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## EXPLAINING THE UNCLEAR BY THE INCOMPREHENSIBLE

### Review of Lawrence Kelemen's *Permission to Believe*

(Southfield, Mich.: Targum Press, 1991)

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Kelemen's book begins with the assertion that one should "not read further expecting to become a believer" [1] because, after all, people believe only that which makes them happy. This declaration notwithstanding, *Permission to Believe* is admittedly dedicated to providing rational arguments for the existence of God as envisioned by Orthodox Judaism. Why? In Kelemen's own words,

...many people would believe in God tomorrow if only their intellects would allow them. These people intuitively suspect the existence of an Almighty. Yet the admirably high value our society places on reason, combined with the unfortunately widespread misconception that belief in God is necessary irrational, squelches their potential spirituality. These individuals should be permitted to examine the case for God. They should be granted permission to believe.[2]

Of course, there have been believing people since the dawn of mankind until present; few of them would ask anyone for permission to believe as they did. Furthermore, in the Western world on the edge of the 2nd and the 3rd millennia CE -- the world of Kelemen's intended readers -- there are people who freely admit that Orthodox Jewish beliefs (be it a belief in God's existence, in the divine authorship of the Torah, or any other element of the credo) are irrational but adhere to these beliefs wholeheartedly for whatever reasons they may have. Marvin Fox, an Orthodox Jew and a professor of philosophy, is an example:

I believe in the traditional doctrine of *Torah min ha-shamayim*, the teaching that the Torah is divine... No one can reasonably claim to understand how God reveals Himself to man. The very idea of revelation leads us to paradoxes which defy rational explanation... Yet we affirm in faith what we cannot explicate, for our very humanity is at stake. I believe, because I cannot afford not to believe. I believe, as a Jew, in the divinity of Torah, because without God's Torah I have lost the ground for making my own life intelligible and purposeful.[3]

Nobody needs any special permission to believe if he wants to believe. Of course, a believer should know the limits of his belief. A person may believe that the Earth is the center of the

universe and the sun orbits around it and not vice versa (as some pious Jews believe to this very day, since this is what Maimonides stated in his authoritative *Mishneh Torah*[4]) -- but when he writes a program that controls operations of a spacecraft, he'd better put this belief aside. However, since even weirdest beliefs rarely crash into the walls of reality (how many Jews with this belief set are employed by space agencies?), the long-term survival of these beliefs seems guaranteed. People generally prefer their psyche's stability to pure rationalism -- but problems arise when the distinction between faith and reason is blurred. Striving to provide his readers with permission to believe, Kelemen ends up presenting them with faulty argumentation at best, and intentionally deceiving them at worst.

## God, who do they think You are?

"Atheism is irrational," proclaims the title of Kelemen's first chapter. Devoting several lines to a definition of three possible opinions on the question of God's existence --believers (who think God exists), agnostics (who admit they don't know) and atheists (who think there is no God), Kelemen claims:

Only the first two of these theological attitudes are potentially sensible. The third, atheism, is necessarily irrational.[5]

In regard to agnostics, this is certainly true: one may be ignorant of the existence of something even if there is a sufficient amount of evidence in favor of it -- not everything in the world is known to everybody. But what about the believers?

There are two ways one can be rational and believe with certainty in God. First, it is possible (at least in theory) that God might introduce Himself to you... Second, one could come to know that God exists through indirect evidence, that is, through circumstances and phenomena that cannot be explained without positing God's existence.[6]

The first option suggested by Kelemen is actually twofold: imagine that the Almighty Himself appears to you and says that tomorrow He is going to commit suicide (whatever that would mean). If we are to accept the possibility of revelation, this might have already occurred to somebody long ago -- so it may be rational to be an atheist, after all.

What about the second option? In order to conclude that certain "circumstances and phenomena... cannot be explained without positing God's existence" one has first to know, at least theoretically, what God is. Maimonides' Thirteen Principles of Faith,[7] accepted since the High Middle Ages as the credo of Judaism,[8] states:

1. God is the absolutely perfect Creator and Master of the whole world; existence of all beings is dependent on Him.
2. God is unique -- not one of several such beings, not a being separable into lesser parts, but a unique and inseparable being.
3. God is incorporeal.
4. God is eternal.

5. God is the only one whom people are to worship; to worship any other being is forbidden...
6. God knows of every deed and thought of humans.
7. God rewards those who obey His precepts and punishes those who disobey them...[9]

But what is the meaning of God's knowledge, for example? Does it include knowledge of every human deed and thought in advance, or only *post factum*? In the latter case, does this limitation of God's knowledge not lessen His perfection? In the former, does it not mean that all deeds and thoughts of all people had been known to God long before they were or are to be born -- that is, their deeds and thoughts are predetermined -- in which case it makes no sense to command people about anything, since they have no real choice regarding the way they act? Maimonides dealt with this question in his *Mishneh Torah*:[\[10\]](#)

Perhaps you may say, "Behold, God knows everything which is going to happen - - therefore, He knows that a certain person would be a righteous or a wicked one, doesn't He? And if He knows that a certain person is going to be righteous, it is impossible for him to become wicked: for if you say that despite God's knowledge that he is going to be righteous he still can become wicked -- it would follow that God's knowledge is imperfect." But you should know that the answer to this question is lengthier than the earth and wider than the sea, and many principles, colossal like high mountains, depend on it. And you should know and understand the things that I say: as I have already clarified in the second chapter of the Laws of the Torah Essentials, God's knowledge does not exist separately from Him, as it is with humans who are entities different from their knowledge[\[11\]](#) -- but His essence, glorified be He, is inseparable from His knowledge. Human intellect cannot comprehend this; but as humans are incapable of comprehending and figuring out God's true essence -- as it is written, "One cannot see Me and stay alive"[\[12\]](#) -- so are they incapable of comprehending and figuring out God's knowledge, as the prophet has said: "For My thoughts are not your thoughts, and My ways are not your ways."[\[13\]](#) Therefore, we cannot comprehend how God knows of every being and deed, but we know without any doubt that that a person may freely choose his deeds, and God neither urges him to do anything nor determines that thus he will do. This is known to us not only from the religious tradition, but also through conclusive arguments of wisdom, and therefore the prophecy says that a person is judged in accordance with his own deeds, be they good or bad -- this is the basic principle on which all the prophecies depend.

That is, the issue of God's knowledge cannot be fully comprehended by human mind -- and the same may be said of the concept of God in general (try to answer the question whether God can create a stone that He would not be able to lift from the earth). Therefore, one who endeavors to prove God's existence in the way proposed by Kelemen will unavoidably find himself trying to explain the unclear by the incomprehensible -- few things can be less rational.

Unfortunately, there were people less honest than Maimonides, who fully understood the implications of his statement but were concerned mainly with preventing others from understanding them -- for example, R' Abraham ben David of Posquières:

This author [Maimonides] did not follow the way of the wise, who do not start a discourse if they do not know how to finish it. But he began asking questions and remained with questions, to which he had no answer but faith. It would be better for him to spare sophistications for the sake of the innocent and to abstain from raising doubts in their minds while providing them with no solution -- for maybe uncertainty would enter their hearts, even for a brief time.[14]

That is, to prevent doubt from entering the hearts of the faithful is much more important than clarifying the issue of God's existence and attributes. This was, apparently, also the attitude which guided Kelemen in writing his book. Consider, for example, the following:

one can be absolutely sure that God exists. People who possess such certainty are known as believers (from the Middle English *bi-leafe*, which means "complete knowledge").[15]

Merriam-Webster's Collegiate Dictionary, however, describes the etymology of the word *believe* quite differently: "Middle English *beleven*, from Old English *belEfan*, from *be-* + *lyfan*, *lEfan* to allow, believe; akin to Old High German *gilouben* to believe, Old English *lEof* dear." But who cares about etymologies if you can, by a single assertion, impress upon the reader that only belief in God is "complete knowledge"?

Or consider the following Kelemen's statement:

it is impossible to be rational and know with certainty that God does not exist, just as it is impossible to be rational and know that any person, object or force does not exist. Knowing with certainty that something does not exist requires first being aware of all things that do exist. This would mean simultaneously examining every cubic centimeter of the universe for the objects or forces in question. Because we cannot monitor every corner of the universe, we cannot reasonably declare the non-existence of anything -- including God.[16]

Yet, we can be reasonably sure that certain things do not exist: married bachelors, for example, or living beheaded humans. No one has to examine "simultaneously... every cubic centimeter of the universe:" if a concept describing some being contains an internal logical fallacy (married bachelor) or contradicts facts known to us with certainty (beheaded humans cannot live), then we may reasonably conclude that the being described by the concept does not exist. True, in regard to God this principle is irrelevant, since Judaism openly admits that humans cannot even comprehend the concept of God, let alone analyze its logical and factual implications. But, this being the case, would it be rational to assume the existence of something one cannot even comprehend?

## Misbegotten Morality

In the second chapter of his book Kelemen delves into the origins of morality. Or at least, so he claims.

Many people believe in universal ethics, i.e., standards of right and wrong that extend across all geographical and temporal boundaries. The popular idea that

murder is always wrong -- that there is something unethical about slaughtering guiltless, non-threatening human beings in any country at any period of history -- is an example of just such a universal ethic.[17].

Interesting: Kelemen does not care whether the belief shared by "many people" is correct. "Many people believe" something -- so why not make them believe in God, too?

*Why is murder wrong?* That is, who or what has the authority to establish such a universal ethical principle? Who or what *made* murder wrong?[18]

Not reason, claims Kelemen, nor any decision by a human or collective of humans ("If someone earned the right to dictate morality... then others must have earned this right before him and still others would do so after him. Murder's moral status would then be subject to change every eighty years or so"[19]), not nature ("In nature, life has always been a matter of survival of the fittest, kill or be killed"[20]) -- God must be it: "Murder can be eternally and universally unethical only if some eternal, authoritative source says so." [21] This view, however, leads to a paradox known already to Plato: does God establish ethical norms in accordance with some independent standards of morality, or is it divine approval itself which makes some actions good and others evil? In the first case, there would indeed be universal standards of morality, but they would exist independent of God and would not require His existence. In the second case, the standards of morality established by God would not be really universal, since their existence would be contingent on an arbitrary decision by God.

This paradox can be overcome by putting the term "universal" in a more earthly context: universal morality would be that which obligates all people at all times and places. Then moral standards arbitrarily established by God could be universal insofar as they would be binding on all people; perhaps this is what Kelemen meant by insisting that the source of morality must be not only eternal but also authoritative. But is God indeed universally authoritative? On which grounds can universal obedience of His will be demanded? Kelemen does not try to answer this question, nor does he dare pose it -- yet for his argument to be valid, this question needs to be posed and answered, as does another: Can we know what God's will is?

The answer to the second question is beyond the scope of this essay. Elsewhere in his book, Kelemen tacitly assumes the Hebrew Bible to be the expression of God's will.[22] Speaking rationally, of course, this has still to be proved -- which Kelemen does not bother to do. Marvin Fox's remark that "the very idea of revelation leads us to paradoxes which defy rational explanation" may cast doubt on the entire concept of God-given morality. But the question "Why should we obey God's commands?" still deserves consideration.

There are two possible answers: love/gratitude and fear. The "argument from love/gratitude" goes like this: God created the whole universe, designed it so that each of us is brought to the world, and sustains us at every moment of our lives -- so, it would be the ugliest form of ungratefulness not to love Him to the depths of our soul or to refuse to do whatever He tells us to. Yet gratitude is a moral feeling itself, -- so, were this argument true, there would be universal morality not only independent of but prerequisite to the God-given one. And if universal moral feelings can exist in principle, there may be other such feelings besides gratitude -- which leaves little room for the notion of God as the source of morality.

The "argument from fear" takes another position: whatever can be said of moral duties, humans should be expected to comply with God's will because He is all-powerful and His

capacities to do favors with those who obey Him -- or to make the disobedient suffer -- are limitless. The advantage of this argument is its ability to bridge the gap between *is* and *ought* through acknowledgement of a plain biological fact: people are usually concerned with avoiding their own suffering. We are, after all, a living species, and living things do not like to suffer or die. Yet this is only partially true, as Kelemen notes himself (albeit in another context):

First, for many people survival [or avoidance of suffering] is not the highest value. The Japanese Kamikaze pilots who gave their lives to win World War II were not lunatics; they were highly intelligent military officers who valued Japanese victory more than their own lives. Any student of history could easily list a dozen similar examples of rational people who were willing to sacrifice themselves for the sake of abstract ideals.

Second, even those who consider their own survival [or avoidance from suffering] their highest value might logically conclude that murdering others is a good idea. Murder, when one can get away with it and benefit in the long run, might be quite rational.[23]

So there is no objective and universal reason to obey God's will, even if one knows what it is. Yet Kelemen's objections to the instinct of survival (or avoidance from suffering) as a source of morality are not completely true. The self-preservation instinct is not a conscious goal of humans or other living organisms; it is imprinted in our genes -- and consequently, in our minds -- whether we want it or not. Any species which lacked this instinct became extinct long ago. Therefore, our primary and subconscious drive in situation of danger would be to maximize our chances for survival and minimize our chances for suffering -- be it by obedience to God's will or in any other way. Of course, we can consciously override this drive and sacrifice our very lives for the sake of an abstract ideal, but such conduct cannot be expected of most of people. Kamikazes and their like are a tiny minority of *Homo sapiens* specimens; no ideology can be stronger than the hundreds of millions year old evolutionary drive.

On the other hand, a creature that merely strives for self-preservation would not experience much difficulty in murdering others if the circumstances were appropriate. Thus the notion of God may be useful in keeping people from murdering, though some freaks of disobedience may occur here and there -- but is such a notion necessary? Perhaps the evolutionary history of certain species provided them with other innate drives on which social behavior -- including refraining from murder -- can be based? And indeed,

Social life, even for nonhuman animals, requires constraints on behaviour. No group can stay together if its members make frequent, no-holds-barred attacks on one another. Social animals either refrain altogether from attacking other members of the social group, or, if an attack does take place, the ensuing struggle does not become a fight to the death -- it is over when the weaker animal shows submissive behaviour. It is not difficult to see analogies here with human moral codes. The parallels, however, go much further than this. Like humans, social animals may behave in ways that benefit other members of the group at some cost or risk to themselves. Male baboons threaten predators and cover the rear as the troop retreats. Wolves and wild dogs bring meat back to members of the pack not

present at the kill. Gibbons and chimpanzees with food will, in response to a gesture, share their food with others of the group. Dolphins support sick or injured animals, swimming under them for hours at a time and pushing them to the surface so they can breathe.[24]

But is this not contradictory to the basic principle of evolution through natural selection -- struggle as much as you can for your own survival and reproduction, or you'll be wiped out by ruthless competitors? Not exactly.

Research in evolutionary theory applied to social behaviour... has shown that evolution need not be quite so ruthless after all. Some of this altruistic behaviour is explained by kin selection. The most obvious examples are those in which parents make sacrifices for their offspring. If wolves help their cubs to survive, it is more likely that genetic characteristics, including the characteristic of helping their own cubs, will spread through further generations of wolves...

Less obviously, the principle also holds for assistance to other close relatives, even if they are not descendants. A child shares 50 percent of the genes of each of its parents, but full siblings too, on the average, have 50 percent of their genes in common. Thus a tendency to sacrifice one's life for two or more of one's siblings could spread from one generation to the next. Between cousins, where only 12 1/2 percent of the genes are shared, the sacrifice-to-benefit ratio would have to be correspondingly increased.

When apparent altruism is not between kin, it may be based on reciprocity. A monkey will present its back to another monkey, who will pick out parasites; after a time the roles will be reversed. Reciprocity may also be a factor in food sharing among unrelated animals. Such reciprocity will pay off, in evolutionary terms, as long as the costs of helping are less than the benefits of being helped and as long as animals will not gain in the long run by "cheating" -- that is to say, by receiving favours without returning them. It would seem that the best way to ensure that those who cheat do not prosper is for animals to be able to recognize cheats and refuse them the benefits of cooperation the next time around. This is only possible among intelligent animals living in small, stable groups over a long period of time. Evidence supports this conclusion: reciprocal behaviour has been observed in birds and mammals, the clearest cases occurring among wolves, wild dogs, dolphins, monkeys, and apes.[25]

As animals become more intelligent, they achieve greater levels of socialization. The benefits of the latter are clear, especially for humans: since Plato's *Protagoras* -- with its description of Zeus taking pity on humans, who were hopelessly weak in comparison to other beasts, and giving them the sense of morality and capacity for law and justice so that they would be able to live in communities and cooperate with one another -- no better articulation of the human need for society was made or is indeed necessary.

For beings engaged in reciprocal altruism, the first and most reasonable implementation of their capacity for law and justice would be to punish those who do not reciprocate, and in extreme cases to push them out of society altogether so that they would not be able to take advantage of others while doing no favours in return. One of the crudest forms of non-

reciprocation in human society is, of course, the murder of "guiltless, non-threatening human beings." Thus, while evolutionary biology may explain why most people would obey God's will were they to know for sure what it is, it can also explain the origin of moral feelings -- including repulsion from murder -- without any involvement in theological speculations.

An important clarification should be made, though. If human repulsion from murder has its origins in the evolutionary history of social behavior, it would obviously apply only to those people whom one perceives as belonging to his society or, at least, as potential reciprocators. If a certain society possesses a high degree of genetic distinctiveness -- close similarity between the genotypes of the society's members and considerable dissimilarity of their genotypes from those of other people -- any mischief done to a member of such society by an outsider would particularly enrage other members, an obvious result of kin selection. And the greater racial, economic, cultural, and political barriers between different societies are, the less they perceive one another as groups of potential reciprocators. The Wari tribe, living in the Amazon rainforest, has in its language a term for edible things which includes anyone who is not a Wari.[26] The Bible commanded the Hebrews murder all the Amalekites -- including newborn children.[27] The Babylonian Talmud states thrice[28] that the term "man" applies only to the Jews, not to the Gentiles. In the 19th-century USA many white citizens -- especially in the South -- thought that the blacks are naturally destined for slavery. The Turks massacred 1.5 million Armenians in 1915 and Nazi Germany exterminated 6 million European Jews during World War II without much interference from the Allies. It took the world becoming a "global village" to make the notion of universal morality so popular -- but even now the racial-cultural-historical load remains with us: the Serbs' persecutions of the Albanian population in Kosovo brought about NATO's campaign against Yugoslavia while much greater atrocities in Rwanda -- where hundreds of thousands of Tutsis were murdered by the Hutu-controlled army and militias in the most brutal ways imaginable -- met virtually no international effort to stop the massacres. It will take much more time for our morality to become really universal.

Moreover, the development of morality does not end with considerations of kinship and reciprocity. Every human society

has a clear interest in promoting devotion to the group and can be expected to develop cultural influences that exalt those who make sacrifices for the sake of the group and revile those who put their own interests too far ahead of the interests of the group. More tangible rewards and punishments may supplement the persuasive effect of social opinion. This is simply the start of a process of cultural development of moral codes.[29]

Once the process of development of moral codes starts, another important step is taken: the terms *guiltless* and *non-threatening* are defined more or less precisely through definitions of what constitutes guilt and threat. These definitions -- without which the condemnation of murder of "guiltless, non-threatening human beings" makes little sense -- vary, of course, from one society to another. In the society of biblical Hebrews, for example, violation of the Sabbath constituted a felony punishable by death.[30] Among the same Hebrews[31] -- or in 17th-century Salem, Massachusetts -- it was a capital crime to engage in witchcraft (too many supernaturally-minded people find it hard to realize that witchcraft is merely a scam). Adultery, if committed by a married female, was punishable by death in Hammurabi's Babylon, in ancient Greece and Rome, should be punished thus according to the laws of

Judaism, and is still considered a capital crime in such countries as Iran, Afghanistan, and Saudi Arabia. In the United States adultery is not punishable by death, but several other actions are (murder and rape are most common examples), while under Israeli law a person may be sentenced to death only for extraordinary crimes like genocide; in Great Britain capital punishment has been abolished altogether. The debate on the justifiability of capital punishment is one of the hottest in modern ethics and jurisprudence -- and, in a sense, this is a debate on whether and under which circumstances murder is permissible. Regardless of what "many people believe," no universal solution are yet available to many moral dilemmas. Wherever there is such solution, it is not because of God's revelation -- different groups of people disagree manifestly on what, if anything, can count as one -- but because of our common evolutionary origin and the "global village" tendencies of the modern world. As Encyclopaedia Britannica[32] has put it,

It seems likely that morality is the gradual outgrowth of forms of altruism that exist in some social animals and that are the result of the usual evolutionary processes of natural selection. No myths are required to explain its existence.

Which is not, however, a matter of great concern for Kelemen -- who, freely admitting in the conclusion to his "moral argument" that it "is not a conclusive proof that God exists," remarks that there is still "a group [of people] persuaded that murder is universally and eternally wrong, and that other absolute moral standards also exist -- and for this group the moral approach to God's existence offers permission to believe." [33] It is only a pity that an author who declared that he offers his argument "in the interest of the truth" [34] acts in fact like a salesman rather than a researcher.

## The Big Puff

The third chapter of Kelemen's book is titled "The Cosmological Approach to God's Existence." In fact, it turns out to be a brief account of the scientific developments which led to the formulation and almost universal acceptance of the hot big bang theory as the description of our universe's history. To put it simply, the hot big bang theory states that some time ago (estimated as 10 to 20 billion years) all the matter in the universe was located at exactly the same place -- that is, the universe was infinitesimally small and infinitely dense -- and since then, the space has been stretching, distances between different chunks of matter increasing, and frequency of the radiation which filled the universe in the early stages of its development decreasing. [35] The mathematical description of the universe expanding from a point, based on Albert Einstein's general theory of relativity, was first formulated by Alexander Friedmann in 1922. In the following seven years Edwin Hubble observed that the distance between galaxies is increasing -- and the farther from us a galaxy is, the quicker it moves away from us. George Gamow suggested in 1948 that the early universe should have been very hot and dense, and that remnants of the radiation which filled the universe at its primeval stage still fill it, though they have dropped greatly in frequency and consequently, in energy: their temperature, Gamow claimed, should be only a few degrees above absolute zero (the lowest temperature in nature, --273.15 °C). In 1965, Arno Penzias and Robert Wilson detected that primeval radiation (at a temperature of only three degrees above absolute zero, about --270 °C). From the early 1970s the hot big bang theory became dominant in cosmology, and now it

is almost universally accepted by scientists, since it offers the best explanation of our observations of the universe.

So far so good. But what attracted Kelemen in the big bang theory? In his own words, this model

generates an uncomfortable question. Why would a dot containing all matter and energy -- a dot that sat quietly for an eternity -- suddenly explode? The Law of Inertia insists that objects at rest should remain at rest unless acted upon by an external force. Since all matter and energy would be contained within this dot, there could be nothing outside to get things going -- nothing natural, at least. What force could have ignited the initial explosion?

And even if one were tempted to answer that the dot was never stable -- that it popped into existence in its unstable form and immediately exploded -- one would still have to explain how anything could pop into existence. The Law of Conservation of Matter and Energy dictates that the total matter and energy in the universe cannot increase or decrease. How can one begin to suggest the instantaneous, ex-nihilo creation of the universe without slipping into a theological discourse? The... model seems to assume a supernatural Creator.[36]

Instead of proving God's existence to skeptics, however, this argument only reveals Kelemen's misunderstanding of the big bang theory. To begin with, the theory does not imply that "a dot containing all matter and energy... sat quietly for an eternity" before the moment of the big bang, and then "suddenly exploded." There was no explosion in the regular sense of the word - - spreading of matter in space. Instead, it is the space itself which has been stretching for the last 10 billion years or so (hence the increase of distance between galaxies). And regarding time,

At that time, which we call the big bang, the density of the universe and the curvature of space-time would have been infinite. Because mathematics cannot really handle infinite numbers, this means that the general theory of relativity (on which Friedmann's solutions [implying that there was a big bang] are based) predicts that there is a point in the universe where the theory itself breaks down. Such a point is an example of what mathematicians call a singularity... This means that even if there were events before the big bang, one could not use them to determine what would happen afterward, because predictability would break down at the big bang. Correspondingly, if, as is the case, we know only what has happened since the big bang, we could not determine what happened beforehand. As far as we are concerned, events before the big bang have no consequences, so they should not form part of a scientific model of the universe. We should therefore cut them out of the model and say that time had a beginning at the big bang.

This quote is taken from the first edition of Stephen Hawking's *The Brief History of Time*,[37] p. 46 -- just a line before Hawking's comment that "Many people do not like the idea that time has a beginning, probably because it smacks of divine intervention," cited joyfully by Kelemen.[38] What Kelemen does not quote is Hawking's comment that the notion that time began at the big bang dooms to futility any search for the big bang's cause: here one can only

hypothesize, without any chance to verify whether his hypotheses are factually correct. Kelemen either misunderstood Hawking's argument or deliberately misrepresented it in order to make his readers believe that existence of a supernatural Creator is a reasonable conclusion from the big bang theory.

In fact, there are purely godless assumptions as to where the "raw material" for the big bang came from. Some scientists suggest that before our universe sprang into existence there were other universes undergoing the process from big bang to big crunch (when a universe collapses into a singularity) -- and from each crunching universe the next universe emerged. The regular objection to such a proposal is that an infinite sequence of such past universes would contradict the Second Law of Thermodynamics, which states that within a closed system, entropy -- the measure of disorder -- increases with time. This provided, the objection runs, if there existed an infinite number of universes before ours, our universe would be in a state of maximum entropy -- consisting of radiation and particles equally distributed in space instead of large chunks of matter (stellar objects, for example) dotting practically void interstellar space.

An objection of this kind, raised by Stanley Jaki, is quoted with excitement by Kelemen -- but it does not make much sense, since it is well possible that the entire set of natural laws is arranged anew with each new big bang, and the law of entropy simply did not exist in all previous universes.[39] Even if our universe will not end up in a big crunch (which is still debated, despite Kelemen's assertions to the contrary), no one can deny the possibility that a big crunch was the ultimate fate of all the previous universes, each of which finished its life producing a singularity in an instable state, which instantly exploded into a new universe -- ending with the one we live in. Such a proposition cannot be proved, of course -- but violates no rule of logic, while the very Judaic concept of God is sheerly illogical. If one had to choose between the proposed theories, the infinite-number-of-previous- universes assumption would be much more reasonable than the assumption of God.

