lines with a view toward the *past*, the *present*, or the *future*.

With a view to the *past*, the establishment of a Jewish state is tied to Israel, the land of our ancestors, the *Promised Land*. The Torah states that the Jewish people ought to have a land of their own; God promises this much and leads them to the land of Canaan:

And I appeared unto Abraham, unto Isaac, and unto Jacob, by the name of God Almighty, but by my name JEHOVAH was I not known to them. And I have also established my covenant with them, to give them the land of Canaan, the land of their pilgrimage, wherein they were strangers. And I have also heard the groaning of the children of Israel, whom the Egyptians keep in bondage; and I have remembered my covenant. (Exodus 6:3-5) (See also Exodus 3:9; Number 34:1-3; Deuteronomy 6:3.)

This great idea played a pivotal role in the history of the Jews and it captured the imagination of millions of Jews in modern times. In 1948 Israel was founded, and in a short period of time, it established a democratic system in spite of a hostile environment and frequent wars; Israel introduced its own agriculture and industry; and it put together one of the best armies in the world. All this is proof that the potential of Israel is so great that it is able to partake in areas of human activity that have for ages been considered foreign to the Jewish people.

Enormous difficulties were encountered en route to statehood. The country was founded in a hostile Arab environment and even if Israel gathered all the Jews in the world, it would be hard-pressed to produce modern weapons in quantities sufficient to rebuff Arab countries that are supplied by militarily advanced countries. The small size of its territory makes Israel even more vulnerable.

Arab countries have a culture that predisposes them to aggression, authoritarian regimes, and awkward economic development. After all, their economic prosperity is ethereal, for it hinges on the abundance of one natural resource: oil.² Israel, on the other hand, possesses a culture predisposed towards peaceful foreign policy, democracy, and

democracy's counterpart - effective economic development. As a result, Israel will, for a long time to come, represent an unsightly model for the Arab world. At the same time, in the age of advanced weapon systems, the military dependence of Israel on a greater power will remain strong. However, superpowers have their own individual interests and may at some point choose to sacrifice their satellites.

When the Jewish state existed two thousand years ago, it was preserved by military strength. But it proved insufficient against a mighty Roman empire, and the Jewish state was destroyed. It remained in that condition for about 2000 years. There are no guaranties that this cannot happen again.

With an eye on the *present*, a Jewish state could be created with the purchase of land. (Plans were made to buy land in Kenya or Canada, or elsewhere.) Another way to create a Jewish state is to form a Jewish enclave in a large country, but such autonomous national entities are unstable. The dominant group of a large country tends to develop a culture innate to that group. If another ethnic group that has its own history, and especially its own land, happens for some reason to be situated within the territory of a large country, the smaller group will struggle to preserve its own culture and eventually secede into an independent state. A successful example of such break up is Norway's separation from Sweden. However, autonomous national entities always hang by a thread, because the governing nation tries to assimilate them for the purpose of preventing separatist movements, as well as for the purpose of controlling them (uniformity of language and culture, generally speaking, serve this purpose). For example, even if the Soviet Jews had received Crimea, which was part of the Soviet Union, instead of Birobidzhan, life there would be unbearable and this autonomy could have been revoked at any time.

So, solving the problem of Jewish statehood by means of Jewish autonomy within the borders of an existing great power is unacceptable for the aforementioned reasons. Where can one look to find land for a new state when all the land is already taken by different countries?³

With a view toward the *future*, a Jewish state could be founded using pioneering ideas based on innovative technologies. For example, a state could be established on floating artificial islands that are supported by inexpensive thermonuclear energy and that draw on

unlimited water resources. In 1932, for the first time, a real plan (not a fantasy) was hatched to build an artificial island for the refueling of airplanes flying over the Atlantic Ocean. In 1940 the British Air force began to build open platforms in the sea, not so far from the outfall of the Thames. These platforms were used for anti-aircraft installations to defend England from German bombers. In 1967 the principality of *Sealand* was formed on one of these platforms. Terry Roy Baits, a major of the English army, decided to settle on this platform with his family. He announced that this island was a state and he was its prince. He supplemented his claims with such accessories of a viable state as radio broadcasting, stamps, etc. Unfortunately, this state was involved in some scandalous affairs, but it continues to exist to this day. An interested reader will find extensive literature about this island on the Internet under the rubric *Sealand*. Today, artificial islands built for oil extraction are common in the open sea. In 1957 the famous American writer Ayn Rand published a novel titled *Atlas Shrugged*. In this novel she describes a utopian country free of all flaws of a modern society. Erwin Strauss from Virginia decided to design such a country on atolls located 260 miles from the South Pacific island kingdom of Tonga in Western Polynesia. He describes this plan in his book "How to Start a New Country?" (1985). *The New York Times Magazine* (08/09/98, pp.29-30) informed its readers that the Millennial Project, the New Island Creation Consortium under the general name *Oceania*, has tried to implement the idea of a new society on artificial islands. Lazarus Long from Oklahoma is trying to create a new society on an artificial island located in the Caribbean Sea 120 miles from the Cayman Islands. He founded an offshore company that agreed to invest three million dollars to build a platform in Florida and transport it to the intended location. According to an announcement found on the Internet, a platform had been moved, and its development continues to progress.

