LOGIC IN THE TORAH

A Thematic Compilation

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Abstract

Logic in the Torah is a 'thematic compilation' by Avi Sion. It collects in one volume essays that he has written on this subject in *Judaic Logic* (1995) and *A Fortiori Logic* (2013), in which traces of logic in the Torah and related religious documents (the Nakh, the Christian Bible, and the Koran and Hadiths) are identified and analyzed.

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FOREWORD

The present volume, *Logic in the Torah*, is a 'thematic compilation'; that is, it is a collection of essays previously published in some of my primary works. Such collections allow me to increase the visibility of scattered writings over many years on a specific subject. In the present case, the essays are drawn from only two past works, *Judaic Logic* (abbr. JL) (1995) and *A Fortiori Logic* (abbr. AFL) (2013).

The title of the present book, *Logic in the Torah*, is also the title of an essay in AFL, which was there included as an appendix, and which I have here placed as the opening chapter. However, whereas the title of this chapter intends the word *Torah* in its restrictive sense of the Pentateuch (the Five Books of Moses, or *Chumash*), the title of the book as a whole intends the same word in a larger sense, referring to the *Tanakh* (the whole Jewish Bible).

It should, however, be said that the present work does not constitute a thorough study of logic in the Tanakh. Whereas it includes a hopefully thorough listing of logic in the Torah (Pentateuch) and a presumably thorough listing of a fortiori logic in the Nakh (the rest of the Jewish Bible), it does not include a thorough listing of *other* forms of reasoning in the Nakh.

I have studied and written about Torah (or Tanakh, or more broadly Judaic) logic, not for religious apologetic purposes, or through ethnic pride, but out of scientific curiosity. Most logicians spin logic theories without reference to actual practice in the past and the present. My way has always been to first examine actual human reasoning. This empiricist approach to logic greatly enriches theory, and assures its utility. Torah being very ancient literature, it provides very interesting information on the history and geography of human reasoning. Most of

the findings presented in my works are products of original research.

The chapters of the present compilation are not placed in a strictly chronological order, note. The first chapter, as already stated, comes from AFL; the next four chapters come from JL; and the five remaining chapters come from AFL. Note that I do not here include my studies of post-Biblical (Talmudic and Rabbinic) logic, but limit the work to Scriptural evidence of logic.

Note that only the first eight chapters concern the Jewish Bible. Chapter 9 concerns the Christian Bible; and chapter 10, the Islamic Koran and Hadiths. I have here included (part of) my studies on Christian and Muslim logic for purposes of comparison. Here again, I have left out material relating to non-Scriptural logic (notably, my work on Islamic *fiqh*). Readers interested in post-Scriptural developments can pursue the matter in JL and AFL.

1.   LOGIC IN THE TORAH

Drawn from. A Fortiori Logic *(2013), appendix 6.*

1.   Introduction

There is evidently quite a bit of logic – inductive as well as deductive – to be found in the Tanakh (the Jewish Bible). Although this document aims, of course, primarily to convey narratives (they did this, they said that) and legislation (do this, don't do that), it also incidentally – whether intentionally or not – contains quite a few lessons in logic. Perhaps for this reason, Jews have traditionally been rather logical-minded people. However, to date no one (so far as I know) has made a systematic study of this topic, looking for all information of logical interest in the Tanakh. The term 'logic' should here be taken in its most comprehensive sense, including not only inductive and deductive processes capable of formal representation, but also logical intuitions, methodological guidelines and epistemological theories, and indeed anything that may conceivably improve cognitive efficacy, for that after all is the main purpose of logic.

[As we shall see in chapter 7], researchers have over time found 46 instances of a fortiori argument, including 5 in the Torah proper (i.e. the Pentateuch). In my earlier work, *Judaic Logic*, I focused on passages in the Torah which contain a couple of very important principles of inductive logic. But there is bound to be much more material of logical significance than that. If a fortiori argument, a relatively subtle and complex argument, is so frequent, we can reasonably expect a great many simpler and more common arguments to be found. Noticing them and

correctly identifying them requires some logical skills, of course; not everyone can do this job.

With this thought in mind, I have read once through the Torah looking for new material of logical significance and commenting on it. My findings are given below. The result is a grab bag of miscellaneous logical techniques or principles; it is clearly not an exhaustive toolbox, let alone a systematic teaching. Still, these findings are worth noting, as they may well have influenced and continue to influence Jews and others, consciously or otherwise, into more logical thinking. The findings listed below are, to repeat the findings from merely a first reading of the Torah; more readings will very likely yield additional findings, some perhaps more subtle and profound than those initially identified.

Moreover, I have not yet looked into the rest of the Jewish Bible (the Nakh) for similar material; no doubt quite a bit more should be found there. Nevertheless, I think the work below should pave the way for further research of the same sort in the future, by myself and others.

2.   Instances of logic in the Torah

The first words of **Genesis 2:16**, "And the Lord God commanded the man, saying," suggest the possibility of communication between God and mankind, i.e. of prophesy. From a secular point of view, this possibility is not very significant, since most of us do not nowadays lay claim to prophetic powers. But from a religious point of view, it is of course of major significance, and it is implied not only here but throughout the Torah and Tanakh.

In **Genesis 2:16-17**, God gives Adam the first of all commandments, viz.: "Of every tree of the garden [of Eden] thou mayest freely eat, but of the tree of the knowledge of good and evil, thou shalt not eat of it; for in

the day that thou eatest thereof thou shalt surely die." This passage is of interest to logic, because of the form of its discourse. The second part of it may be stated as: If you eat of this tree, the consequence will be death; therefore, do not eat of it; and the first part as: If you eat of any other tree, no such consequence will follow; therefore, you may eat of it. More symbolically put: if you do X, Y will then occur, and Y is undesirable, therefore avoid X; and if you do something else X', Y will not then occur, therefore, no need to avoid that other thing X'. Thus, this passage makes use of an if–then proposition, and implicitly of an inverse if–not-then proposition. Moreover, it teaches that if something undesirable would follow a certain action, one should not do it; whereas if nothing undesirable would follow a certain action, one may do it. The latter lesson concerns ethical logic.

Genesis 2:19 tells us that after God formed the beasts of the field and the fowl of the air, he paraded them before Adam "to see what he would call them; and whatsoever the man would call every living creature, that was to be the name thereof." Now this obviously a statement with logical significance; but what does it mean, exactly? Well, the simplest reading would be that words are arbitrary labels (initially composed of sounds, and later of written symbols) that man, for his own purposes, mentally attaches to the things he perceives or conceives. And this corresponds to the commonsense view of words; so, we can say that the author of this statement was saying the obvious. The implication of this simple view, note well, is that words *in themselves* tell us nothing about the objects they refer to: they are conventional.

Very different is the mystical interpretation of this verse that has developed among Jewish commentators[1]. According to them, language is originally made up of Hebrew letters, which were used by God during Creation to fashion the things created. When Adam named things, he was actually seeing into their essence and intuiting the verbal elements constituting them. This is clearly a much more complex theory of words, with metaphysical as well as epistemological implications. And, note well, it is in direct opposition to the simpler, commonsense view, since it claims that words (or at least, the Hebrew words used by God and Adam) are significant in themselves, as against conventional.

My point here is not to judge the matter, but merely to draw attention to the philosophical issues raised by this statement. Nevertheless, I would personally opt for the non-mystical theory, in view of the practical difficulties inherent in trying to prove the mystical one. The latter can only be classed as speculative, since (as far as I can see) we have no way to ever inductively prove it. Of course, we can conceive the things of this world as consisting of vibrations (of force fields, presumably) – but how would we scientifically establish that these vibrations correspond to those of Hebrew letters? Anyway, the commentators who make this claim have not demonstrated the correspondences. Therefore, by elimination, the commonsense view is more convincing.[2]

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1   Notably Radak (David Kimchi – Southern France, 1160–1235), according to a comment ad loc. in *The Stone Chumash* (ArtScroll, NY).

2   It should be added that the Biblical view that all languages are derived from Hebrew (since the incident described in Gen. 11:6-7) is open to doubt. In this regard, I would cite for instance John McWhorter. This explains the technical

Genesis 2:21-24 tells us that God made the first woman (Eve) by taking one of the ribs of the first man (Adam), then declares: "Therefore (*al ken*) shall a man leave his father and his mother, and shall cleave unto his wife, and they shall be one flesh." This passage is logically interesting because it says "therefore," implying that an inference is taking place. But what inference is intended here is far from clear! Why should the fact that the first man and woman were "of one flesh" imply that men should, or even merely would, thenceforth leave their parents and cleave to their wives? For a start, Adam and Eve had no parents, so, they provide no example to follow. Secondly, women after the first were not formed from a rib of their husband, but by ordinary reproduction; so, the unity of later couples is not as literal.

Thirdly, leaving aside those first two objections, why would couples who are "of one flesh" *not* stay with the husband's parents? In fact, they often do stay with his parents (or at least, did so till modern times), and even sometimes with hers (though this is not excluded here). No explanation is given, in the text or in subsequent commentary. Sure, one can readily see the purpose of the statement – to teach that the new couple is, or is to be, a new psychosocial unit, distinct from the parental units. But this is a supplementary insight, rather than a deduction; so, why say "therefore"? The translation of *al ken* into "therefore" seems sound; the literal meaning of the phrase is 'on yes' – i.e. on this basis, because of this, this implies.

So, we may have here an early instance of 'dud' inference; that is to say, of something presented as inference, which is in fact not at all inference. The use of a marker like "therefore" makes it look like inference, but it is not really

difficulties inherent in such reductionism, no matter what the initial language is assumed to be.

so. In short, this is rhetoric, rather than logic. It is interesting to find this mode of communication being used in the Torah. Such use is perhaps innocent – not intended to fool anyone, but merely to make the narrative seem more continuous.

Another tack. Needless to say, all the above is said within the framework of the Torah world view. But of course, modern science has a very different world view. The Torah view is one claimed to be based on revelation, and deduction and to a lesser extent induction therefrom; whereas the scientific view is one based on publicly accessible empirical data, and induction and to a lesser extent deduction therefrom. According to modern science, there was no first man and woman, and the world was not created less than 6000 years ago. The Big Bang, which started the expansion of the material universe, occurred some 13.8 billion years ago (based on complex astronomical measurements). Our planet, Earth, was born some 4.6 billion years ago, soon after the Sun (long after most stars visible in the sky, note) and before the Moon. Life on Earth began about 3.9 billion years ago (we do not know exactly how). Mankind is the product of a long evolution of life forms since that time. The age of our species is difficult to gauge, simply because it gradually emerged in an evolutionary continuum; but we can say, even if somewhat conventionally, that it is about 200,000 years old (which means, very, very recently).

As regards sexual differentiation, it has a long and rich natural history. Certainly, males did not precede females in our species, but both existed in earlier species well before our species arose. Therefore, the Torah here, as in many other contexts, is a world apart – a factually inaccurate report. This is, of course, indicative of logical errors; especially, not enough inductive logic was used. The Torah account may seem convincing to some people, due to their limited scientific knowledge; but the conclusion of

inaccuracy and error is inevitable to anyone who studies the matter objectively. I take no pleasure is saying this, and I am certainly not the first to say it. Therefore, we must view many of the Torah claims – especially concerning prehistoric times – as myths, legends and opinions. We can still learn many valuable lessons from this venerable document, which is after all a message from our ancestors; but we should remain coolheaded. It may conceivably have been Divinely inspired, but some admixture of human ideas must have occurred in the process, since it contains factual errors.

In **Genesis 3:1-5**, the serpent tries to tempt Eve by means of the following argument (here paraphrased): "since God did not say 'you shall not eat of any tree of the garden'[3], then you may eat of this tree;" to which Eve rightly retorts, briefly put: "He said we may eat of all trees *except* this one." We can discern in this a teaching of logic, namely that the serpent's inference from 'not all X are Y' (i.e. 'some X are not Y') to 'this one X is not Y' is fallacious, and learn from Eve's reply that a proposition may be general and exceptive, i.e. have the form 'all X except this one are Y'. It is easy to see how readers of such discourse absorb, over time, if only incidentally, lessons in logic.

Genesis 4:15 provides the first Biblical example of syllogism and apodosis in the Torah. In response to Cain's complaint (in the preceding verse) that "whosoever findeth me will slay me," God declares: "whosoever slayeth Cain, vengeance shall be taken on him sevenfold." The form of this statement is: anyone who does X, will be subject to consequence Y. Understanding such a statement requires the ability to subsume a particular case under a generality

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3   He puts it as a rhetorical question: "Hath God said 'you shall not eat of any tree of the garden'?" – suggesting that God did not say that.

Although this is not explicitly exemplified here, it is understood that if ever any individual does indeed do X, the consequence Y will befall him. That is to say:

Any man who does X will receive Y;

and this man did X,

therefore, this man will receive Y.

This is syllogism (1/ARR) if the major premise is viewed as categorical, or apodosis (*modus ponens*) if it is viewed as conditional. Clearly, the argument may be described as application of a general rule to a particular case. The same arguments are implicit in all the Biblical statements that detail a negative consequence of disobeying a commandment. For example, in Exodus 12:15: "whosoever eateth leavened bread from the first day until the seventh day, that soul shall be cut off from Israel." There is no need to list all cases.

This is admittedly not a fully explicit demonstration of syllogism and apodosis in the Torah, since the minor premise and conclusion are not stated, but obviously the Torah takes for granted that we understand the word 'whosoever' and can grasp the practical significance of an if–then statement. We do have an example of concrete application of an abstract rule, in the case of breach of the Sabbath, described in Numbers 15:32-36, where a man disobeys the interdiction to work on the day of rest and is consequently put to death[4]. Further on, e.g. in Leviticus 21:21, we do find more explicit apodoses.

In **Genesis 4:23-24** we find the Torah's first example of a fortiori argument, which is (more precisely) an a crescendo

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4   The rule is given earlier, in Ex. 31:14: "everyone that profaneth it [the Sabbath] shall surely be put to death." Nevertheless, in the episode of Num. 15:32-36, the question is put to God before the rule is applied.

argument. Lamekh, who was the father of Noah (5:28-29), argues: "If Cain shall be avenged sevenfold, truly Lamekh seventy and seven-fold." The statement about Cain being "avenged sevenfold" is a reference to 4:15, which reads: "whosoever slayeth Cain, vengeance shall be taken on him sevenfold." This interpretation and translation[5] is not very clear. The statement is by God, who intends thereby to prevent people from slaying Cain, who murdered his brother Abel. Fair enough; but how would the person who slays Cain be punished "sevenfold" – he can only be executed once, unless we admit of reincarnation! For this reason, I gather, Rashi (and other commentators follow suit) reads the statement as meaning that the punishment of Cain must be put off for seven generations.

Given this interpretation, we can better understand Lamekh's thinking. Rashi[6] reads his statement as meaning: "If Cain killed intentionally, [and yet] his punishment was delayed for seven generations, [then] I, who killed unintentionally[7], surely will have my punishment deferred for many periods of seven generations." This is, as already mentioned, an a fortiori argument; or more precisely, it is an a crescendo argument, since the conclusion has a larger quantity (77) than the premise (7). And the argument is logically credible: unintentional killing is far less culpable than intentional killing, and so deserves proportionately less punishment, and/or longer deferral of punishment. All

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5   It is the American-Jewish (A.J.) translation, given in *The Soncino Chumash*.

6   Based on *Tanchuma Bereshit* 11.

7   The story traditionally told in this context is that Lamekh, who was blind, shot an arrow at what he thought (because his son Tubal-Cain suggested it) was a deer – but his arrow shot and killed Cain (and then, when he discovered his mistake, he killed his own son).

this may be viewed as, incidentally at least, a teaching of logic.

There are four more examples of a fortiori argument in the Torah, namely: **Genesis 44:8**, **Exodus 6:12**, **Numbers 12:14**, **Deuteronomy 31:27**. Each of these contains some interesting lesson of logic, since their forms vary. The first is positive predicatal in form, the second negative subjectal, and the last two are positive subjectal. All four are (in my opinion) purely a fortiori, unlike the above argument by Lamekh. The argument in Numbers plays a big role in Talmudic discussion, and is there considered by the Gemara author(s) as a crescendo. I need not here say more about them, since I deal with them in plentiful detail elsewhere [in AFL].

Genesis 8:6-12 may be viewed as a lesson in inductive logic, since it describes a deliberate experiment. This passage is part of the deluge story: Noah, while still in his ark, together with his family and samples of all animals, at some point "wanted to see if the waters were abated from off the face of the ground." To test the matter, he first "sent forth a raven;" this bird "went forth to and fro, until the waters were dried up from off the face of the earth" – meaning that the raven kept flying around, either close to the ark or elsewhere, without returning into the ark[8]. Noah then "sent forth a dove," but she "found no rest for the sole of her foot, and she returned unto him to the ark, for the waters were on the face of the whole earth." A few days later, "he again sent forth the dove out of the ark;" and this

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8   Rashi, referring to the haggadah of [chapter] *Chelek* [from Sanh. 108b], reads "to and fro" as meaning that "the raven kept returning to the ark, because it [the raven] suspected him [Noah] concerning its mate [i.e. as having sexual interest in the raven's mate]." This interpretation strikes me as so fanciful as to be ridiculous.

time she "came to him at eventide, and lo in her mouth an olive-leaf freshly plucked." In this way Noah "knew that the waters were abated from off the earth." A few days later, he "sent forth the dove" again, "and she returned not again unto him any more."

This story gives its readers a clear example of experimental method. Noah sends birds out to scout the surrounding countryside, and judges the level of water there by observing their subsequent behavior. The experiment seems to be a flop with a raven: its behavior is not conclusive. He instead tries a dove, three times. When she first returns, he assumes this means that she found no rest elsewhere (this conclusion is a bit doubtful, if doves behave like homing pigeons or if they are attached to their mates; moreover, the world is a big place, which it would take a long time for a dove to cover and a dove's energy is not unlimited). When she next returns with an olive leaf in her beak, he assumes this means she found some dry land or at least an olive tree branch above the waters (though strictly it might have been floating on the water, even if it seemed fresh to him). The last time, she does not return, and he presumably concludes that it went off to get on with its life (though strictly it might have died – it is after all surprising that it did not return for its mate). The conclusions Noah draws are reasonable, even though only probable.[9]

Of course, in view of its divergences from scientific fact, we can hardly doubt that this story is legendary[10]. For a

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9   Notice that Noah uses inductive means; he does not try to deduce reality from previous Divine utterances, using gematria (numerology) or any other mystical means.

10   The only way this story might conceivably be sustained is by claiming the apparent world to be illusory, and the reality behind it to be as described in the Bible. But that is really a farfetched defense!

start, where would the quantity of water required to cover the earth's surface to the peaks of the highest mountains come from? Gen. 1:6 mentions "waters above the firmament" and "waters below the firmament," and 7:11 states that "the fountains of the great deep [were] broken up, and the windows of heaven were opened." As regards the "fountains of the great deep," people in antiquity[11] believed the waters of rivers and seas were overflows from subterranean reservoirs of water. As regards the "windows of heaven," our forefathers thought that rain came from a heavenly reservoir of water[12]. But these beliefs are now known to be empirically inaccurate. This is not said to deny God and his kindly providence – it only means that the Bible's particular theory as to how that providence proceeds is fanciful. The text cannot be taken literally; it is at best a poetic statement.

Secondly, there are no geological or other traces of a worldwide flood about 4000 years ago. Of course, God may have erased all traces of the event – but why would He do that? Note that four millennia are not so long ago; yet, there is no evidence that history was suddenly interrupted. Peoples across the globe did not disappear, to be replaced by descendants of Noah, as is obvious from genetic and cultural evidence[13]. Thirdly, I have not made the

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11   At least until Aristotle objected to the idea (see his Meteorology 2:2, given in Appendix 4 [of AFL]). Note that Ex. 20:4 and Deut. 4:18 mention "the water under the earth." There is no mention anywhere of ice at the earth's poles melting, and indeed they did not.

12   They apparently did not realize that rainclouds are formed by evaporation of water from the seas, lakes and rivers. See also Deut. 11:17 and 28:12.

13   For instance, there are Amerindian tribes in North, Central and South America which are genetically proven descendants of a human whose bones were unearthed on the

calculation, but I very much doubt that two specimens of each and every animal species existing in the world at the time concerned would have fitted into a space the size of Noah's ark. People at the time this story was told were evidently not aware of the enormous number of animal species in the world. What of animals in the Americas, in Australia and other far off places – how did they get to the ark? Of course, God might have performed miracles, teleporting the beasts, and shrinking them or expanding the ark (and of course, undoing all that after the flood) – but to affirm this would be sheer conjecture and interpolation, for it is nowhere hinted at in the proof-text.

Genesis 18:16-32 can be viewed as a lesson in logic, if we understand the term logic in a broad sense including methodology. What is taught here, by means of an example, is the need to *ask questions*, and not passively accept things that seem unreasonable, if we want to get to know reality. Inversely, we should know when to stop asking questions, for we cannot expect answers to an infinite number of questions. When an answer satisfies one's rational faculty, there is no need to press further. One may of course press a little bit further, just to make sure; but at some point one must stop. It may, however, be that some time later, one does feel the need to ask more questions, because one's context of knowledge has

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west coast of the U.S.A. and found to be 13000 years old. At that time, the Bering Strait was frozen, and people could cross over it (on a coastal route) from Asia. Today's tribes could not have descended from Noah, since the Bering Strait was no longer frozen 4000 years ago. Think likewise of Australia's Aborigines, and many other remote peoples. As for cultures, they continued without a break; for instance, in nearby Egypt (where, by the way, most pyramids, including the three big ones at Giza, were already in existence). The flood story obviously doesn't hold water.

changed somewhat and so one's reason requires revised answers. Different people may, of course, due to having different contexts of knowledge, ask different questions and different numbers of questions.

All this can be seen in the story told in this passage. God tells Abraham that He may destroy Sodom and Gomorrah if their sin is as grievous as the cry of it suggests. There is a moment of silence, during which Abraham reflects on this and decides to ask a question: what if there are some righteous men among the wicked people there – would God refrain from destroying the cities for their sake? Abraham first asks the question with reference to 50 righteous men, and God answers He would forgive for their sake. Abraham then tries 45, then 40, then 30, then 20, then 10 righteous men – God answers every time that in such case He would not destroy[14]. Below 10, Abraham asks no further question – he is satisfied with that number as a minimum; there has to be some justice, after all.

It is noteworthy that God does not preempt Abraham's question-asking outburst by specifying at the outset that He would refrain from destruction even if there are only 10 righteous men. Nor does God answer Abraham's first to fifth questions that way. Nor does He state that the answer to Abraham's sixth question is the last. This suggests that God's relationship to Man is interactive. God leaves blank spaces in His discourse, inviting Man to ask questions about them and eventually to try filling them in. This preference of God for dialogue is also evident in the passages relating to the daughters of Zelophehad (later on, in Numbers). God did not create human beings as automatons, never questioning anything, born only to shut

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14   Note in passing that forgiveness is only promised for 50 righteous men, whereas for 45-10 such men only non-destruction is promised.

up and obey. He endowed each one of us with a rational faculty and some intelligence, giving us means to think for ourselves, to ask questions and look for answers.