And there is yet another alternative. There is a field of physics dealing with the realm of the extremely small: quantum mechanics. For one acquainted only with large-scale realm physics it is a strange field; it came into existence because of Heisenberg's uncertainty principle, which states that it is impossible to measure precisely both the velocity and the position of an object at any given time:

Heisenberg showed that the uncertainty in the position of a particle times the uncertainty in its velocity times the mass of the particle can never be smaller than a certain quantity, which is known as Planck's constant [ $1.05 \cdot 10^{-34}$  kg\*m<sup>2</sup>/sec]... this limit does not depend on the way in which one tries to measure the position or velocity of the particle, or on the type of particle: Heisenberg's uncertainty principle is a fundamental, inescapable property of the world.[40]

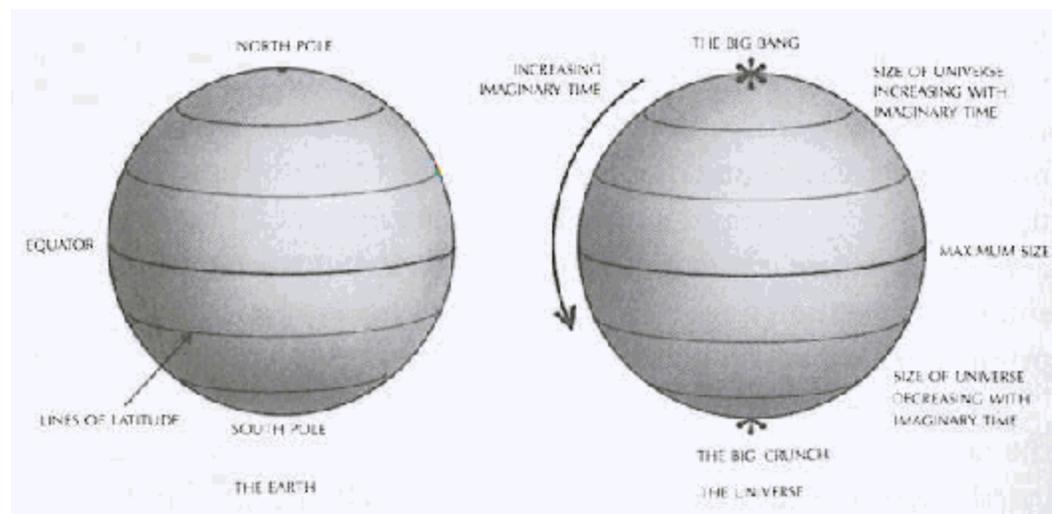
This provided, it is impossible to speak of separate and well-defined positions and velocities of objects in the realm where the uncertainties postulated by Heisenberg's principle make a sensible difference -- that is, in the realm of elementary particles. Therefore, in the 1920s Werner Heisenberg, Paul Dirac and Erwin Schrödinger developed the field of quantum mechanics, based on the concept of a quantum state -- a combination of position and velocity. Strange or not, quantum mechanics provides an indispensable tool for understanding the

physics of elementary particles and underlies many fields of modern technology, from integrated circuits to atomic bombs.

But the big bang theory is based on Einstein's general theory of relativity, and the latter

is what is called a classical theory; that is, it does not take account of the uncertainty principle of quantum mechanics, as it should for consistency with other theories. The reason that this does not lead to any discrepancy with observation is that all the gravitational fields we normally experience are very weak. However, the singularity theorems... indicate that the gravitational field should get very strong in at least two situations, black holes and the big bang. In such strong fields the effects of quantum mechanics should be important. Thus, in a sense, classical general relativity, by predicting points of infinite density, predicts its own downfall.[41]

To describe correctly what happened when the universe was in its primeval state, Hawking asserts, it is necessary to build a complete and consistent theory which will unify general relativity and quantum mechanics. And though such theory has not yet been built, "we do know a number of the features it should have." [42] Based on these features, Hawking proposed a model of universe in which the dimension of time is not essentially different from the three dimensions of space (Hawking calls it *imaginary time*, since, for the sake of technical convenience, time is measured in imaginary numbers [43] in quantum mechanics [44]). The universe, according to this model, is much like a spherical surface (that of the Earth, for example), except that it has four dimensions instead of two (longitude and latitude).



(Taken from S. Hawking, *A Brief History of Time*, p. 138)

Such a universe has no boundaries either in space or in time and Hawking's theory eliminates the problem of "the beginning" altogether -- just as it would be wrong to say that the North Pole is "the beginning" of Planet Earth, so would it be wrong to say that the big bang is "the beginning" of the universe. In a sense, Hawking's model revives the millennia-old concept of a static universe -- except that instead of the universe existing in three-dimensional space without undergoing large-scale changes with time, Hawking presents a picture of the universe

as a four-dimensional space continuum (time is just one more dimension of space), in which matter is distributed in a certain way.

The universe would be completely self-contained and not affected by anything outside itself. It would be neither created nor destroyed. It would just BE.[45]

But for us, there is an essential difference between space and time: in space we can move both backward and forward in any dimension, while in time we can move only forward (sci-fi stories of time machines notwithstanding). To this, Hawking says, the solution is simple: we perceive time as the direction of increase of entropy -- the measure of disorder of a thermodynamic system. Why? Because our memory is also subject to the law of entropy: to remember something, we need use a certain amount of energy accumulated by our bodies, diffusing a part of it into the space around us in the form of heat. Thus, with every act of remembering the overall entropy in the universe increases -- therefore, we can only remember (and classify as past) states in which the overall entropy in the universe was smaller than it is now. Entropic time is the only one we can use in everyday life -- but this is only a limitation of our brains and has nothing to do with the fundamental structure of the universe.

Yet why should disorder increase with time at all? Because according to the quantum-mechanics interpretation of gravity, articulated by Hawking, the big bang point of the space-time continuum

would be a regular, smooth point of space-time and the universe would have begun its expansion in a very smooth and ordered state. It could not have been completely uniform, because that would violate the uncertainty principle of quantum theory. There had to be small fluctuations in the density and velocities of particles...

The universe would have started off with a period of exponential or "inflationary" expansion in which it would have increased its size by a very large factor. During this expansion, the density fluctuations would have remained small at first, but later would have started to grow. Regions in which the density was slightly higher than average would have had their expansion slowed down by the gravitational attraction of the extra mass. Eventually, such regions would stop expanding and collapse to form galaxies, stars and beings like us. The universe would have started in a smooth and ordered state, and would become lumpy and disordered as time went on. This would explain the existence of the thermodynamic [entropic] arrow of time.[46]

The inflationary model of the big bang can also answer the question of where all the matter in the universe come from. According to quantum theory, elementary particles -- the "bricks" of which matter is built -- can emerge into existence out of energy in the form of particle/antiparticle[47] pairs. But where did the energy come from?

The answer is that the total energy of the universe is exactly zero. The matter in the universe is made out of positive energy. However, the matter is all attracting itself by gravity. Two pieces of matter that are close to each other have less energy than the same two pieces a long way apart, because you have to expend energy to separate them against the gravitational force that is pulling them together. Thus, in

a sense, the gravitational field has negative energy. In the case of a universe that is approximately uniform in space, one can show that this negative gravitational energy exactly cancels the positive energy represented by the matter. So the total energy of the universe is zero.

Now, twice zero is also zero. Thus the universe can double the amount of positive matter energy and also double the negative gravitational energy without violation of the conservation of energy. This does not happen in the normal expansion of the universe in which the matter energy density goes down as the universe gets bigger. It does happen, however, in the inflationary expansion, because the energy density... remains constant while the universe expands: when the universe doubles in size, the positive matter energy and the negative gravitational energy both double, so the total energy remains zero. During the inflationary phase, the universe increases its size by a very large amount. Thus the total amount of energy available to make particles becomes very large. As [Alan] Guth [the author of the inflationary model of the big bang] has remarked, "It is said that there's no such thing as a free lunch. But the universe is the ultimate free lunch." [48]

But why should the direction of increase of entropy in the universe be the same as the direction of the universe's expansion rather than the direction of its contraction? (Hawking's model implies that the universe will finally contract or, more precisely, that it is a closed four-dimensional surface that would be perceived by a human observer -- were any to witness the whole process -- as expanding and then contracting with time.) Well, it should not be so -- at least not always. During the universe's contraction, entropy would still increase, and if people happened to live at the time of the universe's transition from the phase of expansion to that of contraction, their perception of time would not change: "The thermodynamic and psychological arrows of time would not reverse when the universe begins to recontract." [49] We just happen to live during the expansionary phase -- and actually, mankind will not be able to survive even to the end of this phase, let alone to the contraction phase :

The inflation in the early stages of the universe... means that the universe must be expanding at very close to the critical rate at which it would just avoid recollapse, and so will not recollapse for a very long time. By then all the stars will have burned out and the protons and neutrons in them will probably have decayed into light particles and radiation. The universe would be in a state of almost complete disorder. There would be no strong thermodynamic arrow of time. Disorder couldn't increase much because the universe would be in a state of almost complete disorder already. However, a strong thermodynamic arrow is necessary for intelligent life to operate. In order to survive, human beings have to consume food, which is an ordered form of energy, and convert it into heat, which is a disordered form of energy. Thus intelligent life could not exist in the contracting phase of the universe. [50]

Hawking's model gives a comprehensive and consistent large-scale picture of the universe (including the big bang), but leaves no role in it for a Creator. As of now, this theory is just what it is -- a theory, still in need of observational verification. Yet until scientifically refuted, the descriptive power of Hawking's theory is much greater than that of the theological concept of divine creation, which is merely an attempt to explain the unclear by the incomprehensible.

Kelemen's efforts to deduce the existence of God from the big bang turn, under a little scrutiny, into little more than a big puff.

## Endeavor to Deceive

The fourth chapter of Kelemen's book, titled "Teleological Approach to God's Existence," presents the millennia-old argument from design:

The intricate structure of the world has astounded man for millennia, and modern scientific advances have done nothing to attenuate that astonishment. In fact, during this century researchers have revealed aspects of the universe's structure that make all the design observations of the previous two thousand years seem insignificant.[51]

And if there is design, there is a Designer -- or at least so Kelemen wants his readers to believe. As an example of such design he chose the complex organic chemical which is found in all living cells and in many viruses and which codes genetic information of living organisms -- DNA:

Consider, for example, James Watson and Francis Crick's 1953 discovery of the structure and function of deoxyribonucleic acid (DNA), a chain of chemicals found in every human cell. Watson and Crick proved that DNA contains an exact blueprint of the body's every physical detail: fingerprints and toeprints; skin, hair and eye color; heart size and shape. Everything.[52]

Even this brief passage contains, however, two errors which cannot be expected from an author who is supposed to do some homework on the subject he writes about. First, Watson and Crick merely discovered the molecular structure of DNA -- its role as the component which carried genetic information had already been shown by Oswald Avery in 1944, the fact that genes (units of hereditary information) exert their influence by directing the production of enzymes (proteins that facilitate chemical reactions in the cell) was demonstrated by George Beadle and Edward Tatum in that same decade, and the first model of the process by which DNA directs protein synthesis in cells was presented by François Jacob and Jacques Monod in 1961.[53] This information is, of course, not of primary concern in regard to Kelemen's argument from design -- but it can well indicate his mastery of the subject.

Second, DNA is found not only "in every human cell," but in every living cell -- from most primitive single-cell organisms to most developed mammals. Such unity of hereditary material in all cellular life forms upon Earth is strong evidence of their common descent from some primeval form of life through more or less gradual changes in the genetic code -- in full accordance with the theory of evolution so despised by Kelemen because it is a reasonable alternative to the belief in divine creation. Furthermore, genetic research shows that the more recent a date that was given by evolutionary biologists for the supposed common ancestor of some organisms, the less differences there are between their genetic codes.

For example, *cytochrome c* (a protein molecule) of humans and chimpanzees consists of the same [sequence of] 104 amino acids[54] in exactly the same order;

but differs from that of rhesus monkeys by one amino acid, that of horses by 11 additional amino acids, and that of tuna by 21 additional amino acids.[55]

If someone needed, a century after Darwin, additional evidence for the evolution of living organisms, here it is.

But Kelemen continues to describe the wonders of God's design:

How does the body know where in the DNA chain to begin reading the code for, say, a nose? How does it avoid accidentally reading the wrong message and putting our ear or elbow where our nose should go? The DNA code starts with a table of contents, so to speak. One of the chain's first coded messages tells the body where to look in the chain for all the other messages. The DNA chain also contains a coded description of itself. Every time the body builds a new cell, the parent cell's DNA chain looks into itself, reads its own blueprint, and reproduces an exact copy of itself for the new cell.[56]

Unfortunately, not a single sentence in this passage is correct. To begin with, no organism "reads the code" for any part of the body straight from the DNA strand. Cell machinery "translates" certain sections of DNA strand -- genes -- into chains of amino acids; these chains, each of which has its peculiar shape, are proteins. The protein contents of a cell determine the cell's structure and function. In multicellular organisms (human beings included) each newly formed cell develops into an adult cell of a certain kind, specialized to perform specific functions. Each cell keeps in constant communication and cooperation with its neighbors. Cooperative assemblies of similar cells form tissues, each of which typically contains a small number of cell types and is devoted to a specific physiological function. Cooperation between tissues, in turn, forms organs: nose, ear, heart, etc. The process of specialization of young cells into adult cells of different types is called *cell differentiation*. It is cell division (through which new cells are formed) and cell differentiation which turn the zygote (fertilized ovum) into a fully developed embryo and then into an independent organism.

Cell differentiation does not affect the genetic information contained in cells: normally, in cells of any specific kind in a certain organism the same DNA chain is present (except for white blood cells, in which segments of DNA are rearranged for the needs of the immune system). And though the mechanism of cell differentiation is not yet understood, some of its features are already well known, [57] and none of them implies a divine Designer.

DNA chains are, of course, subject to alteration -- as a result of accidents in the duplication of genetic material in the course of cell division or under influence of external factors (electromagnetic radiation or certain chemicals). If such alteration -- *mutation*, as it is termed -- befalls a certain cell in the body, all the cells descendant from that cell will carry the mutation further. Thus mutations can produce a localized change in one's body -- for example, form an albino streak in the hair of an otherwise normal individual.[58] But since complex organs, like noses or ears, are formed of several kinds of tissues specifically arranged, many changes in an organism's genetic code are needed to turn its nose into ear;

mutations, on the other hand, are minor and quite rare, so none of them can turn a nose into ear in a single blow.

But nevertheless, even small changes can turn one organism into another, if the changes accumulate. If a mutation befalls an ordinary cell in the organism -- a *somatic mutation* -- it won't be passed on to the organism's offspring. But if a mutation in a sex cell (spermatozoon or ovum) -- a *germinal mutation* -- occurs, it will affect the organism's offspring. If the mutation turning hair cells white (hindering the hair pigmentation) occurs in the mother's ovum instead of her hair cells, no albino streak will appear in her hair, but all the hair of her offspring, developed from this ovum, will turn albino. Most germinal mutations are harmful or neutral -- but some of them may result in a beneficial change, increasing the chances of the mutant organism to survive and produce viable and fertile offspring compared to the analogous chances of non-mutant organisms. In this case, the percentage of organisms with the mutated gene will increase with each generation until that gene becomes the norm in the population. A classical example is the peppered moth *Biston betularia*:

The peppered moth had originally been white-coloured, but a dark (melanic) form of the peppered moth, first noticed in Manchester, Eng., in 1848, had outnumbered the usual light-coloured moth by 99 to 1 by 1898. The explanation of this phenomenon is that the dark moth, which originally was a chance mutation, was rendered less conspicuous to bird predators than the light moth against tree trunks which had become covered with black soot owing to the air pollution caused by nearby industries. The difference is genetic and of interest as a striking example of rapid evolutionary change in a localized area. [59]

Organisms with the mutated genes are, of course, subject to further germinal mutations, changing the external appearance and functional organization of their offsprings; some of these mutations may be beneficial and increase the mutant organisms' chances to survive and produce viable and fertile offspring, and so on ad infinitum. This mechanism is the essence of biological evolution. *Natural selection* is the process in the course of which organisms better adapted to the environment due to beneficial mutations oust those less adapted.

Furthermore, Kelemen's assertion that "the DNA chain... contains a coded description of itself" is sheer nonsense. Kelemen himself brought on the next page of his book an explanation of how DNA replication really occurs:

During DNA replication the hydrogen bonds between the bases weaken, allowing the double helix to unzip into two independent chains. Each chain attracts the nucleotides necessary to form another full DNA strip, lines them up end to end, and zips up again. Two new double-helices identical to the parent molecule have been formed. [60]

It is only a pity that in the rush to grant his readers "permission to believe" Kelemen failed to pay attention to contradictions and factual flaws in his argument.

But when all is said and done, does the DNA mechanism provide evidence for a supernatural Designer? The answer is definitely no. Biologist Kenneth Miller of Brown University gives an example -- the section of human genome termed *the  $\beta$ -globin cluster*,

which produces an important component of hemoglobin, the oxygen-carrying protein that gives blood its red color. This cluster contains genes for five different kinds of  $\beta$ -globin: two are expressed in adults, and three are expressed during an embryo's development. The embryonic forms of  $\beta$ -globin bind oxygen a bit more tightly than adult forms do. (The embryo uses its tight-binding forms to draw oxygen from the blood of its mother; the adult forms need only draw oxygen from the atmosphere.)[61]

Evolutionary biology explains the appearance of the  $\beta$ -globin cluster in its present form as result of gene duplication -- a random process in which several copies of a single ancestral gene are made. Each of these copies is, due to mutations, slightly different from the original ancestral gene, and such differences could well have produced the five forms of the  $\beta$ -globin gene, each with its own specific benefits (those which bind oxygen more tightly, for example, are beneficial for embryonic development). But was it through random mutations that the five forms of the  $\beta$ -globin gene appeared, or were they a product of design by an intelligent Creator?

The cluster itself, or more specifically a sixth  $\beta$ -globin gene in the cluster, provides the answer. This gene is easy to recognize as part of the  $\beta$ -globin family because it has a DNA sequence nearly identical to that of the other five genes. Oddly, however, this gene is never expressed, it never produces a protein, and plays no role in producing hemoglobin. Biologists call such regions "pseudogenes," reflecting the fact that however much they may resemble working genes, in fact they are not [such]...

The theory of intelligent design cannot explain the presence of nonfunctional pseudogenes unless it is willing to allow that the designer made serious errors, wasting millions of bases of DNA on a blueprint full of junk and scribbles. Evolution, in contrast, can easily explain them as nothing more than failed experiments in random process of gene duplication that persist in the genome as evolutionary remnants.[62]

Furthermore, Miller explains,

The  $\beta$ -globin story is not an isolated case. Hundreds of pseudogenes have been discovered in the 1 or 2 percent of human DNA that has

been explored, and more are added every month. In fact, the human genome is littered with pseudogenes, gene fragments, "orphaned" genes, "junk" DNA, and so many repeated copies of pointless DNA sequences that it cannot be attributed to anything that resembles intelligent design.[63]

This is bad news for believers in the direct divine creation of all kinds of living things. Not surprisingly, therefore, Kelemen sets out to undermine the neo-Darwinian theory of evolution (which is a synthesis of Darwin's original theory and genetics):

Neo-Darwinian theory speculates that the ingredients of a primordial chemical soup randomly combined and recombined until viable primitive life formed. That first living thing then reproduced abundantly, as did its offspring, occasionally producing mutant species. These species also reproduced and generated new, more sophisticated mutants, ultimately yielding the range of living creatures alive today. (Interestingly, Charles Darwin never actually suggested that evolutionary forces could transform dead matter into living creatures. Rather, his theory explained only how lower life forms could evolve into more sophisticated ones. It was Darwin's students who later expanded his theory to include even the formation of the first living creature.)

When Darwin first proposed evolution in 1859, it was only a theory based on unsupported premises. To Darwin's disappointment, the essential evidence needed to transform the theory into fact did not materialize during his lifetime; nor has such evidence materialized today.[64]

But again, Kelemen is wrong on all accounts. First, the idea that the first living thing materialized from non-living matter in a primordial soup of chemicals -- or any other hypothesis regarding the origin of life on Earth -- is not and never was germane to the theory of evolution. Encyclopaedia Britannica defines *evolution* as "theory in biology postulating that the various types of animals and plants have their origin in other preexisting types and that the distinguishable differences are due to modifications in successive generations" and states further that while "the fact of evolution; that is, that organisms are related by common descent" was established by scientific research "with utmost certainty," "the characteristics of the first living things and when they came about... remain completely unknown." In Douglas Futuyuma's classic textbook *Evolutionary Biology*[65] only one of almost 600 pages is devoted to the discussion of the origin of life on Earth, ending with the conclusion that "the origin of life has not still yielded to the efforts of chemists"[66] -- which obviously did not hinder Futuyuma from dedicating hundreds of pages to evolutionary mechanisms -- changes in genetic information of organisms and natural selection -- which are far better understood.

Second, Charles Darwin did actually speculate on the origin of life on Earth from non-living matter. In a much-quoted letter of 1871 he wrote:

It is often said that all the conditions for the first production of a living organism are now present, which could ever have been present. But if (and oh! what a big if!) we would conceive in some warm little pond, with all sorts of ammonia and phosphoric salts, light, heat, electricity, etc., present, that a protein compound was chemically formed ready to undergo still more complex changes, at the present day such matter would be instantly devoured or absorbed, which would not have been the case before living creatures were formed.  
[67]

And third, even as early as 1859, Darwin's theory was based not on "unsupported premises," as Kelemen wants his readers to believe, but on firm factual evidence:

The *Origin of Species* has two separate theses: that all organisms have descended with modification from common ancestors, and that the chief agent of modification is the action of natural selection on individual variation. Darwin was the first to marshal on so grand a scale the evidence for the first thesis, the historical reality of evolution, by drawing on all relevant sources of information: the fossil record, the geographic distribution of species, comparative anatomy and embryology, and the modification of domesticated organisms. Much of his arguments consists of showing how naturally observation in these areas, such as the vestigial wings of flightless beetles, follow from the supposition of common ancestry, and how implausible they are under the hypothesis of special creation [the biblical notion of direct divine creation of all living species in their present form -- "according to their kinds," as Genesis 1 puts it].  
[68]

Since then, of course, the theory of evolution gained much more support from factual observations, becoming "one of the fundamental keystones of modern biological theory."  
[69]

This fact apparently so troubled Kelemen that he resorted to outright distortion in order to camouflage it. The sentence, "To Darwin's disappointment, the essential evidence needed to transform the theory into fact did not materialize during his lifetime; nor has such evidence materialized today,"  
[70] is provided by Kelemen with the footnote:

John Horgan, a member of the *Scientific American's* Board of Editors, wrote in 1991: "Although this scenario [of evolution]  
[71] is already ensconced in textbooks, it has been seriously challenged of late" (*Scientific American*, February 1991, p. 102).

One needs only open John Horgan's article "In the Beginning" in the specified issue of *Scientific American* to read the quote in context:  
[72]

Experiments in the early 1980s seemed to complete the picture. They revealed that ribonucleic acid, or RNA, a singleand molecule that serves as DNA's helpmate in manufacturing proteins, might have the

ability to make copies of itself without the assistance of enzymes. Some investigators concluded that the first organisms consisted of RNA and that the early "RNA world" had provided a bridge from simple chemistry to prototypes of the complex DNA-based cells found in modern organisms. According to the fossil record, such cells emerged within the first billion years after the earth had formed 4.5 billion years ago.

Although this scenario is already ensconced in textbooks, it has been seriously challenged of late. Tests of the RNA-world hypothesis have shown that RNA is difficult to synthesize in the conditions that probably prevailed when life originated and that the molecule cannot easily generate copies of itself.

Horgan's comment refers not to evolution in general, but to a specific theory in regard to the origin of life on earth -- which, again, has little to do with the theory of evolution as such. Sadly enough, the author who declared his commitment to "the interest of the truth"[73] actually turned his attempt to grant skeptics "permission to believe" into an endeavor to deceive.

Furthermore, quoting the British astronomer Fred Hoyle's saying that spontaneous emergence of a single-cell organism through a random combination of chemicals is less likely than that "a tornado sweeping through a junkyard might assemble a Boeing 747 from the materials therein," Kelemen footnotes it:

In February 1991, *Scientific American* reprinted Hoyle's comment, adding: "Most researchers agree with Hoyle on this point" (p. 102). [74]

Again, it would be useful to open *Scientific American* and read the quote in context:[75]

Some scientists have argued that, given enough time, even apparently miraculous events become possible -- such as the spontaneous emergence of a single-cell organism from the random coupling of chemicals. Yet Fred Hoyle, the iconoclastic British astronomer, has said such an occurrence is about as likely as the assemblage of a 747 by a tornado whirling through a junkyard.

Most researchers agree with Hoyle on this point (although on little else). The one belief almost everyone shares is that matter quickened through a succession of steps, none of which is wildly improbable.

Hoyle's argument attacks a "straw man." Nobody thinks that the first single-cell organism emerged from a random combination of chemicals. Researchers suppose that there was an intermediary succession of self-replicating organic compounds between the non-organic stuff of primeval Earth and the first unicellular organisms:

The current version of genesis... is also couched in Darwinian terms. Life began, they say, when some compound or class of compounds developed the ability to copy itself in such a way that it occasionally made heritable "mistakes." These mistakes sometimes produced generations of molecules that could replicate more efficiently than their predecessors. Voilà: evolution, and so life.

This quote is taken from the same February 1991 issue of *Scientific American*, page 102 -- just a passage below the phrase quoted by Kelemen. Kelemen could not be unaware of it. Yet he preferred once more endeavored to deceive.

Moreover, more than a page of Kelemen's book[76] is devoted to calculations purported to show that the probability of a single bacterium randomly appearing, at a single try, from a stew of amino acids is, under most generous assumptions, infinitesimally small (1 in  $10^{39,950}$ , while the number of atomic particles in the whole universe is only about  $10^{80}$ ). Having finished, Kelemen proudly asserts:

Calculations like this led Harold P. Klein, chairman of the National Academy of Sciences Committee on Origin-of-Life research, to comment, "The simplest bacteria is so... complicated from the point of view of a chemist that it is almost impossible to imagine how it happened."

The source for this comment, as specified by Kelemen, is the same *Scientific American* article (page 104 this time). Unsurprisingly, the article includes no "calculations like this," for they are nothing but nonsense. Nobody thinks a bacterium had ever appeared through a random assemblage of amino acids. Klein's assertion ("The simplest bacterium is so damn complicated from the point of view of a chemist that it is almost impossible to imagine how it happened") appears in the *Scientific American* article without any justification, and while it makes a great deal of sense -- bacteria's chemical mechanisms are indeed complicated -- its pessimistic disposition is not shared by much of the scientific community. Antonio Lazcano and Stanley Miller, two of the world's most prominent experts on the origins of life, have argued that "there is no compelling reason to assume that the origin and early evolution of life took more than 10 million years,"[77] out of 300 million years allowed by the fossil record for the development of life from simple organic substances to cyanobacteria (blue-green algae, microfossils of which were found in rocks dated to 3.5 billion years ago).

True, current scientific concepts of the origin of life on Earth are only hypotheses and incomplete ones at that: it is widely agreed that relatively simple organic chemicals -- amino acids, nucleic acid bases and sugars -- could have emerged spontaneously from their components on primeval Earth (as they have on meteorites[78] and do in countless scientific experiments[79]), and that the first living things were self-replicating RNA molecules from which organisms based on DNA-RNA-protein mechanism later evolved,[80] but opinions differ as to transitional stages between amino acids and alike and full-fledged RNA molecules. It is clear that origin-of-life researchers will not finish their job in the

coming decades, but to posit God in order to fill the gaps in our knowledge of life's origin would be yet another attempt to explain the unclear by the incomprehensible.

As mentioned above, the theory of evolution in its present (neo-Darwinian) form is a synthesis of Darwin's original theory and genetics. The famous biologist Ernst Mayr was one of the architects of neo-Darwinian theory, promulgated in the 1930s. Yet Kelemen chose no other field than genetics and no less authority than Mayr for another attack on evolution:

Darwin assumed that any species could slowly evolve into any other species through a series of small changes. But scientists know now that genes have mutability limits. A DNA chain will stretch only so far from its original form before breaking or snapping back. This principle was first identified in 1948 by Harvard University geneticist Ernst Mayr. He deduced this theory, which he called "genetic homeostasis," from tests performed on the *Drosophila melanogaster* fruit fly.[81]

Unfortunately, Kelemen does not document this statement with reference to any of Mayr's works, but an interested reader may easily find out what Mayr meant by genetic homeostasis in his fundamental *Animal Species and Evolution*: [82]

One of the most interesting findings... is the tendency of the phenotypes [observable characteristics of organisms] to return to the original condition when selection is discontinued after a population has been exposed to a severe selection pressure for a specific phenotypic character, whether increased bristle number or body size in *Drosophila* or increased egg number or egg size in the domestic fowl. The many observations of the selective superiority of morphological intermediates is merely another aspect of the same phenomenon. Lerner (1954)[83] has designated this phenomenon *genetic homeostasis*, defining it "as the property of the population to equilibrate its genetic composition and to resist sudden changes"...