An article called "Strange Islands" by Lidia Loevski appeared in the Israeli journal *Vesti (News)* on April 25, 1999. This article describes the activities of Yry Bak, a prominent Israeli designer who designed an artificial island. It is a floating platform with a foundation constructed of strong tubular parts. The infrastructure inside the tubes supports the above-water sections of the island. The platform itself could be located any distance from shore on the sea surface,

and it does not interfere with the currents, nor with the local wind patterns. Certainly, the implementation of this project requires a substantial amount of investment. But, is this investment comparable to Israeli military expenditures? There are some companies in Japan and in Holland that are seriously considering making investments in this artificial island project. The outrageous idea to build a Jewish state on artificial islands draws on the Jewish pioneering spirit and might be attractive for a number of Jews who have actively joined the modern civilization. Recall that the Jewish pioneering spirit has a tradition throughout Jewish history, and it goes back perhaps even farther than the idea of the Promised Land. History of the Jews reveals (of course, this is a hypothesis) that the Jews, as a biological entity, have been mediums of innovative ideas, even though the Torah calls for great caution in developing technological innovations. Boris Moisheson's book (2001) provides evidence for the innovative implementation of new technological ideas by the Jews.

I have briefly discussed arguments for and against the various approaches to the creation of a Jewish state. The plan to establish a Jewish state based on a view that looks to the *past* succeeded because it was rooted in a very powerful *tradition* and, no less important, because it was "technically" *feasible*. The view that looks to the *present* apparently failed, because it lacks a concrete idea that is rooted either in the past or looks toward the future (but still connected with the past), as well as because of the perils of settling in countries in which the Jewish enclave can be shut down. The view toward the *future*, even if it has the potential to survive from the point of view of tradition, must first become technically feasible. Thus, floating islands in open waters require cheap energy in great quantities. Controlled thermonuclear fusion is one of the most promising sources of inexhaustible cheap energy from independent (in the sense that they do not belong to anybody) water sources. But, alas, how many years will it take until this stratagem is practical! So, the first path of creation of a Jewish state, the one that was realized, remains the most realistic one, and consequently major effort has to be undertaken to support Israel. At the same time, we have to keep in mind the alternatives outlined above and commit some resources to develop new projects. It is quite possible that such projects may impact the current situation of the Jewish state.

The role of Diaspora

Safeguarding the manifold of ethnic groups does not spell out how these groups ought to be organized. The preservation of the Jewish race raises the issue of its spatial "allocation". In the extreme cases, an ethnic group can either be scattered throughout the world or concentrated in one area. Having a home base does not exclude the possibility of living in other areas. The key is what proportion of the population ought to live in the principal land and what proportion in the peripheries. The problem of Jewish state versus Diaspora defies a simple solution, for neither alternative can be proved superior. I do not know the critical size of the territory or the size of the population that would effectively reduce the role of the diaspora to zero, but, in principle, the presence of statehood for a given ethnic group does not imply that "all eggs should be put in one basket."

I realize that advocating the need for a diaspora is subject to valid criticism. Anti-Semitic sentiments pose grave danger for the Jews living in foreign countries, especially so when host countries experience turmoil and look for a scapegoat to appease the native population. Such methods of appeasement can take place in any country, e.g., attempts to solve this problem in the Soviet Union had led to great many tragedies. Throughout Soviet history, Jews were persecuted under various banners: the struggle with the Trotskijtes,⁴ cosmopolitanism, and Zionism.

Still, I would argue in favor of combining statehood with diaspora, particularly if the territory of the state is not large and it is surrounded by a very hostile environment. One argument is the financial help extended to the Jewish state by Jews living in wealthy countries as well as the influence of Jewish lobbies in establishing friendly relations with Israel. For instance, Theodor Mommsen (1867) emphasized that a key strength of the Judea was that the Jews had, along with their own state, major settlements in the most advanced cities of the day, namely Alexandria and Rome.