Genesis 23:18-27 provides another lesson in inductive logic. The patriarch Isaac asks his son Jacob to draw near so that he may feel him and tell whether he is indeed Esau (Jacob's brother, whom he is impersonating). This is also experiment – using one's senses to answer some material question. This story could be viewed as a forewarning that while one can test ideas empirically, one must be careful to construct the trial in a sufficiently conclusive manner. For here, Isaac was indeed (luckily) fooled by Jacob, being led to believe he was Esau by means of fake hair. And this, even though Isaac suspected something was wrong, since he reflected that the voice of the person before him sounded more like Jacob's than Esau's. From a logical perspective, he should have investigated the matter further before drawing a conclusion, even if it was in this case a good thing that he did not.

Exodus 2:11-14 may be construed as illustrating legal reasoning by analogy, and more specifically a possible illustration of the hermeneutic principle of *gezerah shavah*. Here, we are told that when Moses "saw an Egyptian smiting (*makeh*) a Hebrew, one of his brethren" he "smote (*vayakh*) the Egyptian, and hid him in the sand." Later on, seeing two Hebrews "striving together," he says to the bad guy: "Wherefore smitest thou (*takeh*) thy fellow?" To which, the man retorts: "Who made thee a ruler and a judge over us? Thinkest thou to kill me, as thou didst kill the Egyptian?" This causes Moses to worry that his earlier summary execution of the Egyptian might be common knowledge; and eventually, when Pharaoh hears of the matter and orders Moses be killed, he flees the country.

Now, the analogy here is proposed by the bad Hebrew man, but he is suggesting that Moses might be thinking along

those lines. The argument conceived is: just as Moses smote the Egyptian who smote a Hebrew slave, so he might smite the bad Hebrew who smote another Hebrew. The situations might superficially be construed as analogous, in that in both cases there is one man striking another and a third comes along and kills the striker. The analogy is perhaps not perfect, since the first case seems to have to do with political injustice (an Egyptian oppressor smiting an oppressed Hebrew), while the second case seems to concern a more private dispute (a Hebrew, supposedly unjustly, smiting another); but both events seem to involve a bully severely beating up and perhaps killing an innocent person.

The repeated use of the same verb to smite (*lehakot*) suggests the hermeneutic process of *gezerah shavah*. To begin with, since the violence by the bad Hebrew (*harasha*) is described with the same verb (to smite) as the violence by the Egyptian, we may suppose that the two crimes were the same in their severity – this is the main *gezerah shavah*. But what was the crime involved – was it merely a severe beating, or was it blows resulting in death? We are not told whether the two victims died or not. Yet Moses evidently considered the Egyptian sufficiently criminal to kill him. Moreover, the bad Hebrew asks whether Moses intends to kill him too. What legal principle was Moses appealing to?

Two explanations of Moses' response are possible. One is to suppose both victims to have been actually killed; the other is to suppose that Moses intervened to prevent their likely murder. In the former case, Moses was punishing or about to punish a murderer with the death penalty[15]. In the latter case, Moses was acting preemptively, on the principle that a 'pursuer' (*rodef*) can be killed if that is the

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15   See Ex. 21:13: "He that smiteth a man, so that he dieth, shall surely be put to death."

only way to save the life of his victim[16]. The Torah's use of the verb to smite to characterize Moses' killing of the Egyptian may suggest that this word is intended to refer to killing; and this may be viewed as confirmation that the two aggressions (the Egyptian smiting his victim and the bad Hebrew smiting his) were also killings. Alternatively, smiting may here mean, more loosely, striking – possibly, but not necessarily, to the extent of killing – in which case, Moses' smiting of the Egyptian may be known to have been a killing by inference from the fact that he thereafter buried the corpse.

That Moses' approach is legalistic seems implied by the bad Hebrew's question: "Who made thee a ruler and a judge over us?" The bad Hebrew, of course, is not aware of the Torah's use of the verb to smite. When he asks Moses: "Thinkest thou to kill me, as thou didst kill the Egyptian?" he characterizes Moses' killing of the Egyptian – which he presumably witnessed, or maybe just heard about – as killing, using the less ambiguous verb *leharog*, and he uses that same verb for what he anticipates to be Moses' reaction to his own deeds. That this argument by analogy offers a template for the hermeneutic technique of *gezerah shavah* is evident from the important role that *verbal* equation plays in it. This is quite an interesting finding, suggesting that *gezerah shavah* has indeed, like *qal vachomer*, a Biblical origin.

Exodus 3:2-3 contains an important teaching of inductive logic; namely that if you have some theoretical belief in mind, and it turns out to be belied by empirical observation, you should look for a way to harmonize the two (either by

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16   This is based on Deut. 22:25-27, according to BT Sanhedrin, 73a.

particularizing the theory or by revising the initial observation by means of additional observations).

Here, Moses comes across a bush that apparently burns with fire and yet is not consumed; and naturally he wonders "why the bush is not burnt." All of us would, on the basis of past experience, firmly expect the burning of a bush (cause) to be invariably followed by its consummation (effect). If this expectation seemed belied by the facts, we would wonder what optical illusion was involved: maybe the fire we glimpsed was not really fire, but a dance of colorful butterflies; or maybe the bush was not really a wooden bush, but a metal replica of one; or maybe both the fire and the bush were real, but their conjunction was illusory, made possible by some arrangement of mirrors. How would we find out? Normally, we would do so by more careful observation of the facts on the ground.

And this is what Moses was evidently about to do, moving towards the burning bush to observe it more closely. But in this particular case, a miracle was involved, and he was advised not to come closer. A miracle, by the way, would not annul the categorical statement that 'all burning bushes are consumed' or the hypothetical statement that 'if a bush is burning, it must be consumed' – for these statements are generalizations from experience in a natural context, and miracle is by definition non-natural or supernatural. In miracle, God willfully prevents nature from taking its normal course, so this is outside the range of ordinary human knowledge. But we can anyway, with reference to Moses' initial reaction to the surprising phenomenon, learn from this episode a valuable lesson about inductive reasoning – viz. to research the matter further, when something unexpected occurs.

Exodus 18:13-26 exemplifies the logical process of formulating causal propositions relating means to ends. Such propositions are composed of if–then clauses.

Although there are, of course, many if–then propositions in the Torah, before and after this passage, here we witness the reasoning through which one was constructed. Jethro, Moses' father-in-law, observes that Moses spends much of his time, and the time of his people, sitting in judgment in particular cases. This is, in Jethro's eyes, "not good," because it will unnecessarily fatigue both Moses and the people. He recommends that Moses, instead of this, concentrate on obtaining from God the general laws, and appoint and train qualified men to deal with their application to particular cases. These men are placed in a hierarchy, with Moses at the top. In difficult cases, where all lower-level judges experience doubt, Moses might still be called upon to decide. Moses follows his advice.

From this story we learn that, seeing a faulty state-of-affairs (say, not-Y), one must look for ways (say, X) to correct it (i.e. produce Y). That is, one must find the causes (X) that give rise to the desired effect (Y). This is causal logic: 'if not-X, then not-Y, but if X, then Y'; that is, 'if the corrective measures (X) are not done, the negative situation (not-Y) will endure, whereas if the corrective measures are indeed done, the negative situation will be eliminated'. Of course, the appropriate measures cannot be chosen out of context. This is made clear by Jethro when he wisely adds: "If thou shalt do this thing, *and God command thee so,* then…" (my italics), which may be taken to mean: *but remain aware of the wider context, i.e. your ultimate values* (in this case, God's will). To avoid collateral damage from the pursuit of particular goals, one must not proceed 'with tunnel vision', but must act in harmony with the totality of one's value-system. In the event of conflict between values, obviously the higher values ought to be preferred to the lesser ones. Such reasoning is central to ethical logic.

Exodus 20:12 and **Exodus 23:1-3, 6-8**, and similar passages in Leviticus and Deuteronomy, proffer guidelines or rules addressed primarily to judges functioning within a

formal justice system. But they can also be read more broadly as applicable to anyone at all times, since we are all throughout our lives called upon to judge between truth and falsehood. There are two aspects to this cognitive imperative: accuracy in collection and reporting of facts and wisdom in judgment. Regarding the first aspect, viz. ensuring the factual accuracy of our knowledge, we can be inspired by the following instructions of the Torah:

Ex. 20:12 – "Thou shalt not bear false witness against thy neighbour." Ex. 23:1 – "Thou shalt not utter a false report; put not thy hand with the wicked to be an unrighteous witness." Ex. 23:2 – "Thou shalt not follow a multitude to do evil; neither shalt thou bear witness in a cause to turn aside after a multitude to pervert justice." Ex. 23:7 – "Keep thee far from a false matter; and the innocent and righteous slay thou not; for I will not justify the wicked."

We may be factually inaccurate either through negligence in our cognitive ways or through more or less deliberate prevarication. This may seem without consequence to some people, but that is because they do not realize how much they harm themselves as well as others through such policies. In the short term, it may seem innocuous; but over time, the harmful consequences come round. Logic is founded on the idea of utter respect for reality; on the idea that knowing reality is certainly a major component of the highest good, if not the *summum bonum* itself. To divorce one's mind (and eventually the minds of others) from reality is to sentence oneself (and others) to a sort of prison, where the soul is out of contact with the world at large – that is, to a delusional state[17]. The business of cognition is

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17   This is not to be confused with meditative states, where one temporarily distances oneself from sensory and mental phenomena in order to better get in touch with aspects of reality that are accessible more intuitively.

a delicate matter, requiring constant attention and conscientious observation and memorization. Moreover, one should have respect for and confidence in one's own faculties, and not let one's perceptions and conceptions be influenced unduly by the say-so of other people, be they a few authorities or a big crowd. One may of course learn from others, but one should do so in a careful manner and not irrationally. By training oneself, one can develop a mind that is both independent and balanced. Regarding the second aspect, viz. judging perspicaciously, we can be inspired by the following instructions of the Torah:

Ex. 23:3 – "Neither shalt thou favour a poor man in his cause." Ex. 23:6 – "Thou shalt not wrest the judgment of thy poor in his cause." Ex. 23:8 – "And thou shalt take no gift; for a gift blindeth them that have sight, and perverteth the words of the righteous."[18]

This can be taken to mean: Don't let your judgment be swayed by extraneous considerations, but judge honestly in accord with the facts of the case at hand. Good judgment is an exercise in common sense. The poverty, or the richness, of a man has nothing to do with his innocence, or with his guilt – for a man, whether outwardly rich or poor, is subject to the same inner constraints and liberties, and may do good or bad equally. Similarly, ideological preference for the underprivileged or for the elite, or greedy desire for social or material rewards, should not be allowed to impinge on the impartiality of one's judgments. Emotion is all very nice, but when it comes to judgment one should try to be cool-headed. Objectivity is necessary to good judgment, and every effort should be made to ensure one has it.

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18   A similar message is given in Deut. 1:17 – "Ye shall not respect persons in judgment; ye shall hear the small and the great alike; ye shall not be afraid of the face of any man; for the judgment is God's." This is commented on further on.

Leviticus 10:9-11 teaches us a principle which has to do with epistemology, even though not with formal logic. This reads: "Drink no wine nor strong drink… that ye may put the difference between the holy and the common, and between the unclean and the clean, and that ye teach the children of Israel all the statutes, etc." This passage is followed by a great many laws relating to allowed and forbidden foods, to ritual purity and impurity, and so forth – so, it may be viewed as an introduction to that field of religious study. Nevertheless, we can also regard it more broadly as a recommendation relating to the pursuit and transmission of knowledge in general.

If we want to distinguish things accurately, we must have a clear head. Alcohol can, at least when consumed in excess, negatively affect our cognitive abilities. Moreover, although the text does not explicitly say so, we can generalize from it and say the same for all psychotropic drugs – marijuana and the like. We can reasonably do that, since the Torah explicitly tells us *why* alcohol is undesirable – because (that, *ve*) it affects our ability to discriminate and to teach. Thus, this passage can be viewed as a general warning that, if we want to discover and transmit truth (in particular religious truth, but more generally any truth), it is wise to avoid alcohol (and more broadly, any substance abuse that affects the mind adversely).

The reasoning through a common cause proposed here suggests that the rabbinic hermeneutic principle of *binyan av* (lit. 'father construct') has some root in the Torah. When the reason for a Torah commandment is explicitly given, as here, or (presumably, by extension) implied with sufficient clarity, the same reason might be used to generate other commandments. This would constitute inductive reasoning, since we are in effect generalizing from the given Torah commandment (whether positive or negative) to a new ruling; i.e. we are assuming that the reason given

(or implied[19]) is applicable not only to the specific Torah commandment, but to other, similar situations. Such assumption is inductively reasonable, provided no counterevidence makes it unreasonable; i.e. unless or until we find the apparently general rule belied elsewhere in the proof-text.

Leviticus 10:16-20 provides us with another epistemological guideline. This passage recounts how Moses "diligently inquired" regarding the correct performance of some ritual, and "he was angry" when he discovered that an error had been made. He asks Aaron and his sons why they did things as they did, and Aaron gives him a reply he finds satisfactory. Finally, "when Moses heard that, it was well-pleasing in his sight." We learn two things, here, of value to all pursuit of knowledge: (a) it is virtuous to diligently inquire into every significant issue, and not just let apparent problems pass without trying to solve them; and (b) when one discovers one was wrong in some contention, one should be happy to have learnt the truth, and be grateful rather than resentful to one's opponent.

Leviticus 11:3-4 – and a similar passage in **Deuteronomy 14:6-8** – is of some logical interest. This passage allows Jews to eat beasts that "chew the cud" *and* "part the hoof," but forbids them those that "*only* chew the cud" or "*only* part the hoof." There is, however, no explicit mention here of beasts that neither chew the cud nor part the hoof: can they be eaten or not? Presumably, the implicit intent is that subsequent verses will clarify the matter – i.e. some may be eaten, and some not.

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19   Obviously, reliance on a relatively implicit reason is even more inductive than an explicit reason.

In any case, this passage can be used to exemplify the various ways two items X and Y and their negations can be combined: in "X and Y," in "X but not Y" (i.e. "only X"), and in "Y but not X" (i.e. "only Y"). This list is missing a fourth possibility, viz. "neither X nor Y" (that is, "both not X and not Y"). Thus, the list of three combinations really refers to the inclusive disjunction "X and/or Y." Although the Torah contains no explicitly formal logic, by providing this example it teaches people immersed in it how to think of the different possibilities of combination between any two items, X and Y.[20]

Leviticus 13 is of logical interest in that it describes how the plague of 'leprosy' in people or objects may be recognized through certain indices by a qualified priest. Needless to say, I am not here granting credibility to the description of this so-called leprosy and its symptoms. All that I wish to draw attention to is the example of looking at alleged symptoms of an alleged disease, and deciding whether they are indeed indicative of the disease or not. It is this *logical relation between a sign and what it signals* that are of interest from a logical perspective. Under what conditions do symptoms point to a disease?

The answer, according to causative logic, is as follows. The disease X may be said to be the cause of its symptoms Y1, Y2, Y3, etc. That means that the relation: "if X, then Y1 and Y2 and Y3, etc." is true. It does not follow from this that the symptoms Y1, Y2, Y3, etc., individually (i.e. separately) imply their underlying cause, or even that they collectively (i.e. in conjunction) do so. For it may be that these very phenomena, Y1, Y2, Y3, etc., individually or

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20   The Torah does make use of disjunctions with more than two alternatives. To give an example at random, Leviticus 22:19 says: "Ye shall offer a male without blemish, of the beeves, of the sheep, or of the goats."

collectively, are also implied by a cause other than X. However, in some cases we might know by observation (or, in a Torah context, by revelation) that these symptoms, either individually or collectively, are *exclusively* implied by the cause X. In such event, the presence of any one of them, or certain combinations of them, or all of them, as the case may be, may be taken to imply the presence of the cause X.

Although the Torah does not say all that in the referenced chapter, it does sufficiently hint at it in its precise descriptions of what signs are or are not conclusive for the diagnosis of 'leprosy'. Note that in some cases the passage of a certain amount of time stands as one of the indicators. The reader who pays attention will take note of the intricacies involved, and absorb a lesson about causative logic in more abstract terms.

Leviticus 18:24, which reads: "Defile not ye yourselves in any of these things; for in all these the nations are defiled, which I cast out from before you," contains a teaching of logic – namely, that the quantity 'all' does not necessarily mean 'all together' (all collectively), but may in some situations mean 'every one of' (all distributively). Although in the Hebrew original the same word (*kol*) is used in both instances, the context makes clear that there is no need to do literally *all* the deviant sexual acts referred to in the preceding verses (viz. 6-23) to be defiled; doing *any one or more* of them is enough to be defiled. This is evident from the repetition of the word 'defiled' in a couple of the listed cases (namely, in v. 20 and 23). Note that this understanding of the passage is explicitly upheld by the rabbis in the Talmud (Makkoth 24a).

Leviticus 19:11 has obvious logical implications. "Ye shall not steal; neither shall ye deal falsely, nor lie one to another." When we lie to other people, whether outright or by intentionally misleading them in our discourse, we deal

falsely with them and steal their credulity. Lying implies dishonesty in the speaker and disrespect for the one spoken to. A person with respect for reality and for other people avoids such behavior, knowing that in the long run it is sure to cause him confusion and loss.

Leviticus 19:15 and 19:35 are passages of the Torah primarily addressed to judges, but which can be interpreted more generally. The first verse reads: "Ye shall do no unrighteousness in judgment; thou shalt not respect the person of the poor, nor favour the person of the mighty; but in righteousness shalt thou judge thy neighbour." This is a teaching that we should not allow our judgment to be distorted by favoritism for this or that prejudice, but judge matters in a lucid and honest manner.

The second verse reads: "Ye shall do no unrighteousness in judgment, in meteyard, in weight, or in measure." This gives us two very important teachings in inductive logic. The lesson of the second verse is that empirical studies must be accurate: if we want to discover reality and not get lost in illusion, we must make thorough and precise observations or experiments. The lesson of the first verse is that rational interpretation of the data thus collected must be objective, impartial and intelligent; we have no right to ignore or twist facts and fake conclusions. Truth is a paramount value, not to be cynically compromised for whatever motive. (Similar lessons can be found in Exodus and Deuteronomy.)

In **Leviticus 21:21**, we are given an explicit positive apodosis (*modus ponens*), i.e. an argument consisting of a hypothetical major premise, a categorical minor premise that affirms its antecedent, and a categorical conclusion that affirms its consequent. This passage first tells us that no priest who has a blemish "shall come nigh to offer the offerings… made by fire" – this is the major premise; then it adds: "he hath a blemish; he shall not come nigh to offer

the bread…" – these are the minor premise and conclusion. Although in truth the major premise concerns offering "the offerings… made by fire" and the conclusion concerns offering "the bread," so there is a change of term that is not strictly deduced, nevertheless I would say that a partial deduction (as regards a priest with a blemish not coming nigh) is indeed intended, because of the categorical form of the statement "he hath a blemish." This statement clearly serves as an explanation for the inference from the previous sentence to the next.[21]

Numbers 13:17-20 may be looked at as example of planned research – i.e. as a lesson in methodology. Here, Moses tells the twelve men chosen to spy out the promised land what information to look for: they are "to see the land, what it is; and the people that dwelleth therein, whether they are strong or weak, whether they are few or many; and what the land is that they dwell in, whether it is good or bad; and what cities they are that they dwell in, whether in camps or in strongholds; and what the land is, whether it is fat or lean, whether there is wood therein, or not." Thus, when we have a research project, we should start by thinking about the kind of material information we shall need to collect in order to arrive at an answer to the question asked.

Numbers 14:11-16 has significance for inductive logic, in that it shows that an event might have different explanations. Here, God is angry at the children of Israel for doubting in His capacity to get them into the promised land; and He proposes to wipe them out and replace them with another people, descended from Moses. Moses argues with Him that if He carries out this threat, other peoples

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21   There may be better examples of explicit positive apodosis, and maybe also of negative apodosis. But at least this one is a start.

will think that He killed the Israelites because He was unable to do with them as He had sworn, i.e. unable to give them the promised land. Moses thus points out that the destruction of the Jewish people by God (the event referred to) would be wrongly interpreted by the nations: instead of understanding God's true motive (exasperation with the Israelites' weak faith), they would assume that God was motivated by lack of power (inability to achieve what He set out to do).[22]

Symbolically put, an event E may have alternative causes C1, C2, etc. Each cause implies the same event: i.e. 'if C1, then E'; 'if C2, then E'; etc. are all true. Thus, observing the occurrence of E, one cannot logically tell whether its cause is C1 or C2 or what. That is to say, positive apodosis from the presence of the consequent to that of the antecedent is logically invalid. We can also learn from this that the absence of any one antecedent (say, C1) to the absence of the consequent (E) is invalid, since the consequent might occur through the agency of another antecedent (say, C2). In other words, if C1 implies E, it does not follow that E implies C1, or that not-C1 implies not-E; and similarly for C2, etc. Thus, to correctly identify the causes of events, one must remain aware that there may alternative explanations and not rush to judgment. We should not assume the first hypothesis that comes to mind to be correct, but consider what other hypotheses might be equally (or more or less) credible.

Numbers 16:28-33 can be viewed as another lesson in inductive logic. Moses tells the children of Israel to observe

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22   Moses therefore asks God for mercy for the Jews; and God pardons them to some extent, agreeing not to wipe them out immediately, but at the same time resolving to wait for the next generation before taking them into the promised land (v. 17-24).

what will befall the rebels Korah, Dathan and Abiram: "If these men die the common death of all men… then the Lord has not sent me. But if the Lord make a new thing, and the ground open her mouth, and swallow them up, with all that appertain unto them, and they go down alive into the pit, then ye shall understand that these men have despised the Lord," by doubting that He chose Moses. And indeed the latter prediction is realized. This argument can be clarified by putting it in more symbolic terms. There are two conflicting theories: that God chose Moses (T) and that He did not (not-T); and they make two conflicting predictions: that the rebels will perish in ordinary circumstances (not-P) and that they will perish in an unusual manner (P). The argument is, then, as follows: If not-P, then not-T; but if P, then T. Since P came true, rather than not-P, it follows that T is true, and not-T is false.

The argument is formally valid, and its content is reasonable (assuming that natural means like high explosives were not available to Moses and that these events indeed took place). However, it should be noted that this is a special case, in that the relation between the theories and their predictions is here exclusive and exhaustive; this is what makes possible the inference from the predictions to the theories. In most cases, the problem is more complicated in that the theories may number more than two and they may have some predictions in common, and their other predictions may differ but not be known to be in conflict. In such cases, inference from a prediction to a theory is not logically possible – and we decide between the theories on the basis, rather, of comparatively how many successful predictions they respectively make, and especially with reference to unsuccessful predictions if any. In other words, the truth of a prediction is less decisive that the falsehood of a prediction, for whereas the former cannot prove the theory implying it (unless only that one theory is compatible with it), the latter makes possible

immediate elimination of the theory implying it (or at least calls for modification of the theory).