The reasons for genetic homeostasis should be evident... A naturally existing phenotype is the product of a genotype that has a long history of selection for maximum fitness. Any selection for a new phenotype will force the abandonment of the previously integrated genotype and will thus lead to lowered fitness, due to either an accumulation of homozygous recessives[84] or a disharmony between the newly favored genes and the remainder of the genotype. Relaxation of the selection for the new phenotype permits at least a partial return by natural selection to the historical combination that had given maximum fitness, particularly heterozygous combinations. As a by-product there will be a partial restoration of the original phenotype. If the return to the original phenotype is only partial and some of the phenotypic gains of the preceding selection are preserved, this indicates either that some homozygous fixations had

occurred or, more likely, that an alternate adaptive peak had been climbed. This alternative peak is equivalent to the original phenotype as far as general fitness is concerned... but superior with regard to the specific phenotypic character that had been under selection pressure.

That is, genetic homeostasis not only constitutes no contradiction to the theory of evolution, but evolution perfectly explains it. Were it not for a long history of organisms' adaptation to a given environment through mutations and natural selection, there would be no reason for a specific genotype (genetic constitution of organism, determining its phenotype) to restore itself after several generations of artificial selection preferring another genotype.[85] Correspondingly, if some traits of the artificially selected genotype are equivalent to or better than those of the original in regard to general fitness, they will be preserved under genetic homeostasis -- this is the "alternate adaptive peak" of which Mayr spoke. And while artificial selection is not terminated, its pressure overweighs even those balancing genetic mechanisms which otherwise cause genetic homeostasis: the latter occurs only when artificial selection is discontinued. Now if we substitute the changing demands of natural selection (as result of changes in environment, say) for the pressure of artificial selection, it becomes evident that genetic homeostasis does not prevent evolution. The case of the peppered moth *Biston betularia* is only one of numerous examples, and of course, in 1948 Ernst Mayr was not a Harvard professor but the curator of birds at the American Museum of Natural History in New York (he was given the Harvard chair of zoology only in 1953),[86] and the term *genetic homeostasis* was coined by Isadore Lerner, not by Mayr. Kelemen really should have done his homework better.

Incidentally, Kelemen mentions the case of the peppered moth -- but in a quite peculiar way:

...scientists have changed the famous peppered moth (*Briston betularia*) from speckled to silver, silver to black, and black back to speckled. But the moth never became green, purple or blue, and it always remained a moth.[87]

This statement is provided by Kelemen with reference to Michael Denton's *Evolution: A Theory in Crisis*[88] (pp. 79-81) -- an extremely rare occasion of a scientist attempting to disprove the theory of evolution. The main core of Denton's book is not of concern here,[89] but a brief look at the pages specified by Kelemen suffices to show that the latter has again distorted his source (and even misspelled the very name of the species -- "*Briston*" instead of *Biston betularia*).

As mentioned above, the transition of *Biston betularia* specimens from light to dark color occurred in industrially developed areas of England in the 19th century without any interference by scientists. To explain this transition, a hypothesis suggested that dark specimens (born due to random mutations) living on trees covered by the black soot of nearby factories were better camouflaged from avian predators -- which spared them from the extermination by avian predators that

befell the light specimens, resulting in overwhelming dominancy of black moths (99:1) in a mere 50 years.

In the 1950s, Oxford zoologist Bernard Kettlewell set out to prove this hypothesis by an experiment, conducted both in polluted and unpolluted forests. In each forest Kettlewell released a certain number of dark and light moths and marked their undersides with spots of quick-drying cellulose paint (each day a different color) in order to enable the researchers who subsequently trapped large numbers of moths to identify the specimens which they had previously released and to determine the length of time for which the moths were exposed to predators in nature.

In an unpolluted forest, 984 moths were released: 488 dark and 496 light. 96 of these moths were recaptured, of them 34 dark and 62 light -- which indicated that in such a forest, the light moths had a clear adaptive advantage over the dark. In a polluted forest the results were reversed: of the released moths which had been subsequently recaptured, there were twice as many dark specimens as light. The hypothesis of natural selection at work was upheld, and Kettlewell titled his article in *Scientific American*, describing the experiment, "Darwin's Missing Evidence."<sup>[90]</sup>

Especially spectacular in this experiment (and in the original 19th-century observations) was the fact that it was an example of natural selection changing the phenotype of moths; contrary to Kelemen's statement, it was not "scientists" but nature that changed the moth populations from light to dark, and of course, no transition "from speckled to silver, silver to black, and black back to speckled" was actually reported. Only Kelemen knows where he got these details.

Geneticists have shown that the difference between the light and dark forms of *Biston betularia* originates from a single gene: in heterozygous dark moths, the allele for dark pigmentation is dominant and the one for light coloration is recessive; in light moths -- vice versa.<sup>[91]</sup> Even if we assume that this species never had dark moths prior to 1848, one random mutation was sufficient to produce a dark-colored moth, which could then pass this trait to its offsprings, who would thus become better adapted to their environment, with better chances to produce viable offspring before being caught by avian predators -- which would lead, in full accordance with the theory of evolution, to the moth population in industrialized areas becoming almost wholly dark. For a moth to become green, purple, or blue, more complicated mutations might have been needed (all the more so to become an organism of a separate species). More complicated mutations mean that one would have to wait longer before it occurs -- and even then, since the environment did not favor green, purple, or blue moths, the chances of such a mutant organism surviving and producing viable offspring would be no greater than those of his non-mutant fellows, so that natural selection would not favor the mutant color trait, mutant specimens would remain extremely rare, and, remaining so scarce, the mutant population would be quickly exterminated by predators. Even if mutation of this kind had actually occurred -- which we may well doubt -- we would simply fail to notice the mutant specimens before they were exterminated. However, if one had an opportunity to track all the

peppered moths for a sufficient period of time (thousands of years, at least), he might well notice green, purple, or blue ones.

Yet another of Kelemen's assertions reveals his ill acquaintance with biology:

The fact that neither Darwin nor any subsequent biologist has ever succeeded in causing or even witnessing the evolution of one species into another cannot help but disturb those who would like to believe in the theory of evolution.[92]

Wrong again. Numerous instances of speciation -- formation of new and distinct species -- have been witnessed.[93] To bring just a couple of examples, in the beginning of the 20th century Hugo de Vries, studying the genetics of the evening primrose *Oenothera lamarckiana*, found an unusual variant among his plants: instead of the normal 14 chromosomes for this species, the variant had 28 chromosomes. The variant was unable to breed with the original *Oenothera lamarckiana*, thereby constituting a new species, which de Vries termed *Oenothera gigas*. [94] In 1958-1963, Theodosius Dobzhansky succeeded in producing a new species of *Drosophila* fruit fly in his laboratory. A strain of *Drosophila paulistorum*, when first collected, was interfertile with other strains, but developed hybrid sterility after being isolated in a separate culture for just a few years[95] -- and when two populations are incapable of producing fertile offspring through interbreeding, they belong, by definition, to different species.

Another of Kelemen's attacks on evolution:

If the theory of evolution were true, then every species would have been preceded by a nearly identical parent-species. In *The Origin of Species*, Darwin himself admits that such a gradually evolving series of fossils had yet to be discovered:

Geological research, though it has added numerous species to existing and extinct genera, and has made the intervals between some few groups less wide than they otherwise would have been, yet has done scarcely anything in breaking down the distinction between species, by connecting them together by numerous, fine, intermediate varieties; and this not having been effected, is probably the gravest and most obvious of all the many objections which may be urged against my views.

While Darwin had faith that paleontologists would one day discover the missing links, more modern research suggests that they will never be found.[96]

The quote from Darwin is provided by Kelemen with reference to the 6th edition of *The Origin of Species*. The 6th edition, first published in 1872 (and reprinted countless times since then), is considered the most authoritative. It contains numerous answers to criticisms which had been raised against Darwin's theory

since the publication of the first edition in 1859, and it would be highly unlikely for Darwin to leave "the gravest and most obvious of... objections" against his views without answer in this edition -- but were he to do this, it would be a fact of considerable weight.

However, a brief look at several editions of *The Origin of Species*[97] is sufficient to show that Kelemen has again endeavored to deceive. There simply is no such quote in the 6th edition of *The Origin of Species*! The quote is taken from an earlier edition,[98] while in the 6th edition the corresponding passage[99] reads:

It has been asserted over and over again, by writers who believe in the immutability of species, that geology yields no linking forms. This assertion, as we shall see in the next chapter, is certainly erroneous. As Sir J. Lubbock has remarked, "Every species is a link between other allied forms." If we take a genus having a score of species, recent and extinct, and destroy four-fifths of them, no one doubts that the remainder will stand much more distinct from each other. If the extreme forms in the genus happen to have been thus destroyed, the genus itself will stand more distinct from other allied genera. What geological research has not revealed, is the former existence of infinitely numerous gradations, as fine as existing varieties, connecting together nearly all existing and extinct species. But this ought not to be expected; yet this has been repeatedly advanced as a most serious objection against my views.

"This ought not to be expected," Darwin says -- a phrase not quoted by Kelemen -- and explains:

It may be worth while to sum up the... remarks on the causes of the imperfection of the geological record under an imaginary illustration. The Malay Archipelago is about the size of Europe from the North Cape to the Mediterranean, and from Britain to Russia; and therefore equals all the geological formations which have been examined with any accuracy, excepting those of the United States of America. I fully agree with Mr. Godwin-Austen, that the present condition of the Malay Archipelago, with its numerous large islands separated by wide and shallow seas, probably represents the former state of Europe, while most of our formations were accumulating. The Malay Archipelago is one of the richest regions in organic beings; yet if all the species were to be collected which have ever lived there, how imperfectly would they represent the natural history of the world!

But we have every reason to believe that the terrestrial productions of the archipelago would be preserved in an extremely imperfect manner in the formations which we suppose to be there accumulating. Not many of the strictly littoral animals, or of those which lived on naked submarine rocks, would be embedded; and those embedded in gravel or sand would not endure to a distant epoch. Wherever sediment did not accumulate on the bed of the sea,

or where it did not accumulate at a sufficient rate to protect organic bodies from decay, no remains could be preserved.

Formations rich in fossils of many kinds, and of thickness sufficient to last to an age as distant in futurity as the secondary formations lie in the past, would generally be formed in the archipelago only during periods of subsidence. These periods of subsidence would be separated from each other by immense intervals of time, during which the area would be either stationary or rising; whilst rising, the fossiliferous formations on the steeper shores would be destroyed, almost as soon as accumulated, by the incessant coast-action, as we now see on the shores of South America. Even throughout the extensive and shallow seas within the archipelago, sedimentary beds could hardly be accumulated of great thickness during the periods of elevation, or become capped and protected by subsequent deposits, so as to have a good chance of enduring to a very distant future. During the periods of subsidence, there would probably be much extinction of life; during the periods of elevation, there would be much variation, but the geological record would then be less perfect.

It may be doubted whether the duration of any one great period of subsidence over the whole or part of the archipelago, together with a contemporaneous accumulation of sediment, would EXCEED[100] the average duration of the same specific forms; and these contingencies are indispensable for the preservation of all the transitional gradations between any two or more species. If such gradations were not all fully preserved, transitional varieties would merely appear as so many new, though closely allied species. It is also probable that each great period of subsidence would be interrupted by oscillations of level, and that slight climatical changes would intervene during such lengthy periods; and in these cases the inhabitants of the archipelago would migrate, and no closely consecutive record of their modifications could be preserved in any one formation.

Very many of the marine inhabitants of the archipelago now range thousands of miles beyond its confines; and analogy plainly leads to the belief that it would be chiefly these far-ranging species, though only some of them, which would oftenest produce new varieties; and the varieties would at first be local or confined to one place, but if possessed of any decided advantage, or when further modified and improved, they would slowly spread and supplant their parent-forms. When such varieties returned to their ancient homes, as they would differ from their former state in a nearly uniform, though perhaps extremely slight degree, and as they would be found embedded in slightly different sub-stages of the same formation, they would, according to the principles followed by many palaeontologists, be ranked as new and distinct species.

If then there be some degree of truth in these remarks, we have no right to expect to find, in our geological formations, an infinite number of those fine transitional forms, which, on our theory, have connected all the past and present species of the same group into one long and branching chain of life. We ought only to look for a few links, and such assuredly we do find -- some more distantly, some more closely, related to each other; and these links, let them be ever so close, if found in different stages of the same formation, would, by many palaeontologists, be ranked as distinct species. But I do not pretend that I should ever have suspected how poor was the record in the best preserved geological sections, had not the absence of innumerable transitional links between the species which lived at the commencement and close of each formation, pressed so hardly on my theory.

Not only had Darwin little "faith that paleontologists would one day discover the missing links" in their entirety, he also explained why such faith would be unreasonable. Only a small fraction of organisms are preserved as fossils, and only a tiny proportion of them have been recovered and studied by paleontologists. Nevertheless,

the succession of forms over time has been in some cases reconstructed in detail. One example is the evolution of the horse. It began with the dawn horse (genus *Hyracotherium*), an animal the size of a dog, with several toes on each foot and dentition appropriate for browsing, which evolved over 50,000,000 years ago; the most recent form is *Equus*, the modern horse, much larger in size, one-toed, and with teeth appropriate for grazing. The transitional forms are well preserved as fossils, as are many other kinds of extinct horses that evolved in different directions and left no living descendants.[101]

Or another example -- the record of the evolution of humans:

For skeptical contemporaries of Darwin, the "missing link" -- the absence of any transitional form between apes and humans -- was a battle cry, as it remained for uninformed people afterward. Not one but many creatures intermediate between living apes and humans have since been found as fossils. *Australopithecus*, a hominid that lived 3,000,000 or 4,000,000 years ago, had an upright human stance but a cranial capacity of less than 500 cubic centimetres -- comparable to that of a gorilla or chimpanzee and just about one-third that of humans. Its head displayed an odd mixture of ape and human characteristics: a low forehead and a long, ape-like face, but with teeth proportioned like those of humans. Along with increased cranial capacity, other human characteristics have been found in *Homo habilis*, which lived about 1,500,000 to 2,000,000 years ago and had a cranial capacity of more than 600 cubic centimetres, and *Homo*

*erectus*, which lived between 500,000 and more than 1,000,000 years ago and had a cranial capacity of 800 to 1,100 cubic centimetres.  
[102]

In some cases, paleontological discoveries shed light on the most radical transitions in form and function of body parts. Organs which had been previously considered by many irreducibly complex -- able to function only when present in their final form, and not to be expected to evolve through a series of gradual changes from other pre-existing organs -- were discovered by paleontologists in their transitional steps:

The three smallest bones in the human body, the malleus, incus, and stapes, carry sound vibrations across the middle ear, from the membrane-like tympanum (the eardrum) to the oval window. This five component system fits... [the] test of irreducible complexity perfectly -- if any one of its parts are taken away or modified, hearing would be lost. This is the kind of system that evolution supposedly cannot produce. Unfortunately for "intelligent design," the fossil record elegantly and precisely documents exactly how this system formed. During the evolution of mammals, bones that originally formed the rear portion of the reptilian lower jaw were gradually pushed backwards and reduced in size until they migrated into the middle ear, forming the bony connections that carry vibrations into the inner ears of present-day mammals. A system of perfectly-formed, interlocking components, specified by multiple genes, was gradually refashioned and adapted for another purpose altogether... As the well-informed reader may know, creationist critics of this interpretation of fossils in the reptile to mammal transition once charged that this could not have taken place. What would happen, they joked, to the unfortunate reptile while he was waiting for two of his jaw bones to migrate into the middle ear? The poor creature could neither hear nor eat! As students of evolution may know, A. W. Crompton of Harvard University brought this laughter to a deafening halt when he unearthed a fossil with a double articulation of the jaw joint[103] -- an adaptation that would allow the animal to both eat and hear during the transition, enabling natural selection to favor each of the intermediate stages.[104]

The incompleteness of the fossil record should be, of course, taken into account -- but, as it stands now, the fossil record provides evidence for evolution rather than against it.

Finally, Kelemen presents the reader with what he considers "apparently contradictory evidence" to the evolutionary theory:

The theory of evolution teaches that new organs must evolve in tiny stages over a long period of time. Darwin himself wrote in *The Origin of Species*: "If it could be demonstrated that any complex

organ existed which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down." Yet a myriad of such organs have been identified.[105]

This time, the sentence quoted by Kelemen is present in the 6th edition of *The Origin of Species*, as well as in earlier editions. Nevertheless, when Kelemen quotes something, it is worth checking the quote in context (and since the 6th edition of *The Origin* is considered the most authoritative, let us turn to it):[106]

If it could be demonstrated that any complex organ existed, which could not possibly have been formed by numerous, successive, slight modifications, my theory would absolutely break down. But I can find out no such case. No doubt many organs exist of which we do not know the transitional grades, more especially if we look to much-isolated species, around which, according to the theory, there has been much extinction. Or again, if we take an organ common to all the members of a class, for in this latter case the organ must have been originally formed at a remote period, since which all the many members of the class have been developed; and in order to discover the early transitional grades through which the organ has passed, we should have to look to very ancient ancestral forms, long since become extinct.

We should be extremely cautious in concluding that an organ could not have been formed by transitional gradations of some kind.[107]

These words are as true today as they were 150 years ago. Oxford biologist Richard Dawkins asked the following questions concerning the human eye -- one of the favorite creationist examples of a "complex organ... which could not possibly have been formed by numerous, successive, slight modifications:"

1. Could the human eye have arisen directly from no eye at all, in a single step?
2. Could the human eye have arisen directly from something slightly different from itself, something we may call X?[108]

The answer to the first question, Dawkins agrees, is definitely no. But to the second one the answer is equally definitely yes, "provided only that the difference between the modern eye and its intermediate predecessor X is sufficiently small." [109] Yet,

X is *defined* as something very like a human eye, sufficiently similar that the human eye could plausibly have arisen by a single alteration in X. If you have a mental picture of X and you find it implausible that the human eye could have arisen directly from it, this simply means that you have chosen the wrong X. Make your mental picture of X progressively more like a human eye, until you find an X that

you *do* find plausible as an immediate predecessor to the human eye...

Now, having found an X such that the answer to Question 2 is yes, we apply the same question to X itself. By the same reasoning we must conclude that X could plausibly have arisen, directly by a single change, from something slightly different again, which we may call X'. Obviously we can then trace X' back to something else slightly different from it, X'', and so on. By interposing a large enough series of Xs, we can derive human eye from something not slightly different from itself but *very* different from itself. We can "walk" a large distance across "animal space," and our move will be plausible provided we take small-enough steps.[110]

Of course, a mere series of Xs would not suffice -- each of them has to work sufficiently well to assist the survival and the reproduction of the animals in whom it is thought to have been present (though it must assist them in any possible way, not necessarily in the way our eyes assist us). Yet, as Darwin noted, "we should be extremely cautious" in concluding that eye -- or any other organ -- could not evolve through such a series of gradations. In the eye's case, at least, a plausible series of such gradations was found long ago.[111] The famous paleontologist George Gaylord Simpson remarked in 1951 that

In fact, representative stages at every gradually different level [of the conventional hypothetic scheme of eye evolution] happen to have survived [in presently living species], from diffuse photosensitivity of the whole body through scattered photosensitive cells, cell basins, basins and vesicles plus lenses, and so on to the fully developed image-forming eye with lens, iris and its other complexities. These photoreceptors function splendidly at every level and do not wait to start working until the final stage [i.e. a complete eye of any highly developed form] is reached. They simply enlarge, refine, and to some extent change their functions as they become more complex.[112]

And in 1994, the Swedish biologists Dan Nilson and Susanne Pelger built a computer model of eye's evolution, "from a light-sensitive spot to a fully developed lens eye." [113] Under consistently pessimistic assumptions, tending to overestimate rather than underestimate the time necessary for eye's evolution, the model has shown that the whole process would have occurred in less than 400,000 years [114] -- a very short period of time from an evolutionary viewpoint (full-fledged cellular life exists on Earth for at least 3.5 billion years [115] and it took the modern humans 3-4 million years to evolve from the ape-like *Australopithecus*). As Nilson and Pelger concluded, "In this context it is obvious that the eye was never a real threat to Darwin's theory of evolution. [116]

And as Dawkins generalized,

One hundred and twenty five years on, we know a lot more about animals and plants than Darwin did, and still not a single case is

known to me of a complex organ that could not have been formed by numerous successive slight modifications.[117]

Still, it may be illuminating to consider some of the examples Kelemen brings of organs that could not, in his view, "possibly have been formed by numerous, successive, slight modifications:"

Parasitologist Asa Crawford Chandler admitted in 1961: "It would be difficult, if not impossible, to explain, step by step, the details of the process of evolution by which some of the highly specialized parasites reached their present condition." [118]

In fact, Asa Crawford Chandler died in 1958,[119] and could not admit anything in 1961. Kelemen merely meant the 1961 edition of Chandler's *Introduction to Parasitology* (as Kelemen's reference to this work testifies). Interestingly, the same quotation from Chandler's book appears in Denton's *Evolution: A Theory in Crisis*. [120] Additional scrutiny shows that all Kelemen's quotes from scientists speaking of allegedly irreducibly complex organs are taken verbatim from Denton's book. [121] Apparently, Kelemen never opened these scientists' works and mistook the date of *Introduction to Parasitology*'s posthumous publication as when Chandler articulated his views (the book, originally titled *Animal Parasites and Human Disease*, was first published in 1918, and the last edition of Chandler's lifetime saw light in 1955).

In this case, however, ignorance diminishes sin -- for relying wholeheartedly on Denton's book, Kelemen must have been unaware of what Denton did to Chandler's discussion. Let us, again, check the quote in context: [122]

Parasitism, in the restricted sense of a small organism living on or in, and at the expense of, a larger one, probably arose soon after life began to differentiate in the world. It would be difficult, if not impossible, to explain step by step the details of the process of evolution by which some of the highly specialized parasites reached their present condition. Parasitism at times has probably grown out of a harmless association of different kinds of organisms, one of the members of association, by virtue, perhaps, of characteristics already possessed, developing the power of living at the expense of the other, and ultimately becoming more and more dependent upon it.

It is easy to understand the general mechanism by which parasites of the alimentary canal were evolved from free-living organisms which were accidentally or purposely swallowed, and which were able to survive in the environment in which they found themselves, and to adapt themselves to it. It is also easy to see how some of these parasites might eventually have developed further territorial ambitions and have extended their operations beyond the confines of the alimentary canal. The development of some of the blood

Protozoa[123] of vertebrates, on the other hand, seems clearly to have taken place in two steps: first, adaptation to life in the gut of insects and, second, adaptation to life in vertebrates' blood or tissues when inoculated by hosts with skin-piercing and bloodsucking habits.[124]

Contrary to the impression Denton and Kelemen want their readers to have, Chandler did not renounce an evolutionary approach to the biology of parasites; on the contrary, his account of the origins and development of these organisms is coined in purely evolutionary terms. This account is brief and there is surely much more on the evolution of parasites to be said -- but it is simply not the question Chandler's book is dealing with. The sentence quoted by Denton and Kelemen is not Chandler's main thesis, nor even a positive assertion, but rather an admission of lack of knowledge -- fully justified, but incapable, by its very nature, of proving or disproving anything, evolutionary origin of highly specialized parasites included.

Chandler's concern in his *Introduction to Parasitology* was not with the evolution of parasites but with the diseases they cause humans, as the book's original title, *Animal Parasites and Human Disease*, may testify, and as Chandler himself admitted on the first page of the book. But many other textbooks on the biology of parasites (e.g. Elmer and Glenn Noble's *Parasitology*[125] and Arthur Jones' *Introduction to Parasitology*[126]) describe in details the mechanisms of parasites' evolution, and Peter Price, now of Northern Arizona University, authored a whole book titled *Evolutionary Biology of Parasites*. [127] Though many details of the evolution of parasites -- as well as of many other forms of life -- remain unknown to this very day, nothing in parasitology contradicts the evolutionary theory as such, out-of-context citations by Denton and Kelemen notwithstanding.

Another example of Kelemen's/Denton's misquotation of a scientist:

Botanist Francis Ernest Lloyd confessed similar amazement [at features of organisms which are allegedly incomprehensible in the framework of neo-Darwinism] in 1942. Regarding the origin of carnivorous plants (such as the Venus Fly Trap), he wrote: "How the highly specialized organs of capture could have evolved seems to defy our present knowledge." [128]

Although this quote is provided by Kelemen with reference to Lloyd's *The Carnivorous Plants*[129] (p. 7), there is little doubt that Kelemen took both the quote and the reference from Denton, in whose book the quote is a bit expanded:

About the origin and the evolution of the carnivorous plants, however, much as these questions may intrigue the mind, little can be said, nor have I attempted to discuss them. How the highly specialized organs of capture could have evolved seems to defy our present knowledge.[130]

But in Lloyd's book itself, these sentences, taken in context, sound quite differently:[131]

About the origin and the evolution of the carnivorous plants, however, much as these questions may intrigue the mind, little can be said, nor have I attempted to discuss them. The evidence from fossils is meager, for these plants, even the most prolific of them, have seldom been preserved. A *Utricularia*[132] (*U. Berendii* Keilhack) is recorded from the old-diluvial of Oberohe (Engler and Prantl).[133] No others, so far as I know, have been recorded. The water lilies are recorded for the Tertiary,[134] and it is probable that *Utricularia* was contemporary. The fact that they have originated at two or more distinct points in the phylogenetic tree[135] is of major importance. How the highly specialized organs of capture could have evolved seems to defy our present knowledge.[136]

All Lloyd said is that he did not have enough information to account more or less comprehensively for the evolution of carnivorous plants. He does not claim them to constitute a conundrum in principle unsolvable in evolutionary terms. This obstacle was "overcome" by Denton by simply omitting the crucial sentences from the passage without even noting the omission in his quotation.