There is certainly the danger of Jews in the diaspora assimilating into the native population, but this trend is not so clear-cut. Assimilation of one group is accompanied by the strengthening of the sense of ethnic identity in another, and this has come to the fore with the founding of the Jewish state. Of course the ratio between these two groups varies from country to country. Perhaps, in free

countries where Jews are not afraid to show their ethnic origin, those who reject assimilation and adhere to their ethnic background comprise the greater share of the Jewish population. One observes this trend in the USA where, in the past 30 years, growing interest on the part of Jewish youth in Judaism is hardly in doubt.

I call the latter phenomenon the "Reverse Pyramid Effect." It is usually thought that the older generation, grandfathers and grandmothers, are the most conservative and are the ones who maintain the religion and culture of their people. Their children are less inclined toward religion, and the grandchildren become complete atheist "without clan or tribe." But we also observe contrary trends in the diaspora. The present-day grandfathers, having grown up under the banner of assimilation and having been pushed by the anti-Semitism of the host nation, try to forget their Jewish roots and oftentimes renounce the ideas of their Jewish-minded parents. On the other hand, the next generation, their children, are convinced that escaping their Jewishness will not solve the problem but they still entertain hopes of adapting to their surroundings along the same lines as their parents. Now, the grandchildren largely understand the delusional nature of such a mindset. Thus, the pyramid is turned upside down, and its pinnacle may once again turn toward Jewishness.

Generalizing the history of the Jewish tribe in the diaspora suggests four possible combinations generated by two factors: the degree of hostility of the environment towards the Jews and the size of the Jewish population. In simple terms, the degree of hostility can be denoted as being either strong or weak, and the size of the population as being either sufficient or insufficient in having the critical mass to preserve the Jewish identity. In a favorable environment, but with the size of the population small (and in a sense lacking the critical mass needed to maintain distinct identity) Jews tend to dissolve among the native peoples. This was the fate of old Jewish settlements in China. Within a hostile environment, Jews in sufficient numbers can preserve their ethnicity for a limited period of time. An example of this are the Jews of Spain who managed to survive as Marranos during the time of the Inquisition. Perhaps, this is also true of Russian Jews, especially if we account for the emigration of Jews who are active in preserving their Jewish identity. The combination of favorable conditions and sufficient size is

evident in Jewish communities in England, the USA, and some Latin American countries. Nevertheless, the historical perspective of this experience is too narrow to make any definite conclusions regarding the prospects of the Jews in these countries. The other extreme - hostile environments in conjunction with small population -has practically led to the vanishing of the Jews. Modern day Poland is an example of this situation.

The above considerations have lead me to conclude that the Jewish problem could be resolved through a combination of a Jewish state and diaspora. This approach defies the sentiments of Jews who prefer to give up the idea of an independent Jewish state and remain only as an independent ethnic group that lives in foreign countries. Certainly, my argument in support of combining a Jewish state with diaspora is inadvertently colored by the personal desire to justify my admiration of Israel and my own decision to live in the diaspora.

¹ It seems to me that the idea of subjugation is, generally speaking, foreign to the Jewish people. As I have said, the relationship between God and a Jew is predicated upon parity.

Relations between a monarch and the populace can be used to illustrate the above statement at the societal level. The institution of monarchy is oftentimes associated with a singular point which transforms the social manifold into a singular variety. When the Torah discusses the problem of finding the king for the future Jewish state, it emphasizes the need to prevent the king from usurping the power and to limit the king as much as possible. (See Deuteronomy, 17:14-20.)

² In his book (1966) Simon Kuznets excludes Arab countries from his analysis. While many of these countries have high GNP, their development hinges on a single product and therefore does not satisfy the requirements of modern economic growth.

³ This reminds me of an old joke about a Jew who plans to emigrate from the Soviet Union. He searches the table globe trying to find a good country to settle in. He finds faults with all countries, so he asks his friend if he has another globe.

⁴ Boris Moisheson told me in a private conversation that based on the analysis of the documents from the thirties, in his opinion (which I share), the term Trotskijte was, at the time, associated with the Jews.

Conclusion

In conclusion I will review the answers to the *18 questions* posed in the *Introduction*. These questions were formulated in a way that retraces the development of the Torah. In the synopsis that follows, the sequence of the original questions is rearranged to reflect the “importance” of the questions.