The latter, which are principles of adduction, are implied more explicitly in the Torah in Deuteronomy 13:2-4 and 18:21-22 (see further on).

Numbers 17:16-24 provides us with yet another example of inductive logic. In order to preempt further doubt and rebellion, Moses, under instructions from God, had the princes of the tribes of Israel prepare rods, each man's rod with his name on it, including Aaron the high priest, of the tribe of Levi; the twelve rods were then placed overnight in the tent of meeting, and the next morning Moses found that the rod of Aaron "was budded, and put forth buds, and bloomed blossoms, and bore ripe almonds," which miracle demonstrated that God's choice for the post of high priest was definitely Aaron.

Even though this story relates to a miracle (and of course it contains a weakness in that the miracle occurred behind the scenes, so that the onlookers could not be sure Aaron's rod was not switched by human hand), it can be viewed as a lesson in controlled experiment. The conflicting predictions made by different theories are tested empirically: the winning theory is the one with the most successful prediction. Here, there were twelve theories regarding which prince merited the high priest's position, with twelve predictions regarding which rod would stand out from the rest. The miraculous budding, blooming and bearing fruit of just one rod, namely Aaron's, indicated that the latter was selected for the job.

Numbers 27:1-11 and the follow-up in **Numbers 36:1-12** demonstrate again the methodological importance of asking questions. A group of women, the daughters of Zelophehad, of the tribe of Manasseh, approach Moses demanding that they be given the portion of the land of Israel that would have been given to their father, who died

earlier on without sons. Moses brings their cause before God, who agrees with the women and decrees that women may inherit from their father if he has no son. Further on, the leaders of the family grouping to which the daughters of Zelophehad belong come to Moses and complain that if any of these women married outside her tribe, the land she inherited would go to her husband's tribe and so be lost to her father's tribe. Once again, Moses consults with God on the issue, and the latter agrees and decrees that the women may marry who they wish but only within their own tribe.[23]

In these passages we see, as we did in relation to Genesis 18:16-32, that God often waits for a question before giving us its answer. If the daughters of Zelophehad and the leaders of their family grouping had not had the curiosity and courage to ask their respective questions, they (and we) would not have known the answer. People, women as well as men, are graced with thinking minds; and they have to use them to get at the truth. The truth of a matter will not always be placed in their laps ready-made. Research is usually necessary. If this is true with regard to matters subject to revelation, it is all the more true with regard to natural issues. Notice also Moses' open-mindedness. He does not reject the appeals offhand, but gives them serious consideration, even going so far as to bring them before God.

Numbers 32:24 – "Do that which has proceeded out of your mouth!" – may be viewed as a lesson in methodology, insofar as harmony between word and deed, or more

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23   Women are evidently not treated entirely as equal to men in these contexts. They do inherit from their fathers, but only if they have no brothers. They can freely marry within their tribe, but not outside it. Or maybe (I do not know) the law is that they may marry into other tribes; but in that case, they lose their share of their father's estate.

broadly between thought and action, or consciousness and will, is essential to proper functioning of the human mind and to human relations. Someone who often indulges in lies, to self and/or others, is ultimately bound to suffer psychologically, losing contact with reality and self-confidence, and socially, losing credibility and respect. Of course, that does not mean one should be rigid-minded at all costs – sometimes it is wise and good to change one's mind. But as a general rule of behavior, integrity is a key to mental health and social well-being. One's word, to oneself or to others, should be one's bond.

In **Numbers 35:30**, and further on in **Deuteronomy 17:6** and **19:15**, we are told that a matter cannot be established by the testimony of only one witness, there has to be more than one witness for credibility. This rule is of course stated in the Torah primarily with regard to issues that come before a court of law; but we can also assume it to have a broader intent. What does 'witnessing' mean? Many events in the world occur without having been observed by any man or woman. Some events are only observed by the person or persons participating in them. Some events are observed by non-participant third parties. A 'witness' is someone who has observed an event, and thus can and eventually does describe it to other people. The observation may occur through any combination of the five senses; and it may be direct or made through the intermediary of some instrument.

The alleged witness may or may not be reliable. Reliability depends, firstly, on the witness' skills in observation, memory and verbal expression. If someone lacks these abilities, then no matter how earnest their testimony, it is unreliable. Secondly, reliability depends on the witness' personal interest in the matter, i.e. on whether he or she has something to gain (e.g. money) from the testimony or is proffering it purely as a public service. It is of course theoretically possible for someone to be able to speak

truthfully in spite of interests to the contrary; and indeed this is ethically ideal. But few people are able to do this; and it is not always possible for third parties (who must judge the matter) to tell whether they are trustworthy or not. For these reasons, the testimony of one witness is rarely enough evidence to establish a matter; and in serious cases, there has to be more than one.

In science, such reflections give rise to the principle of reproducibility of experiments. In most matters of internal experience, scientists have to rely on the say-so of people. If someone claims to believe or disbelieve something, or to love or hate something, scientists can hardly contradict him or her (although they might check the claim by observing the person's actual behavior over time). However, in matters of external experience, scientists generally do not believe the say-so of people, but endeavor to recreate the experience for themselves (and thus become first-hand witnesses too). For instance, if a scientist claims he observed so and so in a certain experiment, he is in principle not believed until at least one other scientist has made the same experiment with the same results. Thus, we can say that testimony just provides confirmation for a hypothesis – never proof. The more such confirmations, the more confidence we have in the hypothesis; but it is never definitely proved.

In **Deuteronomy 1:17** and **16:18-20**, Moses reminds the appointed judges some of the ways to attain just judgment, saying: "Ye shall not respect persons in judgment; ye shall hear the small and the great alike; ye shall not be afraid of the face of any man;" and again: "Judge the people with righteous judgment. Thou shalt not wrest judgment; thou shalt not respect persons; neither shalt thou take a gift; for a gift doth blind the eyes of the wise, and pervert the words of the righteous. Justice, justice shalt thou follow." As we remarked in relation to similar passages in Exodus and Leviticus, such injunctions may be taken as general

cognitive principles, for everyone to follow in all circumstances. If we want to get in contact with reality, and remain there, we must all always make every endeavor necessary to that end, and not allow any consideration to lower our determination and deflect us from the truth. Knowledge of the truth is a great value, not to be abandoned out of fear of some loss or out of hope for some gain. Integrity is a virtue not only for judges, but for all people.

Deuteronomy 5:17, which forbids us to "bear vain witness" against our neighbors, is a repetition of the same commandment in Exodus 20:12 against bearing "false" witness, i.e. of the ninth of the 'ten commandments'. The intent is primarily to refrain from lying in a court of law. Commentators explain the difference in wording here by saying that even if the lie seems harmless, it should be avoided. But here again, we may generalize the imperative to all cognitive contexts. The importance of scrupulous accuracy, honesty and integrity in the pursuit and transmission of knowledge cannot be overemphasized.

In **Deuteronomy 5:21-23**, referring to Moses statement: "we have seen this day that God doth speak with man and he [i.e. the man spoken to] liveth [i.e. survives the experience]," the children of Israel retort: "if we hear the voice of our Lord our God any more, then we shall die. For who is there of all flesh, that hath heard the voice of the living God speaking out of the midst of the fire, as we have, and lived?"[24] Now, these statements are somewhat in conflict, in that Moses points out that in fact God spoke to the Israelites and they survived, yet the latter fear that if God addresses them directly any longer they risk dying nevertheless, since in their view this is ultimately

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24   Similarly, in Ex. 20:16, the people ask Moses to speak with them instead God – "lest we die."

impossible[25]. The resolution of that conflict is of course simply that the Israelites were momentarily graced with an exception to the rule, but they are not confident that they merit further direct revelation after that brief preview.

What is interesting in this passage, for the purposes of logic theory, is that it contains an effective *definition of implication*, albeit in material terms. The first statement of the Israelites: 'if we hear the voice (etc.), then we shall die' signifies an implication of the form 'if X, then Y'. Their next statement: 'For no one who hears the voice (etc.) survives' constitutes an explication of the first statement, since it says 'for' (*ki*, in Hebrew), and it has the form of a negation of conjunction 'not-(X and not-Y)'. Thus, we have here a clear hint that 'if X, then Y' means the same (to the ancient Israelites, or at least to the author of that Biblical passage) as 'not-(X and not-Y)', even though that equivalence is stated in material terms. Moses' earlier empirical statement may be symbolized as 'X and not-Y', and so apparently belies the Israelites' statements. That being the case, the implication advocated by the Israelites must be viewed as more limited in scope than it seems at first – i.e. as applicable *thenceforth* (i.e. after Moses' statement) – to avoid inconsistency.

All this may be taken as a teaching of logic in a book of the Torah, a document traditionally dated as ca. 1300 BCE (though some modern commentators consider it as having been composed some 500 years later). This is of course (in

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25   The people believed this perhaps based on tradition; or maybe it seemed obvious to them for some reason. For although in Ex. 33:20 God says: "man shall not see Me and live," this is well after the ten commandments episode (which occurs in Ex. 20 and is retold in Dt. 5). Ex. 33-34 details God's revelation to Moses of the thirteen attributes of mercy, after the episode of the golden calf, when he went back up Mount Sinai with two new stone tables on which to write the ten commandments again.

any event) quite a while before the time of Megarians Diodorus Cronus (d. ca. 284 BCE, some say later) and his disciple Philo (fl. ca. 300 BCE), as well as their successor Chrysippus of Soli (279-206 BCE). I am not, of course, saying that the Torah teaching was as thorough as that of these Greeks[26]; but I am saying that it was potentially as effective. I am not saying, either, that the said finding in the Torah excludes the possibility of similar findings in more ancient Greek or other literature; obviously, the latter remains possible (though of course, if we accept the traditional dating of the Torah, we would have to look into very early literature). It is just an interesting finding. So far as I know, the rabbis never consciously discussed the logical aspects of this or similar passages of the Torah. In

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26   For Diodorus Cronus a conditional proposition was true only if the consequent (Y) always followed the antecedent (X), whereas for Philo, it sufficed for such a proposition to be true if the consequent followed the antecedent at a given time. These two kinds of implication are today labeled respectively 'strict' and 'material', or necessary and actual. Given that actual implication means 'It is at this time false that X and not-Y', we might ask how it can be known – for knowledge of such 'negation of a conjunction' cannot be arrived at independently. Either (a) we know this because we know (either by generalization from past experiences or as the resolution of some paradox) that 'it is impossible for X to be true and Y to be false together', or (b) we know it through specific knowledge that 'X is true and Y is true' or that 'X is false and Y is true' or that 'X is false and Y is false' is true at this time, or (c) someone else knows one of the preceding facts and tells us its implication that 'X is true and Y is false' is false at this time. Thus, though so-called Philonian implication is conceivable, it is a rather artificial form. Chrysippus went further than his predecessors by clarifying the arguments (which I call 'apodoses') that could be formulated with conditional propositions, such as the modus ponens (affirming the antecedent, and concluding with the consequent) and the modus tollens (denying the consequent, and concluding with denial of the antecedent).

any case, they do not include the definition of implication among their hermeneutic principles. But one can well suppose that they were at least subconsciously affected by this passage and others like it.

Deuteronomy 6:7, "thou shalt teach them diligently unto thy children," refers primarily to teaching the commandments of the Torah to one's children. But we can take this verse as exemplifying the importance of *education* more generally. Human knowledge depends largely on education. Human knowledge is of course primitively an individual enterprise, meaning that we can and must to some extent engage in self-education. But human knowledge would be very limited if it were limited to that one source or process. In fact, human knowledge is a social enterprise, stretching in time as well as space. Much of what we know we have learned from others, people from other countries as well as people in the past we descend from. The riches of our individual knowledge were made possible by all the information and skills we were fortunate to receive from others.

A well-rounded education would consist of what we might call 'The Six Rs' – Reading, wRiting, aRithmetic, Reasoning (logic), Righteousness (ethics), and Religion (spirituality). Through literacy, we can receive knowledge from others (reading) and transmit knowledge to others (writing). Though it is true that receipt and transmission of knowledge of various sorts can be done orally, oral communication is relatively limited in scope and also not entirely reliable (since information might more easily be forgotten or modified or added on). Writing and reading are manifestly more powerful means overall, opening the way to a vast pool of world literature that everyone can contribute to and draw from – more than ever nowadays due to technological developments. Arithmetic, and more broadly mathematics (including geometry), is needed to understand quantitative relations. Logic trains the mind to

think correctly and avoid error, thus improving one's own production of knowledge and also learning to be critical and selective in one's absorption of knowledge from others.

Ethics is needed not only to develop worthwhile values, but even for the pursuit of purely factual knowledge. To obtain true knowledge of any kind, we have to observe accurately, report honestly, make an intellectual effort, be realistic, be open-minded, be courageous, and so forth. Methodology is impossible without appeal to many ethical imperatives of this sort. And of course, ethics in a broader sense also serves to build within us the mental health necessary to knowledge. In this context, the value of meditation should be stressed: it calms the mind and ensures its most efficient working. Also, the social and political offshoot of ethics, jurisprudence, serves to ensure optimum conditions around us for knowledge. Without freedom of thought and speech, for instances, we obviously cannot hope to attain and pass on true knowledge. Again, a society where no one cares for his fellows, or worse still where violence is widespread, is obviously not conducive to education.

Last but not least is spirituality, which consists in awareness that we humans are not merely bodies with minds, but moreover spirits or souls – i.e. that we have a dimension of being that transcends the material living organism with some mental capabilities that we seem to be or inhabit at first sight. Such awareness is needed to take into consideration facts relating to consciousness, volition and valuation. Many scientists doggedly refuse to take these facts into consideration, out of fear of spirituality. This is understandable in view of the fact that religions have often misled mankind, by dogmatically denying material facts. But there is no wisdom in throwing out the baby with the bath-water. Human spirituality is also a fact – to ignore it and opt for a narrow materialistic viewpoint

is to condemn ourselves to another sort of stupidity. Open-mindedness on both sides is essential to true cognition.

Deuteronomy 13:2-4 and **18:21-22** contain two *extremely important principles* of inductive logic. I drew attention to these two passages of the Torah and explicated them in detail, years ago in my *Judaic Logic* [see chapter 2 of the present volume]. The first passage clarifies the positive aspect of adduction, viz. that a thesis which makes a correct prediction regarding certain empirical events is thereby *confirmed* – although this does not mean that it is proven: it is only made more probable than it previously was. The second passage clarifies the negative aspect of adduction, viz. that a thesis which makes a wrong prediction regarding certain empirical events is thereby *disproved* – and not merely undermined, i.e. not just made less probable than it previously was. These are, to repeat, two crucial logical principles.

I'd like to add here a few remarks concerning the form of reasoning called, in Latin, *post hoc ergo propter hoc* (meaning, in English, 'after this, therefore because of this')[27]. Aristotle drew attention to such reasoning as fallacious, in his *Rhetoric* (2:24.7): it "consists in representing as causes things which are not causes[28], on the

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27   When the intent is 'with this, therefore because of this', the Latin phrase would strictly speaking be cum hoc ergo propter hoc; but we may take post hoc as including this special case. Note that a distinction might also be drawn between events that are successive or simultaneous, and events that are noticed successively or simultaneously, and the discussion further deepened.

28   Note that Aristotle's wording here suggests that *post hoc ergo propter hoc* is a specific fallacy within the larger category of *non causa pro causa* (taking a non-cause for a cause). We might include under the latter heading not only unjustified assumptions of causality, but also mistaken causal identities – by which I

ground that they happened along with or before the event in question. They assume that, because B happens after A, it happens because of A." With regard to Deut. 13:2-4, this means that reasoning from "a sign or wonder" that "comes to pass" to the authenticity of an alleged prophet, would be fallacious[29]. However, it should be stressed that this severe judgment by Aristotle is made specifically with reference to deductive logic: we cannot *deduce* from B following A that B is caused by A.

However, from an inductive perspective, we might well and often do *induce* from B following A that B is caused by A. On this basis, popular confidence in a prophet is naturally encouraged by the accuracy of his predictions. Such reasoning can be justified by generalization, i.e. by assuming that since A is followed by B in this case, and maybe a few more similar individual instances, we may expect A to be followed by B in all cases, or all cases of a certain sort, which would indeed imply that A causes B, at least for cases of that sort. Such generalization may, of course, turn out to be wrong – and often enough does. But then, in those cases where it fails, we would simply particularize; i.e. we would retract the generalization. This is indeed the teaching of Deut. 18:21-22, according to which if what an alleged prophet's prediction "follow not,

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mean, for instances, taking a partial cause for a complete (sufficient) cause or taking a contingent cause for a necessary (*sine qua non*, lit. 'without which not') cause.

29   Clearly, if a predictor is a genuine prophet, then his predictions should "come to pass;" but if his predictions "come to pass" it does not logically imply that the predictor is a genuine prophet. A scientist may repeatedly make correct predictions without thereby being considered prophetic, for he remains naturally capable of human error like anyone else. An alleged prophet, on the other hand, has to be invariably right to be accepted as genuine.

nor come to pass," then he may confidently be considered not to be a true prophet.

It should also be pointed out that there are two distinct areas of causality where reasoning *post hoc ergo propter hoc* might be used. One is causation and the other is volition. When by 'cause' we mean causation, then the argument from 'after this' to 'because of this' always relies on generalization, as above detailed. However, when by 'cause' we mean volition (i.e. acts of will), we rely on such generalization only in some situations; very often, we rather rely on introspection (and then, of course, generalize from there). The reason we have to do so is that volition, unlike causation, is inherently a form of causality that is not necessarily repetitive. To will something means to cause it, but we could equally have willed the opposite thing; this is the meaning of 'freedom of the will'. Every act of will is individual, rather than the product of a law of nature as in causation. Therefore, in volition, the notion that "like causes have like effects" does not always hold[30].

In volition, there is room for real variety emerging from one and the same cause (i.e. the person doing the willing). Will is usually motivated, but it may occasionally be quite devoid of purpose. Motives are variously influential, but never determining; which is why the person willing may logically (and morally and legally) be held responsible for the act. Therefore, we can often only guess at the motive of an action, by resorting to introspection (or more broadly, by asking a sample of people to introspect and answer our

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30   The statement "like causes have like effects" is sometimes referred to as the law of causation. I call this a mere notion, because it is too vague: it does not clarify how much alike "like" means. Furthermore, it refers to things as causes or effects without having first proven them to be causes or effects. The statement is nevertheless useful as a practical guide.

questions) and assuming that the action occurred in such and such a context. This is also inductive reasoning, note well, for we may well later be proven wrong by discovering that the person concerned could not have had that particular motive. In the latter case, we might then doubt that the person did the action, or we might suspect that he or she did it but with some other motive in mind. Clearly, causal reasoning becomes more speculative and complex when dealing with volition. Needless to say, the issues involved are very significant in legal contexts when, for instance, judges attempt to determine who committed a crime and why; but they are also relevant in everyday life.[31]

Deuteronomy 13:15, "then shalt thou inquire, and make search, and ask diligently; and, behold, if it be truth, and the thing certain…," is of course stated in a specific context, with intent to prevent idolatry in Israel. But we can also learn from it the attitude of *respect for truth*: we should not base our beliefs on mere imagination or hearsay, but make inquiries, do all necessary research, and also pay attention to what others have said or say on the subject, and then only, *if* and only if the empirical evidence and rational considerations in favor of the belief are sufficiently convincing and comparatively strong may we opt for the belief in question. Our beliefs should be products of pondered judgment, not fanciful prejudices.

Deuteronomy 18:10-11 states "There shall not be found among you… one that useth divination, a soothsayer, or an enchanter, or a sorcerer, or a charmer, or one that consulteth a ghost or a familiar spirit, or a necromancer." This may be read as an epistemological guideline: truth is not to be found through such superstitious means. Here, the Torah is way ahead of other documents in its civilizing

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31   For a more detailed study of this topic see my book *Volition and Allied Causal Concepts*.

influence. Of course, it recognizes prophesy as a means of knowledge; but that is a much grander route, to which these various superstitious means cannot be compared.

Deuteronomy 25:13-15, which commands us to have perfect and just, and not diverse, weights and measures, is a passage that has been cited by some commentators in support of the application of logic to legal matters. This makes sense, in that logic is an essential tool to get at the truth and avoid falsehood in any and every context. The command regarding weights and measures is, of course, primarily aimed at accuracy in perception and in factual reporting. A dishonest merchant attempts, by means of adulterated weights and measures, to buy more quantity of a good for less money or to sell less quantity for more money. In the same way, by analogy or by generalization, we can say that a dishonest speaker attempts, by means of fallacious arguments, to defend a false thesis or to condemn or put in doubt a true one. The value of logic is its ability to spot and unmask such dishonest attempts to fool people. And it is important not only as a protective shield against being fooled by others, but also against being fooled by oneself. For we do often out of various motives, fool ourselves. For this reason, training in logic is essential. Even though it does not guarantee perfection, it safeguards us against much dishonesty and foolishness.

Deuteronomy 27:18 says: "Cursed be he that maketh the blind to go astray in the way." There are in this world people who, when asked by a blind person for directions, think it is very funny to misguide him or her; and this is of course sick behavior**32**. We can generalize this moral

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32   Lev. 19:14 – "You shall not curse the deaf nor place a stumbling block before the blind." – is a broader warning not to take malevolent advantage of people's weaknesses. The reference to the blind in both passages (and to the deaf in the

judgment to all people who knowingly misinform their neighbor – and of those there are a lot more. Think of all the politicians and journalists who daily, for whatever motives, grossly lie to the people: hiding relevant information, inventing patent falsehoods, and distorting what they know to be the truth; they are indeed despicable. The Torah here again, then, stresses the importance of commitment to truth – for this is one of the foundations of social cohesion and peace. It is one of the prime expressions of benevolence towards one's fellows.

Everyone, including philosophers and sundry academics, and indeed religious teachers, are required by the ethics of logic to pursue and propagate truth, because we are all responsible for the collective knowledge of mankind as well as for our individual state of knowledge. This means that we should always admit our ignorance or uncertainty when applicable, and not give other people the false impression that we have knowledge or certainty when we in fact lack it. Most if not all of us are unaware of very many things, and thus deserving to be qualified as "blind" to varying degrees. When stupid or malicious people propagate falsehood, it is like "the blind leading the blind." If they do not know for sure something to be true, they should not pretend they do; all the more, if they do know for sure something to be untrue, they should not dish it out as true.