In fact, nothing in carnivorous plants is unintelligible in evolutionary terms. One of the most famous monographs on this kind of organisms is Charles Darwin's *Insectivorous Plants*[137]-- and the founding father of evolutionary biology found no contradiction to his theory in the plants he studied. Though fossil evidence of transitional forms which could have led from non-carnivorous to carnivorous plants was even more meager in Darwin's days than it was in Lloyd's, comparative analysis of plant forms enabled Darwin to provide a reasonable account of evolutionary paths which could have led to the appearance of certain features in carnivorous plants. Since Darwin, of course, much new evidence from comparative biology, biogeography, paleontology and genetics has become available, and a very detailed account of the possible evolutionary path for the ancestors of modern carnivorous plants may be found in recent works on the subject.[138]

But Kelemen continues:

In 1965, another botanist, Claude Wilson Wardlaw, echoed Lloyd's statement, writing about flora in general:

Special adaptive features such as those exemplified by the plants of special habitats, climbing plants, insectivorous plants, the numerous cunning floral arrangements that ensure cross-pollination, and so on virtually ad libitum, seem to the writer to be difficult to

account for adequately in terms of a sequence of small random variations, and natural selection.[139]

This quote is provided by Kelemen with reference to Wardlaw's *Organization and Evolution in Plants*[140] (p. 405) -- but again, there is little doubt that Kelemen took both the quote and the reference from Denton's book, where the quote appears verbatim.[141] And again, it is worth seeing the quote in context:[142]

Special adaptive features such as those exemplified by the plants of special habitats, climbing plants, insectivorous plants, the vegetative and floral developments in the Rafflesiaceae, [143] the numerous cunning floral arrangements that ensure cross-pollination, and so on virtually *ad lib.*, seem to the writer to be difficult to account for *adequately* in terms of a sequence of small random variations, and natural selection, though all of these considerations are admittedly relevant. Geneticists have assiduously sought validating evidence for their views and have been active in the pursuit of reasoned inference and in the expression of imaginative conjecture. But relevant morphogenetic aspects, especially in the flowering plants -- the largest and most important group with which the botanist has to deal -- have received considerably less attention. When one tries to account for the ontogenesis and phylogenesis of some special adaptive feature, one has no conviction that any *adequate detailed explanation* has yet been advanced.[144] Huxley (1942),[145] as already noted, deprecated the tendency to discuss adaptations mainly with reference to special cases (*see* p. 397[146]). Nevertheless, it is a simple inescapable fact that there are indeed very large numbers of these special cases both in the Plant and Animal Kingdoms which are not satisfactorily accommodated in the omnibus of evolutionary doctrine.[147] But, to be fair, neither are they satisfactorily accounted for by any other scientific doctrine or thesis. We may recognize the Darwinian "explanations" as being valid inferences and reasoned conjectures based on a great body of careful observation and experiment. But, even so, the organismal systems under consideration are complex and still very incompletely understood. Some new and additional system of ideas, based on integrated studies of genetical changes, morphogenetic processes, ecological factors and organization seems to be required.[148]

But to quote Wardlaw saying that the evolutionary considerations "of a sequence of small random variations, and natural selection" are "admittedly relevant" to the discussion of the origins of plants' special adaptive features, that Darwinian concepts are "valid inferences and reasoned conjectures based on a great body of careful observation and experiment," and that the problem is merely the absence

of an "adequate detailed explanation" of the special adaptive features of some organisms would definitely take the wind out of Denton's sails -- so why not take some fragments here and there out of context and make Wardlaw appear to say things he never intended? And if Wardlaw were aware enough of the possibility that his view might be misunderstood to emphasize the main point -- the validity of the general evolutionary approach and the mere absence of an "*adequate detailed explanation*" of some details -- in italics, too bad for Wardlaw. So much for Denton's intellectual honesty.

To be sure, it is hardly fair to blame Kelemen for intentional deception on these points -- though it was his responsibility to check Denton's sources instead of rejoicing at his word as one who finds great spoil. But whether by Kelemen or by Denton, attempts to disprove evolution and to promote instead the idea of special divine creation are more of an endeavor to deceive than permission to believe.

## History Twistory

The fifth chapter of Kelemen's book is titled "The Jewish History Approach to God's Existence," and begins with the following statement:

Thousands of years ago, the Middle East, the cradle of civilization, was a hotbed of polytheism. Monotheism was completely unknown... From ancient man's perspective, polytheism must have seemed the most rational of belief systems. Man examined his environment, recognized the existence of forces beyond his understanding and control, and related to those forces as conscious creatures. It was monotheism -- the belief that all the apparently disparate forces in the universe obey a single omnipotent, omniscient being -- that seemed irrational.

For whatever reasons, the Jews opposed all of mankind and declared the irrational to be true.[149]

Interesting: the author who speaks of being dissatisfied with "the unfortunately widespread misconception that belief in God is necessarily irrational,"[150] appears to admit the irrationality of that belief. And though Kelemen speaks of the "ancient man's perspective," the situation is not much different nowadays:

In fact, if you are a devotee of supernatural explanations, polytheism explains evil better than one-God theories. A devil is easier to blame for cancer than a just God.[151]

The only difference between modern and ancient perspectives is that, with time, an ever increasing number of people realize that all theories alluding to supernatural entities as causes of earthly phenomena are, at best, attempts to explain unclear by incomprehensible. This, however, does not make monotheism any more rational than paganism.

The Jews, in any case, were not the first to discover monotheism: in ancient Egypt, with its elaborate and complicated polytheistic religion, there were streams of thought that saw the various gods as merely the different forms which one universal God at times takes. These streams achieved their greatest triumph in 1375 BCE, when the pharaoh Amenhotep IV

repudiated the authority of the old gods and their priests and devoted himself exclusively to Aton, the god appearing as the sun disk. He proclaimed himself the son of Aton, taking the name *Akhenaton* ("devoted to Aton"), and he imposed this worship on others. By royal decree Aton became the only God who exists, king not only of Egypt but of the whole world, embodying in his character and essence all the attributes of other gods. Akhenaton even had the names of the other gods effaced from inscriptions and replaced with the name of Aton.[152]

Akhenaton's monotheistic reform lasted only 25 years or so and was completely crushed by one of his successors to the Egyptian throne, Tutankhamen, yet it considerably antedated biblical monotheism, which there are no reasons to date earlier than the 1st millennium BCE.

But what about Abraham, Moses and other alleged preachers of the Hebraic monotheism? Not only there is no historical evidence of their lives and activity as described in the Bible, certain details of the biblical stories of these personages betray the period in which these stories were really written. The biblical account of Abraham's mission is prefaced with the comment that Abraham, his wife, his father, and the rest of his relatives "went out from Ur of the Chaldeans [*Ur Kasdim*]."[153] The Bible's chronological scheme places Abraham somewhere between 2000-1600 BCE, but the Chaldean tribes reached southern Mesopotamia (where the city of Ur is situated) only by the end of the second millennium BCE; the first historic reference to them appears in Assyrian documents of the 9th century BCE.[154] Furthermore, Ur became a major religious center of the Neo-Babylonian (Chaldean) kingdom only in the mid-6th century BCE, and some researchers suppose that the reference to Abraham's origin from "Ur of the Chaldeans" dates to that period and was intended to provide the Jews, then under Babylonian rule, with "a distinguished and ancient cultural pedigree." [155]

The book of Genesis says that "Abraham sojourned in the land of the Philistines many days,"[156] and that "Isaac went to Abimelech king of the Philistines to Gerar." [157] That Gerar is situated in Canaan is clear from God's warning to Isaac not to leave that land and Isaac's resultant settlement in Gerar.[158] But the Philistines appeared on the southern coast of Canaan only in the 12th century BCE; [159] such an anachronism can hardly be expected of a divinely authored book. Furthermore, the excavations at Gerar, identified with Tel Haror northwest of Beersheba, show that in the early phase of Philistine history it was a small, insignificant village, hardly likely to be known to anybody outside its nearest vicinity -- but by the late 8th-7th centuries BCE, "it had become a strong, heavily fortified Assyrian administrative stronghold on the south, an obvious landmark,"

[160] most likely to be mentioned by a contemporary author of the account of Isaac's sojourn in Philistia.

Nor is the situation better with Moses, the alleged leader of the Exodus from Egypt -- one of the pivotal events of the biblical tradition. In the vast multitude of ancient Egyptian sources available to modern scholarship there is not a single mention of a people called Jews, Israelites, or Hebrews being enslaved in Egypt, nor of their escape therefrom (the famous stele of Pharaoh Merneptah, who reigned in 1213-1204 BCE, mentions a people called Israel -- but in Canaan, not in Egypt, and "laid waste" by Merneptah's army[161]). No evidence is found of the great and awesome Ten Plagues nor of drowning of all the Egyptian army in the Red Sea waters. True, absence of evidence does not usually count as evidence of absence -- but there are situations in which it does. Suppose, for example, that someone has told you that in June 1917 a tremendous earthquake shook London, turned half of the city into ruins, and killed 15,000,000 people. You go to a library, browse through major newspapers of the relevant period -- and find no mention of an earthquake in London's vicinity. You search the newspapers for mention of reconstruction works in the aftermath of the earthquake or for accounts of relief extended to the survivors -- with no result. You read several books on earthquakes -- and find no mention of an earthquake in London in June 1917 or at any other period. For a levelheaded person this would be sufficient to conclude that the earthquake in question had never occurred and that reports of it are mere fiction.

But you need not stop at that. You may recall that in June 1917 World War I was at its peak, Great Britain was fervently fighting Germany and the other Central Powers in Europe and elsewhere, and on June 7th the British started an offensive in Flanders which led to the Third Battle of Ypres in July-November 1917[162] -- not an exploit to be expected of a country suffering from such a large-scale catastrophe. You may also study the tectonics of London and the area and recognize that there is no real chance for an earthquake to occur there. You may go to London and see a lot of buildings -- more or less famous -- which were built before June 1917 and continue to stand without having suffered any disturbance. You may learn that in 1917 there were less than 15,000,000 people in London and its vicinity, and so on.

Now, this is exactly the situation with the Exodus from Egypt. Not only there is no mention of anything like it in the numerous Egyptian documents of the period, it is also plainly impossible that it occurred. The biblical chronological scheme places the Exodus at sometime between 1500 and 1200 BCE (depending on the interpretation of some mutually contradictory passages in the Bible). The interpretation adopted by the Judaic tradition, to which Kelemen apparently adheres, implies that the event took place in the year 2448 from Creation,[163] 1313 BCE. The Bible says that the number of Israelite adult males escaping from Egypt was 600,000 -- which would imply some 2.5 million people, including the women and children. But archaeological research shows that the whole population of Egypt towards the end of the 2nd millennium BCE was only 2-3 million people.[164] So, with the Israelites' departure Egypt would have become devastated -- but the archaeological record shows no traces of such devastation,

and in fact, no large population decrease occurred in ancient Egypt from the late 4th millennium to the 4th century BCE.

Moreover, were Egypt indeed to undergo the calamities described as the Ten Plagues and were its army to drown in the Red Sea, its chief adversary of the period -- the Hittites -- would have immediately invaded the powerless empire. In fact, at the end of the 14th-beginning of the 13th centuries BCE Egypt and the Hittite empire were in a state of constant war, and not much imagination is needed to realize what the Hittites would have done to Egypt were the latter reduced to the state described by the Bible -- especially in the light of Moses' assertion in Deuteronomy 11:4 that, 40 years after the Exodus, the Egyptian army was still ruined. But instead of a Hittite invasion of Egypt, the two powers fought a decades-long indecisive war which ended with a peace treaty and a mutual defense pact signed between Egypt and the Hittite empire and endorsed by the marriage of the Hittite king's daughter to Ramses II.[165]

The Bible tells us that after they left Egypt, the Israelites wandered for 40 years in the Sinai desert, and there they experienced God's revelation. Major nomadic activity in an area of such size usually leaves a lot of traces easily discoverable by archaeologists, especially since "modern archaeological techniques are quite capable of tracing even the very meager remains of hunter-gatherers and pastoral nomads all over the world. Indeed, the archaeological record from the Sinai peninsula discloses evidence for pastoral activity in such eras as the third millennium BCE and the Hellenistic and Byzantine periods [when the population of Sinai was tiny compared to the wandering Israelites of the Bible]."[166] Yet "repeated archaeological surveys in all regions of the peninsula, including the mountainous area around the traditional site of Mount Sinai... have yielded only negative evidence: not a single sherd, no structure, not a single house, no trace of ancient encampment."[167]

Among the places in which Israelites encamped on their journey through Sinai, the Bible mentions Esion Geber and Qadesh Barne'a.[168] The latter is identified by archaeologists with the large and well-watered oasis of Ein el-Qudeirat in eastern Sinai (a water spring near that oasis is to this day called Ein Qadis) and the former is mentioned in the Bible as a port town on the north-eastern tip of the Red Sea,[169] which led to its identification by archaeologists with a mound located between the modern towns of Eilat and Aqaba. However, numerous excavations and surveys throughout these areas have not provided even the slightest evidence of any settlement or encampment there at the time of the Israelites' alleged wandering through Sinai.[170]

No less telltale is the fact that in the 14th-12th centuries BCE Canaan was under firm Egyptian grip. Egyptian forts were built throughout the country and Egyptian officials administered its affairs. From the Tell el-Amarna letters, dated to the 14th century BCE, it appears that a unit of fifty Egyptian soldiers was strong enough to pacify unrest in Canaan.[171] The very idea of an exodus from Egypt to Egyptian Canaan would seem quite ludicrous -- and, not surprisingly, in the stories of the Israelite conquest of Canaan in the books of Joshua and Judges there is no mention of the Egyptians altogether.

The stories of the Exodus, the Israelites' wandering at Sinai (including, of necessity, the famous revelation), and their conquest of Canaan appear to be utterly unhistorical. But there are some clues in the story about the time when it was really written.[172] The boldest of them is, apparently, the biblical account of Moses sending emissaries to the king of Edom to ask permission to pass through his territory on the way to Canaan -- permission which the king of Edom refused to grant, thus making Israelites bypass his land.[173] The Bible implies that in the last year of the Israelites' wandering through Sinai there was already a kingdom in Edom. However, "archaeological investigations indicate that Edom reached statehood only under Assyrian auspices in the seventh century BCE. Before that period it was a sparsely settled fringe area inhabited mainly by pastoral nomads." [174]

The evidence is overwhelming; even William Dever, one of the most "pro-biblical" present-day archaeologists, recently admitted that the "seventh-century BC[E] date for the composition of most of the Pentateuch and the Deuteronomistic History" and the conclusion of unhistoricity of the core biblical account from the Patriarchs to the conquest of Canaan are "almost certainly right." [175]

To Kelemen such situation is, of course, extremely undesirable. He has found an easy way out of the problem: the unselective adoption of anything in print apparently supporting the biblical story and gerrymandering the sources if necessary. For example:

Historians are at a loss to explain how the Jews managed to get out of Egypt. Archaeologists are beginning to suspect that they slipped out amid a series of natural disasters that convulsed ancient Egypt. The *Ipuwer Papyrus*, acquired by the Museum of Leiden in 1828, contains an ancient Egyptian's eyewitness report of such disasters -- the Nile flowing with blood, hail storms that devastated Egypt's crops, inexplicable darkness, and other strange phenomena. A monolith discovered in el-Arish, a town near the modern Egyptian-Israeli border, contains a similar report.[176]

This statement is provided by Kelemen with references to a book by Immanuel Velikovsky, *Ages in Chaos*[177] (v. 1, pp. 22-45). However, Velikovsky was not an archaeologist. He was a psychologist, deeply persuaded that the Exodus from Egypt took place as it is described in the Bible (more or less). The sheer absence of Egyptian reference to such an event did not confuse him: "It has been argued," he remarked, "that no people would invent legends about bondage which were not calculated to enhance the dignity of the nation, and therefore... there must be a historical basis for the story." [178] This argument is neither unique to Velikovsky (it has been repeated numerous times, and stated even by Encyclopaedia Hebraica and Encyclopaedia Biblica[179]) nor convincing: after all, the first chapter of the book of Exodus tells how the Israelites, people of respectable pedigree, were perfidiously enslaved by Egyptians who feared their multiplicity and might. Thus, the point of the legend of the Egyptian servitude might have been provoking anti-Egyptian sentiments among the Israelites (for whatever purpose), and invention of

slave ancestry was merely cutting of the nose necessary to incense the face. On the other hand, Velikovsky's argument refers not to the Exodus itself but merely to the Israelites' enslavement in or to Egypt. If it is agreed that the Israelites did not conquer Canaan from outside but gradually emerged as a distinct ethnic group therein (which is a matter of almost unanimous consensus among present-day researchers[180]), then one must take into account that during the 15th-13th centuries BCE Palestine was under Egyptian yoke, and that a careful reading of Exodus 1:11, describing the Israelites' work for their Egyptian masters, provides some parallels to the Tell el-Amarna letters describing the Canaanites' work for their local rulers and Egyptian overlords.[181] The story of the Israelites' servitude *in* Egypt may then reflect their servitude *to* the Egyptians in their native land (although some of them may have been taken to Egypt to build "store cities," and a few may have managed to escape back to their homeland). In the 12th century, Egyptian rule had collapsed in most of Palestine in the wake of havoc wrecked there by the invasion of the Sea Peoples (of whom the Philistines were a part), and due to the anarchy which followed the reign of the last weak kings of the 19th Dynasty in Egypt.[182] The Israelites and the Canaanites (who were not significantly different from each other at that time) were thus left to their own devices, and the Exodus story may have been invented later to glorify the not-so-glorious past: isn't it worth sacrificing some human pride to have been redeemed by God Himself? The "no baseless bondage legends" claim is insufficient to argue for the historicity of the Exodus, and Velikovsky might have suspected that.

Assuming rather than intending to prove the historicity of the Exodus, Velikovsky set out to find extra-biblical evidence for it. And he succeeded -- or at least, so he thought. The "evidence" he discovered is the Ipuwer Papyrus mentioned by Kelemen. By picking up a phrase here and half a sentence there, Velikovsky purported to show that the papyrus describes the Ten Plagues from an Egyptian eyewitness' point of view. No matter that these phrases and half-sentences, taken in context, resemble less than remotely the biblical account of the Plagues -- the best parallel between the papyrus and the book of Exodus, noted even by academic sources,[183] is "Lo, the river is blood"[184] vs. "All the waters in the river were turned into blood,"[185] but the source of the blood specified by Ipuwer is very different from that spoken of in Exodus: "Lo, many dead are buried in the river, the stream is the grave, the tomb became stream"[186] (this could not, of course, turn the whole river into blood, but there is no indication in the papyrus that the phrase "the river is blood" is anything more than hyperbole). No matter that the papyrus, even under Velikovsky's "wishful reading," makes no mention whatsoever of Hebrews or Israelites, Moses or Aharon, nor of anything resembling even remotely the plagues of the frogs, the lice, the wild beasts, the boils, the locusts and the death of the firstborn (in order to solve the perplexity with the death of the firstborn, the most impressive plague of the Exodus story, Velikovsky had to render the Hebrew word for "firstborn," *bekhor*, as *bahir*, "chosen"[187] -- though in Hebrew these are two absolutely different words, formed of different roots). No matter that the papyrus describes social chaos accompanied with natural disasters rather than calamities of nature (Plagues) leading to a flight of a group of slaves from the country (Exodus). No matter that the papyrus is written in Middle Egyptian -- a form of the ancient Egyptian

language which went out of use with the end of the so-called Middle Kingdom in Egypt, while all the pharaohs bearing the name Ramses for whom the enslaved Israelites could have built a store city with this name[188] ruled during the New Kingdom -- hundreds of years later. No matter that the Ipuwer Papyrus bears an awfully ambiguous character, which brought Egyptologists to dispute whether it has any historical basis[189] or none at all, being instead a representative of the fictitious "order versus chaos" genre.[190] To all these considerations Velikovsky preferred his firm belief in the historicity of the Exodus story as presented in the Bible, producing as a result an account which is best defined as wishful thinking.

The same may be said of Velikovsky's interpretation of the inscription covering the outside walls of the El-Arish shrine[191] (whose designation as a "monolith" both by Kelemen and Velikovsky may be due to the fact that the shrine was hollowed out from a single block of stone). Velikovsky claimed to have found in this inscription the following parallels to the biblical story of the Exodus: the name of King Thom or Thoum (in whose honor the store city of Pithom, built by the enslaved Israelites, was named), the mention of a place called Pi-Kharoti (biblical Pi-ha-Hirot, to which the Pharaoh pursued the fleeing Israelites and where his army drowned in the Red Sea), the mention of the plague of darkness, and the mention of the king leaping into "the Place of the Whirlpool" (which Velikovsky understood as a report of the pharaoh and his hosts drowning in the Red Sea).[192]

The facts are, however, quite different. All the personages mentioned in the inscription are Egyptian deities, not people -- which places the inscription in the realm of mythology rather than history; as the famous French Egyptologist Gaston Maspero has noted, "Were there ever duller legends and a more senile phantasy!"[193] That an Egyptian myth mentions some days of darkness lends, obviously, no credence to a Hebrew source mentioning some days of darkness also.

The deities mentioned in the inscription are

Shu, the son of Ra or Atum, Tefnut, and Geb, son of Shu. In the theological system of Heliopolis [one of the ancient Egypt's religious centers], Atum or Ra was the primeval creator. His offspring, Shu and Tefnut, were the first couple. From their union arose Geb and Nut, or earth and sky (who in turn produced Osiris, Isis, Set, Nephthys, and Horus). Atum-Ra, Shu, and Geb succeed one another as rulers of creation.[194]

Atum is mentioned in the inscription as Tum/Toum; in fact, the names Atum, Tum and Ra are used in the text interchangeably: as Georges Goyon noted at the very beginning of his translation, "in the continuation of the narrative, the first king of the universe is sometimes Ra, sometimes Toum."[195] Tum of the el-Arish inscription has no connection to any historical king whatsoever.

As to the place called Pi-Kharoti, it is indeed mentioned in the inscription -- but as a place where Geb raped his mother Tefnut (or, as Francis Griffith put it gently in his translation, "seized her by force"[196]). And the reported occurrence at the

"Place of the Whirlpool" is entirely different from what Velikovsky claims it to be:

Now when the majesty of Ra Harmachis [fought] with the evil-doers in this pool, the Place of the Whirlpool, the evil-doers prevailed not over his majesty. His majesty leapt into the so-called Place of the Whirlpool? His legs became those of a crocodile, his head that of a hawk with bull's horns upon it: he smote the evil-doers in the Place of the Whirlpool?[197]

This is Griffith's translation, and he was not sure about the reading "Place of the Whirlpool" -- he followed it with a question mark and noted, "The reading of this name is unknown;" Goyon leaved this name in transliteration, *Yat-Desoui*, and noted that it should be translated "the hill of the two knives." [198] But in any event, this is not Pi-Kharoti, and the report of Ra turning into a hawk-headed bull-horned crocodile who "smote the evil-doers" has nothing to do with the biblical story of the Pharaoh and his hosts drowning in the Red Sea. This may be the reason Velikovsky cited in his book [199] only the fragment marked in the above quote in bold. Out-of-context quotations are not the exclusive prerogative of writers trying to disprove the theory of evolution -- but Kelemen, again, should have been more scrupulous picking up his sources.

From the Exodus Kelemen proceeds to the alleged conquest of Canaan by the Israelites:

The land that the Jews felt belonged to them was then occupied by more than a half-dozen nations. The archaeological record, in consonance with the book of Joshua, suggests that the Jews triumphed over the natives in a series of wildly destructive battles. Commenting on the findings of archaeologist Kathleen Kenyon at the biblical site of Jericho (the first town conquered by the Jews), a journalist reported, "Owing to erosion, the Kenyon researches threw no light on how the [city] walls were destroyed; [but] Kenyon thinks it may have been an earthquake, which the Israelites attributed to Divine intervention." Similar ruins were found at the biblical sites of Gibeon and Hazor, also towns taken by the Jews in their initial foray. [200]

"A journalist" here is Paul Johnson, a writer for *The New York Times* and afterwards editor of the *New Statesman*, from whose *A History of the Jews* [201] (p. 43) the quote about Jericho is taken. So far so good.

But what Johnson actually says in this quote is that Kenyon was not able to throw any light on how the walls of Jericho were destroyed; her proposition about an earthquake is a mere guess. Moreover, Kenyon admitted in her *Digging Up Jericho* [202] -- which Johnson claims to be his source [203] -- that "of the town walls of the Late Bronze Age, within which period the attack by the Israelites must fall by any dating, not a trace remains;" [204] thus, it is absolutely not clear

whether there were any walls at all in the Late Bronze Age city. On the other hand, a violent destruction of Jericho's fortifications in the Middle Bronze Age, shortly after 1580 BCE, is well reflected by the archeological record<sup>[205]</sup> -- only it occurred centuries before any Israelites could show up in the area. A new town was built at the same location about 1400 BCE, but it was abandoned -- for unknown reasons -- in the third quarter of the 14th century BCE.<sup>[206]</sup> Since the Judaic tradition dates the Exodus to 1313 BCE, it dates the Conquest of Canaan to the second quarter of the 13th century, when the site of Jericho had already been desolate for 50 years or so. There simply was no city for the Israelites to conquer.

Hazor, on the other hand, was indeed violently destroyed in the 13th century BCE,<sup>[207]</sup> but its ruins -- those of a great Canaanite city-state in all its splendor -- are hardly similar to the ruins of the Late Bronze Age Jericho, a small town of which little has remained. If anything, the ruins of Hazor are similar to those of the fortified Middle Bronze Age Jericho -- but 300 years elapsed between the destructions of these two cities.

As for Gibeon, no traces of violent destruction in the 13th century CE were found there -- nor were any expected, since the Bible itself denies that the Israelites took Gibeon in a "foray." The ninth chapter of Joshua vividly describes how the Gibeonites, frightened by the havoc the Israelites wrecked on Jericho and Ai, sent emissaries to Joshua to arrange for peace; the emissaries, making themselves appear as strangers and not natives of Canaan (who, according to God's commandment, had to be exterminated), succeeded in securing a peace agreement -- and when three days later Joshua's warriors discovered who the Gibeonites really were, the agreement remained intact, except that as punishment for deceit, Joshua ordered the Gibeonites to be "hewers of wood and drawers of water" for the Israelites. Joshua 11:19 repeats this point plainly: "There was not a city which made peace with the Sons of Israel except the Hivites living in Gibeon; they took them all in battle." And Paul Johnson, whose book *Kelemen* brings again as his source,<sup>[208]</sup> speaks, of course, not of an Israelite assault on Gibeon but on the defeat the Israelites, bound by the above agreement, wrecked upon the armies of five Canaanite kings who attempted an assault on the renegade Gibeonites -- or at least, so the Bible says.<sup>[209]</sup> If Kelemen wished to present his readers a Bible-style history of the Israelites, he had to read the Bible more carefully.

But the biblical picture of the conquest of Canaan is hardly more historical than that of the Exodus. Excavations at the mound in the village of El-Jib (some 5 miles northwest of the Old City of Jerusalem), identified with the biblical Gibeon,

Revealed remains from the Middle Bronze Age and from the Iron Age, but none from the Late Bronze Age. And archaeological surveys at the sites of the other three "Gibeonite" towns of Chephirah, Beeroth, and Kirjath-jearim revealed the same picture: at none of the sites were there any Late Bronze Age remains. The same holds true for other towns mentioned in the conquest narrative and in the summary list of the kings of Canaan (Joshua 12). Among them we find Arad (in the Negev) and Heshbon (in Transjordan).<sup>[210]</sup>

And in Ay (identified with Khirbet et-Tell, about 10 miles northeast of the Old City of Jerusalem), "extensive remains of a huge Early Bronze Age city" were found but "not a single pottery sherd or any other indication of settlement there in the Late Bronze Age."[211] One must add the fact that no mention of the Egyptian presence in Canaan is found in the books of Joshua and Judges -- too big a blunder to be made if these books had indeed described the historical events of the 13th-12th centuries BCE. In short, the biblical story of the conquest is myth rather than history.

But Kelemen does not stop with the Conquest:

The Jews held the land of Israel for a time, repelling attack after attack from neighboring armies. In 701 BCE the Assyrian king Sennacherib made it as far as the walls of Jerusalem, but his entire battalion was wiped out one night in a mysterious epidemic. The Greek historian Herodotus attributed the Assyrian defeat to "a violent outbreak of bubonic plague." The biblical version of the story reads: "And it came to pass that night that the angel of the Lord went out and smote in the camp of Assyria one hundred eighty-five thousand; and when [the Jews] arose early in the morning, behold, [the Assyrians] were all dead corpses."[212]

Instead of reference to Herodotus' own work, Kelemen provides his quote with reference to Paul Johnson's *A History of the Jews* (p. 73). Johnson, in turn, speaks of Jerusalem being saved from Sennacherib by "a violent outbreak of bubonic plague, carried by mice, to which the Greek historian Herodotus later referred" -- but provides no reference whatsoever.