First, let me make some preliminary remarks. The Torah is a great amalgam of myths, legends, and historical events. Naturally the creationist approach expressed in the Torah stands in opposition to the scientific theories of development of the universe encapsulated by the concept of the Big Bang and evolutionary theory. However, if treated as two modes of representation of a system, the two approaches could be viewed as complementary. This is analogous to the explanation of planetary motion - as a system of differential equations (which resembles a scientific theory), or on the basis of the extremal principle that seems associated with God. This approach answers the question “(1) Could the evolutionist and creationist approaches to the development of the Universe be **complimentary**?” Analysis of the Torah reveals that some myths contained in it are reflections of very old myths, and some are reflections of relatively new myths. This may help us understand the reason the Torah contains **two versions** of creation of the universe and of living creatures (respectively Chapter 1 and 2 in *Genesis*, the first book of the Torah). Question “(10) Why is it stated in Chapter 1 of Genesis that God created Man and Woman simultaneously, but in Chapter 2 it states that God created **Woman from Man**?” The second part of this question “Why did God create Woman from Man?” is being debated to this day. It seems that the current strides in evolutionary theory allow us to bypass this discussion. By analogy, the simple creatures were asexual and multiplied by fragmentation or

specialized reproductive cells, such as spores. Later on there appeared two kinds of specialized reproductive cells – male and female, but they were housed in a single body, as is the case with hermaphrodites. (e.g. African snails) Over the course of evolution, there appeared specialized bodies - male and female sex - that host only one kind of cell respectively.

Let me now discuss briefly the key issues raised in the *18 Questions*.

The first set of pivotal ideas

In my opinion, the major idea of the Torah is encapsulated in the following question: “(12) Why is God willing to engage in a *struggle* with a Man (Jacob) and accept *criticism* from a Man (Moses)?” The answer to this question is predicated upon *parity* of God and Man. I intentionally use capital letters for God and Man to emphasize their *parity*. The parity is formally reinforced by the *covenant* between God and Abraham and by certain actions, e.g. the struggle between God and Jacob and the criticism of God by Moses.

To the best of my knowledge, the Jewish religion is the *one* religion that is based on the idea of parity between God and Man. On the one hand, this is a consequence of Jewish mentality, rooted in biology, in the attitude of an animal to the leader of the group. These origins reflect the degree of subordination of an animal to its leader or, respectively, of a human being to authority. On the other hand, this personality trait drives the behavior of influential Jews (I mean, the critical core of the people) and predisposes them to challenge authority. It is not by accident that there is a disproportionately high number of innovators among Jews relative to the size of the population.

This makes me believe in the wisdom of introducing some modifications into Jewish religious rituals. Today, it is typical of many denominations of the Jewish religion to exceedingly praise God during a prayer, while underplaying the role of Man's positive actions. It seems to me that it might be a good idea for the prayer to pay more attention to the parity between God and Man, praise both of them and thank both of them for their good deeds. When I ask myself, “Why do I think that I am a Jew?” the answer is evident to me: “I am, first and foremost, not afraid to challenge authority!” Certainly, in scholarly matters, I have *respect* for acknowledged authority, but I do not *idolize* it. When I ask myself: “Why I don't belong to a synagogue when I fully recognize its great role in

integrating the Jewish community?” the answer is evident to me: “I cannot accept the disproportional praising of God!”

The second set of pivotal ideas

These ideas probe the nature of God and Man and help clarify the statement regarding parity. I elaborated upon Vera Ulea's concept of God as a **creator** rather than a **wizard**, as well as upon the idea, borrowed from *Process Theology*, of God as a mutable, evolving entity. Here I shall also try to answer questions 6) and 7). “(6) Is God an entity that has **feelings**, or does God make only **rational** decisions?” This question is addressed based on the view of a complex living being as an amalgam of rational thinking and feelings; this allows one to combine decision making methods that require relatively long and short periods of time respectively. The answer to question “(7) Is God an entity that has **gender** or is God asexual?” is based on the idea that sexuality is irrelevant to God because sexuality is applicable only to entities that reproduce; God of the Torah is not an entity that multiplies. The Jewish religion, as expressed in the Torah, assumes God and the living creatures encompass the unity of good and evil, as opposed to many other religions that compartmentalize good and evil within different entities. The unity in the Jewish faith helps avoid the temptation to achieve ultimate happiness by exterminating the embodiment of evil. This approach to good and evil also provides clues to question “(14) Do **good** and **evil** coexist in God?” The limitations of God motivate God to create *amplifiers* of God's own strength. This helps explain why God created human beings in own image and why God *prevents* them from self-destruction. Being creative entities human beings aim for development (survival is merely a necessary condition) and try to create beings more sophisticated than they themselves are. This addresses question “(11) Are human beings the **pinnacle** of the creative universe?” With development comes realization that innovations created by the human race could pose grave danger. I want to reiterate that the story of the *Tree of Knowledge* is very profound. The danger of a Man being acquainted with knowledge stems from the discrepancy between the negative unexpected outcomes of human activities and Man's lack of ability to remedy these negative outcomes.¹ The Torah demonstrates a profound understanding of the *danger of creation of novelties* by ordinary people. On this basis I developed a 2x2 matrix that juxtaposes the source of ideas for novelties (God or Man) with the