The *Sayings of the Fathers* counts these virtues among the seven characteristics of the true scholar: "Where he has heard no information he says: 'I have not heard'" and "He

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one from Lev.) is obviously metaphorical – and has indeed been so taken by Jewish commentators. "Plac[ing] a stumbling block before the blind," being more calculating and active, seems generally a bit more criminal than "Mak[ing] the blind to go astray in the way," although of course in some cases losing one's way might be more harmful than being tripped over.

admits that which is true;" to which it adds: "The contrary of these attributes marks the boor" (5:10). Another saying worth quoting here is: "Who is wise? He who learns from all men" (4:1).

3.   Summary and conclusions

We can summarize the above information, if only roughly, concerning the Torah, as in the following table. As can be seen, we found altogether some 50 passages of broadly logical interest (respectively 11, 6, 9, 9 and 15, in each of the books of Moses); and these we roughly classified as: deduction (15), induction (10), causative logic (2), ethical logic (2), methodology (16) and, more vaguely, epistemology (6). This may not seem like a very rich harvest, but it is considerable anyway in view of the great antiquity of the document concerned.

Table 1.1   Instances of logic in the Torah

Reference	Content (roughly)	Type (roughly)
Gen. 2:16	Possibility of prophesy	epistemology
Gen. 2:16-17	If-then discourse	ethical logic
Gen. 2:19	Theory of words	epistemology
Gen. 2:21-24	Dud 'therefore' marker	deductive logic
Gen. 3:1-5	'Not all are' does not imply 'this one is not'	deductive logic
Gen. 4:15	Syllogism (fig. 1) or apodosis (*ponens*)	deductive logic
Gen. 4:23-24	A crescendo argument (+s)	deductive logic

Gen. 8:6-12	Experiment	inductive logic
Gen. 18:16-32	Asking questions	methodology
Gen. 23:18-27	Experiment	inductive logic
Gen. 44:8	A fortiori argument (+s)	deductive logic
Ex. 2:11-14	Analogy (*gezerah shavah*)	deductive logic
Ex. 3:2-3	Harmonization of theory with observation	inductive logic
Ex. 6:12	A fortiori argument (-s)	deductive logic
Ex. 18:13-26	Means and ends	ethical logic
Ex. 20:12	Factual accuracy	methodology
Ex. 23:1-3, 6-8	Factual accuracy, perspicacious judgment	methodology
Lev. 10:9-11	Stay sober and analogy (*binyan av*)	method, deduction
Lev. 10:16-20	Diligent inquiry and admitting one's errors	methodology
Lev. 11:3-4	Inclusive disjunction	deductive logic
Lev. 13	Sign and signaled	causative logic
Lev. 18:24	'All' as collective or distributive	deductive logic
Lev. 19:11	Truthfulness	methodology
Lev. 19:15	Unprejudiced judgment	methodology
Lev. 19:35	Factual accuracy	methodology
Lev. 21:21	Apodosis (*modus ponens*)	deductive logic

Num. 12:14	A fortiori argument (+s)	deductive logic
Num. 13:17-20	Planning research	methodology
Num. 14:11-16	Alternative explanations	causative logic
Num. 16:28-33	Theory and predictions	inductive logic
Num. 17:16-24	Controlled experiment	inductive logic
Num. 27:1-11	Asking questions and open-mindedness	methodology
Num. 36:1-12	Asking questions and open-mindedness	methodology
Num. 32:24	Word and deed	epistemology
Num. 35:30	Testimony	inductive logic
Deut. 1:17	Unprejudiced judgment	methodology
Deut. 5:17	Factual accuracy	methodology
Deut. 5:21-23	Definition of implication	deductive logic
Deut. 6:7	Education	epistemology
Deut. 13:2-4	Positive adduction	inductive logic
Deut. 13:15	Respect for truth	epistemology
Deut. 14:6-8	Inclusive disjunction	deductive logic
Deut. 16:18-20	Unprejudiced judgment	methodology
Deut. 17:6	Testimony	inductive logic
Deut. 18:10-11	No superstition	epistemology

Deut. 18:21-22	Negative adduction	inductive logic
Deut. 19:15	Testimony	inductive logic
Deut. 25:13-15	Factual accuracy and use of logic	methodology
Deut. 27:18	Commitment to truth	methodology
Deut. 31:27	A fortiori argument (+s)	deductive logic

So much, for now, as regards logic in the Torah[33].

4.   As regards the Tanakh

I will not here propose a list of cases in the rest of the Tanakh, but I predict that many more cases are there to be found. As regards a fortiori argument alone, 41 instances have been identified.

The following is, offhand, one example which provides evidence of *syllogistic reasoning* in the Tanakh. In **Malachi 1:6**, God argues: "A son honors his father, and a slave his master. If I am a father, where is the honor due me? If I am a master, where is the respect due me?" This may be rendered as: "Fathers/masters are generally [to be] honored by their sons/slaves" (major premise, 'All Y should receive Z from their counterparts') and "I am their Father/Master" (minor premise, 'X is Y'), therefore "I ought to be honored by them" (tacit conclusion of the syllogism, 'X should receive Z from his counterparts') –

33   Note that some passages cited are only intended as representative, without attempting to find and list all similar instances.

"yet they do not honor Me" (i.e. 'X does not receive Z from his counterparts', contrary to the tacit conclusion of the syllogism, i.e. to rational expectation). There is no other way to understand this discourse than through syllogism.

I believe I have over the years noticed many other Biblical passages that may be likewise viewed as logic teachings of various kinds. The Tanakh did not wait for Aristotle or other Greeks to engage in logical thought. Such thought is an integral part of the human condition – something that existed long before logicians brought it into full light by distinguishing the form of logical argument from its content. Certainly, once logicians did highlight argument forms, ordinary people thereafter made use of them more easily, correctly and frequently. Similarly, though the examples of reasoning offered in the Tanakh were not new to mankind, nevertheless they helped Jews and other readers of that document to fortify their reasoning powers.

2.   ADDUCTIVE LOGIC IN THE TORAH

Drawn from Judaic Logic *(1995), chapter 2:1-3, and addendum 1.*

1. The art of knowing

Induction, as an epistemological concept, refers to the logical processes through which all propositions, and their various constituents, are gradually developed. Some philosophers have tended to define induction as the pursuit of general principles from particular ones, but such a formula is too limited and only reflects the greater difficulty of and interest in that specific issue. In the largest sense, induction includes all the following factors of cognition:

- **perception** (direct consciousness of concrete phenomena, whether material/sensory or mental/intimate) and **conception** (direct consciousness of abstract phenomena[34] or indirect consciousness of anything), as well as **recognition** (memory of percepts and concepts) and **imagination** (perceptual or conceptual projection);

- **identification** (awareness of similarities between phenomena) and **differentiation** (awareness of differences between phenomena), which make possible

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34   The process of abstraction consists in ignoring (excluding from consciousness) all but certain aspects of something perceived in whatever way; this process precedes the comparisons, contrasts and mental manipulations through which we conceptualize.

classification (grouping), often accompanied by **verbalization** (naming);

- **formulating propositions**, with varying degrees of awareness, sometimes but not always verbally, which relate together various percepts and concepts in various ways (first as possible potential particulars);

- **generalization** and **particularization** (including the techniques of *factorization*, *factor selection*, and *formula revision*[35]), which are the processes through which one discovers how far one may extend or one must narrow the applicability of propositions;

- **deduction**, the inference of some new proposition(s) from one or more given proposition(s) of any kind, through a host of processes like *opposition*, *eduction*, *syllogism*, *a fortiori*, *apodosis*, *paradox*, and others;

- **adduction**, the formation and tailoring of postulates, as well as their *testing* and *confirmation* or *elimination*, with reference to rational-empirical considerations (more on this topic below).

All the above depend on reference to the main Laws of Logic, which ensure the ultimate fullness and harmony of knowledge, namely:

1. **Identity** - acknowledging all phenomena cognized, as being at least appearances, and so problemacies with varying credibilities, whether ultimately found to be realities or illusions; *never ignoring data or issues*. (This is what we mean by "facts are facts".)

2. **Non-Contradiction** - not acknowledging as real, but insisting as partly or wholly illusory, any set of propositions cognized as incompatible, whatever their

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35   See my work *Future Logic* for details on these processes.

levels of abstraction and cognitive roots; *always pursuing consistency in one's knowledge*. (Contradictions are impossible in reality.)

3. **Exclusion of the Middle** - not rejecting all possible alternatives, but seeking resolution of conflicts, through some new alternative or some commonalty; *seeking solutions to all problems*. (There is no nebulous middle ground between being and not-being.)

Now, these various factors of cognition play a joint role in the acquisition of knowledge, and although here listed in a 'logical' manner, with some subdivisions and in a semblance of chronological order, they in actual practice function very interdependently, feeding off each other's results in every which way and in no set order. Furthermore, they are here described very succinctly, so much so that their individual, relative and collective significances may be missed if one does not take time to reflect.

This brief overview of the theory of knowledge should be understood as *both descriptive and prescriptive*. That is to say, there is no essential difference between the palette of cognitive processes used by different human beings, be they common folk or expert scientists, trained in logic or purely instinctive, male or female, young or old, of whatever class or people, healthy or sick. This must be stressed: everyone has more or less the same cognitive tools; some people are, there is no denying it, better endowed, others somewhat handicapped, but their overall arsenal is roughly the same, as above listed.

What distinguishes individuals is perhaps rather the effort and skill they exercise with these same instruments, in each given context. Knowing is an art, and artists may vary in style and quality. Some people lay more stress on experience, others on reasoning, others on their emotions. Some people are more visual, some more auditory, some

more touch-sensitive. Some people are excessively categorical or class-conscious, too verbal in their thinking, to the detriment of intuition; some people are slaves to their passions, exercising insufficient control on the objective quality of their thought processes. And so forth - but in any case, the range of faculties available to human beings is roughly the same. The art, as with music, as with painting, is to find a balance - the right measure, the right time and place, for each instrument.

It must be added that two people equally skilled in the art of knowing (or one person at different times) may arrive at different specific conclusions, due to different *contexts* of knowledge. The content and volume of one's experience - in the largest sense of the term experience, including material and mental perceptions and conceptual insights - has a direct influence on one's logic, affecting one's every rational process.

2.   Adduction in Western philosophy

Logic, since Antiquity and throughout the Middle Ages, in Europe at least, has been associated more specifically with deduction, because that was the field in which the most impressive theoretical work had been done, mainly by Aristotle. Only in recent centuries was a greater stress laid, thanks in large part to practitioners like Newton, on the experiential aspects of knowing (by philosophers like Locke and Hume) and on its adductive aspects (by philosophers like Bacon and Mill); and in more recent times on the crucial role of imagination in theory formation (by Einstein, for instance).

This does not mean to say that induction, nor more specifically adduction, are novel concepts as such. People certainly always used all the factors of induction in their everyday efforts at knowing - they used their senses and

their heads, to try and make sense of the world around them, sometimes more wildly than we do, sometimes more rigidly, sometimes more sensibly perhaps. Also, we have to admit that Aristotle, after some four or five centuries of development in Greek philosophy including his predecessors Socrates and Plato, was well aware of the primary issue of induction, the so-called 'problem of universals' (namely, how concepts are known).

Indeed, his formal work in logic, including on opposition, on immediate inference and on the syllogism, was a lucid attempt, however incomplete, to solve just that problem. Deduction, in Aristotle's view, was not apart from induction, or against it, but rather a major aspect of induction. For him, it seems, certain generalities were known directly and indubitably (like the axioms of logic), others had to be developed empirically (seemingly, by complete enumeration); thereafter, one could arrive by inference to all other general principles. The grey areas in that view were, no doubt, the source and validity, and the number, of the initially given top principles, as well as the scope of empiricism in the light of the practical difficulties in complete enumeration.

Today, we would certainly agree that deduction is one of the instruments of induction - needed to infer predictions from postulates for testing purposes, and more broadly, to pursue consistency. The grounds of knowledge, in our view, are primarily experiential data, whether concrete or abstract, and to a lesser extent self-evident propositions whose contradictories are self-contradictory. We are more aware of the hypothetical and tentative nature of much of knowledge; and instead of complete enumeration, we refer to processes like generalization and particularization.

But if we regard the perceptual and conceptual phenomena which are the starting-points of knowledge as being effectively 'axioms' (in an enlarged sense of the term), then

our view is seen as not much different from Aristotle's in essence, though varying in detail and emphasis. The historical point I am trying to make is certainly not, that Aristotle was omniscient and as fully aware of epistemological questions and answers as we are today. Rather, that in his time and earlier still, a search for such questions and answers was already in motion, and a spirit of intelligence, honesty and objectivity was already at work, so that to make a fair assessment we must focus on his contributions instead of his blanks.

I think it is important for historians to keep in mind that philosophers are human. They do not have time to put everything they know or think into words, down on paper. Often, too, they intuit a larger horizon than they have the time to actually tread in detailed thought. No one philosopher can therefore be expected to point out and clarify every aspect of induction, or to develop a truly full spectrum of logical techniques. Not saying something is not necessarily not knowing it, or at least being on the way to know it. Some unimaginative disciples, as well as historians, tend to ossify philosophies, and make them seem more rigid and limited than they were to their living wellsprings.

Thus, the suggestion that general propositions are arrived at by 'complete enumeration', attributed by some historians to Aristotle, contains within it the seeds of empiricism. We today certainly acknowledge the major role played by *partial* enumeration - this is how *particular* propositions are known: one experiences one or more cases of a kind to have a certain attribute or behavior, and one expresses that observation verbally, without thereby presuming to comment on the unobserved cases or to claim that they have the same attribute or behavior.

This is the common ground, between us and Aristotle; the issue is only, how one moves up from there to generalities.

Complete enumeration may have been, for Western philosophy, a first and tentative suggestion; but upon reflection it was soon enough seen to be an impractical ideal, because most classes we deal with are open-ended. Today, we realize that the answer is to be found in the trial and error processes of generalization and particularization, or more broadly speaking in adduction.

Nevertheless, in spite of their manifest deep roots in the past, it is evident that until the Enlightenment the concept and laws of adduction were relatively little discussed and little understood, in Western philosophy at least. Historians tend to attribute to Francis Bacon (1561-1626, London) the clear formulation of these laws. As Anthony Quinton points out, the crucial innovation in Bacon's 'new method' was that it was *eliminative* ("*major est vis instantiae negativae*"). Bacon also gave due credit to the positive aspects of induction (i.e. observation and confirmation), and he made explicit many of the pitfalls possible in the course of such processes (which he referred to as "idols").

Needless to say, Bacon's words were not the last on the subject; many further contributions have happily been made since then. Whatever their precise history, the **Laws of Adduction** may be expressed as done below. By 'postulate' is meant a set of imagined propositions of yet unsettled truth. By 'experience' is meant any appearance, preferably concrete rather than abstract, taken *as is*, as it appears, as a mere configuration of phenomena, without classificatory work of comparison and contrast to other, remembered phenomena. By 'confirmation' or 'weakening' of a thesis is meant adding or subtracting some credibility from it; whereas by 'proof' or 'disproof' is meant extreme credibility or incredibility.

1. If some postulate has certain necessary logical implications, and these implications are found to be in

accord with experience, the postulate is thus far confirmed, though not necessarily proved (Positive Law).

2. If some postulate has certain necessary logical implications, and these implications are found to be in discord with experience, the postulate is disproved, and not merely weakened (Negative Law).

These laws may be explained, and unified, with reference to the concept of probability, and on the same basis many corollaries can be derived from them. The corollaries emerge from the consideration of competing postulates - a couple of examples: every time a postulate is confirmed, while a competitor is not confirmed, then the latter is weakened; when a postulate is disproved, then all its remaining competitors (whether known or unknown alternatives) are strengthened (though all equally so, unless some of them predicted the disproving experience, rather than merely accepted it). However, these issues and details are too voluminous for the present study (see my work *Future Logic*).

3.   Adducing prophecies and prophethood

Adduction is generally regarded as a historically relatively recent philosophical concept, and those who do so, whether out of traditionalist or modern tendencies, may therefore consider that its application to Biblical or Talmudic contexts is an anachronism. The truth of the matter, in my view and I will now demonstrate it, is exactly the opposite. The laws of adduction are found almost explicitly formulated already in the Torah of Moses, evidence of a very early logical maturity, and it is not surprising therefore

that they should have been used with such frequency and skill in Talmudic times[36].

The essentials of adductive method are given in two passages of Deuteronomy. I will now quote them and explain the aspects of adduction that each clarifies (referring to the positive and negative laws written in the previous section). Note that the term 'prediction', used below, should be understood to comprise all descriptive details of the event(s) concerned, including eventual time limits and location.

FIRST LAW: **Deuteronomy 13: 2-4.**

If there arise in the midst of thee a prophet, or a dreamer of dreams - and he give thee a sign or wonder, and the sign or wonder **come to pass***, whereof he spoke unto thee - saying: 'Let us go after other gods, which thou hast not known, and let us serve them'; thou shalt not hearken unto the words of that prophet, or unto that dreamer of dreams; for the Lord your God putteth you to proof, to know whether ye do love the Lord your God with all your heart and with all your soul.*

SECOND LAW: **Deuteronomy 18:21-22.**

And if thou say in thy heart: 'How shall we know the word which the Lord hath not spoken?' When a prophet speaketh in the name of the Lord, if the thing **follow not, nor come to pass***, that is the thing which the Lord hath not spoken; the prophet hath spoken it presumptuously, thou shalt not be afraid of him.*

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36   Notwithstanding, the Talmud, in its effort at creating dogmas, at least as we view it nowadays, preferred to keep these adductive processes relatively hidden and tacit, so as to give the impression, false but convenient, of being a purely deductive discipline - but that is another issue.

Evidently, the first law deals with the positive aspect of adduction: it acknowledges the natural tendency of humankind to be moved to belief by correct prediction (the prophesied event empirically 'comes to pass', i.e. occurs), but it comes to teach us that such confirmation *does not constitute proof*, and therefore that good reason may yet be found to reject the thesis in question (such as its calling for a turn to other gods). The second law elucidates the negative aspect of adduction: it suggests that false theses ultimately stumble, teaching that incorrect prediction (the prophesied event empirically 'follows not, nor comes to pass', i.e. does not occur as and when predicted) is not merely a weakness but *constitutes disproof*, so that the thesis in question must be eliminated.

The logical value of these biblical statements, the legitimacy of their interpretation as here done as *general epistemological principles*, is (I think all will agree) manifest. Note well the **empiricist criteria** explicitly given here: the prediction 'comes to pass' or 'comes not to pass'; the thesis in question (the prophecy) is *tested empirically with reference to public events* and not solely by the (rationalistic) comparison to the religious document or tradition.

We have to note for the record that traditional commentators have, with reference to passages relating to prophesy found throughout the Tanakh, further refined the above rules, and thereby incidentally showed their full understanding of their implications. They pointed out that the two Deuteronomic rules were formulated with reference to false prophets. They are logical techniques for the identification and evaluation of candidates for the dignity of prophet, teaching us not to automatically believe those who claim to be mouthpieces for God and how to find out that they are not.

I was told by R. Abraham Y. Schlesinger of Geneva (but have not verified it) that the refinements under discussion are elucidated notably by Maimonides, in *Hilkhot Yesodei haTorah* 10:4; as for the Talmudic source, it is not the Babylonian but the Jerusalem Talmud, namely *Sanhedrin* 15:5, "*Ani mitnabei...*". However, I found the main Biblical source thanks to the Encyclopaedia Judaica article on prophets and prophesy: it is Jeremiah 28:8-9, which I now quote (Yirmeyahu is talking to Chananyah ben Azur, a rival prophet, who has promised good things for the Judeans):

> "The prophets that have been before me and before thee of old prophesied both against many countries, and against great kingdoms, of war, and of evil, and of pestilence. As for the prophet who prophesies for peace, when the word of that prophet shall come to pass, then shall it be known that the Lord has truly sent the prophet."

This passage implies that if a prophet made a prediction which did not come to pass, it did not follow that he was not a true prophet. It depended on the polarity of the prophecy in question. If it constituted *a blessing* from God, then once announced it had to come to pass, because God's blessings are irrevocable. If what was predicted was *a curse*, it might well not come to pass and yet still be true, because such negative prophecies are always (i.e. up until they are realized) conditional and contingent on the eventual failure of the audience to repent and change their ways (as in the story of Jonah and Nineveh, for instance).

The proposal is consistent. We may just add that the same loophole, in fairness, equally well applies to prophetic candidates as to established prophets. In other words, negative predictions of theirs which do not come to pass,

do not disqualify them, either; only positive predictions
which do not come to pass, do. For an example in the Bible
(other than the above-mentioned by Chananyah) of false
positive prediction, look at 1 Kings 22 (and 2 Chronicles
18), where some 400 'prophets' in the court of Achav
(Ahab) promised him victory over the Arameans, while
only Micah foresaw the death of the king of Samaria.

We may add[37] that when Micah predicted the death of king
Achav, he made a correct prediction, confirming his
prophetic powers, though not proving them; whereas, when
the 400 so-called prophets predicted the king's victory,
they made a wrong prediction, proving their lack of
prophetic powers, and not merely diminishing their
credibility. We could also add that Micah's credibility was
double, in that he correctly predicted a negative event,
which is harder to do since curses are to the last revocable
by God. Similarly, the discredit to the 400 was double, in
that they wrongly predicted a positive event, although
blessings once decreed by God are irrevocable.

On another tack, I would like to reconsider the underlying
distinction between positive and negative predictions. The
Biblical passage 1 Samuel 15:29 would seem to contradict
such a principle. Here, Samuel makes a negative prediction
(that Saul will lose the kingship) and considers it
irreversible (i.e. to be bound to happen, even if Saul should
repent). Samuel says that God does not "lie or repent",
apparently formulating a general principle.

If we review how the principle that prophesies of negatives
are not inevitable (proposed by the *J.T.* and Maimonides,
according to *Enc. Jud.*) is inferred from Jeremiah's
statement in 28:8-9 (quoted above), we see that it is an *a
contrario* inductive inference. That is, the principle about
negatives is not deductively implied or explicitly stated,

37   Addendum 1 (2005) to JL.

but merely assumed tacitly intended by the stated principle that prophesies of peace come to pass. Since *davka* positives only are mentioned, negatives are presumed excluded from the statement. Jeremiah does not actually say that prophesies of war and the like do not necessarily come to pass.

In fact, if we look at Jeremiah's statement more closely, he is not saying that prophesies of peace are inevitable, but that *when* they come to pass, *then* they will have manifestly come from God. This does not formally exclude that prophesies of war and such may be subject to identical rules. This issue of conditionality is already discussed above.

We may conclude from all that: in some cases true predictions, whether positive or negative, are inevitable, while in some other cases they are conditional upon a continuation or change of attitude or behavior. The de facto authority of the prophet and the actual outcome allows us ex post facto to estimate which category the case under consideration might fall under. But to the extent that some of those factors are tacit and informal, our assumption that they are implicit is inductive rather than deductive; i.e. we are interpreting rather than inferring.