In fact, Herodotus did speak of a plague carried by mice -- but in entirely different circumstances:

...there came to the throne the priest of Hephaistos, whose name was Sethos. This man, they said, neglected and held in no regard the warrior class of the Egyptians, considering that he would have no need of them; and besides other slights which he put upon them, he also took from them the yokes of corn-land which had been given to them as a special gift in the reigns of the former kings, twelve yokes to each man. After this, Sanacharib king of the Arabians and of the Assyrians marched a great host against Egypt. Then the warriors of the Egyptians refused to come to the rescue, and the priest, being driven into a strait, entered into the sanctuary of the temple and bewailed to the image of the god the danger which was impending over him; and as he was thus lamenting, sleep came upon him, and it seemed to him in his vision that the god came and stood by him and encouraged him, saying that he should suffer no evil if he went forth to meet the army of the Arabians; for he himself would send him helpers. Trusting in these things seen in sleep, he took with him, they said, those of the Egyptians who were willing to follow him, and encamped in Pelusion, for by this way the invasion came: and not one

of the warrior class followed him, but shop-keepers and artisans and men of the market. Then after they came, there swarmed by night upon their enemies mice of the fields, and ate up their quivers and their bows, and moreover the handles of their shields, so that on the next day they fled, and being without defence of arms great numbers fell. And at the present time this king stands in the temple of Hephaistos in stone, holding upon his hand a mouse, and by letters inscribed he says these words: "Let him who looks upon me learn to fear the gods." [213]

To be sure, this account smells too much of myth -- a genre of which Herodotus' *History* is not free -- but it can testify to a literary motif common to Herodotus and the Bible: deliverance of righteous from danger through a plague miraculously inflicted on the enemy army. Besides the above passage, there is no source speaking of an Assyrian invasion of Egypt during the reign of Pharaoh Shebitku (Herodotus' Sethos, ruled 703-690 BCE), and Sennacherib's campaign against Judah in 701 BCE is described by the king himself in a totally different way:

As to Hezekiah, the Jew, he did not submit to my yoke, I laid siege to 46 of his strong cities, walled forts and to the countless small villages in their vicinity, and conquered (them) by means of well-stamped (earth-)ramps, and battering-rams brought (thus) near (to the walls) (combined with) the attack by foot soldiers, (using) mines, breeches as well as sapper work. I drove out of them 200,150 people, young and old, male and female, horses, mules, donkeys, camels, big and small cattle beyond counting, and considered (them) booty. Himself I made a prisoner in Jerusalem, his royal residence, like a bird in a cage. I surrounded him with earthwork in order to molest those who were leaving his city's gate. His towns which I had plundered, I took away from his country and gave them (over) to Mitinti, king of Ashdod, Padi, king of Ekron, and Sillibel, king of Gaza. Thus I reduced his country, but I still increased the tribute and the *katrû*-presents (due) to me (as his) overlord which I imposed (later) upon him beyond the former tribute to be delivered annually. Hezekiah himself, whom the terror-inspiring splendor of my lordship had overwhelmed and whose irregular and elite troops which he had brought into Jerusalem, his royal residence, in order to strengthen (it), had deserted him, did send me, later, to Nineveh, my lordly city, together with 30 talents of gold, 800 talents of silver, precious stones, antimony, large cuts of red stone, couches (inlaid) with ivory, *nîmedu*-chairs (inlaid) with ivory, elephant-hides, ebony-wood, box-wood (and) all kinds of valuable treasures, his (own) daughters, concubines, male and female musicians. In order to deliver the tribute and to do obeisance as a slave he sent his (personal) messenger. [214]

Of course there is no reason to trust Sennacherib any more than the Bible (the number of 200,150 captives driven out from Judah is a terrible exaggeration:

archaeological research shows that the total number of people in Judah at that time was some 110,000, and in Jerusalem only about 7,500[215]). But even in the Bible itself, the picture of the Assyrian onslaught on Judah is far from consistent. Thus, just before the story of the Assyrian march on Jerusalem and the city's miraculous deliverance, the Bible tells that

In the fourteenth year of King Hezekiah's reign, Sennacherib king of Assyria attacked all the fortified cities of Judah and captured them. So Hezekiah king of Judah sent this message to the king of Assyria at Lakhish: "I have done wrong. Withdraw from me, and I will pay whatever you demand of me." The king of Assyria exacted from Hezekiah king of Judah three hundred talents of silver and thirty talents of gold. So Hezekiah gave him all the silver that was found in the temple of the Lord and in the treasuries of the royal palace. At this time Hezekiah king of Judah stripped off the gold with which he had covered the doors and doorposts of the temple of the Lord, and gave it to the king of Assyria.[216]

In spite of some differences in details of the tribute paid by Hezekiah to Sennacherib -- the biblical writer's reluctance to mention Hezekiah's own daughters and concubines being sent to the king of Assyria for obvious purpose is quite understandable -- this biblical account is fairly concurrent with Sennacherib's own document. It is the continuation of the biblical story which is problematic: if Hezekiah had already agreed to pay Sennacherib any tribute he demanded, recognizing the Assyrian king thereby as his legitimate overlord, why would Sennacherib send his army on Jerusalem? Also, there is no reason why an army of 185,000 soldiers would be sent to besiege a city populated by tens of thousands of people at best (even under assumption that numerous refugees from the devastated Judean hinterland fled to Jerusalem). If Sennacherib could indeed muster such a number of troops (which is by no means certain), it would be almost all the manpower he could muster, and the loss of it would render Assyria powerless for a long time -- which did not happen, of course: only a year after his Judean campaign Sennacherib was able to suppress quite easily a major rebellion in Babylonia, and the next few years sufficed him to prepare a major onslaught on Elam (in what is now southwestern Iran).[217] It seems rather certain that the Bible's account in II Kings 18:13-16 is historical while the subsequent story of Jerusalem delivered from the Assyrians by an angel of God is literary fiction of a genre quite common in the ancient Near East.

Another version of history by Kelemen:

Seventy years later [from Nebuchadnezzar's conquest of Jerusalem], though, there were still Jews in Babylon and the surrounding territories who cared about being Jewish. And when the Babylonian empire was uprooted by an alliance of Persians and Medes, the new head of the state, Cyrus the Great, proclaimed the Jews free to return to Israel. News of the exile's end spread quickly, drawing waves of Jewish pilgrims from across the Near East. Under close Persian

scrutiny, the Jews reestablished their independence and reconstructed their Temple in Jerusalem. They thus became the first people in recorded history to regain a land they had lost in a bloody defeat more than half a century earlier.[218]

Hardly a single sentence here is true. The Neo-Babylonian Empire of Nebuchadnezzar and his successors was not "uprooted by an alliance of Persians and Medes." The last king of this empire, Nabonidus, even concluded a treaty of mutual defense with the Median king Astyages; both of them feared the rising regional power -- the Persians under Cyrus' leadership.[219] Cyrus himself was affiliated with the Medes: he was married to Astyages' daughter and in 559 BCE inherited his father's position as the ruler of Persia and a vassal to the Median court. Less than a decade later, however, he openly rebelled against his overlords and defeated them in a battle in which considerable numbers of Median troops deserted to the Persian side. In 550 BCE the Median empire became the first Persian empire, ruled for 220 years after by the kings of Cyrus' Achaemenid dynasty.[220] In the summer of 539 BCE Cyrus marched into Babylon, hailed by local priests and large sectors of population who had been previously opposed to Nabonidus' policies, which included appeal to the cult of the moon god Sin instead of the local chief god Marduk.[221]

The first conquest of Jerusalem by Nebuchadnezzar's troops took place in 597 BCE; the second, resulting in the First Temple's destruction, occurred in 587 BCE.[222] None of the two preceded Cyrus' conquest of Babylonia by 70 years. Kelemen's "seventy years" are but another biblical construct:

"This whole country will become a desolate wasteland, and these peoples [of Judah] will serve the king of Babylon seventy years. But when the seventy years are fulfilled, I will punish the king of Babylon and his nation, the land of the Chaldeans, for their guilt," declares the Lord, "and I will make it desolate forever." [223]

And this is just one more biblical construct at odds with history. Not only did the Babylonian domination over Judah not last 70 years, Judah did not become "desolate wasteland" either:

The most thorough research of the settlement of Judah in the Babylonian period, conducted by Oded Lipshits of Tel Aviv University, has shown that the site of Tell en-Nasbeh near modern Ramallah -- identified as the location of biblical Mizpah -- was not destroyed in the Babylonian campaign, and that it was indeed the most important settlement in the region in the sixth century BCE. Other sites north of Jerusalem such as Bethel and Gibeon continued to be inhabited in the same era. In the area to the south of Jerusalem, around Bethlehem, there seems to have been significant continuity from the late monarchic [of the last Judah's kings] to the Babylonian period. Thus, to both the north and south of Jerusalem, life continued almost uninterrupted.[224]

Jeremiah 52:28-30 -- the only account of the number of Jews exiled to Babylonia that is internally consistent, covers all the waves of exile, and does not operate with suspicious round numbers (usually too pretty to be true) -- reports that the deportations totaled 4,600 people. To be sure, these may be merely male heads of exiled households (a system of census quite common in the ancient world), in which case it is possible to speak of some 20,000 Jewish deportees. But the total population of Judah before the exile (in the late 7th century CE) "can be quite accurately estimated from data collected during intensive surveys and excavations at about seventy-five thousand."<sup>[225]</sup> Thus, only a quarter or so of Judah's population was exiled to Babylonia. And the latter, of course, did not become desolate after the Persian conquest -- instead, it became the richest province of Cyrus' empire.<sup>[226]</sup> Nor has it become desolate forever.

Cyrus' permission to the exiled Jews to return to their land and to rebuild their Temple was anything but unique, as Cyrus' own testimony reveals:

(As to the region) from...<sup>[227]</sup> as far as Ashur and Susa, Agade, Eshnunna, the towns Zamban, Me-Turnu, Der as well as the region of Gutians, I returned to (these) sacred cities on the other side of the Tigris, the sanctuaries of which have been ruins for a long time, the images which (used) to live therein and established for them permanent sanctuaries. I (also) gathered all their (former) inhabitants and returned (to them) their habitations.<sup>[228]</sup>

Taught by the example of Babylon, Cyrus was tolerant to the religions of peoples inhabiting his empire. To him, the God of the Jews was but another deity on a par with those of Sumer and Akkad, whose images he ordered to be restored to their former temples.<sup>[229]</sup>

Nor was the return to Judah -- or, more precisely, to the new Persian province of Yehud (Judea) that "was a much smaller territory even than the limited area of Judah in the late seventh century BCE"<sup>[230]</sup> - - remarkably massive. There were, at best, tens of thousands of Jews abroad, and while Ezra 2:64 and Nehemiah 7:66-67 speak of almost 50,000 repatriates, "survey data from all the settlements in Yehud in the fifth-fourth centuries BCE yields a population of approximately thirty thousand people"<sup>[231]</sup> -- including the descendants of those who were left at home under Nebuchadnezzar, of course.

The Jewish repatriates did not "reestablish their independence" either: Judea was run by Persian-appointed governors; together with other parts of Palestine, Syria, the Phoenician coast, and Cyprus it formed the fifth satrapy of the Persian Empire.<sup>[232]</sup> Nehemiah 9:37 records the Jews bewailing to God that Judea's "abundant harvest goes to the kings You have placed over us. They rule over our bodies and our cattle as they please." To be sure, King Artaxerxes (either I or II) of Persia granted Ezra authority over the Jews in the "Province Beyond-the-River" (west of the Euphrates), including the right to sentence transgressors to monetary fines, terms in prison, exile and even death

-- but Ezra had to provide for observance of "the law of the king" on a par with "the law of God." [233] Still, the importance to Jewish history of this autonomy can hardly be overestimated: here was set the precedent for more than two millennia of Jewish autonomy, which enabled the Jews to survive as a people without maintaining full political independence.

One should bear this Jewish autonomy in mind when reading the continuation of Kelemen's narrative:

In 332 BCE the Greeks completed a quick, lethal campaign against the Persian empire. Alexander of Macedon's generals carved up the Near East, establishing kingdoms in Egypt, Syria, Mesopotamia and Anatolia. The Jews struggled to maintain some freedoms, despite the Greek stranglehold tightening around their community. But in 167 BCE the Greeks outlawed Judaism and Jewish educational activities, and converted the Temple in Jerusalem into a showplace for Greek idols. The Jews moved to revolt but were put down by merciless troops. They then went underground, breaking into bands of guerillas who would ravage the Greeks in and around the Temple area and then disappear into the Judean hills to regroup. Headed by Matisyahu Hasmon, the Jewish offensive caused the Greeks tremendous losses, and eventually the empire withdrew from Jerusalem. In 164 BCE the Jews reclaimed their Temple and rededicated it to the one God. A tiny band of guerillas had repelled the most powerful military force on the face of the globe. [234]

In fact, no "Greek stranglehold" tightened around the Jews after Alexander the Great until the Seleucid king Antiochus IV Epiphanes, under whose reign the persecutions of 167-164 BCE took place. Of Alexander's own affairs in Judea little is known; Flavius Josephus [235] tells that when the great conqueror was crushing one Persian stronghold in Syria-Palestine after another, he demanded the High Priest of Jerusalem furnish men and supplies to his army and tribute to him as he had previously furnished to Darius. The High Priest refused to transgress the oath of loyalty he had sworn to the Persian king and the angry Alexander, after the conquest of Gaza, marched on Jerusalem -- but when he approached the city he was met by a procession of Jews, headed by the High Priest himself holding a golden plate on which God's name was written. Alexander, thus the story goes, recognized in the High Priest the man whom he had seen in a dream and who urged him to take on the conquest campaign, promising him success. Grateful Alexander offered a sacrifice to the God of Jerusalem under the High Priest's guidance, and granted the

Jews --in Palestine and elsewhere -- the right to live according to the laws of their forefathers, to the extent that on sabbatical years, when land cultivation in Palestine was forbidden by Jewish law, the Palestinian Jews would be free from the duty of tribute to the royal chamber. Another variant of this story, with some inevitable alterations, is preserved in the Babylonian Talmud.[236]

This story is, to be sure, merely a Judaization of similar Greek tales -- like the one about the Celtic king Catumundus who refrained from destroying the Greek colony of Marseilles because he recognized in the local idol of Athena the goddess who appeared to him in a dream, urging him to make peace with the city.[237] For the High Priest to refuse the demands of Alexander -- who had just taken the cities of Tyre and Gaza, far better equipped for defense than Jerusalem -- would be equivalent to suicide, something he would hardly commit out of fidelity to a heathen monarch.

But be it as it may, Alexander did not take Jerusalem by force. And when he went further into Asia, fighting the Persians, he had among his troops some Jewish soldiers, and these were not maltreated except for the corporal punishments and fines imposed upon them when they refused to participate in the restoration of the pagan sanctuary of Esagila in Babylonia -- without much effect, for the Jews' contempt of all other cults was already strong enough to prevent them from participating, however indirectly, in idolatrous practices.[238] The autonomy was, in all likelihood, maintained: ancient empires were neither willing nor able to change the traditional structures of their subject cities, villages, and tribes.[239]

With Alexander's death his empire broke down, and his generals -- and later their successors -- fought one another for power in different regions which were now independent and semi-independent Hellenistic kingdoms. Judea, however, was relatively secure under the rule of the Ptolemaic dynasty, whose chief domain was Egypt. Information about the relationship between the Ptolemies and their Jewish subjects is scarce, but

Some essential facts... are clear: the Jews of Judea constituted a more or less self-governing *ethnos*, the law of Moses was their law, and their Temple was sacrosanct. In other words, the Ptolemies, like Alexander before them and the Seleucids after them, in this respect continued the policies established by Cyrus, Darius and Artaxerxes.[240]

The Seleucids -- the dynasty which had initially assumed dominion over most of Alexander's Asian possessions but failed to take control of Palestine -- conquered the whole of Palestine, including Judea, in 200 BCE. King Antiochus III confirmed all the privileges the Jewish

community in Judea had previously enjoyed and let the Jews settle their own issues by themselves: there was neither permanent royal agent nor royal garrison in Jerusalem.[241] The law of the Torah was binding for all Jews in Judea by order of a Gentile king.

This was the situation when Antiochus IV Epiphanes came to power in 176 BCE. Jewish tradition portrays him as the villain of the plot:

Then the king wrote to his whole kingdom, that all should be one people, and that everyone should leave his customs. All the Gentiles accepted the order of the king. And of Israel also many consented to his religion, and offered sacrifices to idols, and profaned the Sabbath. For the king had sent letters with messengers to Jerusalem and to the cities of Judea that they should follow the laws foreign to the Land [of Israel].[242]

This statement is untenable. Antiochus IV never ordered all his subjects to abandon their ancestral religions: the goddess Nanaia continued to be worshipped in Susa according to ancient custom all through his reign, as did the local six-winged deity in Byblos and the chief god Marduk in Babylon.[243] True, the king plundered the Jerusalem Temple, stripping it of all its riches, in 169 BCE -- but he often did this to other temples, too, and it had nothing to do with any religious persecution: the royal treasury simply was in desperate need of funds.[244]

The persecutions of Judaism under Antiochus IV were absolutely unique. The whole hodgepodge of Oriental peoples which constituted the majority of the population of the Seleucid empire (in which only the ruling class -- royal families, high officials, military officers, and elite troops -- were ethnically Greek) continued to live undisturbed all through Epiphanes' reign. How, then, did the persecutions come to pass?

In the centuries following Alexander's conquests, the entire realm from Macedonia to Persia was experiencing the same cultural tendencies. The Near Eastern culture was becoming increasingly Greek -- or Hellenistic, if this term is adopted for the stage when Greek culture grew universal rather than ethnic. This was the first human experiment in cultural universalism, the new sense of identity being based on education and culture rather than ethnic origins:

A man became a "Hellene" without at the same time forsaking his gods and his people, but merely by adopting Hellenic culture. Clearchus, a disciple of Aristotle, represents his master as conducting a conversation with a pious Jew and calling this Jew "a Greek man not only in language but also in spirit." A

century later the great geographer Eratosthenes [c. 276-c. 194 BCE] declared that men are not to be distinguished as Greek or barbarian, but rather according to their virtues and their vices.

During the three centuries which we call Hellenistic -- that is, the period between Alexander the Great and Emperor Augustus (330 to 30 BCE) -- the notion of the "Hellene," like the modern notion of the "European," grew into a concept independent of descent.[245]

The Jews, on the other hand, had by then been living for generations under an exclusivist set of laws governing all fields of life:

Nothing brings people closer together than a common table. But his dietary laws forbade the Jew to taste the food of his non-Jewish neighbor. There is no closer tie than the bond of matrimony. But the Jews told with approval the story of a father who abandoned his own daughter in order to free his brother from a passing attachment to a pagan dancing girl.[246] To a man of the Hellenistic age this "separation from the nations" could be regarded as nothing else than the expression of a Jewish "hatred of mankind." [247]

It is small wonder then that a large group of Jews soon began to seek paths to "normalization" -- or, as the first book of Maccabees puts it,

In those days, there went out of Israel wicked men, who persuaded many, saying: "Let us go and make a covenant with the nations that are around us -- for since we had departed from them, many troubles befell us." And this plan pleased them much. Then some of the people volunteered to go to the king, who gave them license to behave in accordance with the laws of the nations, whereupon they built a gymnasium in Jerusalem according to the customs of the nations, and made themselves uncircumcised [restored their foreskin through a painful procedure], and forsook the Holy Covenant, and joined themselves to the Gentiles, and became addicted to do mischief.[248]

The idea ascribed here to the "wicked men" may be merely a mockery of their outlook by the nationalist and orthodox author of I Maccabees -- but if it is not, it appears that imitation of Gentile customs notwithstanding, the reformers still perceived history in traditional Jewish terms: troubles befall the Jews because of their departure from the correct conduct. In line with Greek sympathizers of the Jews -- who highly revered their doctrine of an imageless God

but saw in the numerous barriers raised by Judaism between the Jews and the Gentiles a later contamination of the pure philosophic idea -- the reformers must have seen Jewish exclusivism as unethical. Furthermore, Hellenistic thinkers had already developed a comparative study of religion, and they knew that many legislators -- from Zoroaster to Lycurgus -- claimed divine inspiration for their laws just as Moses did; from this it was only one step to the conclusion that the Torah was yet another work of a human mind, ascribed to God only in order to give it more authority -- and therefore assimilation with Gentiles did not really involve violation of divine commandments, but only of human statutes.[249]

Thus the reform got under way. The king was still disinterested: when a scion of the High Priestly family, Jason (Yeshu'a), wanted to become the High Priest instead of his pious brother Onias (Honio), he had to pay Epiphanes 360 talents of silver (plus 80 talents of "other revenue"); for the license to build a gymnasium and to found a colony of "Antiochians" (that is, citizens not obliged to live by the laws of the Torah but possessing their own Greek-style constitution[250]) in Jerusalem, he had to pay the king 150 talents more.[251] This would be unintelligible were it Antiochus' own plan to turn the Jews into Hellenes.

The reform met with considerable success:

Such was the height of Greek fashions, and the popularity of Gentile manners... that the priests were no more zealous to serve at the altar, but -- despising the Temple and neglecting the sacrifices -- hastened to participate in unlawful activities at the place of exercise, when the call of the [game of] discus was heard. They disregarded what their fathers honored, but liked the glory of the Greeks most of all.[252]

When Epiphanes passed through Jerusalem in 174 BCE, about a year after the reform was introduced, he was hailed by Jason and the city's inhabitants.[253] Not a single voice was raised against the reform -- not even that of the pious Onias -- and the future looked bright.

But then another player entered the field -- the priest Menelaus. Sent in 172 to hand tribute to the king, he decided to secure Jason's position for himself. The king did not mind, and for good reason: Menelaus promised him 300 silver talents more each year than Jason had previously offered. Jason fled to the Transjordan. In order to pay the tribute promised to the king, Menelaus had to expropriate some golden vessels of the Temple. Only now was the first voice of protest raised -- that of Onias, who had consequently to flee from Menelaus' anger and to hide in a pagan sanctuary at Daphne, a suburb of Antioch. Yet even there he was reached by Menelaus' partners and

slain -- not before they persuaded him by oaths of amity to quit the sanctuary. This murder infuriated both Jews and Gentiles, and Antiochus had to punish his deputy Andronicus, who slew Onias at Menelaus' initiative, but Menelaus succeeded, through bribery, to get himself acquitted. His deputy at the High Priest's office, Lysimachus, continued to strip the Temple of its riches, provoking popular violence in the course of which he was killed. Menelaus, having retained his office by the king's decision, punished the rioters -- but the seeds of unrest had already been sown.[254]

In 169 Antiochus started his campaign against Egypt, which resulted in full occupation of the country, except the capital city of Alexandria. There was a good chance that Antiochus would assume the rule of Egypt as custodian of King Ptolemy VI, his nephew.[255] Having conquered Egypt, Antiochus returned to Palestine and plundered the Jerusalem Temple, this time stripping it of all its riches[256] -- the revenues paid by Menelaus apparently far from satisfied the king.

In summer of 168, the Roman ambassador in Egypt ordered Antiochus to withdraw from the country. Antiochus had no choice but to comply -- it was not his kingdom but Rome who was truly "the most powerful military force on the face of the globe" (as illustrated by the Romans' butchery of the Macedonian army at Pydna on June 22 of that year, spelling the end to Macedonian independence).[257] But for the inhabitants of Jerusalem, not much versed in international politics, it was only natural to attribute the dishonorable Seleucid retreat from Egypt to Antiochus' death, rumors of which had spread in Judea.

A revolt burst out in Jerusalem. Jason returned to the city, slaying supporters of Menelaus. The latter fled to the city's fortress. Antiochus, enraged by the news of revolt, assailed the city, slew many of its inhabitants, sold countless others into slavery, pulled down the city's walls and built a new fortress on a hill opposite the Temple Mount (in all the extant sources it is called simply the Acra -- "fortress" in Greek). A Seleucid garrison was stationed in the Acra, the fortress became the residence of Philip -- a Phrygian by origin, appointed by Antiochus the governor of Judea. The Hellenized Jews, including Menelaus, also found refuge in the fortress.[258]

It was in this atmosphere that the persecutions began: the Jerusalem Temple was renamed the temple of Zeus Olympios, cultic prostitutes were introduced there, ritually unfit things were sacrificed on the Temple altar (on which the "abomination of desolation" -- most likely a cultic rock -- was placed at the end of 167), sacrificial sites were erected throughout the country, Torah scrolls were burnt, observance of Sabbath, Jewish feasts and fasts and circumcision were outlawed, and Jews were compelled to eat pork and to participate in pagan processions. On the advice of a certain Ptolemy, the same measures

were taken in regard to the Jews residing in Hellenistic cities adjacent to Jerusalem, and royal agents were dispatched to the villages of Judea to foster compliance with the new cult.[259] The persecutions, however, affected only the Jews residing in Jerusalem and thereabouts; the Samaritans (whose customs were largely Jewish, including Sabbath observance, circumcision, and a ban on intermarriage) and the Jews living in other corners of the Seleucid empire were spared. Given the local character of the persecutions, it seems that they were instigated by local authorities -- perhaps by Menelaus himself,[260] who would thus "modernize" the "backward" and particularistic Jewish creed, and gain himself more power, crushing potential opponents with imperial might (the traditionalist camp could have gained some popularity as result of the disasters that Jason's and Menelaus' policy brought on Judea).

Be it as it may, in the first months of 166 BCE royal agents came to the town of Modi'in, on the southwestern fringe of Judean territory. The townsmen were requested to sacrifice a pig in fulfillment of the royal decree, but when one of them volunteered to perform the sacrifice, the local priest Mattathias (Matityahu) killed him, slew the royal agent, and destroyed the altar built by the latter for the pig sacrifice. Then Mattathias and his sons -- John (Yohanan), Simon, Judah, Eleazar and Jonathan -- fled to the mountains of Judea. There, joined by similarly zealous Jews, they became a kind of guerilla force, fighting not against the Seleucid administration but primarily against Jewish infidels:

They made a stealthy and roundabout entrance into the villages and summoned those eager to fight; with the force thus formed they moved from place to place, destroying the idolatrous altars where they found them, compelling the observance of the Torah by force (for example, they circumcised newborn infants, as many as they found), and smiting apostate violators of the law.[261]

A year after the outburst of the revolt, Mattathias died. His third son Judah, surnamed the Maccabee, assumed command, continuing the guerilla war for two more years. Prudently, he did not venture to attack walled cities and forts, confining himself to raids on small towns and villages. Antiochus, whose empire extended then from the border of Egypt to the Persian Gulf, should have paid little attention to the revolt: for him, it was yet another robber band whose likes abounded throughout the empire. But in the meantime, Judah's forces grew to over 3,000 men, justifying the sending of more or less regular Seleucid detachments to pacify the revolt. Judah's troops, however, crushed one such detachment after another, making clever use of the advantage which the hilly landscape of Judea gave guerilla forces over regular troops. In the fall of 165, Judah apparently seized control over the road from Jaffa to Jerusalem, thus cutting the Hellenistic administration of Judea off from direct communication with the sea and with the central government. Now a large Seleucid army, under the command of Lysias, governor-general of the lands west to the Euphrates, was sent

to crush the revolt. This army, however, was far from representing the whole or the majority of Seleucid might, since Epiphanes was at that time engaged in a serious war against Mithradates I of Parthia which was far more important to him than the conflict in Judea -- here the control over all the eastern provinces of the empire was at stake. The accounts in I and II Maccabees of Seleucid armies numbering tens of thousands of soldiers destroyed by the Maccabean forces are, therefore, clearly exaggerated --Antiochus' whole army consisted, by 166, of little more than 50,000 soldiers, and he could not afford to withdraw one-fifth or more of his army from the Parthian front.[262]

Apparently Epiphanes wanted to stop the hostilities in Judea altogether so that Lysias' army would be able to assist him in the Parthian campaign. For this reason he offered, in his letter preserved in II Maccabees 11:27-33, amnesty to all the rebels who would return to their abodes by the end of March 164, and permitted the Jews "to use their own food and to observe their own laws as of yore." But it was too little and too late: the king did not restore the obligatory status of Jewish law and the hated Menelaus was still to remain in power. Some Jews may have availed themselves of the king's decree, but the Maccabean host as a whole did not dissolve, the war continued, Lysias' army was defeated at Beit Sur (a fortress some 7 km north to Hebron) but the victory was indecisive, and negotiations for peace began. Documents referring to these negotiations are preserved in II Maccabees 11:16-21 and 34-38; interestingly, a Roman delegation en route to the Seleucid capital of Antioch took the Jews' part and urged them to formulate their demands quickly so that the Roman ambassadors would be able to present them to the Seleucid court (Rome, of course, had every interest in weakening the power of the Seleucids, at whose domains the Romans were gazing with ever growing appetite). Though documents detailing the sides' positions were sent to Antiochus and all waited for his verdict, the king had died in Parthia (November-December 164), leaving on the throne his minor son, Antiochus V Eupator. Meanwhile, Judah seized Jerusalem (except Acra), swept out the Hellenized Jewish authorities and rededicated the Temple to the God of Israel in accordance with the traditional rite, celebrating the event for eight days from the 25th of Kislev on. Thus the feast of Hanukkah was established -- but the Seleucid garrison still remained in the Acra, and Menelaus, although no longer officiating in the Temple, still presided over the reformer community in the fortress.