entity that implements these ideas (God or Man). The matrix reveals that a positive attitude to novelties is typical for novelties that originate with God even if implemented by Man. We can speculate that the leading role of God in innovating is coupled with the role of human beings who understand God's ideas and can implement them properly. It seems such people are exceptional in the eyes of God. The Torah expresses predominantly negative attitude to innovations that originate with Man and are implemented by Man. Such a cautious attitude to Man's innovations is very difficult to put in practice. On the one hand, in order to save itself from destruction (epidemics, famine, cosmic catastrophes, etc.) mankind tries to develop ever more sophisticated "instruments". On the other hand, the creation of these instruments is fraught with danger coming from the hidden immanent forces that can destroy mankind. It seems that mankind is trapped between Scylla and Charybdis! "You fall into Scylla in seeking to avoid Charybdis" (Bartlett's Familiar Quotations). The above discussion informs question "13) Why does God forbid Adam and Eve from eating from the **Tree of Knowledge**?"

The third pivotal set of ideas

This set of ideas derives from my *concept of indeterminism*. The key element of this concept is the nature of the *program* that transforms inputs into outputs. A deterministic program is *unavoidable*; it does not depend of whether or not it is complete and consistent, nor, on the degree of certainty of the output. An indeterministic program is avoidable. In the general case, it assumes incompleteness and inconsistency and, ultimately, the uncertainty of the outputs. I assume that the valuation of the outputs is based on the degree of conditionality. This spectrum ranges from fully unconditional to fully conditional values. Of particular importance are the semi-conditional values that are characteristic of *beauty*. The methods of operation within an indeterministic framework vary. Instead of a *prediction* and setting of a *goal* and a *plan* ("program" being synonymous with "rigid plan"), the question "2) Did God have a **final goal** that guided God as the creator of the universe?" is addressed so as to encapsulate a *process*. This process entails a *direction* as well as *stages* of development.

Related to my concept of *predisposition* (formed at each stage) is the following set of questions "3) Why didn't God create the universe **instantly**? Why does it take God six days?", "4) Why didn't God state in detail His **plan** or **program** for the creation of the universe

given that it is a protracted process" and "5) Why did God act in **stages**, each time stating the purpose of each stage?"

The idea that a predisposition envisioned by God corresponds to God's original intent as soon as predisposition is formed and recognized, and the idea that an evolving God measures it (predisposition) through *beauty* addresses questions "8) Why was it necessary for God to evaluate the **results** of own work during the first six days?" and "9) Is 'good', serving as the 'local' criterion for the evaluation of intermediate results, equivalent to '**beauty**'?" and "15) Can a Creator with the power to foresee everything **destroy** own creations?"

Uncertainty, as far as the impact of a given stage upon the future, calls for the introduction of *strategic constraints* at each stage. These constraints, in the form of a *manifold* of options, call for the preservation of different species; manifold can subsequently be converted to a *singular variety* which informs the immediate decisions to select the "good" creatures and separate them from "evil" ones. These considerations address questions: "16) What prompted God to impose **unconditional** demands upon the conduct of the Jews including the Ten Commandments, while at the same time, making these demands **conditional** (situation specific) with respective rewards and punishments?" "17) Why does God, seeing the wickedness of the serpent and discriminating between clean and unclean flesh in general, chose to tell Noah **to take all the animals** along and save them from the flood so that they may multiply afterwards?", and "18) Could the task of preserving the Jewish nation be accomplished outside of the **Promised Land** as stated in the Torah?"

¹ "Now that Adam and Eve have eaten from the Tree of Knowledge, humans have the intelligence necessary to improve or destroy the world. So too with the tower builders and their descendants: If they use their collective intelligence without fore-sight, wisdom, and moral constraint, they may well succeed in producing apocalypse, thus merging our earthly world with God's heavenly domain." (Dershowitz, 2000, p. 45-46)

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