It should further be noted that good and bad are often relative - what is good for one person or group may be bad for another, and vice versa, or even with regard to one and the same person something may be good in some respects or at some time and bad in/at others. Blessings are often 'mixed'. Assumably, the evaluation of a prediction as 'positive' or 'negative' is made with reference to the terms of the prophecy itself: whom it intends to favor or disfavor, how, and when.

With regard to prophecies of *neutral* events, like some astronomical events or perhaps some unnatural apparition in public, without good or bad impact on human lives, other

than serving to reveal the predictive power of the prophet, (I assume that) they fall under the Deuteronomic rules quoted earlier. Which means, neutral events predicted by a reputable prophet are bound to come to pass; and, a prophetic candidate predicting neutral events which fail to occur is disqualified.

Note that the *Enc. Jud.* article mentioned above points out that, even with the refined rules proposed by Jeremiah, difficulties arise when prophecies accepted as true by tradition are tested with reference to later events as described in the Bible itself. However, such difficulties are generally surmountable, because one may always *ex post facto* interpret even 'failed' positive prophecies as having, as in the negative cases, been *tacitly conditional*[38]. One can say that the good things were promised to happen, *provided* we stayed on our positive path or improved our ways in

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38   That this is an accepted and used manner of reasoning by traditional commentators may be demonstrated with reference to a difficulty in Gen. 28, pointed out by R. Adin Steinsaltz in a talk in Geneva recently. During Jacob's dream of the ladder, God promises him many good things (v. 13-15), yet immediately thereafter Jacob seems to doubt these promises, when he says: "If God will be with me..." (v. 20-22). The explanation Rashi gives (according to R. Steinsaltz, but I did not find the place) is that Jacob understood God's promises as depending on his continued good conduct, i.e. on his remaining the same person. Thus, here a positive promise is taken as tacitly conditional.

Incidentally, R. Steinsaltz himself offered an alternative explanation of Jacob's doubt: namely, that Jacob may not have been sure whether his dream was indeed a prophesy or merely the wishful thinking of a worried traveler. But, though this explanation is psychologically interesting, epistemologically it implies that a prophet can doubt his own prophecy. Such a premise would, in my view, put all prophecies in doubt; we must assume that the prophetic experience is intrinsically indubitable, or else it loses its special status.

certain obvious ways, just as one can say that the bad things were promised to happen, *unless* we got off our negative path and improved our ways.

One more comment which may be profitably made in this context, with regard to prophecies, whether in the Bible or in the analogous documents of other religions or sects, is that they are very often *sufficiently vague*, with regard to time and place, if not with regard to descriptive details, that they can be evaluated rather generously by those who already believe in them and additionally be twisted by interpretation to fit any scenario they wish. Prophecies are not always conveniently vague, of course; for instance, in Jer. 28, Chananyah sets a two-year time limit for his prophecy and Yirmeyahu, a clear one year for his.

Some of these comments no doubt sound very skeptical, but one must be honest and see: just what is being prophesied, in relation to whom exactly, and precisely when and where. Without these specifications it is very hard to apply the adductive laws in a strict and conclusive manner. The real difficulty is to know where to draw the line, between justification and pretext; for this we must refer to *context*: the past reputation of the prophet, the turn of subsequent events, and the overall theme of the Bible. (I do not here even consider the issue of historicity, whether the events reported actually occurred; this too calls for context, but still wider a context than that provided by the text itself.)

It is necessary to distinguish between the adductive evaluation of prophecies and that of prophets. A prophet, one might say, is a bundle of prophecies. First, each prediction must be evaluated, using the given principles; second, the person making the predictions is evaluated, with reference to his/her overall record of predictions. This distinction is made clear through the story of Bilaam, a

false prophet who was nonetheless used, even against his own will, by God as the vehicle of true prophecies which predicted the blessings of Israel (Num. 22-24)[39].

Another issue is to distinguish between claims to prophesy, and ordinary predictions. Even if we regard (as I do, with gratitude) every item of knowledge, however ordinary its methodology, however natural its source, as a wondrous gift from God - a distinction must be drawn. The medieval commentator Nachmanides interprets terms in the above quoted passages as follows: 'a prophet' - one who claims that God communicated a message to him while he was awake[40]; 'sign' denotes the prediction of a natural incident, while 'wonder' implies the forecast of a supernatural event[41]. A meteorologist, say, makes no claims to prophesy, yet forecasts the weather; we would judge him as an effective scientist is his predictions were consistently

39   This story is full of interesting details about prophesy. According to Nachmanides (Cohen, p. 921), that Bilaam was not a prophet beyond the events recounted in it is suggested by the use of the expressions "God came unto Bilaam" (22:9) and God or the Lord "met Bilaam" (23: 4, 16), which suggest a non-habitual encounter (yikar) initiated by God (yavo). Furthermore, the expression "the Lord put a word in Bilaam's mouth" (23: 5, 16) seems to imply a forcible takeover by the Lord of Bilaam's faculties of speech, at least in the first two prophecies; in the third prophecy "the spirit of God came upon him" (24:2). Other technical details include: having the eye opened (24: 3, 15), hearing the words of God, seeing the vision of the Almighty, fallen down yet with opened eyes (24: 4, 16), and knowing the knowledge of the Most High (24:16).

40   But see Num. 12:6-8, where a 'prophet' is defined as someone to whom the Lord makes Himself known in a 'vision' or speaks to in a 'dream', with the exception of Moses who is spoken to 'mouth to mouth, even manifestly, and not in dark speeches' and who beholds 'the similitude of the Lord' (Cohen, p. 855).

41   Cohen, p. 1062.

(or even usually) right, but never assign him prophetic powers.

What counts in the judgment concerning prophecy is the source of the knowledge, or the methodology which led to it. If natural means are used, like satellites, even daily and invariably correct predictions do not imply 'prophesy'. This is equally true in the case of predictions so vague that there is a natural probability that such and such a kind of event happen at some time in the future somewhere in the world! Of course, the wild guesses of charlatans, however convinced they themselves might be of the unnatural origins of their predictions, are bound to turn out wrong sooner or later, and reveal the fakeness of their authors. Prophesy, then, has to predict *natural events unpredictable by ordinary means* or to predict *supernatural events* (which are, in any case, unpredictable by ordinary means).

The concept of an 'unnatural' event presents logical difficulties, by the way. The perfectly scientific mind has no preconceptions, no foreknowledge, regarding Nature or what is natural; whatever happens, whatever happens to happen, *is* natural, and Nature *is* the sum total of all things ever happening. Just because an event is unique, different from routine events, it does not follow that it is unnatural, just less frequent. The definition of magic or miracle would have to refer to some special genesis of event, like telekinesis or supernatural intervention. However, once such event is established as capable of occurring in this world, then we would have to include it in our concept of the World, and it would thereby qualify as normal and natural in our expanded world-view. Thus, the term 'natural' is logically very relative; but we can still give it its understood connotation conventionally.

Also note: prediction is not, as commonly thought, the essential or even main attribute of prophesy. Prophesy

seems to be primarily a high-level relationship to God - which, rather incidentally, implies special cognitive and other powers. The principal prophets, like Moses, Samuel, Elijah, Elisha, and so forth, are especially spiritual leaders of the Israelite and human community; their cognitive and other powers are mere means to this end, the outer garb of their profound dignity.

In conclusion, to return to the central topic of the present chapter, I think that the documentary evidence adduced above shows without shadow of a doubt that the Jewish religious tradition had a very clear understanding of the two logical laws of adduction well before Greek philosophy, let alone post-Renaissance Western philosophy. For those who believe in the Divine source and traditional dating of Deuteronomy, these laws of logic were God-given at Sinai some 3,300 years ago, almost 1,000 years before Aristotle's time. For those who doubt this, and regard the Book as of human and more recent origin, say around the First Exile period - these laws of logic are still a couple of hundred years older than Aristotle's discoveries![42]

However, it should be emphasized that (so far as I know) the Torah laws of adduction were never highlighted and discussed by the Rabbis of the Talmud and after *as logical principles applicable to all thought*. They evidently unconsciously practiced adduction in their debates on the

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42   In the case of Deuteronomy, which concerns us here, some say that it dates from the reign of king Josiah, one of the last kings before the exile. Whatever the age of the Books of Moses, they were apparently well established by the time of Ezra. Judging by the Book of Ezra, this period may have been, rather, the starting point of Rabbinic Judaism, which reached its full momentum through the Mishnah and Gemara.

law, but they never enshrined such reasoning in a hermeneutic principle or analyzed why it is effective. We could accuse them of having doctrinal reasons for this silence, namely to prevent the development in people of scientific modes of thought, which could weaken religion; but the truth is more probably simply that they did not notice the hint in the Torah. Very probably, I would not have noticed it, either, had I not studied philosophy, long after the advent of modern science; credit must be given where it is due.

3.   QAL VACHOMER

Drawn from Judaic Logic *(1995), chapters 3:1 and 4:1-2*
(part).

1. Background

Jewish logic has long used and explicitly recognized a form
of argument called **qal vachomer** (meaning, lenient and
stringent). According to *Genesis Rabbah* (92:7, *Parashat
Miqets*), an authoritative Midrashic work, there are ten
samples of such of argument in the Tanakh: of which four
occur in the Torah (which dates from the 13th century
BCE, remember, according to Jewish tradition), and
another six in the Nakh (which spreads over the next eight
or so centuries). Countless more exercises of *qal vachomer*
reasoning appear in the Talmud, usually signaled by use of
the expression *kol sheken*. Hillel and Rabbi Ishmael ben
Elisha include this heading in their respective lists of
hermeneutic principles, and much has been written about it
since then.

In English discourse, such arguments are called **a fortiori**
(*ratione*, Latin; meaning, with stronger reason) and are
usually signaled by use of the expression *all the more*. The
existence of a Latin, and then English, terminology
suggests that Christian scholars, too, eventually found such
argument worthy of study (influenced no doubt by the
Rabbinical precedent)[43]. But what is rather interesting, is

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43   There are already, in the Christian Bible, examples of a
fortiori, some of which are analyzed by H. Maccoby in *The
Mythmaker: Paul and the Invention of Christianity*. The author
mentions Paul's fondness for the argument, but shows him to

that modern secular treatises on formal logic all but completely ignore it - which suggests that no decisive progress was ever achieved in analyzing its precise morphology. Their understanding of a fortiori argument is still today very sketchy; they are far from the formal clarity of syllogistic theory.

Witness for instance the example given in an otherwise quite decent *Dictionary of Philosophy*: "If all men are mortal, then *a fortiori* all Englishmen - who constitute a small class of all men - must also be mortal". This is in fact not an example of a fortiori argument, but merely of syllogism[44], showing that there is a misapprehension still today. Or again, consider the following brief entry in the *Encyclopedie Philosophique Universelle*[45]: "*A fortiori* argument rests on the following schema: x is y, whereas relatively to the issue at hand z is more than x, therefore a fortiori z is y. It is not a logically valid argument, since it depends not on the form but on the content *(Ed.)*". The skeptical evaluation made in this case is clearly only due to their inability to apprehend the exact formalities; yet the key is not far, concealed in the clause "relatively to the

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have lacked knowledge of the '*dayo* principle' (see further on), concluding that his use of the form was more akin to the rhetoric of Hellenistic Stoic preachers (pp. 64-67).

44   It could be said that there is an a fortiori movement of thought inherent in syllogism, inasmuch as we pass from a larger quantity (all) to a lesser (some). But in syllogism, the transition is made possible by means of the relatively incidental extension of the middle term, whereas, as we have seen, in a fortiori proper, it is the range of values inherent to the middle term which make it possible.

45   Vol. 1, p. 51, my translation.

issue at hand". Many dictionaries and encyclopaedias do not even mention a fortiori.[46]

> (*Qal vachomer* logic was admittedly a hard nut to crack; it took me two or three weeks to break the code. The way I did it, was to painstakingly analyze a dozen concrete Biblical and Talmudic examples, trying out a great many symbolic representations, until I discerned all the factors involved in them. It was not clear, at first, whether all the arguments are structurally identical, or whether there are different varieties. When a few of the forms became transparent, the rest followed by the demands of symmetry. Validation procedures, formal limitations and derivative arguments could then be analyzed with relatively little difficulty. Although this work was largely independent and original, I am bound to recognize that it was preceded by considerable contributions by past Jewish logicians, and in celebration of this fact, illustrations given here will mainly be drawn from Judaic sources.)

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46   I must report that near the end of writing this book, I uncovered a much better definition of a fortiori argument by Lalande, in the *Vocabulaire technique et critique de la philosophie*. He writes (my translation): "Inference from one quantity to another quantity of similar nature, larger or smaller, and such that the first cannot be reached or passed without the second being [reached] also." Note, however, that this definition fails to specify that the positive movement from large to small is predicatal, while that from small to large is subjectal; and it ignores negative moods altogether, as well as differences between copulative and implicational forms. Lalande adds that the argument is of legal origin, quoting the Latin rule "*Non debet, cui plus licet, quod minus est non licere*" (p. 32).

The formalities of a fortiori logic are important, not only to people interested in Talmudic logic, but to logicians in general; for the function of the discipline of logic is to identify, study, and validate, all forms of human thought. And it should be evident with little reflection that we commonly use reasoning of this kind in our thinking and conversation; and indeed, its essential message is well known and very important to modern science.

What seems obvious at the outset, is that a fortiori logic is in some way concerned with the *quantitative* and not merely the qualitative description of phenomena. Aristotelian syllogism deals with attributes of various kinds, without effective reference to their *measures or degrees*; it serves to classify attributes in a hierarchy of species and genera, but it does not place these attributes in any intrinsically numerical relationships. The only "quantity" which concerns it, is the extrinsic count of the instances to which a given relationship applies (which makes a proposition general, singular or particular).

This is very interesting, because - as is well known to students of the history of science - modern science arose precisely through the growing awareness of quantitative issues. Before the Renaissance, measurement played a relatively minimal role in the physical sciences; things were observed (if at all) mainly with regard to their qualitative similarities and differences. Things were, say, classed as hot or cold, light or heavy, without much further precision. Modern science introduced physical instruments and mathematical tools, which enabled a more fine-tuned pursuit of knowledge in the physical realm.

A fortiori argument may well constitute the formal bridge between these two methodological approaches. Its existence in antiquity, certainly in Biblical and Talmudic times, shows that quantitative analysis was not entirely absent from the thought processes of the precursors of

modern science. They may have been relatively inaccurate in their measurements, their linguistic and logical equipment may have been inferior to that provided by mathematical equations, but they surely had some knowledge of quantitative issues.

In the way of a side note, I would like to here make some comments about the history of logic. Historians of logic must in general distinguish between several aspects of the issue.

(a) The *art or practice* of logic: as an act of the human mind, an insight into the relations between things or ideas, logic is part of the natural heritage of all human beings; it would be impossible for us to perform most of our daily tasks or to make decisions without some exercise of this conceptual power. I tend to believe that all forms of reasoning are natural; but it is not inconceivable that anthropologists demonstrate that such and such a form was more commonly practiced in one culture than any other[47], or first appeared in a certain time and place, or was totally absent in a certain civilization.

(b) The *theoretical awareness and teaching* of logic: at what point in history did human beings become self-conscious in their use of reasoning, and began to at least orally pass on their thoughts on the subject, is a moot question. Logic can be grasped and discussed in many ways; and not only by the formal-symbolic method, and not only in writing. Also, the question can be posed not only generally, but with regard to specific forms of argument. The question is by definition hard for historians to answer,

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47   I have an impression, for instance, that modern French discourse involves more use of a fortiori than modern English discourse. To what extent that is true, and why it should be so, I cannot venture to say.

to the extent that they can only rely on documentary evidence in forming judgments. But orally transmitted traditions or ancient legends may provide acceptable clues.

(c) The ***written science*** of Logic, as we know it: the documentary evidence (his written works, which are still almost totally extant) points to Aristotle (4th century BCE) as the first man who thought to use symbols in place of terms, for the purpose of analyzing various eductive and syllogistic arguments, involving the main forms of categorical proposition. Since then, the scope of formal logic has of course greatly broadened, thanks in large measure to Aristotle's admirable example, and findings have been systematized in manifold ways.

Some historians of logic seem to equate the subject exclusively with its third, most formal and literary, aspect (see, for instance, Windelband, or the *Encyclopaedia Britannica* article on the subject). But, even with reference only to Greek logic, this is a very limiting approach. Much use and discussion of logic preceded the Aristotelian breakthrough, according to the reports of later writers (including Aristotle). Thus, the Zeno paradoxes were a clear-minded use of Paradoxical logic (though not a theory concerning it). Or again, Socrates' discussions (reported by his student Plato) about the process of Definition may be classed as logic theorizing, though not of a formal kind.

Note that granting a fortiori argument to be a natural movement of thought for human beings, and not a peculiarly Jewish phenomenon, it would not surprise me if documentary evidence of its use were found in Greek literature (which dates from the 5th century BCE) or its reported oral antecedents (since the 8th century); but, so far as I know, Greek logicians - including Aristotle - never developed a formal and systematic study of it.

The dogma of the Jewish faith that the hermeneutic principles were part of the oral traditions handed down to Moses at Sinai, together with the written Torah - is, in this perspective, quite conceivable. We must keep in mind, first, that the Torah is a complex document which could never be understood without the mental exercise of some logical intuitions. Second, a people who over a thousand years before the Greeks had a written language, could well also have conceived or been given a set of logical guidelines, such as the hermeneutic principles. These were not, admittedly, logic theories as formal as Aristotle's; but they were still effective. They do not, it is true, appear to have been put in writing until Talmudic times; but that does not definitely prove that they were not in use and orally discussed long before.

With regard to the suggestion by some historians that the Rabbinic interest in logic was a result of a Greek cultural influence - one could equally argue the reverse, that the Greeks were awakened to the issues of logic by the Jews. The interactions of people always involve some give and take of information and methods; the question is only who gave what to whom and who got what from whom. The mere existence of a contact does not in itself answer that specific question; it can only be answered with reference to a wider context.[48]

A case in point, which serves to illustrate and prove our contention of the independence of Judaic logic, is precisely the *qal vachomer* argument. The Torah provides

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48   It is interesting to note in any case, that Josephus Flavius claims that a disciple of Aristotle, called Clearchus, wrote a book, which is no longer extant, in which he reports a meeting between Aristotle and a Jew, during which presumably ideas were exchanged. What ideas were exchanged, and whether this story is fact or legend, I do not know (see Bentwich).

documentary evidence that this form of argument was at least *used* at the time it was written, indeed two centuries earlier (when the story of Joseph and his brothers, which it reports, took place). If we rely only on documentary evidence, the written report in Talmudic literature, the conscious and explicit *discussion* of such form of argument must be dated to at least the time of Hillel, and be regarded as a ground-breaking discovery. To my knowledge, the present study is the first ever thorough analysis of *qal vachomer* argument, using the Aristotelian method of symbolization of terms (or theses). The identification of the varieties of the argument, and of the significant differences between subjectal (or antecedental) and predicatal (or consequental) forms of it, seems also to be novel.

2.   The valid moods

Let us begin by listing and naming all the *valid* moods of a-fortiori argument[49] in abstract form; we shall have occasion in later chapters to consider examples. We shall adopt a terminology which is as close to traditional as possible, but it must be kept in mind that the old names used here may have new senses (in comparison to, say, their senses in syllogistic theory), and that some neologisms are inevitable in view of the novelty of our discoveries.

An explicit a-fortiori argument always involves three propositions, and *four* terms. We shall call the

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49   Such arguments occur quite often in everyday discourse. I give you a couple of examples: "if he can readily run a mile in 5 minutes, he should certainly be able to get here (1/2 a mile from where he is now) in 15 minutes." Or again: "if my bus pass is transferable to other adults, I am sure it can be used by kids."

propositions: the major premise, the minor premise, and the conclusion, and always list them in that order. The terms shall be referred to as: the major term (symbol, **P**, say), the minor term (**Q**, say), the middle term (**R**, say), and the subsidiary term (**S**, say). In practice, the major premise is very often left unstated; and likewise, the middle term (we shall return to this issue in more detail later).

Table 3.1   Classification of A-Fortiori Arguments

FORM	STRUCTURE	
Copulative	(1) **Subjectal**	(2) **Predicatal**
Implicational	(3) **Antecedental**	(4) **Consequental**
POLARITY	ORIENTATION	
(a) **Positive**	**Minor to major**	**Major to minor**
(b) **Negative**	**Major to minor**	**Minor to major**

We shall begin by analyzing "**copulative**" forms of the argument. There are essentially four valid moods. Two of them subjectal in structure, and two of them predicatal in structure; and for each structure, one of the arguments is positive in polarity and the other is negative.

a.   **Subjectal** moods.

(i) **Positive** version. (Minor to major.)

  P is more R than Q (is R),

  and, Q is R enough to be S;

  therefore, all the more, P is R enough to be S.

As we shall see further on, a similar argument with P in the minor premise and Q in the conclusion ("major to minor") would be invalid.

(ii) **Negative** version. (Major to minor.)

  P is more R than Q (is R),

  yet, P is *not* R enough to be S;

  therefore, all the more, Q is *not* R enough to be S.

As we shall see further on, a similar argument with Q in the minor premise and P in the conclusion ("minor to major") would be invalid.

b.   **Predicatal** moods.

(i) **Positive** version. (Major to minor.)

  More R is required to be P than to be Q,

  and, S is R enough to be P;

  therefore, all the more, S is R enough to be Q.

As we shall see further on, a similar argument with Q in the minor premise and P in the conclusion ("minor to major") would be invalid.

(ii) **Negative** version. (Minor to major.)

  More R is required to be P than to be Q,

  yet, S is *not* R enough to be Q;

  therefore, all the more, S is *not* R enough to be P.

As we shall see further on, a similar argument with P in the minor premise and Q in the conclusion ("major to minor") would be invalid.

The expression "**all the more**" used with the conclusion is intended to connote that the inferred proposition is more "forceful" than the minor premise, as well as suggest the quantitative basis of the inference (i.e. that it is a-fortiori). Note that instead of the words "and" or "yet" used to introduce the minor premise, we could just as well have used the expression "nonetheless", which seems to balance nicely with the phrase "all the more".

The role of the major premise is always to relate the major and minor terms (P and Q) to the middle term (R); the

middle term serves to place the major and minor terms along a quantitative continuum. The major premise is, then, a kind of *comparative* proposition of some breadth, which will make possible the inference concerned; note well that it contains three of the terms, and that its polarity is always positive (this will be demonstrated further down). The term which signifies a greater measure or degree (more) within that range, is immediately labeled the major; the term which signifies a smaller measure or degree (less) within that range, is immediately labeled the minor (these are conventions, of course). P and Q may also conveniently be called the "extremes" (without, however, intending that they signify extreme quantities of R).

Note that here, unlike in syllogism, the major premise involves both of the extreme terms and the minor premise may concern either of them; thus, the expressions major and minor terms, here, have a different value than in syllogism, it being the relative content of the terms which determines the appellation, rather than position within the argument as a whole. Furthermore, the middle term appears in all three propositions, not just the two premises.