In the beginning of 163, Antiochus V sent a letter to Lysias (preserved in II Maccabees 11:22-26), declaring that his father's decrees of persecution against traditional Judaism were now abolished -- but the Maccabees were still unsatisfied.[263] Judah started besieging the Acra and Lysias had to intervene once again, this time taking Beit Sur, entering Jerusalem, and besieging Judah himself on the Temple Mount. Judah's case seemed desperate -- but now he was saved by the internal political strife of the Seleucid empire. Before he had left for Parthia, Antiochus IV appointed Lysias as regent and guardian of his minor son -- but on deathbed, he entrusted another of his generals, Philip, with the regency. And while the regent Lysias was besieging the Maccabean forces on the Temple Mount he suddenly learned that the regent Philip was marching on Antioch, with the whole army retreating from Parthia, in order to secure the rule for himself. Antioch, of course, was of greater importance to Lysias than Jerusalem -- so he

concluded a hasty peace treaty with Judah and marched against Philip. This treaty not merely permitted the Jews to live in accordance with the law of the Torah, but obliged them to observe this law. The reform party was finally crushed, Menelaus was executed, and one Alcimus (Yaqim) assumed the office of the High Priest. But still Judea remained a part of the Seleucid empire, and the royal garrison remained stationed in the Acra for 21 more years.[264]

It was a coincidence of Judah's military successes (most of which resulted from clever use of guerilla tactics), Antiochus IV's war with Parthia, Roman diplomatic intervention, and internal strife in the Seleucid empire that caused these developments. Kelemen's excited statement about "a tiny band of guerillas" repelling "the most powerful military force on the face of the globe" is very far from the truth.

In his struggle for independence, Judah entered world politics and concluded a treaty of friendship with Rome. Rather than assist him, however, this treaty became the immediate cause of his downfall: the Seleucid government could swallow guerilla campaigns here and there, but an alliance with the empire's avowed enemy was more than it was able to tolerate. In spring 160 BCE, a Seleucid army led by the general Bacchides and assisted by Alcimus, whom Judah had been harassing for all his years in office, attacked Judea and easily smashed Judah's troops. Judah himself was killed and the house of the Hasmoneans faced a temporary decline.[265]

Jewish tradition quickly forgot Judah. He is not mentioned in the Talmud nor in *Megilat Antiochus* -- a post-Talmudic compilation that was read on Hanukkah in medieval Jewish communities -- and the prayer '*Al ha-Nisim*, still recited by every observant Jew on Hanukkah, skips over Judah's name, mentioning merely "Mattathias, the Hasmonean High Priest, and his sons" (a fiction in itself, since Mattathias was a descendant of the priestly family of Jehoiarib, not of the High Priestly dynasty of Joshua the son of Jehozadak[266]). Even Kelemen grants the victory over the Seleucids to Mattathias, in spite of the fact that the latter died when the Hasmonean forces were still no more than an ordinary band of robbers. Only through *Yosifon* -- a Hebrew compilation based on the writings of Flavius Josephus -- could the medieval Jews know of Judah at all, and only with the rise of Zionism, with its need of characters of Jewish military prowess, did Judah finally become a Jewish national hero.

It was Judah's brother, Jonathan, who succeeded in reviving, through shrewd political gambling, Hasmonean power. By the beginning of 152 BCE he was sheikh of the small town of Mikhmas west of Jericho. Those were troubled years for the Seleucid empire. The reigning king, Demetrius I Soter, was faced by a contender, Alexander Balas, who passed himself off as Antiochus IV's illegitimate son. The Romans, determined to cause the Seleucids as much trouble as possible, supported Alexander, as did the kings of Egypt, Pergamum, and Cappadocia, and a part of Seleucid royal troops. Demetrius was in desperate need of military support and Jonathan, who was still popular due to his family's record, was the only person able to summon a Jewish levy to the king's help. So he was given full power to assemble Jewish troops -- as soon as Alexander Balas recognized the potential obstacle these troops presented to him he drew Jonathan to his side,

appointing him the High Priest and the governor of Judea, granting him a court title and allowing him to wear the purple reserved for "the friends of the king." Jonathan, assisting Balas both before the latter managed to ascend to the throne in 150 and afterwards, also took care to fortify Jerusalem and to expand Judea's borders, including access to the sea. Jonathan was taken captive and murdered in 143 by another contender to the Seleucid throne -- at last he backed the wrong horse -- but his brother Simon inherited all his titles and positions and continued Jonathan's enterprise. Profiting by the internal anarchy of the Seleucid empire with its endless struggle between contenders, he managed to capture all the important fortresses in Judea: Beth Sur, Gezer, and finally, the Acra, which was taken in May 141. In May 142 Simon succeeded in providing for Judea's complete freedom from royal tribute, and in 140 he was appointed by decision of the priests, elders, and people of Judea as their leader (*ethnarch*) and High Priest forever, so that nobody could depose him or even convoke an assembly without his consent. Nevertheless, formally at least, Simon still remained a Seleucid vassal -- in order to start striking his own coins he needed a royal privilege, which was granted him in 139.[267]

Only during the rule of Simon's son, John (Yohanan) Hyrcanus, between 134 and 104 BCE, did Judea succeed in obtaining full independence from the Seleucid empire,[268] then already a half-corpse (when its agony was ended by Roman conquest in 64 BCE, the span of the empire was limited to the provinces of Syria and eastern Cilicia, and even those were under tenuous control[269]). John Hyrcanus' son, Alexander Jannaeus (reigned 103-76 BCE), assumed the title of king and expanded the Hasmonean domain even further, starting the brief period of Judea's grandeur that ended with the death of his widow, Queen Salome Alexandra, in 67 BCE. Queen Salome was a supporter of the Pharisees -- a religious faction that had developed the idea of the Oral Torah and was thus a direct predecessor of Rabbinic Judaism. But Salome's pro-Pharisaic stand could not fail to enrage the priestly elite, which belonged largely to the Sadducees, the Pharisees' bitter opponents. The Sadducean opposition consolidated itself under Salome's son Aristobulus. The latter, however, was only the second son of the queen, and the throne had to pass after her death to the firstborn Hyrcanus II. Open war broke out between Aristobulus and Hyrcanus, and when Rome conquered the Seleucid empire and the Roman general Pompey arrived at Damascus, both claimants to the throne, along with the Pharisees, sent embassies to Pompey urging him to bring about order (as each party understood it) in Judea. Pompey, of course, could not refuse, and his army marched into Jerusalem, taking the city after a brief campaign against Aristobulus' supporters encamped on the Temple Mount. The Hasmonean kingship was abolished, the Transjordan and the coastal plain were torn off from Judea, Hyrcanus II was inaugurated as the High Priest and the leader (*ethnarch*) of the Jews, and Judea was now to pay taxes to Rome. The age-old situation of a Gentile power, ruling over Judea and exacting taxes from her inhabitants but granting the Jews a wide autonomy in their religious and social affairs, was restored.[270]

Pompey's actions appear to be quite in line with the demands of the Pharisaic embassy, who asked that the Hasmonean kingship be abolished altogether and the Jews restored under the traditional authority of the High Priest. It is a bit

surprising, therefore, that Kelemen chose to pass over Pompey in silence, starting instead the Roman period in the history of Palestine with Herod the Great:

In 40 BCE, having replaced Greece as the preeminent world power, the Romans dispatched an army of 30,000 infantry and 6,000 cavalry to take Jerusalem. In sheer military might the Romans dwarfed the Jews. The battle was over before it began, and the Romans installed Herod as "allied king and the friend of the Roman people." Herod's primary goal was to exterminate the Jewish guerillas who had so troubled the Greeks. He largely succeeded, and celebrated his victory in 37 CE by executing forty-six leading members of the Sanhedrin (the Jews' supreme religious council). Having disposed of his Jewish opponents, Herod tried to placate the remaining Jewish populace, even going so far as to begin rebuilding the Temple.[271]

But Herod did not assume, in fact, the rule of Judea until 37 BCE. Starting in 47, he was the governor (*strategos*) of Galilee, but in 40 the Parthian invasion into Syria-Palestine brought about an anti-Roman Jewish insurrection led by the Hasmonean Antigonus, Aristobulus' son. Herod fled to Jerusalem and then to Rome, where the Senate eagerly appointed him the king of Judea -- after all, the Romans had nothing to lose in this case. After three years of war Herod took control of the whole of Palestine (the Romans having meanwhile ousted the Parthians from Syria), conquered Jerusalem and had Antigonus and 45 members of the Sanhedrin executed. This was, however, not an anti-Jewish persecution but a sheerly political act: Herod wanted to stem the religious leaders' involvement in secular affairs, leaving them instead autonomy in the religious sphere. A bloody despot though he was, he did not dare to execute the Pharisaic leaders who openly refused to take an oath of allegiance to him and to the Roman emperor, and banned any symbols of pagan worship from being brought into Judean borders. Herod's reign, however tyrannical, was marked by stability, economic and technological progress, and a strengthening of ties with the Jewish diaspora (for the first time since Cyrus, diaspora Jews were appointed High Priests). In the drought year of 25 BCE Herod distributed food and clothes among the poor, and twice during his reign he ordered taxes reduced -- a remarkable policy compared with the usual greed of Roman administrators and appointees. Herod's most famous enterprise was, of course, the rebuilding of the Jerusalem Temple, which he not only began but completed, turning the bleak Oriental sanctuary into a building that impressed friend and foe alike;[272] even the rabbis, generally antipathetic to Herod, had to acknowledge that "one who has not seen Herod's building has never seen a building really beautiful." [273]

Kelemen, however, not only dated Herod's execution of the members of Sanhedrin to 37 CE (instead of 37 BCE), but also made Herod live until 44 CE[274] -- a remarkable geriatric success, since by that time the king would have been well over 100 years old. Of course Herod the Great died in 4 BCE, and 44 CE is the year of death of his grandson, Herod Agrippa I, with whose death the Herodian kingship ceased and Judea was turned into an ordinary Roman province. [275] So much for Kelemen's knowledge of history.

Even when it comes to modern times, Kelemen's narrative tends to be independent of facts if they do not fit the picture he wants to paint:

In 1953 Stalin broke off Soviet relations with Israel, and within two years Soviet weapons were pouring into Arab munitions depots. In 1956, having already blocked Israeli access to the Suez Canal and the Gulf of Aquaba, a confident Nasser [then president of Egypt] signed military pacts with Saudi Arabia and Yemen, formed a unified military command with Jordan and Syria and stepped up *fedayeen* attacks on Israeli settlements. War was imminent when, on October 29, 1956, Israel launched a preemptive raid on the terrorist units in the Sinai. To their surprise, the Israelis quickly took the Egyptian outposts in Rafa, el-Arish, the Gaza strip, the coasts of the Suez Canal and the Gulf of Aqaba, and Sharm el-Sheikh. Just over a week after the war began, on November 7, the United Nations' cease-fire order was accepted, but only after the Israelis confirmed their uncanny ability to defend themselves even against the latest Soviet weapons.[276]

Unfortunately, Kelemen does not mention that Soviet-Israeli diplomatic relations were restored in July 1953 (four months after Stalin's death), that the arms deal between Egypt and Czechoslovakia (through which Soviet weapons were actually supplied to Egypt) was struck only in 1955 -- the first attempt by Nikita Khrushchev to become a major player in the superpowers' game in the Middle East -- and that by 1956, no other Arab country benefited from massive Soviet arms supply. Israel, of course, did not merely pray for salvation, and picked a superpower of her own -- France, enraged by Nasser's support of Algerian guerillas -- and French weapons were soon pouring into Israeli munitions depots. [277]

*Fedayeen* -- armed Arab gangs penetrating Israeli territory and attacking military and civilian targets -- indeed escalated their assaults from Egyptian territory, but only prior to April 1956; in that month, the UN Secretary-General Dag Hammarskjöld visited the region and managed to bring a decrease of hostile activities on Israeli-Egyptian border. After Hammarskjöld's visit there was a certain détente both in Israeli-Soviet and Israeli-Egyptian relations:

Khrushchev announced his support for "the UN peace efforts in the Middle East," and before their visit to London Bulganin [then Soviet premier] and Khrushchev released a declaration which spoke of the necessity of "[maintaining] the status quo in the region;" the [Israeli] foreign minister mentioned in his speech before the Knesset on April 23, 1956 the Soviet statement as a certain turn for good. In London Khrushchev suggested "a universal embargo on arms supply to the Middle East." In addition to this, direct Soviet gestures towards Israel were made. In an international scientific conference in Rehovot, delegations from the USSR, Czechoslovakia and Romania took place for the first time. Simultaneously, Jewish emigration from Poland to Israel was resumed; Romania released imprisoned Zionist activists and declared of her consent to resumption of Jewish emigration to Israel; a significant emigration of Hungarian Jews to Israel also took place.

Khrushchev cautioned an Egyptian paper's correspondent that a war between Arab countries and Israel might lead to World War III. In July [1956], a Soviet-Israeli agreement on the purchase of 20 million dollars' worth of fuel from the USSR was signed and negotiations were held on the purchase of Russian drilling equipment; Arab protests of the fuel agreement met no consent from Moscow. For all that time, however, weapons continued to pour into Egypt from the Eastern bloc -- which was explained by the Soviets as a result of Egypt being threatened by imperialist elements. And yet, despite the continuation of border clashes and *fedayeen* attacks, weakening of Egyptian anti-Israeli propaganda could be easily noticed. In May 1956 an Egyptian journalist visited Israel with the authorization of the Cairo government and met several members of Israeli political leadership, including Moshe Sharet and Golda Meir; in the records of his journey, published by the Egyptian press, he emphasized that Egypt and Israel have a common enemy -- Britain. Years afterwards it became known that at that time, Dom Mintoff, the Maltese prime minister, suggested a secret meeting between Nasser and Sharet -- but London [under whose dominion Malta then was] did not support the initiative, and the meeting was not held.[278]

After Nasser seized power in Egypt in 1954, an Anglo-Egyptian treaty was signed, providing for gradual evacuation of British troops from the Suez Canal Zone -- which would eliminate the last mark of British domination over Egypt. In the summer of 1956 Nasser ordered the nationalization of the British-run Suez Canal Company, as a reaction to the Western powers' refusal to provide him with funds previously promised for construction of a high dam at Aswan. This move enraged the British government, which started, together with France, preparations for war on Egypt.[279]

A Hebrew broadcast on Cairo radio hinted that a positive change in Egyptian policy about Israeli ships' passage through the Suez Canal was possible. Yet Israel preferred to take the initiative to her own hands. On September 22, 1956 the Soviet newspaper *Izvestiya* reported that Israel, Great Britain, and France were preparing to make war on Egypt. In October, Israeli prime minister David Ben-Gurion made a secret visit to France, where his talks with the French premier Guy Mollet resulted in a final agreement on joint military action.[280]

On October 29, 1956 Israeli forces invaded the Sinai Peninsula. Three days later Great Britain and France joined the war under the pretext of Egyptian refusal to their "peace-making efforts" (which were limited to the demand to let their forces enter the Canal Zone). Great Britain and France also vetoed the American-proposed resolution of the UN Security Council calling for an immediate cease-fire and retreat of all foreign troops from Egyptian territory. To circumvent the veto, an emergency session of the UN General Assembly was convened and the American-proposed resolution -- endorsed by the Soviet Union -- was passed by an overwhelming majority (64 to 5, 6 abstained). The international pressure, combined with public scandal in Great Britain, forced her and France to halt the campaign (Israel stopped military actions on November 5, having fulfilled her part of the initial agreement).[281]

The lion's share of the allies' warfare was performed by Israel, but her overwhelming military triumph could not have been achieved alone. Even the Encyclopaedia Hebraica, whose interpretation of recent Middle East history is understandably pro-Israel, had to admit that

Assessing this remarkable [Israeli] military achievement, it is impossible to ignore the threat of Anglo-French invasion, which hung over the Egyptian command's head since the beginning of the Sinai campaign, and which was known to the Israeli command prior to the campaign; nor can one ignore the protection given to the Mediterranean coast of Israel by the French fleet and the assistance of this fleet to the Israeli troops along the coastline. The Egyptian Air Force was actually driven out of action at the end of the war's third day by the joint Anglo-French attack on Egyptian airfields.[282]

And of course, Israel did not take "the coasts of the Suez Canal" in the Sinai War: in full accordance with the Anglo-Franco-Israeli plan, her forces stopped when they were 16 miles east of the canal.[283] But why should Kelemen bother to mention these facts? His story, after all, is about the supernatural destiny of the Jewish people, not about how things really were.

Kelemen's misrepresentations are flagrant, but he is certainly not interested in a mere reiteration of major events in Jewish history. He wants to provide his readers with permission to believe (or, more precisely, to indoctrinate them, since no one actually needs that permission). Jewish history is for him yet another field in which to look for God's finger:

We feebly struggle to explain Jewish survival in secular terms: Maybe it is because they were poor? Maybe it is because they were rich? Maybe it is because they were pacifists? Maybe it is because they fought back? Maybe it is because they were concentrated? Maybe it is because they were scattered? But we know that other peoples shared these characteristics and are gone. The question stands: Why did only the Jews survive?

The theological solution is attractive.[284]

"The theological solution" is, of course, yet another attempt to explain the unclear by the incomprehensible. To be sure, Jewish ethnic perseverance through at least 2800 years (whatever can be said of Abraham and the Exodus, ethnic continuity between the inhabitants of the biblical kingdom of Judah and the modern Jews cannot be seriously doubted) is a most remarkable phenomenon. Contrary to Kelemen's assertion, the Jews are not the only people who succeeded at surviving for more than two millennia. The Basques were already known as a distinct tribe to the ancient Roman authors, their language is the only remnant of the languages spoken in southwestern Europe before the region's Romanization, and their ethnic cohesiveness withstood the imperial policies of Rome, the invasions of German tribes which marked the dusk of the antiquity, the turmoil of the Middle Ages, and the political and cultural pressure of modern nation-states in both France and Spain.[285] The Armenians were already known as a distinct people to Herodotus and the ancient Persians, and their language seems to have existed as a distinct one since about 1000 BCE.[286] Not unlike the Jews, they also experienced a large dispersion and were subject to persecutions, culminating in the Armenian massacres of 1915. China, with "more than 4000 years of recorded history... is unique among nations in its longevity and resilience as a discrete politico-cultural unit." [287] But all these examples do not negate the remarkable nature of Jewish survival, which should be approached on its own terms.

But to understand Jewish survival -- like anything else -- one would do better by investigating the natural causes which brought about this phenomenon than by engaging in the monkey

business of mythical speculation. Of course, human beings and human societies are enormously complex entities, and a "mechanical" explanation of social and historical processes through a sequence of causation, whereby at every stage of the process the next stage is completely determined by some set of laws, is impossible. Yet we can comprehend how some set of factors may bring about a certain historical phenomenon: the decline and fall of the Roman empire, the emergence of the United States of America, the Allies' victory in World War II -- or Jewish survival. The scope of this essay precludes a detailed discussion, but a brief outline of the factors which brought about Jewish ethnic perseverance can be presented.

The first and foremost of these factors is the Jews' own sense of chosenness. Regardless of whether there is a God and whether He expressed His will to mankind in any form, Judaism, with its ethos of the chosen people, is a historical and social reality. Until the 19th century Rabbinic Judaism was the backbone of Jewish ethnic self-consciousness, and its teachings and laws kept the Jews throughout the ages caring about continuation of their existence as a people, guided them to separate themselves from their Gentile surroundings, to live a communal life and to raise the next generations in the spirit of devotion to the Jewish people no less, and perhaps even more, than to God. And while this sense of chosenness eroded in Western Europe with the advance of modernity -- the Parisian Sanhedrin, a gathering of Jewish delegates from France and Italy convened in 1807 by Napoleon Bonaparte, went so far as to declare that "Jews no longer constitute a separate nation and they regard their incorporation into the Great [French] Nation as a privilege and as political redemption"[288] -- the much more populous Jewry of Eastern Europe responded to the challenges of modernity with secular Jewish nationalism: ethnic consciousness at last outweighed the religious one. And though secular nationalism was far from homogenous --harsh conflicts, like those between the advocates of Yiddish and of Hebrew frequently plagued nationalist circles, the stream which saw Palestine and the Hebrew language as the focus of its inspirations soon gained the upper hand. Zionism, as it has been termed since the 1890s, succeeded, in a few decades, to build in Palestine a Jewish polity able to provide for its economic, cultural, political, and military needs -- the polity which ultimately grew into the State of Israel. Half a century after its emergence, Israel is home to some 40% of world Jewry, and sympathy with the Jewish state has become the backbone of Jewish identity for the vast majority of diaspora Jews.[289]

But of course, no people can survive on ethos alone; an appropriate social and political framework is necessary. While at the present time the State of Israel provides such a framework -- for those Jews who live there, of course -- for the most of Jewish history this role was fulfilled by communal self-government, enjoyed by the Jews in all countries of their diaspora from the Babylonian exile until the 18th-19th centuries.[290] The sovereigns of those times were, as a rule, little interested in any aspects of Jewish life besides payment of taxes and, in the Middle Ages, compliance with limitations designed by either Christian or Moslem authorities to humiliate the Jews before the adherents of the dominant creed. In the communal life of the Jews the Jewish law, *Halakhah*, reigned supreme. From its formative stages in the beginning of the Common Era, this body of law was sufficiently extensive and profound to enable Jewish communities to manage their affairs almost independently of the laws and customs of societies around them and to ensure a large measure of behavioral uniformity among the Jews themselves.[291]

Halakhic precepts provided for thorough social segregation of Jews and Gentiles, and works of Jewish philosophy and mysticism concurred with this tendency, emphasizing the difference

between the Jews and the Gentiles as belonging to the very essence of nature.[292] On the other hand, religious and secular authorities in both Christendom and Islamdom also pursued the aim of segregation of the Jews from the "true believers," and legislative measures to this effect were accompanied by popular anti-Jewish sentiments of the Christian and (to a far lesser extent) Moslem populations.[293] Both the Jews and the Gentiles viewed each other, by and large, as inferior creatures better kept at arm's length. These attitudes understandably resulted in the separation of Jewish communities and their Gentile surroundings into mutually exclusive and hostile societies, connections between which seldom extended beyond those of purely utilitarian value. When, with the advent of the Enlightenment, social barriers began to melt in Western Europe and Jews and Gentiles were no longer reluctant to spend time in one another's company (recall the famous salons of Jewish women in Germany and Austria), Jewish communities quickly found themselves plagued by conversions to Christianity due to the all too natural influence of the dominant culture upon the marginal in conditions of close social contact. But even here, differences of religious and cultural background remained significant enough to ensure that most Jews did not choose the path of conversion (whatever they thought of their Jewish identity).[294]

But, while the above factors prevented the Jewish people from assimilating into Gentile societies, the deep animosity of Gentiles towards the Jews was the other side of the coin. Thus the Jews met another threat to their ethnic perseverance -- anti-Semitic violence. This, however, never endangered Jewish survival as such (though the life and welfare of individual Jews or even whole communities might be at risk). Before the advent of anti-Semitism proper -- this term appeared only in the 1870s to designate the new trend of Jew-hatred based on racial rather than religious grounds -- anti-Jewish violence was manifestly local and sporadic, originating with the lower strata of society rather than with those in power. It was not infrequent for the Gentile populace of a certain locality, inflamed by orations of a Jew-baiting preacher, to assail Jews on street or to raid Jewish quarters -- but, having poured out their wrath on a number of Jewish victims they dispersed or proceeded to attack other targets: nobles, wealthy merchants, or official archives containing records of debt. State authorities tried at times to protect Jews (certainly when anti-Jewish violence threatened to develop into a revolt against the existing social order) and closed their eyes at other times, but seldom did they instigate or encourage pogroms. The most dreadful attacks on Jews in the Middle Ages -- in Spain in 1391, in German lands throughout the 14th century, and in Greater Poland in 1648-1667 -- originated with the populace and, though taking thousands of Jewish lives, did not spell the end to existence of Jewish communities in these countries.[295] The assailants of those times were not bent on the total extermination of the Jews: at the very worst, they would murder every Jew who happened to be in their way, but they did not hunt down those hiding in the countryside, did not send detachments to pursue those fleeing to safer places, and sometimes would even agree to stop the killings in return for a substantial payment.

Of course, state authorities were far from sympathetic to the Jews. Official persecutions befell them: the outlawing of Judaism in Byzantium (several times, starting from the 7th century), forced conversions in Spain under the Visigoths and the Almohads (in the 7th and the 12th centuries, respectively), expulsions from almost all countries in Western Europe in the 13th-16th centuries, to name but a few.[296] But even these traumatic events affected only one country at a time, while the Jewish diaspora stretched at this period from Morocco to Persia and from Lithuania to Yemen -- when Jewish life was disrupted in one part of the world it could continue in the others, with refugees from expulsions or forced conversions joining the more quiescent communities. As the Babylonian Talmud put it, "God did mercy to Israel

scattering them among the nations"[297] -- except that, of course, no assumption of God is needed to understand the phenomenon of a Jewish diaspora.

Even the gravest physical blow the Jews suffered before the Holocaust -- the Roman suppression of Jewish revolts in Palestine and other Levantine provinces between 66 and 135 CE, with hundreds of thousands Jews killed and multitudes driven into slavery[298] -- did not affect the Jewish communities of Italy, Spain, the Balkan lands or Mesopotamia, nor even those of Galilee, which was overcome by the Romans rather quickly during both Palestinian revolts and, spared the victors' vengeance, quickly became the hub of Jewish life in the first centuries CE.[299]

It was the modern, racially-oriented anti-Semitism that brought about the only campaign in history designed to wipe out the Jewish people as a whole. The biblical book of Esther does relate an attempt by the Persian courtier Haman to destroy the whole Jewry of the Persian empire -- which, in the Achaemenid age, would amount to the whole of world Jewry -- but this is a historical fiction, written at least a century after Achaemenid Persia ceased to exist.[300] The Holocaust, on the other hand, is the saddest truth of Jewish history, and perhaps the major event which made modern Jews so concerned about their survival as a people. But insofar as the Nazi onslaught was intended to annihilate the Jewish people as a whole, it was doomed to failure from the outset: even were the Germans successful at Moscow, Stalingrad, and El-Alamein, realistically they were far from able to overpower the American continent, which at the outbreak of World War II was home to some 5.4 million Jews.[301]

On the other hand, it was the terrible tragedy of the Holocaust that made most world powers conscious of the need to fight anti-Semitism, at least in its most radical and threatening forms, and to allow the formation of a Jewish state which would become a haven for Holocaust survivors and for the victims of any further persecutions which might befall Jews in other parts of the world. The State of Israel -- the bulwark of Jewish perseverance at present and in the foreseeable future -- owes its creation, in a sense, to Holocaust survivors and victims, as the Israeli Declaration of Independence acknowledges.