The function of the minor premise is to positively or negatively relate one of the extreme terms to the middle and subsidiary terms; the conclusion thereby infers *a similar relation* for the remaining extreme. If the minor premise is positive, so is the conclusion; such moods are labeled positive, or *modus ponens* in Latin; if the minor premise is negative, so is the conclusion; such moods are labeled negative, or *modus tollens*. Note well that the minor premise may concern either the major or the minor term, as the case may be. Thus, the inference may be "from major (term, in the minor premise) to minor (term, in the conclusion)" - this is known as inference *a majori ad minus*; or in the reverse case, "from minor (term, in the minor premise) to major (term, in the conclusion)" - this is called *a minori ad majus*.

There are *notable differences between subjectal and predicatal a-fortiori*. In subjectal argument, the extreme terms have the logical role of subjects, in all three propositions; whereas, in predicatal argument, they have the role of predicates. Accordingly, the subsidiary term is the predicate of the minor premise and conclusion in subjectal a-fortiori, and their subject in predicatal a-fortiori.

Because of the functional difference of the extremes, the arguments have opposite orientations. In subjectal argument, the positive mood goes from minor to major, and the negative mood goes from major to minor. In predicatal argument, the positive mood goes from major to minor, and the negative mood goes from minor to major. The symmetry of the whole theory suggests that it is exhaustive.

With regard to the above mentioned *invalid* moods, namely major-to-minor positive subjectals or negative predicatals, and minor-to-major negative subjectals or positive predicatals, it should be noted that the premises and conclusion are not in conflict. The invalidity involved is that of a non-sequitur, and not that of an antinomy. It follows that such arguments, though deductively valueless, can, eventually, play a small inductive role (just as invalid apodoses are used in adduction).

"**Implicational**" forms of the argument are *essentially similar in structure* to copulative forms, except that they are more broadly designed to concern theses (propositions), rather than terms. The relationship involved is consequently one of implication, rather than one of

predication; that is, we find in them the expression "implies", rather than the copula "is".[50]

c.   **Antecedental** moods.

(i) **Positive** version. (Minor to major.)

   P implies more R than Q (implies R)

   and, Q implies enough R to imply S; therefore,

   all the more, P implies enough R to imply S.

(ii) **Negative** version. (Major to minor.)

   P implies more R than Q (implies R)

   yet, P does *not* imply enough R to imply S; therefore,

   all the more, Q does *not* imply enough R to imply S.

d.   **Consequental** moods.

(i) **Positive** version. (Major to minor.)

   More R is required to imply P than to imply Q

   and, S implies enough R to imply P; therefore,

   all the more, S implies enough R to imply Q.

(ii) **Negative** version. (Minor to major.)

   More R is required to imply P than to imply Q

   yet, S does *not* imply enough R to imply Q; therefore,

   all the more, S does *not* imply enough R to imply P.

We need not repeat everything we said about copulative arguments for implicational ones. We need only stress that moods not above listed, which go from major to minor or minor to major in the wrong circumstances, are invalid. The essentials of structure and the terminology are identical, *mutatis mutandis*; they are two very closely related sets of paradigms. The copulative forms are merely

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50   "Implication" is to be understood here in a generic sense, applicable to all types of modality - we shall avoid more specific senses, to keep things clear and simple.

more restrictive with regard to which term may be a subject or predicate of which other term; the implicational forms are more open in this respect. In fact, we could view copulative arguments as special cases of the corresponding implicational ones[51].

A couple of comments, which concern all forms of the argument, still need to be made.

The standard form of the major premise is a comparative proposition with the expression "**more...than**" (superior form). But we could just as well *commute* such major premises, and put them in the "**less...than**" form (inferior form), provided we accordingly reverse the order in it of the terms P and Q. Thus, 'P is more R than Q' could be written 'Q is less R than P', 'More R is required to be P than to be Q' as 'Less R is required to be Q than to be P', and similarly for implicational forms, without affecting the arguments. These are mere eductions (the propositions concerned are equivalent, they imply each other and likewise their contradictories imply each other), without fundamental significance; but it is well to acknowledge them, as they often happen in practice and one could be misled. The important thing is always is to know which of the terms is the major (more R) and which is the minor (less R).

Also, it should also be obvious that the major premise could equally have been an egalitarian one, of the form "**as**

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51   The logical relationship between "is" and "implies" is well known. X "is" Y, in class-logic terminology, if it is subsumed/included by Y, which does not preclude other things also being Y. X "implies" Y, if it cannot exist/occur without Y also existing/occurring, even if as may happen it is not Y. Thus, if X "is" Y, it also "implies" Y; but if X "implies" Y, it does not follow that it "is" Y. In other words, "is" implies (but is not implied by) "implies"; "implies" is a broader more generic concept, which covers but is not limited to "is", a narrower more specific concept.

much...as" (e.g. 'P is as much R as Q (is R)'). The arguments would work equally well (P and Q being equivalent in them). However, in such cases it would not be appropriate to say "all the more" with the conclusion; but rather use the phrase "**just as much**". Nevertheless, we must regard such arguments as still, in the limit, a-fortiori in structure. The expression "all the more" is strictly-speaking a redundancy, and serves only to signal that a specifically a-fortiori kind of inference is involved; we could equally well everywhere use the word "therefore", which signifies for us that an inference is taking place, though it does not specify what kind.

It follows that each of the moods listed above stands for three valid moods: the superior (listed), and corresponding inferior and egalitarian moods (unlisted).

Lastly, it is important to keep in mind, though obvious, that the form 'P is more R than Q' means 'P is more R than Q *is R*' (in which Q is as much a subject as P, and R is a common predicate), and should not be interpreted as 'P is more R than *P is* Q' (in which P is the only subject, common to two predicates Q and R, which are commensurable in some unstated way, such as in spatial or temporal frequency, allowing comparison between the degrees to which they apply to P). In the latter case, R cannot serve as middle term, and the argument would not constitute an a-fortiori. The same can be said regarding 'P implies more R than Q'. Formal ambiguities of this sort can lead to fallacious a-fortiori reasoning[52].

A-fortiori logic can be extended by detailed consideration of the rules of **quantity**. These are bound to fall along the lines established by syllogistic theory. A subject may be

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52   For example: Jane is more good-looking than a nice girl; she is good-looking enough to win a beauty contest; therefore, a nice girl is good-looking enough to win a beauty contest.

plural (refer to all, some, most, few, many, a few, etc. of the members of a class X) or singular (refer to an individual, or to a group collectively, by means of a name or an indicative *this* or *these* X). A predicate is inevitably a class concept (say, Y), referred to wholly (as in 'is not Y') or partly (as in 'is Y'); even a predicate in which a singular term is encrusted (such as 'pay Joe') is a class-concept, in that many subjects may relate to it independently ('Each of us paid Joe'). The extensions (the scope of applicability) of any class concept which appears in two of the propositions (the two premises, or a premise and the conclusion) must overlap, at least partly if not fully. If there is no guarantee of overlap, the argument is invalid because it effectively has more than four terms. In any case, the conclusion cannot cover more than the premises provide for.

In *subjectal* argument, whether positive or negative, since the subjects of the minor premise and conclusion are not one and the same (they are the major and minor terms, P and Q), we can only quantify these propositions if the major premise reads: "for every instance of P there is a corresponding instance of Q, such that: the given P is more R than the given Q". In that case, if the minor premise is general, so will the conclusion be; and if the minor premise is particular, so will the conclusion be (indefinitely, note). This issue does not concern the middle and subsidiary terms (R, S), since they are predicates. In *predicatal* argument, whether positive or negative, the issue is much simpler. Since the minor premise and conclusion share one and the same subject (the subsidiary term, S), we can quantify them at will; and say that whatever the quantity of the former, so will the quantity of the latter be. With regard to the remaining terms (P, Q, R), they are all predicates, and therefore not quantifiable at will. The major premise must, of course, in any case be general.

All the above is said with reference to copulative argument; similar guidelines are possible for implicational argument.

These are purely deductive issues; but it should be noted that in some cases the a-fortiori argument as a whole is further complicated by a hidden argument by analogy from one term or thesis to another, so that there are, in fact, more than four terms/theses. In such situations, a separate inductive evaluation has to be made, before we can grant the a-fortiori inference.

Another direction of growth for a-fortiori logic is consideration of **modality**. In the case of copulative argument, premises of different types and categories of modality would need to be examined; in the case of implicational argument, additionally, the different modes of implication would have to be looked into. Here again, the issues involved are not peculiar to a-fortiori argument, and we may with relative ease adapt to it findings from the fields concerned with categorical and conditional propositions and their arguments. To avoid losing the reader in minutiae, we will not say any more about such details in the present volume.[53]

3.   Preliminaries

Our first job was to *formalize* a fortiori arguments, to try and express them in symbolic terms, so as to abstract from their specific contents what it is that makes them seem "logical" to us. We needed to show that there are legitimate forms of such argument, which are not mere flourishes of rhetoric designed to cunningly mislead, but whose function is to guide the person(s) they are addressed to through

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53   As regards validation of the above arguments, see JL 3:2 and AFL 1:3. In the present volume, see the brief treatment in chapter 6:1-4, which also deals with a crescendo argument.

genuinely inferential thought processes. This we have done in the previous chapter [in JL].**54**

With regard to Hebrew terminology. The major, minor and middle terms are called: *chomer* (stringent), *qal* (lenient), and, supposedly, *emtsa'i* (intermediate). The general word for premise is *nadon* (that which legalizes; or *melamed*, that which teaches), and the word for conclusion is *din* (the legalized; or *lamed*, the taught). I do not know what the accepted differentiating names of the major and minor premises are in this language; I would suggest the major premise be called *nadon gadol* (great), and the minor premise *nadon katan* (small). Note also the expressions *michomer leqal* (from major to minor) and *miqal lechomer* (from minor to major).

I have noticed that the expression "*qal vachomer*" is sometimes used in a sense equivalent to "*kol sheken*" (all the more), and intended to refer to the minor premise and conclusion, respectively, whatever the value of the terms that these propositions involve (i.e. even if the former concerns the major term, and the latter concerns the minor term), because the conclusion always appears more 'forceful' than the minor premise. This usage could be misleading, and is best avoided.

Let us now, with reference to cogent examples, check and see how widely applicable our theory of the *qal vachomer*

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argument is thus far, or whether perhaps there are new lessons to be learnt. I will try and make the reasoning involved as transparent as possible, step by step. The reader will see here the beauty and utility of the symbolic method inaugurated by Aristotle.

Biblical a fortiori arguments generally seem to consist of a minor premise and conclusion; they are presented without a major premise. They are worded in typically Jewish fashion, as a question: "this and that, how much more so and so?" The question mark (which is of course absent in written Biblical Hebrew, though presumably expressed in the tone of speech) here serves to signal that no other conclusion than the one suggested could be drawn; the rhetorical question is really "do you think that another conclusion could be drawn? no!"

Concerning the absence of a major premise, it is well known and accepted in logic theorizing that arguments are in practice not always fully explicit (*meforash*, in Hebrew); either one of the premises and/or the conclusion may be left tacit (*satum*, in Hebrew). This was known to Aristotle, and did not prevent him from developing his theory of the syllogism. We naturally tend to suppress parts of our discourse to avoid stating "the obvious" or making tiresome repetitions; we consider that the context makes clear what we intend. Such incomplete arguments, by the way, are known as *enthymemes* (the word is of Greek origin).

The missing major premise is, in effect, *latent* in the given minor premise and conclusion; for, granting that they are intended in the way of an argument, rather than merely a statement of fact combined with an independent question, it is easy for any reasonably intelligent person to *construct* the missing major premise, if only subconsciously. If the middle term is already explicit in the original text, this process is relatively simple. In some cases, however, no

middle term is immediately apparent, and we must provide one (however intangible) which verifies the argument.

In such case, we examine the given major and minor terms, and abstract from them a concept, which seems to be their common factor. To constitute an appropriate middle term, this underlying concept must be such that it provides a quantitative continuum along which the major and minor terms may be placed. Effectively, we syllogistically substitute two degrees of the postulated middle term, for the received extreme terms. Note that a similar operation is sometimes required, to standardize a subsidiary term which is somewhat disparate in the original minor premise and conclusion.

We are logically free to volunteer any credible middle term; in practice, we often do not even bother to explicitly do so, but just take for granted that one exists. Of course, this does not mean that the matter is entirely arbitrary. In some cases, there may in fact be no appropriate middle term; in which case, the argument is simply fallacious (since it lacks a major premise). But normally, no valid middle term is explicitly provided, on the understanding that one is easy to find - there may indeed be many obvious alternatives to choose from (and this is what gives the selection process a certain liberty).

4.   Samples in the Torah

(1) Let us begin our analysis with a Biblical sample of the simplest form of *qal vachomer*, subjectal in structure and of positive polarity. It is the third occurrence of the argument in the *Chumash*, or Pentateuch (**Numbers, 12:14**). God has just struck Miriam with a sort of leprosy for speaking against her brother, Moses; the latter beseeches God to heal her; and God answers:

"If her father had but spit in her face, should she not hide in shame seven days? let her be shut up without the camp seven days, and after that she shall be brought in again."

If we reword the argument in standard form, and make explicit what seems to be tacit, we obtain the following.

Major premise:

"Divine disapproval (here expressed by the punishment of leprosy)" (=P) is more "serious disapproval" (=R) than "paternal disapproval (signified by a spit in the face)" (=Q);

Minor premise:

if paternal disapproval (Q) is serious (R) enough to "cause one to be in isolation (hide) in shame for seven days" (=S),

Conclusion:

then Divine disapproval (P) is serious (R) enough to "cause one to be in isolation (be shut up) in shame for seven days" (=S).

Note that the middle term (seriousness of disapproval) was not explicit, but was conceived as the common feature of the given minor term (father's spitting in the face) and major term (God afflicting with leprosy). Concerning the subsidiary term these propositions have in common, note that it is not exactly identical in the two original sentences; we made it uniform by replacing the differentia (hiding and being shut up) with their commonalty (being in isolation). More will be said about the specification "for seven days" in the subsidiary term (S), later.

(2) A good Biblical sample of negative subjectal *qal vachomer* is that in **Exodus, 6:12** (it is the second in the Pentateuch). God tells Moses to go back to Pharaoh, and demand the release of the children of Israel; Moses replies:

"Behold, the children of Israel have not hearkened unto me; how then shall Pharaoh hear me, who am of uncircumcised lips?"

This argument may be may be construed to have run as follows:

Major premise:

The children of Israel (=P) "fear God" (=R) more than Pharaoh (=Q) does;

Minor premise:

yet, they (P) did not fear God (R) enough to hearken unto Moses (=S);

Conclusion:

all the more, Pharaoh (Q) will not fear God (R) enough to hear Moses (S).

Here again, we were only originally provided with a minor premise and conclusion; but their structural significance (two subjects, a common predicate) and polarity were immediately clear. The major premise, however, had to be constructed; we used a middle term which seemed appropriate - "fear of God".

Concerning our choice of middle term. The interjection by Moses, "I am of uncircumcised lips", which refers to his speech problem (he stuttered), does not seem to be the intermediary we needed, for the simple reason that this quality does not differ in degree in the two cases at hand (unless we consider that Moses expected to stutter more with Pharaoh than he did with the children of Israel). Moses' reference to a speech problem seems to be incidental - a rather lame excuse, motivated by his characteristic humility - since we know that his brother Aaron acted as his mouthpiece in such encounters.

In any case, note in passing that the implicit intent of Moses' argument was to dissuade God from sending him

on a mission. Thus, an additional argument is involved here, namely: "since Pharaoh will not hear me, there is no utility in my going to him" - but this is not a *qal vachomer*.
(3) The first occurrence of *qal vachomer* in the Torah - and perhaps historically, in any extant written document - is to be found in **Genesis, 44:8** (it thus dates from the Patriarchal period, note). It is a positive predicatal a fortiori. Joseph's brothers are accused by his steward of stealing a silver goblet, and they retort:

> "Behold, the money, which we found in our sacks' mouths, we brought back unto thee out of the land of Canaan; how then should we steal out of thy lord's house silver or gold?"

According to our theory, the argument ran as follows:

Major premise:

You will agree to the general principle that more "honesty" (=R) is required to return found money (=P) than to refrain from stealing a silver goblet (=Q);

Minor premise:

and yet, we (=S) were honest (R) enough to return found money (P);

Conclusion:

therefore, you can be sure that we (S) were honest (R) enough to not-steal the silver goblet (Q).

Here again, the middle term (honesty) was only implicit in the original text. The major premise may be true because the amount of money involved was greater than the value of the silver goblet, or because the money was found (and might therefore be kept on the principle of "finders keepers") whereas the goblet was stolen; or because the

positive act of returning something is superior to a mere restraint from stealing something.

(4) There is no example of negative predicatal a fortiori in the Torah; but I will recast the argument in **Deuteronomy, 31:27**, so as to illustrate this form. The original argument is in fact positive predicatal in form, and it is the fourth and last example of *qal vachomer* in the Pentateuch:

> "For I know thy rebellion, and thy stiff neck; behold, while I am yet alive with you this day, ye have been rebellious against the Lord; and how much more after my death?"

We may reword it as follows, for our purpose:

Major premise:

More "self-discipline" (=R) is required to obey God in the absence of His emissary, Moses (=P), than in his presence (=Q);

Minor premise:

the children of Israel (=S) were not sufficiently self-disciplined (R) to obey God during Moses' life (Q);

Conclusion:

therefore, they (S) would surely lack the necessary self-discipline (R) after his death (P).

In this case, note, the middle term was effectively given in the text; "self-discipline" is merely the contrary of disobedience, which is implied by "stiff neck and rebelliousness". The constructed major premise is common sense.

We have thus illustrated all four moods of copulative *qal vachomer* argument, with the four cases found in the Torah. For the record, I will now briefly classify the six cases which according to the Midrash occur in the other

books of the Bible. The reader should look these up, and try and construct a detailed version of each argument, in the way of an exercise. In every case, the major premise is tacit, and must be made up.

> Samuel I, 23:3. This is a positive antecedental.
>
> Jeremiah, 12:5. This is a positive antecedental (in fact, there are two arguments with the same thrust, here).
>
> Ezekiel, 15:5. This is a negative subjectal.
>
> Proverbs, 11:31. This is a positive subjectal.
>
> Esther, 9:12. This is a positive antecedental (if at all an a fortiori, see discussion in a later chapter [5.5]).

The following is a quick and easy **way to classify** any Biblical example of *qal vachomer*:

a. What is the polarity of the given sentences? If they are positive, the argument is a *modus ponens*; if negative, the argument is a *modus tollens*.

b. Which of the sentences contains the major term, and which the minor term? If the minor premise has the greater extreme and the conclusion has the lesser extreme, the argument is *a majori ad minus*; in the reverse case, it is *a minori ad majus*.

c. Now, combine the answers to the two previous questions: if the argument is positive and minor to major, or negative and major to minor, it is subjectal or antecedental; if the argument is positive and major to minor, or negative and minor to major, it is predicatal or consequental.

d. Lastly, decide by closer scrutiny, or trial and error, whether the argument is specifically copulative or implicational. At this stage, one is already constructing a major premise.

4.   REVISED LIST OF BIBLICAL A FORTIORI

Drawn from Judaic Logic *(1995), chapter 5:1-4, and addendum 4.*

1. Problems encountered

We stated earlier that, according to *Genesis Rabbah*, there are ten cases of a fortiori argument in the Bible: four of them in the Books of Moses and the other six in various other locations. This Midrashic work is traditionally said to have been compiled either by Rabbi Oshia Rabba (a late Tana) or by Rabba bar Nachmani (a third generation Amora); in any case, circa 3rd century CE[55].

We have already in earlier chapters analyzed in considerable detail the four cases of a fortiori spotted in the *Chumash* by this Midrash, namely: Gen. 44:8, Exod. 6:12, Num. 12:14, and Deut. 31:27. The other six cases mentioned by it are: 1-Sam. 23:3, Jer. 12:5 (2 cases), Ezek. 15:5, Prov. 11:31, and Esth. 9:12. Presumably, this is intended to be a *full* enumeration; i.e. it is not just a list of ten cases among others, but an exhaustive list.

At first, I took this authoritative tradition that there are just these 10 *qal vachomer* arguments in the Bible for granted. But I must admit that over time, to my surprise (not to say, consternation, for I do not want to excite the ire of my religion's orthodoxy), I have been forced to revise that article of faith considerably. Closer scrutiny of the

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[55]   If it matters, the second tradition is upheld in the *Sefer Hadorot*, the first in the more recent *Tsemach David*.

evidence makes indubitably clear that there are more likely **at least about *30 (thirty)* cases in the Bible**, and furthermore that one of the cases listed by the Midrash is open to doubt as a genuine case.

My first inkling that something was amiss was the quite fortuitous discovery of an a fortiori argument in Job 4:17-19, while leafing through Maimonides' *Guide*[56]. I naturally assumed that the list given in the *Encyclopaedia Judaica*[57], which was my initial source, was erroneous by accident (this is not as far-fetched as it may sound: I once spotted a confusion between 2nd and 3rd figure hypothetical syllogism in the 1967 *Encyclopedia of Philosophy*[58]); and that the two cases counted under Jeremiah were really one, while the said argument in Job was perhaps merely omitted by the printers. I resolved to look into the original source, and confirm this assumption (I of course did look into *G.R.* eventually, but found the *E.J.* list correct).

Meanwhile, having had my consciousness of the issue of logical arguments in the Bible raised by my preceding research, I happened on a Shabbat, while studying the "*haftarah* of the week" *(Tazriaa)*, to notice yet another unmentioned case, namely 2-Kings 5:13. Again, my immediate reaction was defensive, conservative; I did not want to belie the tradition. I had early on in my formal researches looked with askance on the argument in Esther (we will return to this detail further on); so I thought, well, if we ignore this doubtful case, we still have a total of only ten a fortiori arguments.

At about that time, as I described to people some of the difficulties I was coming across in my Biblical research,

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56   P. 301.

57   Vol. 8, p. 367.

58   Vol. 4, p. 518.

someone mentioned that there may be a case of *qal vachomer* in Daniel; but I could not find it offhand (as we shall see, I did find a probable case eventually).

Also, leafing through an *ArtScrolls* commentary on Genesis, I noted to my relief their comment that 'some editions' of the Midrash include Gen. 4:24 instead of Ezek. 15:5 in the list of ten. The Rashi commentary on this alternative sample, I then found (see Soncino *Chumash*[59]), is clearly formulated as a *qal vachomer*. (Assumably, then, Rashi favoured the special editions of the Midrash, since in his commentary to Gen. 44:8 he does not dispute the claim that there are only ten *qal vachomer* cases 'in the Torah' [in the larger sense of the term, meaning Tanakh] - this is said in passing).

Thus, in fact, in practice, at least eleven sentences in the Bible are recognized as a fortiori by Rabbinical authorities taken collectively, and not just ten (though some say these ten and some say those ten, and they all agree on nine cases). How they reconcile this with the Midrash claim, which they apparently all continue to uphold undaunted, is beyond me: a contradiction is a contradiction. I do not know whether any among them have noted and acknowledged yet other cases of a fortiori in the Tanakh, and if so how they dealt with the issues implied; but the issues are implied even with a joint list of just eleven cases. The simplest solution, it seems to me, would be to regard the Midrash claim as not intended as exhaustive; then there is no problem of doubting the Midrash's infallibility.

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59   P. 24.

2.   The solution found

I tell this story in detail to demonstrate my goodwill, my
reluctance to contradict authorities (but also my
determination to find the factual truth). By now, it had
become obvious that the common tradition on this topic
was surely factually inaccurate, and that a systematic
reevaluation was called for. But, how, other than by
rereading the whole Tanakh carefully with this issue in
mind? It was at this point that I had a very felicitous
insight...

> The a fortiori arguments in the Tanakh are
> noticeably **not** signaled by expressions like "*kol
> sheken*" or "*qal vachomer*"!

These expressions are utilized in Talmudic (Mishnah and
Gemara) and post-Talmudic (Rabbinic) arguments and
exposés, but not so far as I know in the Bible itself. If we
actually look at the 10 cases mentioned by the (usual)
Midrash, we find exclusively the following language:

Genesis:	*Hen* (behold)... *ve ekh* (how then)...
Exodus:	*Hen* (behold)... *ve ekh* (how then)...
Numbers:	... *halo* (is it not then that)...
Deuteronomy:	*Hen* (behold)... *ve af ki* (then also when)...
Samuel:	*Hine* (behold)... *ve af ki* (then also if)...
Jeremiah:	*Ki* (if)... *ve ekh* (how then)...; *u* (and if)... *ve ekh* (how then)...
Ezekiel:	*Hine* (behold)... *af ki* (then when)...
Proverbs:	*Hen* (behold)... *af ki* (also thus)...
Esther:	... *meh* (what)...

I saw almost at once that these various phraseologies might
be viewed as signals of an intention to formulate an a
fortiori argument. After a while, I realized that these
sentences have, indeed were bound to have, conditional

form, with an antecedent clause (a minor premise), signaled by an "if" operator (one of the particles *hen/hine, ki, ve/u*), and a consequent clause (a conclusion), signaled by a "then" operator (one of the expressions *ve ekh, ve af ki, af ki, halo*, and eventually *meh*). These key words or phrases were limited in number, some half a dozen, and so could with relative ease be used in a search for other cases, if any, in a *Concordance of the Bible* (which is effectively a word index). Of course, there might be other significant expressions, besides those, but I left the question open; at least, this was a starting-point.

The following stage was painstaking research: each reference to a keyword in the concordance was looked up in the Bible, to see whether or not it signaled an a fortiori argument. In truth, I did not research all the keywords: I looked up all occurrences of **ekh, ve-ekh, af, af-ki, ve-af, ve-af-ki, hen, ve-hen, halo, va-halo***;* but I did not have the patience to also research the words **hine, ki**. It was quickly evident that not all occurrences of the keywords signaled a *qal vachomer* (only about 6 percent did so); on the other hand, I found by this method many new cases of the argument, i.e. cases not mentioned in the Midrash (about twenty). In all, I looked up some 500 references in the Bible; by that time my point was proven, since I had about three times the number of a fortiori arguments I started with, and it did not seem important to pursue the matter further and attempt to be exhaustive.

As already said, I was not immediately conscious of the logical role played by the key words/phrases. At first, my approach was pragmatically philological; but once I grasped that what I had to look for were if/then operators, it became obvious that a more detailed linguistic analysis was called for: this laborious research is presented in the next chapter. In this context, I gradually understood the following (which *ex post facto* perhaps seems obvious, but was not immediately evident). Whereas in modern

Hebrew, *im/az* are the closest and most commonly used equivalents of if/then, in Biblical Hebrew the language is more varied:

a.   There are various alternative expressions for "if", such as *hen/hine, reu, ki, ve/u, im, be*; all these announce an antecedent: behold, see, if, when, because, in, etc. The prefix *vav* (and) fulfills this function, like the other words, by presenting a context, in which certain later mentioned events occur.

b.   There are various alternative expressions for "then", such as *af, ve, ki, im*; all these announce a consequent: all the more/less, therefore, then, so, etc. The word *af*, often translated as 'all the more/less' (its distinctively a fortiori reading), more broadly means 'also, similarly'. The word *ki*, which in modern Hebrew usually has the limited meaning of 'because', has evidently in Biblical Hebrew a broader range of meaning, including even 'then'. The use of *vav* (and) in the sense of 'then' is also found in English (e.g. "Press the button and the motor starts"), and therefore needs no explanation.

c.   Antecedents and consequents need not in Biblical Hebrew, anymore than in the modern idiom or in English or French, be signaled by any "if" or "then" operators; they may be tacitly understood by the context, or be left out to avoid repetitions. (Nowadays, we often use a comma to signal a tacit "then" in written texts.) Grammatically, logical operators are merely 'conjunctions', they serve to bring sentences together in various ways.

d.   Although initially expressions like *hen, af-ki, ve-af-ki, ve-ekh, halo* made it possible for me to discover a fortiori arguments, I eventually realized that they were not or not-wholly in fact logically essential factors in these arguments. *Ekh* (how) and *halo* (is it not that) are never then-operator of arguments, but always an integral part of the consequent/conclusion in which they appear, serving as

rhetorical devices: how will you do this? meaning, you cannot do it; is it not that so and so? meaning, it is so and so. As for *af-ki, ve-af-ki,* although the *af* particle serves as then-operator of arguments, the *ve* and *ki* may have a role either as if-operator of the argument, or as if or then operator of its premise and/or conclusion.

In this context, I would like to refer the reader to Esra Shereshevsky's very interesting analysis of Rashi's interpretative techniques, where some of the fine nuances in the meaning of words like *ve* and *ki* are discussed[60].

Apart from that, please note that my use of the operators *if/then* is here very loose, generic (and not exclusively logical); I do not here push the analysis on down to deeper levels, to distinguish between the different modal types of conditioning: the logical (*if*), the natural/temporal (*when, at such times as*), and the extensional (*in such instances as*). The if/then operators of any logical argument are of course of logical modality, but the conditional premises and conclusions (if any) they enclose may be of other modal types.

3.   The data and their analysis

The table below lists the results of these researches, my own proposed list of Biblical a fortiori arguments. I repeat, it is not necessarily exhaustive; and it should be added, some of the arguments are strong, unassailable, some are comparatively weak, open to rebuttal, but I think they are all reasonably clear samples of the form. Opposite each Biblical reference I indicate the apparent if/then logical operators (if any), and parenthetically any of the typical a fortiori expressions *hen, hine, lahen, af-ki, ve-af-ki, ve-ekh,*

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60   Pp. 73-99.

halo, which helped me personally find the case in addition to the operators themselves.

Table 4.1   Proposed list of Biblical A fortiori

No.	REFERENCE	OPERATORS	INITIAL CLUES
	Torah Books		
1	Gen. 4:24	**ki/ve**	(tradition)
2	Gen. 44:8	**hen/ve**	hen, ve-ekh
3	Exod. 6:12	**hen/ve**	hen, ve-ekh
4	Num. 12:14	**-/-**	halo
5	Deut. 31:27	**hen/af**	hen, ve-af-ki
	Historic Books		
6	1-Sam. 14:29-30	**reu/af**	af-ki
7	1-Sam. 21:6	**ki/af**	ve-af-ki
8	1-Sam. 23:3	**hine/af**	hine, ve-af-ki
9	2-Sam. 4:10-11	**ki/af**	af-ki, halo
10	2-Sam. 12:18	**hine/ve**	hine, ve-ekh
11	2-Sam. 16:11	**hine/af**	hine, ve-af-ki
12	1-Kings 8:27	**hine/af**	hine, af-ki
13	2-Chron. 6:18	**hine/af**	hine, af-ki
14	2-Kings 5:13	**ki/af**	ve-af-ki
15	2-Kings 10:4	**hine/ve**	hine, ve-ekh

Table 4.2 (cont'd).

	Other Books		
16	Job 4:17-19	**hen/af**	hen, af
17	Job 15:15-16	**hen/af**	hen, af-ki
18	Job 25:5-6	**hen/af**	hen, af-ki
19	Ps. 78:20	**hen/gam,im**	hen
20	Ps. 94:9	**-/-**	halo
21	Ps. 94:9	**im/-**	halo
22	Ps. 94:10	**-/-**	halo
23	Prov. 11:31	**hen/af**	hen, af-ki
24	Prov. 15:11	**ki/af**	af-ki
25	Prov. 19:7	**ki/af**	af-ki
26	Prov. 19:10	**ki/af**	af-ki
27	Prov. 21:27	**ki/af**	af-ki
28	Jer. 12:5	**ki/ve**	ve-ekh
29	Jer. 12:5	**u/ve**	ve-ekh
30	Ezek. 15:5	**hine/af**	hine, af-ki
31	Dan. 2:9	**lahen/ve**	lahen

We see that there are at least 31 cases of a fortiori in the
Tanakh, 5 of them in four books of the Torah proper, and
26 more in eleven other books (counting Samuel and Kings
as two each). Some of these arguments are repetitive, and
perhaps should not be counted as distinct. For instance, 1-
Kings 8:27 and 2-Chron. 6:18 are definitely one and the
same argument, reported in two different books. The three
arguments in Job might be counted as one and the same
thought, in spite of small verbal variations; and similarly
the two in Jeremiah. The two arguments in Ps. 94:9 have
the same major premise, and might be viewed as a
compound. On the other hand, Ps. 78:20 might be viewed

as two arguments with the same premises but separate conclusions, instead of a single argument with a compound conclusion. Thus, the total number may be as small as 26, or as large as 32, depending on how we count. In any event, the above table may be summarized as follows:

Table 4.3   Frequencies of A fortiori Operators

OPERATORS	(HEBREW)	FREQ.	LOCATIONS
ki/af	כי/אף	7	1S, 2S, 2K, Pr.
hen/af	הן/אף	5	Dt, Jb, Pr.
hine/af	הנה/אף	5	1S, 2S, 2K, 2C, Ez.
reu/af	ראו/אף	1	1S.
ki/ve	כי/ו	2	G, Jr.
u/ve	ו/ו	1	Jr.
hen/ve	הן/ו	2	G, Ex.
hine/ve	הנה/ו	2	2S, 2K.
lahen/ve	להן/ו	1	Dn.
hen/gam,im	הן/גם,אם	1	Ps.
im/-	אם/...	1	Ps.
-/-	.../...	3	N, Ps.

We note that, broadly speaking, the individual key words/phrases, and more significantly their combinations, seem to be fairly evenly distributed throughout the Bible: the language is on the whole pretty uniform. Some books, such as Leviticus, Joshua, Judges, and others, have no a fortiori arguments to my knowledge; but I see no reason why they should, nor what might be inferred from the fact (perhaps somebody else might eventually). If we pay attention to the traditional dating of the reported speakers

in each of the above arguments, we find the following results:

Table 4.4   A fortiori Arguments: By Whom, How Often, When

SPEAKER	FREQ.	TRADITIONAL DATING
Lemech	1	Pre-Deluge
Joseph's Brothers	1	Patriarchal
Moses	5	Sinaitic
God (thru Moses)	1	Sinaitic
Eliphaz	2	Sinaitic
Bildad	1	Sinaitic
Jonathan	1	United Kingdom
David	3	United Kingdom
David's men	2	United Kingdom
Asaph	1	United Kingdom
Solomon	7	United Kingdom
Naaman's servants	1	Northern Kingdom
Jezreel rulers	1	Northern Kingdom
God (thru Jeremiah)	2	End of First Temple
God (thru Ezekiel)	1	End of First Temple
Nebuchadnezzar	1	First Exile.

We see in the above table that apart from 4 of the arguments attributed to God, 21 (68%) of them are spoken by Jews and 6 (19%) by non-Jews. Thus, judging from Biblical sources alone, this form of reasoning seems to be rather predominantly Jewish, though not unknown to non-Jews. I do not intend this remark as racist, but merely wish to arouse interest in historical studies of logic. It would be

interesting to know whether a fortiori arguments appear, say, in Sumerian, Babylonian, Egyptian, Canaanite, Assyrian, or Greek epigraphs or documents; and if so, as of when and how often.

Furthermore, out of 31 cases, only 2 are pre-Sinaitic; 9 (29%) are from Mose's time, meaning about 13th century BCE; 14 (45%) are from the monarchies of Saul, David and Solomon, roughly mid-9th/mid-8th century BCE; and the remaining 6 (19%) are from the period from the splitting of the kingdom to the Babylonian Exile, roughly mid-8th/mid-4th century BCE.

In the course of this research, it occurred to me that the language used in the Bible for a fortiori arguments (and eventually for other types of reasoning) might serve as a dating tool, to resolve issues between Traditionalists and "Higher-Critics" with regard to the ages and authorship of the various books of the Bible. However, looking at the above results, I personally see no firm conclusions possible in this respect (even if the dating proposed by the Critical school is considered in lieu of the traditional).

The only overall conclusion I can suggest is that a fortiori argument was a rather common form of reasoning since early on in the Biblical narrative, and on up to its end, with the greatest frequency occurring in the 9th-8th centuries BCE. Perhaps, after all, the valuable conclusion to draw is that the hypothesis of some of the critics that most of the earlier books of the Bible were composed, or at least compiled, much later than tradition claims, i.e. at about the same time as most of the later books, is if not eliminated at least *not justified* by this data, since if it were true one might expect more, or as, frequent use of the a fortiori argument in the later books compared to the earlier books. But even this is barely probabilistic and open to debate, of course.

4.   Synthesis of Results

Now, let us return to the discussion regarding the number of a fortiori arguments in the Bible. First, let me mention in passing that I doubt seriously that Esth. 9:12 qualifies as a genuine *qal vachomer* argument; I demonstrate this at length in the next chapter already mentioned. I may add here that although *Genesis Rabbah* purports to embody the undebatable tradition and final truth on the matter, its apparent error in enumerating only 10 *qal vachomer* arguments in the Bible, when there are evidently at least some three times that number, allows us to evaluate its statements much more critically, and doubt that this 10th statement really qualifies as a *qal vachomer*.

I say 'apparent' error, because one might always put forward the defense that the ten statements chosen by the Midrash were in fact in some hidden way *special*, having something the others lack. Indeed, a Rabbi of my acquaintance, R. Alexander Safran of Geneva, upon being told by me of the discovery of *qal vachomer* arguments other than the Midrashic ten, offered precisely this defense.

Now, it must be stressed that there is evidently *no formal or linguistic distinction possible*: that is evident from all our discoveries and insights and cannot be contested. Therefore, as always in such situations, the defenders of the faith must fall back onto homiletic or mystical interpretations, and claim these ten statements as having some special ethical, historical, or qabalistic import that the others lack. I leave that job to whoever.

A more intriguing defense was suggested to me by a friend, Sammy Soussan, who studies in a *kollel* (Talmudic study group) in Aix-les-Bains. He asked me to verify whether the Midrash's ten *qal vachomer* arguments might not simply be *samples* of ten distinct *formal types*, whose typology and no other would be merely repeated in the other twenty or so cases I found. My immediate response was that such a

view was unlikely to be true, because my formal studies have revealed that the number of distinct forms is (according to how counted) two, four, or eight, but not ten (nor five).

As we saw earlier, an a fortiori may be positive or negative, subjectal or predicatal (if categorical) or antecedental or consequental (if conditional). With regard to the ten (or eleven) Midrashic a fortiori, they have the following logical forms (most naturally, though they can be recast into other forms): 2 are positive subjectal, 3 are negative subjectal, 2 are positive predicatal, and 2, 3, or 4 are positive antecedental; more specifically:

> Gen. 4:24 is negative subjectal;
>
> Gen. 44:8 is positive predicatal;
>
> Exod. 6:12 is negative subjectal;
>
> Num. 12:14 is positive subjectal;
>
> Deut. 31:27 is positive predicatal;
>
> 1-Sam. 23:3 is positive antecedental;
>
> Jer. 12:5 has two positive antecedentals;
>
> Ezek. 15:5 is negative subjectal;
>
> Prov. 11:31 is positive subjectal;
>
> Esth. 9:12 is positive antecedental (if at all a fortiori).

It is interesting to note anyway that Gen. 4:24 and Ezek. 15:5 are both negative subjectal in form, because if (a) only one or the other Midrashic list of *qal vachomer* arguments is to be adopted, but not a fusion of both, though both must be accepted as equally valid, and (b) the Soussan hypothesis turned out to be correct, then these two a fortiori arguments would have to be of the same form, which they are. Nevertheless, the hypothesis is incorrect, because its main prediction, namely that the Midrashic list of ten includes ten (or five) distinct forms, cannot be upheld.

None of these cases, read simply, are negative predicatal, negative antecedental, or either way consequental, in form; therefore, if at best the Midrash may be said to hint at the formalities of a fortiori, it does not represent them all. Furthermore, it can be shown on a case-by-case basis that all the Biblical a fortiori, recognized as such in the present study, fall neatly into our classification; i.e. that as far as the data at hand is concerned, this classification is exhaustive. This reasoning would seem to preclude the proposed defense: we can predict with confidence that the Midrash is not a taxonomy.

Alternatively, we might consider the possibility that the Midrash list of ten *qal vachomer* arguments reveals ten types of *phraseology*. There are various aspects to this linguistic question: we may focus on individual operators or on their combinations or on key words/phrases or on their combinations in turn. Also, we may ask whether the Midrashic list amounts to precisely ten such expressions, and we may ask whether that number is (in view of new discoveries) exhaustive.

Firstly, we must admit that the Midrashic list does not cover *all* the individual operators or combinations thereof found in Biblical a fortiori. With regard to if-operators, it includes *hen, hine, ki, u,* but ignores *reu, im, lahen*; with regard to then-operators, it includes *ve, af, meh*, and ignores *gam, im*. These oversights are somewhat open to debate: the sentences concerned could be constructed or understood without interpreting these words as operators; but in any case the total number is not ten (it is 7 in the Midrash list, and 11 in mine).

With regard to combinations of operators, while the list spots *ki/ve, u/ve, hen/ve, hen/af, hine/af, -/meh, -/-*, it misses the most frequent combination *ki/af*, as well as *hine/ve, lahen/ve, reu/af, hen/gam,im, im/-*; and in any case, again,

the total number is not ten (but 6-7 in the Midrash, and 12-13 in my view).

As for the number of individual key words/phrases presented by the Midrash, it is also nine; *hen, hine, ki, u/ve, ve-ekh, halo, ve-af-ki, af-ki,* and *meh*, however we organize our list. Unless, that is, we regard the *u* signaling the antecedent of the second part of Jer. 12:5, and the *ve* which flags the consequent of Gen. 4:24, as two distinct terms, which they are in meaning (*u*=if, *ve*=then) though not in spelling (vav). In that case, and retaining Esth. 9:12, we obtain the desired number of ten distinct key words/phrases in the Midrash. However, the Midrash is not exhaustive in this respect; since, in a larger perspective, 4-5 expressions are missing here, namely: *reu, im* (as "if" or as "then")*, gam, lahen*.

With regard to key words/phrases in combination, since two of the cases the Midrash lists use the same language (*hen/ve-ekh* in Gen. 44:8 and Exod. 6:12), there are only nine combinations, even if we like Rashi include Gen. 4:24 (*ki/ve*) in the list instead of Ezek. 15:5 (since its *hine/af-ki* is then excluded). However, if we both count Jer. 12:5 as one *qal vachomer* instead of two, but one which reveals two phraseologies, and include Gen. 4:24 in the list without excluding Ezek 15:5, and of course (contrary to my recommendation) do not leave out Esth. 9:12, we obtain the desired number of ten distinct combinations of key expressions. But here again, this number is not exhaustive, ignoring as it does combinations like *reu/af-ki, ki/ve-af-ki,* and so on.

To sum up: to its credit, the Midrash list reveals crucial expressions like *ve-ekh, halo, ve-af-ki*, etc., which signal *qal vachomer* arguments (though not invariably). It includes ten (or eleven) Biblical samples (I say 9-10) of *qal vachomer*; and these samples can be acknowledged to display ten key expressions and ten combinations thereof.

However, the Midrash listing of 10 cases is certainly *incomplete*, whether regarded statistically, logically or linguistically.

Thus, we have found no scientific justification of the Midrashic listing of *only ten qal vachomer* arguments. It must be viewed as intended, in the said respects, to be at best a partial and random set of examples. If the author of the list intended it to be complete or systematic with reference to the number of samples or to logical formalities or to language forms, he failed: his research was sloppy. The only possible way out of these conclusions is, following the Safran hypothesis, to presume that the author had homiletic or mystical motives for his selection.

5.   THE LANGUAGE OF BIBLICAL A FORTIORI

Drawn from Judaic Logic *(1995), chapter 6.*

In this essay, my purpose is to analyze the language actually used in Biblical a fortiori statements. An empirical study, without preconceptions.

1. Introduction

A Biblical a fortiori argument, as we saw, usually consists of two more or less explicit sentences, one of which is the minor premise and the other the conclusion; the major premise is always more or less tacit. The said premise and the conclusion may be, one or both of them, categorical or conditional in form, and may be expressed in full or be in part merely implied.

The premise and conclusion are usually, though not always, signaled by words which serve as "if" and "then" operators, respectively. However, such keywords sometimes concern, not the argument as such, *as a whole*, but instead belong *within* clauses subsidiary to the argument. Our job here, therefore, is to distinguish and avoid confusion between the if/then operators (if any) which frame the argument's antecedent (premise) and consequent (conclusion), from the operators (if any) which play a role as part of these sentences. [61]

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61   I have referred to various standard translations: for the Pentateuch, Samuel and Kings, mainly to the more classical Soncino Books of the Bible; for the Psalms, to *The Metsudah*

2.   In Torah books

Genesis 4:24. Lemekh ben Methushael:

> "If (*ki*): Cain shall be avenged sevenfold,
>
> then (*ve*): Lemekh [shall be avenged] seventy and seven-fold."

Rashi's reading: If the punishment on Cain, who willfully murdered, was delayed seven generations, surely my [Lemekh's] punishment will be deferred for many times seven, seeing that I slew unintentionally.

The if/then operators of this argument are *ki/ve*. I must say that without Rashi's commentary, this verse would seem pretty obscure, to me at least. This perhaps attests to its true antiquity. In any case, we may accept Rashi's interpretation of the sentence as an a fortiori argument. The story-context he adduces from tradition is that Lemekh slew Cain accidentally while hunting for deer.