The history of Jewish survival is, to be certain, remarkable. Yet no theological speculations are needed to understand it -- especially as all they are capable of is explaining the unclear by the incomprehensible.

## Stick, Carrot and Parrot

Yet Kelemen does not stop with attributing Jewish survival to God's direct influence:

Still we are bothered: If the Jews merit some special Divine protection, then why have they suffered so terribly for so long? Is not the suffering of the Jews itself an argument against their God's existence?[302]

Then he quotes some verses from Leviticus 26 and Deuteronomy 31, and concludes:

The Bible makes clear that the Jewish people's covenant with God works in two directions. To the extent that the Jews differentiate themselves from all other peoples by observing God's commandments, God places them above normal historical processes and preserves them. But, in the words of Rabbi Moshe

Meiselman, a prominent Jerusalem-based Talmudic scholar: "The moment we begin treating ourselves as just another nation, then we, like them, become subject to natural processes. We become governed by the natural laws of history, and according to the laws of history, the Jewish people simply should not exist." [303]

There are, however, several problems with this argument. First of all, it is not clear what the term "laws of history" means. History, after all, is a discipline that merely studies the chronological sequence of the events of the past as affecting human collectives and tries to figure out the causes of the events it studies. If there are any laws to which human societies are subject just as, say, pieces of matter are subject to the laws of physics, then it would be more correct to term them "laws of social sciences." If they are laws, they are expected to work in the future as they did in the past -- nobody thinks, after all, of terming the laws of physics and biology "the laws of natural history." But this is a minor problem.

A greater problem is that if there are any laws by which the world around us functions, then, by definition, they must describe this world as it is. To say that the laws of physics, as we understand them, cannot describe the behavior of some "chosen material object" would be tantamount to saying that our understanding of these laws is wrong. This is what happened when it was discovered that the speed of light does not change whether one measures it standing still or while moving from or towards a source of light: the idea that light waves, like sound waves, are transmitted by some elastic medium (ether) was discredited and the postulate that the speed of light is constant in any frame of reference became one of the pillars of modern physics. Likewise, if the laws of social sciences could not describe Jewish ethnic perseverance, we would only conclude that our concept of these laws is wrong and that a more correct set of laws must be drawn. While the question of whether there is a comprehensive set of laws underlying the behavior of human collectives still remains open, Jewish survival may well be understood as resulting from a set of social, political, and cultural factors as shown above. Were Rabbi Meiselman living a hundred years earlier, he would have probably written that "according to the laws of physics, the speed of light simply should not be constant across all frames of reference" -- or perhaps he wouldn't, for nobody views the speed of light as a value worth living up to, while persuading Jews that Jewish survival is contingent on religious observance may bring them to observe the Halakhic precepts.

Nor is the meaning of reference to the Jews "treating [themselves] as just another nation" any clearer. Taken at face value, it must mean something like "denial of the belief that the Jews are specifically chosen by God, accompanied by the assertion that they nevertheless constitute a distinct nationality." But this idea became popular among Jews only in the late 19th century, and even then most of its adherents were in Eastern Europe, while in the West most Jews clung to the Parisian Sanhedrin's assertion that "Jews no longer constitute a separate nation and they regard their incorporation into the Great Nation as a privilege and as political redemption," and Oriental Jewry still largely lived up to the religious concept of "God's chosen people." Yet instead of leading the Jewish people into oblivion, the secular nationalists from Eastern Europe (and those other Jews who shared their ideals) created the Jewish polity in Palestine which ultimately grew into the State of Israel -- the bulwark of Jewish ethnic perseverance in the past century. On the other hand, the Jews suffered long before the advent of secular Jewish nationalism -- recall the rout of Jewish revolts by the Romans, the 14th-century pogroms in Germany, or butchery of a quarter of Polish Jewry by the Cossacks in 1648-1667.

R' Meiselman's statement clearly requires clarification, which Kelemen tries to provide:

When large segments of the Jewish people assimilate and leave their religious heritage behind, the Bible suggests, then the entire Jewish people will taste normality; then it will feel the pressure of that evolutionary force that drives peoples out of existence.[304]

But this statement, too, taken at face value, is partially wrong and partially a platitude. On the one hand, it is self-evident that when large segments of any people assimilate, the people as a whole is drawn closer to ethnic extinction (the assimilated persons might be only too happy, of course, to forsake their old ethnic identity, but this is another question). No Bible is needed to establish this. On the other hand, those chapters of the Bible quoted by Kelemen say nothing about assimilation: they only promise, in God's name, punishment for the Jews' sins, describing the latter in rather general terms which cannot help to distinguish any particular transgression, save idolatry and inobservance of the sabbatical year (when agricultural work in the Land of Israel is forbidden). One may, of course, refer to Deuteronomy 7:1-4 as stating that idol worship among the Jews may well be caused by intermarriage and that mixed marriages, in which Jewish partners adopt idolatrous and ethnically alien cultures, are earmarks of assimilation -- but the verses in question speak only of the seven peoples of Canaan, presumed by the Pentateuch to be idolatrous in the extreme, so it would still be unclear whether intermarriage with other peoples would similarly lead the Jews to idolatry and to God's punishment. Only in Ezra 9 it is stated more or less clearly that intermarriage in general can make God "angry enough with us to destroy us, leaving us no remnant or survivor," and this also helps clarify Kelemen's intent: he did not mean elimination of the Jewish people through assimilation but rather a physical calamity which would befall the Jews if they dared assimilate.

The term "assimilation," however, is used by Kelemen in a peculiar way:

Both the Talmud and modern historians confirm the spread of such assimilation prior to the destruction of both the first and second Temples in Jerusalem.[305]

The word "Talmud" is provided with reference to Tractate Yoma, 9b, where it states:

Why was the First Temple destroyed? Because of three things practiced at that time: idolatry, forbidden sexual contacts and bloodshed... But the Second Temple, at the time of which they toiled in the Torah, observed the commandments and performed good deeds -- why was it destroyed? Because at that time there was baseless hatred among them.

One may agree or disagree with the Talmud, but it obviously speaks of several categories of sins and not of assimilation (even the "forbidden sexual contacts" mentioned here are contacts between Jews, as the Talmud itself clarifies in the same passage). To say that God punishes Jews with calamities for bloodshed and baseless hatred is one thing; to say that He punishes them for assimilation is another. So, Kelemen's thesis must be something like the following: "When the Jews are, by and large, faithful to the teachings and laws of Judaism, God preserves them. But when large segments of the Jewish people throw off the yoke of the Torah and the commandments, God brings on the whole Jewish people severe calamities." As emphases on the Jews' chosenness and prohibitions against intermarriage are integral parts of Judaism --

Orthodox Judaism, at least -- it may be said that a conscious effort towards assimilation, pursued to its logical end, would constitute a sin in itself. But is Kelemen's thesis true?

To answer this question one must turn to history. What Kelemen presents as "modern historians" -- those who "confirm the spread of such assimilation" prior to the Temples' destruction -- is *A History of the Jews* written by Paul Johnson, a journalist, not a historian. Although Johnson's views by no means concur with Orthodox Jewish doctrine -- he openly states that "the Pentateuch or Torah was canonized as early as 622 BC[E],[306] six and a half centuries after it is believed to have been given to Moses by God Himself -- his book is conspicuously popular in religious Jewish circles; one of the reasons for this may be Johnson's uncritical acceptance of the Bible as an (almost) one hundred percent correct historical account. But such acceptance, while having brought Johnson popularity among religiously-minded readers, has also driven him into numerous errors, a couple of which were already demonstrated above.[307] But if discussion is confined to the period specified by Kelemen -- from the destruction of the First to destruction of the Second Temple -- and to the corresponding part of *A History of the Jews*,[308] Johnson's general framework should be admitted essentially correct, although the reader must be prepared to swallow such blunders as a mention of the book of Daniel excluded from the Jewish biblical canon.[309]

Yet Johnson definitely fails to accomplish the mission placed upon him by Kelemen -- to confirm the Jews' sinking into sins prior to destruction of the First Temple at least. In his description of the period[310] Johnson portrays the kingdom of Judah as more faithful to the worship of YHWH, God of the Bible, than the northern kingdom of Israel. Of course, Johnson admits -- as does the Bible -- that "backsliding into paganism" took place, but, in his own words, from the 7th century on, "Increasingly... the rulers and peoples of Judah began to link their ultimate political and military fate with their current theology and moral behaviour. The notion seems to have spread that the people could only be saved by faith and works." [311] The landmark of the period was, of course, the reform of King Josiah, starting in 622 BCE, which destroyed all forms of pagan and heterodox cults to the root and endowed the religion of the Torah -- in its contemporary form, of course -- with the full support of the state machine.[312]

And curiously, with Josiah's reign the fall of the kingdom of Judah began. Johnson does not mention that, but in 609 BCE Josiah was murdered by the Egyptians, who thereafter imposed on Judah a king of their own choice -- Jehoiakim. For four years Jehoiakim was a vassal of Egypt -- but after Nebuchadnezzar routed the Egyptians at the battle of Karkemish in 605 BCE, Jehoiakim became vassal to Babylon, against whom he rebelled three years later.[313] The Babylonians were apparently too busy elsewhere to put down the revolt in Judah, but when Jehoiakim was succeeded by his son Jehoiachin in 597 BCE, a Babylonian army invaded Judah, took Jerusalem, captured Jehoiachin and exiled him to Babylon with notables, warriors, and the skilled artisans of Judah.[314] (This exile is mentioned by Johnson.[315]) Nebuchadnezzar placed Jehoiachin's uncle Zedekiah on the throne of Judah, but after having served the Babylonian overlord for nine years, Zedekiah rebelled -- and was punished within two years by another Babylonian invasion, the capture of Jerusalem, destruction of the Temple, and the exile of another group of Jews to Babylon. Zedekiah himself was captured, put in chains, and blinded after watching his sons being slain.[316]

Was it a punishment for sins? The Bible says so, bringing Jehoiachin, Jehoiakim, and Zedekiah as whipping boys who "did the evil in the eyes of the Lord." [317] But while the Bible lists as examples of such evil, idolatry, social injustice, bloodshed, and persecution of prophets,[318] it says nothing about forbidden sexual contacts -- the account of the latter is but

an overcreative elaboration of Talmudic rabbis on the verses of Isaiah 3:16-26. And yet more importantly, the Bible itself admits that the fall of Judah had begun already by the end of the reign of the "righteous" king Josiah. What, then, is the Bible's explanation?

Before him [Josiah] there was no king like him, who turned to the Lord with all his heart and with all his soul and with all his might, according to all the Law of Moses; nor did any like him arise after him. Still, the Lord did not turn away from the fierceness of His great wrath, by which His anger was kindled against Judah, because of all the provocations with which Manasseh [Josiah's grandfather] had provoked him. And the Lord said: "I will remove Judah also out of my sight, as I have removed Israel; and I will cast off this city which I have chosen, Jerusalem, and the house of which I said, My name shall be there."[\[319\]](#)

So, although Josiah was righteous, the downfall of Judah came because of the sins of his grandfather, Manasseh. Thus, of course, it is possible to "explain" everything: if a generation of Jews is sinful, disasters befall it because of its own sins, and if it is righteous, disasters befall it because of the sins of its ancestors. And, even worse, this "explanation" is a double-edged sword, for there are always as many notions of sin as there are religious doctrines:

Then all the men who knew that their wives had offered incense to other gods, and all the women who stood by, a great assembly -- all the people who dwelt in Patros in the land of Egypt -- answered Jeremiah: "As for the word which you have spoken to us in the name of the Lord, we will not listen to you. But we will do everything that we have vowed, burn incense to the Queen of Heaven and pour out libations to her, as we did, both we and our fathers, our kings and our officers, in the cities of Judah and in the streets of Jerusalem; for then we had plenty of food, and prospered, and saw no evil. But since we ceased burning incense to the Queen of Heaven and pouring out libations to her, we have lacked everything and have been perishing by sword and by famine."[\[320\]](#)

Regarding the Second Temple, it may look as though the spread of Christianity prior to the Temple's destruction -- while many of the first Christians were of Jewish stock, especially in the diaspora[\[321\]](#) -- brought this disaster upon the Jews; but the succeeding events disprove this thesis. Soon after the Temple's destruction in 70 CE, the ways of Judaism and Christianity parted completely: from the early 2nd century, these were two mutually exclusive and hostile creeds. Then, in 132 CE, the Bar Kokhba Revolt broke out; documents dating to the time of revolt and discovered by archaeologists in the 1950s and '60s "show that the men of the rebellion were orthodox Jews who took great trouble, despite desperate circumstances, to observe the Mosaic law -- the Sabbath, the festivals, priestly and levitical dues for instance."[\[322\]](#) Yet the revolt was put down in less than four years, the devastation caused by the Romans' revenge greater this time than it was even in 70 CE.[\[323\]](#)

Another example which Kelemen brings to support his "stick-and-carrot" view of relations between God and the Jewish people is, unfortunately, once again rooted in distortion:

Historian Lucy Dawidowicz writes that, Soviet Jewry aside, only about a half of pre-World War II East European Jewry was observant, and "secularity was becoming the dominant mode."[\[324\]](#)

This sentence is provided by Kelemen with reference to the Bantam Books edition of Dawidowicz's famous *The War Against the Jews* (p. 335). The reader need, however, only to open Dawidowicz's book to see that she meant something quite different from what Kelemen wrote:

Observant Jews in the prewar community accounted for half, perhaps even more, of East European Jewry -- the Soviet Union excepted. Even though secularity was becoming the dominant mode, the norms and values of traditional Judaism still shaped the behavior of the whole Jewish population. The observance of Judaism had permeated all public aspects of Jewish life. Keeping the Sabbath as the day of rest and abstaining from forbidden foods were observances adhered to by nearly the entire Jewish community. Judaism was practiced in thousands of formal and informal groups: synagogues, houses of prayer and houses of study, yeshivot and *hedarim* [religious elementary schools], ritual baths and ritual-slaughter abattoirs, religious courts, congregational bodies, women's organizations, publishing houses and presses.

Perhaps God could consider such state of things bad enough to start the Holocaust, but it still does not justify Kelemen's attempt to pervert the picture painted by Dawidowicz. The reason for Kelemen's labor is not far to seek, though: during the Holocaust, it was the more religious communities of Eastern Europe who suffered the worst -- the majority of their Jews were annihilated -- while the death toll among less observant Jewries was considerably lower: one-third to two-fifths in the Soviet Union, one-third in Austria, two-fifths in Germany (most Jews had managed to escape these countries before the extermination began), one-third or perhaps only one-fifth in Italy, one-fourth in France.[325] Of course, to seek for God's finger in history is monkey business: mostly observant Oriental Jewry was spared the disaster, as were the largely non-Orthodox communities on the American continent and the predominantly secular *yishuv* in Palestine. And, whatever can be said of Orthodox Jewish observance on the eve of World War II, it was clearly more widespread and deep-rooted than at present; yet, in spite of all the attacks against Israel and anti-Semitic incidents elsewhere, the status of the Jewish people at the turn of the 21st century is much better than it was in the 1930s and '40s. Besides, many disasters -- Judaism being outlawed in Byzantium, pogroms in 14th-century Germany, massacres by Cossacks in 1648-1667, and persecutions in Spain under the Visigoths, the Almohads and the 15th-century Catholic monarchs, to name but a few -- occurred at times when Halakhic observance was practically universal among the Jews.

The "stick-and-carrot" concept of history is, to be sure, thoroughly Jewish: it is encountered in the Bible, and it is possible that even Jewish reformers of the Seleucid age viewed whatever trials and tribulations they experienced as divine punishment for ethical misconduct. Yet a careful look at Jewish history -- or the history of any other group of people -- suffices to show the baselessness of this concept. Kelemen would have certainly done better if he refrained from parroting the "stick-and-carrot" philosophy of history and conducted an objective historical study instead.

## Bad Things, Good People and Poor Explanations

By the last chapter of his book, Kelemen probably thought the reader must be ready to believe that there is God (and the Jewish God, at that). There would remain only one problem:

For many, the last obstacle in the path towards belief is the simple yet disturbing observation that good people sometimes suffer and evil people sometimes flourish. It seems obvious that an omnipotent, omniscient, moral God would not allow injustice. Upon witnessing inequity, it is therefore perfectly natural to doubt God's existence.[326]

Terms like "omnipotent" and "omniscient" smell of Christian theology (was it the reason Kelemen substituted "moral" for "benevolent"?), but the underlying idea here is correct: if, as Maimonides' 10th and 11th principles of faith state, God knows of every deed and thought of humans, rewards those who obey His precepts and punishes those who disobey them, it would be only natural to expect that those who observe God's precepts will flourish and the disobedient will suffer. If one assumes that the Torah was given by God and all of Halakhah possesses some kind of divine authority, and if he sees compliance with God's will as a moral value[327] as Kelemen obviously does, he would justifiably view those who comply with Halakhic laws as good people and those who do not comply as evil. The question, then, appears to be: how can it be that people who meticulously observe the (alleged) Law of God suffer while those who transgress the Law flourish?

That Kelemen does not formulate the question in this form is no help. If he wishes to provide rational arguments for the existence of God as Judaism envisions Him, he must operate within the framework of Judaic theology, in which it is compliance with God's will that is recognized as bringing a person the ultimate reward. This consideration alone is sufficient to undermine Kelemen's first effort at explaining (or rather explaining away) the difficulty:

First, we must know who is good and who is evil. But as any historian, psychologist, or businessman will attest: The people most widely considered to be good are not necessarily good, and the people most widely thought to be evil are not necessarily evil. Indeed, the most evil people in history succeeded in their endeavors by maintaining a façade of altruism. Being evil often involves lying, presenting an upright, even saintly image...

The second piece of missing information is: What is reward and what is punishment? After all, circumstances are not always what they appear to be.[328]

One need only recall the millions of pious and observant Jews murdered in the Holocaust while many of their butchers -- the murder of an innocent Jewish person is a capital offense under Halakhic terms -- lived long and rather enjoyable lives. (Only a minority of them were killed during the war or punished as war criminals; moreover, in Austria, where about a third of SS extermination personnel originated, a series of presidential decrees issued from 1955 on granted amnesty to most of the convicted war criminals.[329]) Should one suspect all those pious Jews of hypocrisy or conclude that "the circumstances" -- a horrible death in Auschwitz and a long and peaceful life, in this case -- "are not what they appear to be"?

And even if the framework of Judaic theology is left aside, does not the fact that thousands of babies who simply have not lived enough to commit any wrong die yearly in earthquakes and floods, of epidemics and starvation, or are outright murdered disprove the notion of a perfectly

moral God who presides over our world? The problem cannot be explained away and Kelemen senses that -- so another attempt is made:

...if God exists, it is also possible that there is an entire non-physical world -- a world unbound by time or space -- and a soul, a human essence that survives death and passes into this eternal world. Human existence might actually be divided into two distinct segments -- finite life and infinite afterlife -- separated by an event called death.

Even most good people make a few moral errors, and even evil people occasionally act righteously...

Is it not possible that God gives evil people some of their reward during the finite existence we call life, and reserves most of their punishment for eternal, infinite afterlife? Likewise, perhaps God lets good people experience some of their punishment in this world, and reserves most of their reward for the eternal world to come? If God really exists, we might expect to see good people periodically suffering and evil people periodically flourishing, so that later, in an infinite world, good people can receive a purer, more intense reward and evil people a purer, more intense punishment.[330]

No more than a brief survey of relevant literature is needed, however, to realize that all the research in the field of neuroscience points to the utter dependence of all that forms human personality -- feelings, emotions, memory, reasoning, decision-making, and consciousness -- on brain function.[331] Psychologists David Rosenhan and Martin Seligman, describing a patient with Alzheimer's disease -- a degenerative brain disorder which results in the progressive and irreversible decline of memory and many other cognitive functions -- noted that the patient "had lost virtually all the traits that had made him a unique individual." [332] If, therefore, the question is asked whether human personality, or *mind*, can continue its existence after the death of body and the cessation of brain activity, the answer is clearly no:

The consensus today among neuroscientists and philosophers is that mind is an emergent property of brain function. That is, what we refer to as mind is a natural consequence of complex and higher neural processing. Clearly brain injury or disease can severely compromise the mind, as happened to Mr. Jones [the Alzheimer's patient mentioned above]. At the very least, then, mind depends on intact and healthy brain function.[333]

Thus, the idea that there is a "human essence that survives death and passes into... eternal world" where each person is given his ultimate reward or punishment is also discredited -- unless one assumes that there is no connection between this "human essence" and human personality as we encounter it in everyday life, in which case, of course, it would be strange to expect this "human essence" to be rewarded or punished for the personality's deeds. Perhaps the true essence of the soul and its connection to human personality as we know it is fundamentally beyond our comprehension, as God's true essence is? But we needn't go that far:

Finally, even for someone who would deny the existence of a soul and an afterlife, the seeming iniquity of reward and punishment does not represent a serious

argument against God's existence. Any rational person will admit that, in theory, the ways of God could be so complex that they defy human understanding. Man might simply be incapable of comprehending and morally evaluating the behavior of an omniscient, omnipotent Being.[334]

This is not so much an argument as an admission of ignorance -- but curiously, it is the passage which makes the most sense in all of Kelemen's book. There may be things which we cannot comprehend -- God's true essence or His ways of reward and punishment -- but then, the whole business of providing rational arguments for God's existence is an exercise in vanity at best and an endeavor to deceive at worst. Kelemen's own arguments run this whole spectrum -- but they manifestly fail to demonstrate that an assumption of God's existence can make reality any more comprehensible than a godless outlook, in spite of what Kelemen boasts in the epilogue to his book.[335] This, however, is not his fault -- nothing can be made more comprehensible by positing the existence of incomprehensible entities. Furthermore, claims that "something is one way instead of another because God wills it to be so" are assertions, not explanations: they do not make it any more clear how God's will led things to be what they are. These are the main reasons why attempts to explain reality by referring to God are irrational.

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Ambrose Bierce has defined faith as "belief without evidence in what is told by one who speaks without knowledge, of things without parallel." [336] It may be argued that there is more to the issue, but if one considers faith as presented by Kelemen, Bierce's conclusion appears to be true.

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[1] *Permission to Believe*, p. 11.

[2] *Ibid.*, p. 12.

[3] In *The Condition of Jewish Belief: A Symposium Compiled by the Editors of Commentary Magazine* (New York: Macmillan, 1966), p. 59.

[4] *Laws of the Torah Essentials*, chapter 3.

[5] *Permission to Believe*, p. 15.

[6] *Ibid.*, p. 16.

[7] Articulated in Maimonides' foreword to his commentary on the 10<sup>th</sup> chapter of Tractate Sanhedrin of the Mishnah and printed, in an abridged form, in all standard Orthodox Jewish prayerbooks.

[8] Classical Rabbinic Judaism -- that of the Mishnah and the Talmud -- paid little attention to the question of religious dogma. In the Middle Ages, several thinkers tried to formulate the main core of Judaic belief. Maimonides' credo won the day -- but this happened a considerable time after his death in 1204. The process of adoption by Judaism of a compelling religious dogma is discussed in Menachem Kellner, *Must a Jew Believe Anything?* (Oxford: Littman Library of Jewish Studies, 1999).

[9] The 6th, 7th, 8th and 9th principles of faith articulated by Maimonides deal with the issues of prophecy in general, the prophecy of Moses, the Torah's divine origin and its immutability; the 12th principle deals with coming of the Messiah; the 13th -- with resurrection of the dead.

[10] *Laws of Repentance* 5:5.

[11] That is, knowledge in general is not an innate part of a person's being: one may acquire knowledge by learning or lose it by forgetting what he knew.

[12] Exodus 33:20.

[13] Isaiah 55:8.

[14] R' Abraham ben David's gloss on *Mishneh Torah*, *Laws of Repentance* 5:5.

[15] *Permission to Believe*, p. 15.

[16] *Ibid.*, p. 16.

[17] *Permission to Believe*, p. 21.

[18] *Ibid.*, italics preserved.

[19] *Ibid.*, p. 23.

[20] *Ibid.*, p. 27.

[21] *Ibid.*, p. 23.

[22] See e.g. *ibid.*, pp. 84-85.

[23] Ibid., p. 22.

[24] Encyclopaedia Britannica, *ethics*, The origins of ethics, Prehuman ethics

[25] Ibid.

[26] Steven Pinker, *How the Mind Works* (New York: Norton, 1997), p. 51.

[27] Exodus 17:14, Deuteronomy 25:17-19, I Samuel 15:2-3.

[28] Yevamot 61a, Bava Meṣi'a 114b, Keritot 6b.

[29] Encyclopaedia Britannica, *ethics*, The origins of ethics, Prehuman ethics, Kinship and reciprocity

[30] Exodus 31:14-15.

[31] Exodus 22:17.

[32] *Ethics*, The origins of ethics, Prehuman ethics, Kinship and reciprocity.

[33] *Permission to Believe*, p. 28.

[34] Ibid., p. 12.

[35] This radiation is electromagnetic waves. As the space stretched, the wavelength of the radiation (the distance between one peak of a wave and another) grew. Since Einstein's relativity theory states that the velocity of spreading of electromagnetic waves (of which visible light is a kind) is constant in every frame of reference, and since radiation frequency equals the velocity of radiation's spreading divided by the wavelength, increase of wavelength means decrease of frequency.

[36] *Permission to Believe*, p. 36.

[37] New York: Bantam Books, 1988.

[38] Ibid., p. 40.

[39] Such a proposition is articulated, e.g., in Charles Misner, John Wheeler, Kip Thorne, *Gravitation* (San Francisco: Freeman, 1973), p. 1214.

[40] S. Hawking, *A Brief History of Time*, p. 55.

[41] Ibid., p. 61.

[42] Ibid.

[43] An *imaginary number* is a number which gives a negative real number if multiplied by itself. An imaginary equivalent of 1, for example, is denoted as  $i$ , and  $i*i = -1$ . There are also negative imaginary numbers which, multiplied by their positive equivalents, give positive real numbers [e.g.  $(-i)*i = 1$ ].

[44] See S. Hawking, *A Brief History of Time*, p. 134.

[45] Ibid., p. 136.

[46] Ibid., pp. 148-149.

[47] An antiparticle is a "subatomic particle having the same mass as one of the particles of ordinary matter but opposite electric charge and magnetic moment. Thus the positron (positive

electron) is the antiparticle of the negative electron (negatron). The spinning antineutron with net charge zero, like the ordinary neutron, has its magnetic polarity opposite to that of a similarly spinning neutron" (Encyclopaedia Britannica, *antiparticle*).

[48] S. Hawking, *A Brief History of Time*, p. 129.

[49] *Ibid.*, p. 130.

[50] *Ibid.*, pp. 151-152.

[51] *Permission to Believe*, p. 45.

[52] *Ibid.*, pp. 45-46.

[53] Encyclopaedia Britannica, *genetics*.

[54] DNA is a double-helix polymer, a spiral consisting of two DNA strands wound around each other. Each strand is composed of a long chain of monomer nucleotides. A DNA nucleotide consists of a deoxyribose sugar molecule to which are attached a phosphate group and one of four nitrogenous bases: *adenine* (A), *guanine* (G), *cytosine* (C) and *thymine* (T). The nucleotides of a single strand are joined together by covalent bonds between the phosphate of one nucleotide and the sugar of the next, forming a phosphate-sugar backbone from which the nitrogenous bases protrude. One strand is held to another by hydrogen bonds between the bases; the sequencing of this bonding is specific: A bonds only with T, and C only with G. Each triplet of nitrogenous bases on a strand codes for one of the 20 amino acids, of which the protein molecules of all the living organisms are built, and is termed *codon*. Each protein molecule consists of many amino-acid fragments, joined together to form a long chain.

[55] Encyclopaedia Britannica, *evolution*, The evidence for evolution, Molecular biology.

[56] *Permission to Believe*, pp. 47-48.

[57] A summary may be found in Encyclopaedia Britannica, *cell*, Cell differentiation; see also the bibliography there.

[58] Encyclopaedia Britannica, *mutation*

[59] Encyclopaedia Britannica, *peppered moth*.

[60] *Permission to Believe*, p. 49.

[61] Kenneth Miller, "Life's Grand Design," *Technology Review*, v. 97, no. 2 (February/March 1994), p. 31.

[62] *Ibid.*, pp. 31-32.

[63] *Ibid.*, p. 32.

[64] *Permission to Believe*, pp. 52-53.

[65] Sunderland, Mass.: Sinauer, 1986.

[66] D. Futuyuma, *Evolutionary Biology*, p. 323.

[67] Cited from Francis Darwin (ed.), *The Life and Letters of Charles Darwin*, v. 2 (Project Gutenberg text).

[68] D. Futuyuma, *Evolutionary Biology*, p. 6.

[69] Encyclopaedia Britannica, *evolution*; see there for a brief summary of the evidence for evolution, as available of now.

[70] *Permission to Believe*, p. 53.

[71] Insertion by Kelemen.

[72] In the following citation, the sentence quoted by Kelemen is marked in larger type.

[73] *Permission to Believe*, p. 12.

[74] *Ibid.*, p. 60.

[75] In the following citation, the phrase quoted by Kelemen is marked in larger type.

[76] *Permission to Believe*, pp. 59-60.

[77] Antonio Lazcano, Stanley Miller, "How Long Did It Take for Life to Begin and Evolve to Cyanobacteria?" *Journal of Molecular Evolution*, v. 39 (1994), p. 551; see also A. Lazcano, S. Miller, "The Origin and Early Evolution of Life," *Cell*, v. 85 (1996), pp. 793-798.

[78] E. Peltzer et al., "The Chemical Conditions on the Parent Body of the Murchison Meteorite," *Advances in Space Research*, v. 4 (1984), pp. 69-74; L. Hua et al., "Identification and Quantification of Nucleic Acid Bases in Carbonaceous Chondrites," *Origins of Life*, v. 16 (1986), pp. 226-227.

[79] D. Futuyuma, *Evolutionary Biology*, p. 322.

[80] A. Lazcano, S. Miller, "The Origin and Early Evolution of Life," p. 794.

[81] *Permission to Believe*, p. 57.

[82] Cambridge, Mass.: Belknap, 1963, pp. 288-289.

[83] Isadore Lerner, *Genetic Homeostasis* (New York: Wiley, 1954).

[84] Any of the different forms of a gene that may occur alternatively at a given site (locus) on a chromosome is termed *allele*. Alleles may occur in pairs, or there may be multiple alleles affecting the expression of a particular trait. If the paired alleles are the same, the organism is said to be homozygous for that trait; if they are different, the organism is heterozygous. In heterozygous organisms, one of the paired alleles generally overrides the other one; the overriding allele is termed *dominant*, and the overridden one -- *recessive*. The overriding means that the traits of the dominant allele are actually expressed in the organism, while those of the recessive one are not. Dominant allele is designated by an uppercase letter (e.g. *A*), and recessive allele -- by a lowercase one (e.g. *a*). In species with sexual reproduction, if two parent organisms are heterozygous for a certain trait (their genetic blueprint for this trait is *Aa*), their child may inherit dominant as well as recessive alleles for that trait. If the child inherits recessive alleles from both of its parents (its genetic blueprint for the trait is then *aa*), traits not expressed in parents will be expressed in the child (e.g. two brown-eyed parents may give birth to a blue-eyed child). Organisms in which the recessive alleles of their parents are expressed are termed *homozygous recessives* (*aa* is a homozygous blueprint).

[85] It is phenotypes, of course, which are directly preferred by selection, both natural and artificial: a farmer breeds fowl to bring more eggs, not to have a special gene in its DNA code. But since it is genotype which determines phenotypic properties, it may well be said that selection prefers certain genotypes -- those which code for the phenotype selected.

- [86] Encyclopaedia Britannica, *Mayr; Ernst*.
- [87] *Permission to Believe*, p. 57; spelling preserved.
- [88] Bethesda, Maryland: Adler and Adler, 1986.
- [89] Several biologists reviewed the book, pointing to serious flaws in Denton's treatment of evidence and argumentation. Their reviews may be found in Don Lindsay's Internet Archive, [Reviews: "Evolution: A Theory In Crisis" by Michael Denton](#).
- [90] *Scientific American*, v. 200, no. 3 (March 1959), pp. 48-53.
- [91] Encyclopaedia Britannica, *heredity*, Heredity and evolution, Selection as an agent of change, Natural selection in operation.
- [92] *Permission to Believe*, p. 58.
- [93] An extensive list of such instances was posted on the Internet by University of Wisconsin-Milwaukee biologist Joseph Boxhorn: [Observed Instances of Speciation](#). Another list was posted by Chris Stassen et al.: [Some More Observed Speciation Events](#).
- [94] Hugo de Vries, *Species and Varieties, Their Origin by Mutation* (Chicago: Open Court, 1905).
- [95] T. Dobzhansky, O. Pavlovsky, "An experimentally created incipient species of *Drosophila*," *Nature*, v. 230 (1971), pp. 289-292.
- [96] *Permission to Believe*, p. 54.
- [97] For this study the 1st and the 6th editions of *The Origin of Species* provided by Project Gutenberg were used, as well as the variorum text published in Morse Peckham's edition by The University of Pennsylvania Press in 1959.
- [98] Chapter 9, "On the Imperfection of the Geological Record."
- [99] This time in chapter 10 (under the same title). In the 6th edition, Darwin dedicated an entire chapter -- chapter 7 -- to a discussion of objections raised against his theory. Therefore, chapters 7-14 of previous editions were renumbered 8-15, correspondingly.
- [100] Emphasis in original.
- [101] Encyclopaedia Britannica, *evolution*, The evidence for evolution, The fossil record. An illustrative Internet exhibit on horse evolution was prepared by the [Florida Museum of Natural History](#).
- [102] Encyclopaedia Britannica, *evolution*, The evidence for evolution, The fossil record
- [103] See A. Crompton, P. Parker, "Evolution of the Mammalian Masticatory Apparatus," *American Scientist*, v. 66 (1978), pp. 192-201, and bibliography there (reference added).
- [104] Kenneth Miller, review of Michael Behe, *Darwin's Black Box, Creation/Evolution*, v. 16 (1996), pp. 36-40.
- [105] *Permission to Believe*, p. 55.
- [106] In the following citation, the sentence quoted by Kelemen is marked in larger type.
- [107] Chapter 6, "Difficulties of the Theory" (Project Gutenberg text).

- [108] Richard Dawkins, *The Blind Watchmaker* (London: Norton, 1987), p. 77.
- [109] Ibid.
- [110] Ibid., pp. 77-78; italics in original.
- [111] An illustration of the conventional hypothetic scheme of eye evolution may be found in K. Miller, "Life's Grand Design," pp. 28-29. For a comprehensive account on evolution of eyes of different types, see Michael Land, Russell Fernald, "The Evolution of Eyes," *Annual Review of Neuroscience*, v. 15 (1992), pp. 1-29.
- [112] George Gaylord Simpson, *The Meaning of Evolution* (New York: Mentor Books, 1955), p. 63.
- [113] Dan Nilson, Susanne Pelger, "A Pessimistic Estimate of the Time Required for an Eye to Evolve," *Proceedings of the Royal Society of London, Series B*, v. 256 (1994), p. 53.
- [114] Ibid., p. 58.
- [115] Christian de Duve, "The Beginnings of Life on Earth," *American Scientist*, v. 83 (1995), p. 430.
- [116] D. Nilson, S. Pelger, "A Pessimistic Estimate of the Time Required for an Eye to Evolve," p. 58.
- [117] R. Dawkins, *The Blind Watchmaker*, p. 91.
- [118] *Permission to Believe*, p. 56.
- [119] The General Libraries at the University of Texas and the Texas State Historical Association, *The Handbook of Texas Online*, Chandler, Asa Crawford.
- [120] P. 221.
- [121] Quote from R. J. Tillyard -- Kelemen, p. 55; Denton, p. 220. Quote from F. E. Lloyd -- Kelemen, p. 56; Denton, p. 226. Quote from C. W. Wardlaw -- Kelemen, p. 56; Denton, p. 226. Quote from B. Stahl -- Kelemen, p. 56; Denton, p. 209.
- [122] In the following citation, the sentence quoted by Denton and Kelemen is marked in larger type.
- [123] *Protozoa*, a subkingdom of kingdom *Protista*, is a collection of unicellular eukaryotic (i.e. possessing a well-defined nucleus) organisms. About 1/3 of the living protozoans are parasites (Encyclopaedia Britannica, *protozoan*).
- [124] A. C. Chandler, *Introduction to Parasitology* (New York: Wiley, 1961), p. 16.
- [125] Philadelphia: Lea & Febiger, 1961.
- [126] Reading, Mass.: Addison-Wesley, 1967.
- [127] Princeton: Princeton University Press, 1980.
- [128] *Permission to Believe*, p. 56.
- [129] Waltham: Chronica Botanica Co., 1942.
- [130] M. Denton, *Evolution: A Theory in Crisis*, p. 226.

[131] In the following citation, the sentences quoted by Denton and Kelemen are marked in larger type.

[132] Bladderwort, a genus consisting of "about 120 widely distributed species of land and water plants characterized by small hollow sacs that actively capture and digest tiny animals such as insect larvae, aquatic worms, water fleas, and other small swimmers" (Encyclopaedia Britannica, *bladderwort*).

[133] Adolf Engler, Karl Prantl, *Die Natürlichen Pflanzenfamilien* (Leipzig, 1887-1915).

[134] Geological term for the period lasting from 66.4 to 1.6 million years ago.

[135] Scheme of the supposed evolutionary interrelations of a group of organisms derived from a common ancestral form. "The ancestor is in the tree 'trunk'; organisms that have arisen from it are placed at the ends of tree 'branches.' The distance of one group from the other groups indicates the degree of relationship; i.e., closely related groups are located on branches close to one another" (Encyclopaedia Britannica, *phylogenetic tree*).

[136] F. E. Lloyd, *The Carnivorous Plants*, p. 7.

[137] London: John Murray, 1875.

[138] See e.g. Barrie Juniper, Richard Robins, Daniel Joel, *The Carnivorous Plants* (London: Academic Press, 1989), pp. 283-309.

[139] *Permission to Believe*, p. 56.

[140] London: Longmans, 1965.

[141] M. Denton, *Evolution: A Theory in Crisis*, p. 226.

[142] In the following citation, the fragments quoted by Kelemen and Denton are marked in larger type.

[143] A family of flowering plants (of the order Rafflesiales), strictly parasitic on roots and stems of other plants and known for its remarkable growth forms. The term *Rafflesiaceae* seemed apparently too sophisticated to Denton, who omitted this whole clause from his quotation, without noting that the latter contains an omission.

[144] This sentence is quoted by Denton (p. 226) but not by Kelemen.

[145] Julian Huxley, *Evolution: The Modern Synthesis* (London: George Allen and Unwin, 1942).

[146] Of *Organization and Evolution in Plants*.

[147] This sentence is quoted by Denton (p. 226) but not by Kelemen.

[148] C. W. Wardlaw, *Organization and Evolution in Plants*, pp. 405-406; italics in original.

[149] *Permission to Believe*, pp. 69-70.

[150] *Ibid.*, p. 12

[151] Sherwin Wine, *Judaism Beyond God* (Farmington Hills, Mich.: Society for Humanistic Judaism, 1985), p. 122.

- [152] *The Encyclopedia of Religion* (ed. M. Eliade, New York: Macmillan, 1987), *monotheism*, v. 10, p. 70.
- [153] Genesis 11:31.
- [154] *Encyclopaedia Biblica, Kasdim*, v. 4, pp. 365-366.
- [155] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 313.
- [156] Genesis 21:34.
- [157] Genesis 26:1.
- [158] Genesis 26:2-6.
- [159] *Encyclopaedia Britannica, Philistine*.
- [160] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 38.
- [161] See *ANET (Ancient Near Eastern Texts Relating to the Old Testament)*, ed. J. Pritchard, Princeton: Princeton University Press, 1969), pp. 376-378.
- [162] *Encyclopaedia Britannica, World War I*, The years of stalemate, Developments in 1917, The Western Front, June-December 1917.
- [163] See e.g. the Babylonian Talmud, 'Avodah Zarah 9a and the commentary of Rashi ad loc., or Yalkut Shim'oni midrash on the Torah, section 189.
- [164] *Encyclopaedia Britannica, Egypt*, History, Introduction to ancient Egyptian civilization
- [165] *Encyclopaedia Britannica, Hittite*
- [166] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 63.
- [167] *Ibid.*, pp. 62-63.
- [168] Numbers 33:35, Deuteronomy 1:2.
- [169] I Kings 9:26, 22:49.
- [170] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 63.
- [171] *Ibid.*, p. 60.
- [172] See *ibid.*, pp. 65-71.
- [173] Numbers 20:14-21.
- [174] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 68.
- [175] William Dever, review of I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, *Biblical Archaeology Review*, v. 27, no. 2 (March/April 2001), pp. 60-62.
- [176] *Permission to Believe*, p. 71; italics in original.
- [177] New York: Doubleday, 1952.
- [178] *Ages in Chaos*, v. 1, p. 1.
- [179] Entry *Yesiyat Misrayim*, v. 20, p. 187 and v. 3, p. 754, respectively.

[180] See e.g. I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, pp. 105-118; cf. William Dever, Review of *The Bible Unearthed*.

[181] S. David Sperling, *The Original Torah* (New York: New York University Press, 1998), pp. 54-56.

[182] *The Bible Unearthed*, pp. 86-90; Encyclopaedia Britannica, *Palestine, history of*, The Bronze Age, Late Bronze Age

[183] See Greta Hort, "The Plagues of Egypt," *Zeitschrift für die alttestamentliche Wissenschaft*, v. 69 (1957), pp. 84-103, v. 70 (1958), pp. 48-59.

[184] Ipuwer 2:10. Quotations from the Ipuwer Papyrus are given here according to the English translation by Miriam Lichtheim (*Ancient Egyptian Literature: A Book of Readings*, Berkeley: University of California Press, 1973, v. 1, pp. 149-163).

[185] Exodus 7:20.

[186] Ipuwer 2:7.

[187] *Ages in Chaos*, v. 1, pp. 32-34.

[188] Exodus 1:11.

[189] As, for example, Alan Gardiner has argued in *The Admonitions of an Egyptian Sage from a Hieratic Papyrus in Leiden* (Leipzig, 1909).

[190] This view was adopted, among others, by Miriam Lichtheim in her introductory comment on the papyrus.

[191] Several translations of the inscription have been published: Francis Griffith, *The Antiquities of Tell el Yahûdiyeh and Miscellaneous Work in Lower Egypt during the Years 1887-1888* (London: Egypt Exploration Fund, 1890), pp. 70-74; Günther Roeder, *Urkunden zur Religion des Alten Ägypten* (Jena: Diederichs, 1915), pp. 150-156; Ernest Alfred Wallis Budge, *From Fetish to God in Ancient Egypt* (New York: Blom, 1972), pp. 438-444; Georges Goyon, "Les Travaux de Chou et les tribulations de Geb d'après le naos 2248 d'Ismaïlia," *Kémi*, v. 6 (1936), pp. 1-42; Gaston Maspero, *History of Egypt* (transl. M. L. McClure, London: Grolier Soc.), v. 1, pp. 242-245 (a partial translation). Velikovsky used the translations of Griffith (English) and Goyon (French).

[192] *Ages in Chaos*, v. 1, pp. 39-45.

[193] G. Maspero, *History of Egypt*, v. 1, p. 245.

[194] Sean Mewhinney, "El-Arish Revisited," *Kronos*, v. 11, no. 2 (Winter 1986), p. 47.

[195] "Dans la suite du récit, le premier roi de l'univers est tantôt Râ, tantôt Toum."

[196] Side C of the inscription, line 6.

[197] Side C of the inscription, lines 21-23.

[198] "La butte des deux couteaux."

[199] *Ages in Chaos*, v. 1, p. 42.

[200] *Permission to Believe*, p. 73.

- [201] New York: Harper and Row, 1987.
- [202] London: Ernest Benn, 1957.
- [203] *A History of the Jews*, p. 597, n. 127.
- [204] *Digging Up Jericho*, pp. 261-262.
- [205] *Ibid.*, p. 229.
- [206] *Ibid.*, pp. 261-262.
- [207] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 81.
- [208] *A History of the Jews*, p. 44.
- [209] Joshua 10:1-27.
- [210] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 82.
- [211] *Ibid.*
- [212] *Permission to Believe*, p. 73.
- [213] Herodotus, *History*, book 2, chapter 141.
- [214] Sennacherib's Prism, column 3, lines 18-49; cited from *ANET*, p. 288 (parenthetic additions by J. Pritchard).
- [215] Magen Broshi, Israel Finkelstein, "The Magnitude of Population in Palestine in 734 BCE" (in Hebrew), *Qatedrah*, no. 58 (December 1990), p. 17.
- [216] II Kings 18:13-16.
- [217] Encyclopaedia Britannica, *Mesopotamia, history of*, Mesopotamia to the end of the Achaemenian period, The Neo-Assyrian Empire, Sennacherib.
- [218] *Permission to Believe*, p. 74.
- [219] Encyclopaedia Britannica, *Mesopotamia, history of*, Mesopotamia to the end of the Achaemenian period, The Neo-Babylonian Empire, The last kings of Babylonia.
- [220] Encyclopaedia Britannica, *Iran, history of*, The Elamites, Medians, and Achaemenids, The protohistoric period and the kingdom of the Medes, The rise of the Persians under Cyrus II.
- [221] *Ibid.*
- [222] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, pp. 292-295.
- [223] Jeremiah 25:11-12.
- [224] *Ibid.*, p. 307.
- [225] *Ibid.*, p. 306.
- [226] Encyclopaedia Britannica, *Mesopotamia, history of*, Mesopotamia to the end of the Achaemenian period, Mesopotamia under the Persians.
- [227] Omission in original.

- [228] Cyrus' Cylinder (*ANET*, p. 316; parenthetical additions by J. Pritchard).
- [229] *Ibid.*
- [230] I. Finkelstein, N. A. Silberman, *The Bible Unearthed*, p. 355.
- [231] *Ibid.*, p. 308.
- [232] Herodotus, *History*, book 3, chapter 91.
- [233] Ezra 7:25-26.
- [234] *Permission to Believe*, pp. 74-75.
- [235] *Antiquities of the Jews*, book 11, chapter 8, sections 3-5.
- [236] Tractate Yoma 69a.
- [237] Elias Bickerman, *The Jews in the Greek Age* (Cambridge, Mass.: Harvard University Press, 1988), pp. 4-5.
- [238] *Ibid.*
- [239] *Ibid.*, p. 7.
- [240] *Ibid.*, p. 74.
- [241] *Ibid.*, pp. 123-129.
- [242] I Maccabees 1:41-44.
- [243] Elias Bickerman, *The God of the Maccabees* (Leiden: Brill, 1979), p. 84.
- [244] *Ibid.*, pp. 11, 43-44, 104-111.
- [245] Elias Bickerman, *The Maccabees* (New York: Schocken, 1947), p. 23.
- [246] This story is preserved in Flavius Josephus, *Antiquities of the Jews*, book 12, chapter 4, section 6.
- [247] E. Bickerman, *The Maccabees*, p. 25.
- [248] I Maccabees 1:11-15.
- [249] E. Bickerman, *The God of the Maccabees*, pp. 84-86.
- [250] *Ibid.*, pp. 38-48.
- [251] II Maccabees 4:8-10.
- [252] II Maccabees 4:13-15.
- [253] II Maccabees 4:22.
- [254] II Maccabees 4:23-50.
- [255] Encyclopaedia Britannica, *Antiochus IV Epiphanes*, Early career.
- [256] I Maccabees 1:20-23.
- [257] Encyclopaedia Britannica, *Antiochus IV Epiphanes*, Early career; *ibid.*, *Pydna, Battle of*.

- [258] II Maccabees 5; I Maccabees 1:29-40; E. Bickerman, *The God of the Maccabees*, pp. 101-111.
- [259] II Maccabees 6-7, I Maccabees 1:44-64.
- [260] E. Bickerman, *The God of the Maccabees*, pp. 76-90.
- [261] E. Bickerman, *The Maccabees*, pp. 20-21; see I Maccabees 2:45-47.
- [262] I Maccabees 3-4; E. Bickerman, *The Maccabees*, pp. 35-40; Encyclopaedia Britannica, *Antiochus IV Epiphanes*, Efforts to hellenize the kingdom; *ibid.*, *Iran, history of*, The Hellenistic and Parthian periods, The "phil-Hellenistic" period, Mithradates I.
- [263] Christian Habicht, "Royal Documents in Maccabees II," *Harvard Studies in Classical Philology*, v. 80 (1976), pp. 1-18. Although E. Bickerman initially held a different view, he eventually agreed with Habicht's conclusions (*The God of the Maccabees*, p. 113).
- [264] E. Bickerman, *The Maccabees*, pp. 45-51.
- [265] *Ibid.*, pp. 52-59.
- [266] I Maccabees 2:1; Ezra 3:1-5; Haggai 1:1, 12-14, 2:2-4; Nehemiah 12:1-11, 13:28.
- [267] E. Bickerman, *The Maccabees*, pp. 61-69.
- [268] *Ibid.*, pp. 77-81.
- [269] Encyclopaedia Britannica, *Seleucid kingdom*.
- [270] E. Bickerman, *The Maccabees*, pp. 80-107; Encyclopaedia Hebraica, *Eres-Yisrael*, v. 6, pp. 351-352.
- [271] *Permission to Believe*, p. 75.
- [272] Encyclopaedia Hebraica, *Hordos*, v. 13, pp. 929-937.
- [273] The Babylonian Talmud, Bava Batra 4a.
- [274] *Permission to Believe*, p. 75.
- [275] Encyclopaedia Britannica, *Palestine, history of*, From Alexander the Great to AD 70, The Herodian house and the Roman procurators.
- [276] *Permission to Believe*, p. 79.
- [277] Encyclopaedia Hebraica, *Eres-Yisrael*, supplementary volume to vv. 1-16, pp. 512-514.
- [278] *Ibid.*, p. 514.
- [279] Encyclopaedia Britannica, *Egypt, History*, The revolution and the Republic, The Nasser regime.
- [280] Encyclopaedia Hebraica, *Eres-Yisrael*, supplementary volume to vv. 1-16, pp. 514-515.
- [281] *Ibid.*, pp. 515-516.
- [282] *Ibid.*, pp. 538-539.
- [283] *Ibid.*, p. 538.
- [284] *Permission to Believe*, p. 84.

- [285] Encyclopaedia Britannica, *Basque*; *Basque language*.
- [286] *Ibid.*, *Armenian*; *Armenian language*.
- [287] *Ibid.*, *China*.
- [288] Cited in Jacob Katz, *Exclusiveness and Tolerance* (Oxford: Oxford University Press, 1961), p. 188.
- [289] See Howard Sachar, *The Course of Modern Jewish History* (New York: Vintage Books, 1990).
- [290] Encyclopaedia Hebraica, *otonomiyah yehudit*, v. 1, pp. 782-789.
- [291] Salo Baron, *A Social and Religious History of the Jews* (New York: Columbia University Press, 1952-1983), v. 2, pp. 215-292, v. 6, pp. 3-151.
- [292] J. Katz, *Exclusiveness and Tolerance*, pp. 13-47; *idem.*, *Tradition and Crisis* (New York: Schocken, 1971), pp. 18-42.
- [293] S. Baron, *A Social and Religious History of the Jews*, v. 11, pp. 77-191.
- [294] J. Katz, *Tradition and Crisis*, pp. 256-257.
- [295] S. Baron, *A Social and Religious History of the Jews*, v. 11, pp. 232-236, 262-270; Bernard Weinryb, *The Jews of Poland: A Social and Economic History of the Jewish Community in Poland from 1100 to 1800* (Philadelphia: Jewish Publication Society, 1973), pp. 181-205.
- [296] *Ibid.*, v. 3, pp. 24, 124-127, 173-185, v. 11, pp. 192-283.
- [297] Tractate Pesahim 87b.
- [298] S. Baron, *A Social and Religious History of the Jews*, v. 2, p. 102.
- [299] *Ibid.*, pp. 122-126.
- [300] See Elias Bickerman, *Four Strange Books of the Bible* (New York: Schocken, 1967).
- [301] Arthur Ruppin, *The Jewish Struggle for Existence* (in Hebrew, Tel Aviv: Mossad Bialik, 1940), p. 33.
- [302] *Permission to Believe*, p. 84.
- [303] *Ibid.*, p. 85.
- [304] *Ibid.*
- [305] *Ibid.*
- [306] P. Johnson, *A History of the Jews*, p. 90.
- [307] Above.
- [308] Pp. 72-149, in accordance with Kelemen's reference.
- [309] P. Johnson, *A History of the Jews*, p. 95.
- [310] *Ibid.*, pp. 72-79.
- [311] *Ibid.*, p. 73.

- [312] Ibid., pp. 73-74.
- [313] II Kings 23:29-24:2, Jeremiah 46:2.
- [314] II Kings 24:5-16.
- [315] *A History of the Jews*, p. 78.
- [316] II Kings 24:17-25:21, Jeremiah 52:1-31.
- [317] II Kings 23:36-37, 24:9, 24:19-20, Jeremiah 52:2-3.
- [318] See e.g. Jeremiah 22, 36.
- [319] II Kings 23:25-27.
- [320] Jeremiah 44:15-18.
- [321] P. Johnson, *A History of the Jews*, pp. 124-133.
- [322] Ibid., p. 142.
- [323] Ibid., pp. 140-143.
- [324] *Permission to Believe*, p. 85.
- [325] H. Sachar, *The Course of Modern Jewish History*, pp. 516-556, 594-613; Lucy Dawidowicz, *The War Against the Jews* (New York: Bantam Books, 1976) pp. 483-544.
- [326] *Permission to Believe*, p. 91.
- [327] Coherence between the two is not trivial: one may admit that Halakhah reflects God's will but still deem its precepts evil. But, be the reasons for it what they may (some of them were considered in the second chapter of this essay), such an attitude does not usually occur in practice.
- [328] *Permission to Believe*, pp. 92-93.
- [329] H. Sachar, *The Course of Modern Jewish History*, p. 635.
- [330] *Permission to Believe*, pp. 93-94.
- [331] See e.g. John Dowling, *Creating Mind: How the Brain Works* (New York: Norton, 1998).
- [332] Cited *ibid.*, pp. 3-4.
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- [334] *Permission to Believe*, p. 95.
- [335] Ibid., pp. 97-99.
- [336] Ambrose Bierce, *The Devil's Dictionary* (Cleveland: The World Publishing Co., 1942).
- \* Authors' names and titles are given in transliteration.

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