Note that this a fortiori argument is not perfectly constructed; although the movement from willful to unintentional (the tacit major premise) is indeed a fortiori, the transition from seven (in the minor premise) to seventy-seven (in the conclusion) does not obey the "*dayo*" (sufficiency) rule: there is an extrapolation involved, which may have an inductive justification, but which is weak

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Tehillim, and for the rest to *The Jerusalem Bible*. In some cases I have had to make small modifications in the choice or order of words, called for by the needs of our analysis. I make an effort to explain the positions I have taken; though if situations are similar, I try to avoid repeating myself. (The mystically inclined may find it interesting to notice, in passing, the content of the Biblical passages this research happens to have brought together; their collective message, as it were.)

from the deductive point of view. However, although this is a Biblical passage, it has no Halakhic authority which might support non-*dayo* reasoning, being the private pronouncement of Lemekh, and not a statement of Divine or prophetic origin.

Genesis 44:8. Joseph's Brothers:

> "Behold (**hen**): the money, which we found in our sacks' mouths, we brought back unto thee out of the land of Canaan;
>
> then (**ve**): how (*ekh*) should we steal out of thy lord's house silver or gold?"

Here, the if/then operators are **hen/ve**. *Hen* (behold) signals a presentation of evidence; while *ve* (and) presents the inference to be drawn from it. The expression *ekh* (how) is part of the conclusion, serving rhetorically to deny the brothers' ability to steal; it literally means: given the evidence, 'how could anyone logically uphold' such a claim (that the brothers would steal). Thus, *ekh* signifies *necessity* of the denial of a claim: it has *a modal function*; and so we could regard it as qualifying the overall relation between premise(s) and conclusion, instead of as merely an internal qualifier of the conclusion.

Exodus 6:12. Moses:

> "Behold (**hen**): the Children of Israel have not hearkened unto me;
>
> then (**ve**): how (*ekh*) shall Pharaoh hear me?"

Same language as in the previous case.

Numbers 12:14. God:

> "[Granting that:] if (*ve*) her father had but spit in her face, should she not (*halo*) hide in shame seven days?
>
> [Similarly, since God is angry with her,] let her be shut up without the camp seven days."

In this case, the argument as a whole, although clearly a fortiori in intent, is expressed *without explicit if/then operators* (this is not disturbing, but a common manner of speaking in all languages). The stated premise is a conditional proposition, with *ve* as its if-operator but without explicit then-operator; the expression *halo* serves a rhetorical purpose within the consequent. The conclusion (as seen in our earlier technical analysis), though stated as a categorical proposition, should be read as a conditional one devoid of explicit operators; its tacit antecedent clause being the fact of Divine disapproval, while its consequent is similar to the premise's.

With regard to *halo* (is it not that): it expresses in the speaker and causes in the hearer a certain turn of mind, which is not peculiarly Hebrew or oriental, but is equally to be found in western formal logic. Its role is to remind us of the following formality: 'if X, then Y' means that X *cannot but* exist with Y, and not merely that X and Y happen to have occurred together. Thus, *halo*, like *ekh*, is a modality, though of opposite polarity; while *ekh* means 'must deny' (=cannot affirm), *halo* means 'cannot but affirm' (=must affirm); and, in the last analysis, such modality may just as well be viewed as concerning the whole antecedent-consequent relation concerned, rather than merely the consequent part of it.

Deuteronomy 31:27. Moses:

> "Behold (*hen*): while (*be*) I am yet alive with you
> this day, ye have been rebellious against the Lord;
>
> how much more (*af*): in the time (*ki*) after my death,
> so (*ve*) [i.e. will ye be rebellious]?"

Here, I suggest, the if/then of the a fortiori argument as
such are ***hen/af***. The premise is a conditional proposition
with *be* as its if-operator, and no explicit then-operator. The
conclusion is similarly a conditional proposition, with *ki* as
its if-operator, and *ve* (meaning, so or the-same) as its then-
operator tacitly implying 'ye will be rebellious'. The
expression actually used in the text is *ve af ki*, but the
elements of this expression play distinct roles in the
statement, which is why I have slightly reshuffled them.

3.   In historical books

1 Samuel 14:29-30. Jonathan:

> "See (***reu***): because (*ki*) I tasted a little of this
> honey, how (*ki*) mine eyes are brightened.
>
> How much more (***af***): if (*ki*) haply the people had
> eaten freely today of the spoil of their enemies
> which they found, then (*ki*) would there not have
> been a much greater slaughter among the
> Philistines?"

Here, the *qal vachomer* is a larger if/then statement,
signaled by ***reu/af***, within which are contained two smaller
if/then statements, signaled by *ki/ki*, which are respectively
the minor premise and the conclusion of the argument.
(Note the reshuffle of antecedent and consequent in the
premise for the sake of logical clarity. The original,
opposite, order serves merely a rhetorical purpose: from
phenomenon to its explanation, from effect to cause - it is

a didactic presentation.) The *dayo* (sufficiency) principle is ignored.

<u>1 Samuel 21:6.</u> David:

> "Of a truth (***ki***): when (*be*) I came out, though (*ve*) it was but a common journey, yet (*im*) women have been kept from us about these three days, and (*ve*) the vessels of the young men were holy;
>
> how much more (***af***): when (*ki*) today there shall be holy bread in the vessels, so (*ve*) [i.e. have we avoided women and kept the young men's vessels holy]."

In this case, the *qal vachomer* proper is formed with the operators ***ki/af***. It has a conditional proposition, with a compound antecedent and a compound consequent, as premise (here re-ordered for clarity); and another, with a simple antecedent and a tacit but obvious enough compound consequent, as conclusion. The operators (*be/im*) and conjunctives (*ve*) within the premise, and those within the conclusion (*ki/ve*), are not to be counted among the operators of the argument as such.

<u>1 Samuel 23:3.</u> David's men:

> "Behold (***hine***): here in (*be*) Judah [=our own territory], we are afraid;
>
> how much more (***af***): if (*ki*) we go to Keilah [=enemy territory], so (*ve*) [i.e. will we be afraid]?"

Here, the operators of the a fortiori as such are ***hine/af***. The premise is in conditional form, its antecedent being signaled by *be*, but its consequent having no signal (as is common in all languages). The conclusion is announced by the phrase *ve af ki*: the *af* of this phrase belongs, as we said, to the *qal vachomer* construction, while the *ve* of *ve af ki* serves to imply the consequent of the conclusion, equating

it to the consequent of the premise (and it is for this reason left tacit in the text, to avoid repetition), and the *ki* of *ve af ki* refers to the antecedent of the conclusion.

2 Samuel 4:10-11. David:

> "If (*ki*): [when] one told me saying, 'behold, Saul is dead' and (*ve*) he was in his own eyes as though he had brought good tidings, then (*ve*) I took hold of him and (*ve*) slew him in Ziklag in the way of reward.

How much more (*af*): when (*ki*) wicked men have slain a righteous man in his own house upon his bed, then (*ve*) now shall I not (*halo*) require his blood of your hand and (*ve*) take you away from the earth?"

In this case, the argument's if/then operators are ***ki/af***. The minor premise consists of a conditional, with both theses compound, without explicit if-operator (unless the initial *ki* is intended to serve a dual purpose, to avoid saying ***ki*** *ki*) and with *ve* as then-operator. The conclusion is also a conditional proposition, with a compound consequent, with *ki/ve* as operators. The extra occurrences of *ve* serve to signal compound antecedences or consequences. Dayo principle obeyed.

2 Samuel 12:18. David's servants:

> "Behold (***hine***): while (*be*) the child was yet alive, [David's sorrow was so great that] we spoke unto him, and (*ve*) he hearkened not unto our voice;
>
> then (***ve***): how (*ekh*) shall we tell him that the child is dead, so that (*ve*) he do himself some harm?"

In this case, the operators of the *qal vachomer* as a whole are ***hine/ve***, and these frame two conditional propositions. One, the premise, has *be* as if-operator, but no visible then-operator (and indeed part of its compound consequent is

also tacit); the other, the conclusion, has no visible if-operator, though it has *ve* as its then-operator (*ekh* serves an internal rhetorical purpose in the conclusion: without *ekh* the conclusion would be merely hypothetical 'if we tell him, he will harm himself', *ekh* signals a pursuit of the reasoning by apodosis 'we do not want him to harm himself, therefore we cannot tell him').

Note that the whole a fortiori argument is itself enclosed in a wider antecedent/consequent (not shown above), expressed by *ki* (because they thought thus), *ve* (therefore they feared to tell him). All these sentences within sentences can lead to confusion; that is why it is important to analyze their logical hierarchy carefully, if we want to be clear as to the identity of a fortiori argument *per se*. *Dayo* principle ignored.

2 Samuel 16:11. David:

> "Behold (**hine**): my son, who came forth from my body, seeketh my life [still, I do not react];

> how much more (**af**): in the case of (*ki*) this Benjamite now [who is less close], and curseth [me], then (*ve*) should I let him alone; for the Lord has bidden him."

Here, the argument is signaled by **hine/af**. The premise is a conditional proposition without any explicit operator, and with a tacit consequent implied by the conclusion. The conclusion takes the *ki* of the expression *ve af ki* as if-operator and, we might say, its *ve* as then-operator. But more precisely, the conclusion, having an explicit consequent, can do without the *ve* conjunction, which rather serves to imply the tacit consequent of the premise.

As for the phrase 'for the Lord has bidden him,' its function is to strengthen the bonds between antecedent and consequent in the premise and the conclusion; for neither of these bonds is naturally automatic, but they proceed

from a volitional choice by David. One might well object
that the leeway a king's son may be granted is not
applicable to a mere subject like Shimei (the Benjamite in
question); in that case, David's argument seems weak: at
worst concealing passivity or fatalism, at best mercifulness
in time of trouble. For this reason, David has to explain
himself, clarify his motivation, and point to his general
attitude of acceptance of God's will. Once the if/then bonds
are thus firmed, the *qal vachomer* as such can proceed more
credibly.

1 Kings 8:27 and 2 Chronicles 6:18. Solomon:

> "Behold (***hine***), heaven and the heaven of heavens
> cannot contain thee;
>
> how much less (***af***): in the case of (*ki*) this house
> that I have builded, will (*ki*) God in very truth dwell
> on the earth [i.e. be contained in this house]?"

Here, the a fortiori is expressed through ***hine/af***. The
premise is categorical in form, needing no operators; and
the conclusion uses the operator *ki* for both its antecedent
and consequent, the former deriving from the expression *af
ki*, and the latter being stated in the original text even before
the premise, together with the consequent of the conclusion
(which is here properly moved to last place).

2 Kings 5:13. Naaman's servants:

> "Granting (***ki***): had the prophet bid thee do some
> great thing, wouldest thou not (*halo*) have done it?
>
> how much rather (***af***): he [merely] saith to thee:
> wash and be clean? then (*ve*) [you should do it]"

In this argument, ***ki*** and ***af*** might be taken from the key
phrase *ve af ki* as the if- and then- operators of the a fortiori
argument as a whole. The premise is a conditional
proposition, bare of any explicit operators (though

containing the rhetorical expression *halo*). The conclusion consists of an explicit antecedent with a tacit if-operator, and a tacit consequent implied by the explicit *ve* in the key phrase. (This interpretation is open to debate: one might equally have regarded the *ki* as if-operator of the conclusion, or of the premise; or it might be viewed as playing a triple role. See also Prov. 15:11 below.)

2 Kings 10:4. The rulers of Jezreel in Samaria:

"Behold (***hine***): the two kings [Joram and Ahaziah, who were powerful men], stood not before him [Jehu];

then (***ve***): [we, who are relatively weak,] how (*ekh*) shall we stand [before him]?"

In this case, the a fortiori is signaled by ***hine/ve***. The premise and conclusion have no explicit operators, because, though explicitly categorical, they are implicitly of conditional form. *Dayo* principle obeyed.

4.   In other books

Job 4:18-19. Eliphaz the Temanite:

"Behold (***hen***): He puts no trust in His servants, and (*u*) His angels he charges with folly;

how much more (***af***): those who dwell in houses of clay, whose foundation is in the dust [does He distrust and charge with folly]?"

Job 15:15-16. Eliphaz the Temanite:

> "Behold (*hen*): He puts no trust in His holy ones; and (*ve*) the heavens are not clean in His sight.
>
> How much less (*af*): one who (*ki*) is abominable and filthy, man, who drinks iniquity like water [does He trust or consider clean]!"

Job 25:5-6. Bildad the Shuhite:

> "Behold (*hen*): even the moon has no brightness, and (*ve*) the stars are not pure in His sight;
>
> how much less (*af*): man, that (*ki*) is a worm [is bright and pure in His sight]?"

In Job, we find three a fortiori arguments with very similar wording and significance, namely that man cannot judge God, being infinitely morally inferior to Him. In each case, the operators of the argument are **hen/af**. The latter two cases involve the expression *af ki*; whereas the first case has *af* without *ki*, which proves incidentally that the word *af* can be used independently of *ki*.

Psalms 78:20. Asaph:

> "Behold (*hen*): He struck a rock, then (*ve*) waters flowed and (*u*) streams burst forth.
>
> In that case (*gam*): bread He can give; is there any doubt that (*im*): He will prepare meat for His people?"

The if-operator of argument is **hen**, and **gam** and **im** seem to be its then-operators. The premise is a conditional proposition, without if-operator, though with *ve* as then-operator to a compound consequent. The conclusion is double, a compound of categoricals. The implicit major premise has to be, for a fortiori purposes, that it is just as hard (or harder) to get water from a rock as (or than) to provide bread and meat. Incidentally, 'Asaph' probably

refers to the Levite serving in the Temple during David's reign, mentioned in 1 Chron. 16:7.

Psalms 94:9-10. Moshe:

> "He who implanted the ear, does He not (*halo*) hear?"

> "If (***im***) He formed the eye, does He not (*halo*) see?"

> "He who chastises nations, does He not (*halo*) reprove [the individual]?"

Here, we have three distinct *qal vachomer* arguments, with the same thrust (in each case, the conclusion is something easier to do than the premise[62]). One of them has ***im*** as if-operator, but two of them have no if-operator; and none of them has a then-operator, though all three use instead the rhetorical expression *halo*.

Proverbs 11:31. Solomon:

> "Behold (***hen***): the just man shall be recompensed on earth:

> how much more (***af***): the wicked and the sinner, so (***ki***) [i.e. shall be recompensed on earth]."

This statement is a fortiori only if 'recompense' is interpreted negatively as in "if the just man (who has few sins) will be *punished* here on earth, all the more will the wicked and the sinner (who has many sins) be so *punished*" (this being 'minor to major' positive subjectal, valid). If 'recompense' were interpreted positively, the statement would not constitute a valid a fortiori (being 'major to

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62   However, the truth of the first two propositions is open to doubt. This is made evident if we apply similar reasoning to humans and say "he who designs an airplane, can he not fly?".

minor' positive subjectal); but would needs be read as a mere conjunctive statement "the righteous (who has much credit) will be *rewarded* here on earth, and even the wicked and the sinner (who has little credit) will be so *rewarded*."

Judging by its use elsewhere, the language (**hen/af**) favors the former alternative, namely the statement's interpretation as an a fortiori. The word *ki* here serves to signal the tacit predicate of the conclusion (added in brackets), equating it to that of the premise.

People prone to theodicy (like Jeremiah: 'wherefore doth the way of the wicked prosper?' etc.) would tend to doubt the empirical veracity of this statement, however interpreted; but one can always argue back that only God really knows men's deepest motives (as the next argument indeed affirms) and the relative values of all their deeds, and therefore His empirically apparent judgments might well be fully justified, however contrary to our expectations. The rebuttal is perhaps too simplistic, which is why appeal by theologians to a fuller accounting including life after death (and for some, previous lives) is usual.

Indeed, we find the Malbim (R. Meir Leibush ben Yechiel Michael, Rumania, 19th Cent. CE), with reference to this verse, commenting that while the righteous man tends to be made to pay for his sins in this world and to be paid for his good deeds in the next, the wicked man reaps his rewards in this world and is deprived in the next[63]. However, while this may well be true, I wonder whether it is logically implicit in the proverb under scrutiny. For, note well, the minor premise specifies recompense *on earth*, in which case *by the* dayo *(sufficiency) principle* the conclusion must similarly be limited. As far as I can see, we cannot strictly,

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63   P. 119.

without illicit process, extrapolate further, to a world beyond.

I want to add, here, that I have all too often noticed similar breaches of the sufficiency principle in other Talmudic and Rabbinic commentaries.

Proverbs 15:11. Solomon:

> "If (*ki*): hell and destruction are before the Lord;
>
> how much more (*af*): the hearts of the children of men [are before the Lord]?"

Here, the premise is apparently not signaled by an if-operator, while the conclusion is signaled by the word *af*; but since both propositions are categorical (the latter with an explicit subject and an implicit predicate), the word *ki*, which is normally an operator, would be redundant if viewed as part of the conclusion: it must therefore be viewed as the missing if-operator of the argument, more rightfully placed before the premise. (Alternatively, the argument might have been viewed as lacking an explicit if-operator, and *ki* as referring us to the absent predicate of the conclusion; or *ki* might have both functions. But see the next case.)

Malbim correctly construes this a fortiori argument's implicit major premise, when he states: "The netherworld is far deeper, far more beyond sight and ken, than the human heart..."[64]. The inductive proof of this statement would be that most of us know a bit about the human heart and nothing at all for sure about the netherworld. Still, I want to make a general comment in this context, which I think is important.

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64   Ibid., p. 159.

While the *logical form* in which the verse under consideration is cast is indubitably a fortiori, it cannot really be viewed as instructing a deductive process. Deduction, viewed very strictly, is inference from more-known contents to the less-known. In the case of our verse, the minor premise cannot be said to be *known by us*; rather, it, as well as the conclusion, are being simultaneously taught to us, presumably as Divinely-inspired. None of us non-prophets can claim to know what it is that God knows; at best, we have a general assumption that God knows everything, under which all particular statements made (whether or not logically ordered, relatively to each other, as premises or conclusions) are equally subsumed, in which case the inference involved is essentially syllogistic.

We must thus view the whole verse as simply (from a logical point of view) a statement - that God will judge us, with full knowledge of our most inner thoughts, and may well send us to hell and perdition. The purpose of this statement is not maieutic, though outwardly cast in such form, but more practically homiletic, a warning to the unconverted or a reminder and encouragement to the converted: namely, that there will be a final judgment, etc. Religious literature, Jewish or otherwise, often indulges in such rhetorical techniques, giving preachments a maieutic appearance.

Proverbs 19:7. Solomon:

> "If (*ki*): all the brethren of the poor do hate him,
>
> how much more (*af*): do his friends go far from him?"

Same operators *ki/af* as in the previous case, for the same reasons. Note, however, that here the word *ki* has no other possible role to play, than the one we have here assigned to it, since the propositions are not only categorical, but

wholly explicit; this justifies the similar position we took in previous such cases.

With regard to the content: one might point out that sometimes friends or even strangers will stand by you more than family. At least outwardly - in truth, their motive may not always be disinterested love for you, but for instances a desire to bind you to them out of gratitude, so they may use you in the future, or simply a role-play to satisfy their ego or to impress their peers with their charity or to effect a commercial transaction with God.

Proverbs 19:10. Solomon:

> "If (*ki*): for a fool to have luxury is not seemly;
>
> how much less (*af*): for a servant to have rule over princes [would be seemly]."

Same language and logical structure as in the previous case. Note, however, that the *relation* between the premise and conclusion is a bit hard to find here; perhaps it is merely aesthetic: just as the delight of a fool strikes us as distasteful, so the sight of a lowly man having power over his betters disturbs our sense of fitness. Supposedly, anyway, this is not a statement of intellectual arrogance, or worse still of aristocratic prejudice, but of moral concern (the joy of an unintelligent person is not *per se* ugly; and some 'princes' would certainly deserve to be ruled by their 'servants').

Looking further into the matter, I found a very interesting comment by Malbim, which convincingly elucidates the premise-conclusion relation. He points out that the fool is one who lets his soul be ruled by his body (in the pursuit of pleasure) - so viewing the minor premise, the reference to princes and servant in the conclusion becomes less of a

non-sequitur[65]. However, in that case, premise and conclusion become two metaphors for the same thing, and the verse becomes a mere reformulation of the same statement, rather than an a fortiori argument. Perhaps we should focus on the question, why the reference to one 'servant' and many 'princes'? This would bring us back to the more socio-political interpretation of the conclusion.

Proverbs 21:27. Solomon:

"If (*ki*): [even brought with a 'sincere' intent] the sacrifice of the wicked is an abomination;

how much more (*af*): brought with a wicked intent [is it abomination]?"

In this case, as before, the key phrase *af ki* provides us with the if/then operators *ki/af*. Note in the above statement how the first part of the premise and the second part of the conclusion were both tacit, but could be readily verbalized by imitation of each other's explicit parts - a sort of 'mirror effect'. It is obvious that the premise could not be an unqualified generality free of the clause we added to it, because then the conclusion would be included in it and redundant; as for the conclusion, it would clearly be incomplete and inexplicable without the clause we added to it, which also shows up its a fortiori relation to the premise. Thus, though the given propositions seem categorical, they are implicitly conditional, one with a tacit antecedent, the other with a tacit consequent. They are formulated with a maximum economy of words, yet because of their symmetry none of the message is lost.

Jeremiah 12:5. God:

> "If (*ki*): thou hast run with the footmen and (*ve*) they have wearied thee,
>
> then (*ve*): how (*ekh*) canst thou contend with horses [and not be wearied]?
>
> and if (*u*): in the land of peace, thou dost [hardly] feel secure;
>
> then (*ve*): in the wild country of the Jordan, how (*ekh*) wilt thou do [feel secure]?"

These are two a fortiori with the same thrust. The if/then operators of these arguments are respectively ***ki/ve*** and ***u/ve***, though in the latter case the *u* (=*ve*) conjoins and equates the two arguments and could thus be viewed as standing in for a tacit *ki*. Note that in the first argument, the premise is a conditional proposition without if-operator, though with *ve* as then-operator, and the conclusion has similar form though partly tacit. In the second case, the premise and conclusion are likewise conditional, though all their operators are tacit. In both cases, *ekh* is used rhetorically, as usual, to deny the ironically suggested strength or security.

Ezekiel 15:5. God:

> "Behold (***hine***): when (*be*) it was whole, it was not meet for any work;
>
> how much less (***af***): when (*ki*) the fire hath devoured it and (*ve*) it is burned, shall it then (*ve*) yet be meet for any work?"

Here, the operators of the argument as a whole are ***hine/af***. The premise is a conditional with *be* as if-operator, and no explicit then-operator; and the conclusion is a conditional proposition (with a conjunctive antecedent, accounting for the first *ve*, incidentally), whose operators are *ki/ve*.

Daniel 2:9. Nebuchadnezzar:

> "Thus (*lahen*): tell me the dream,
>
> and (*ve*): I shall know that you can declare its interpretation to me."

Here, the king's utterance is not in itself a *qal vachomer* argument, strictly-speaking (since the first statement is an order, not an item of information), but it testifies to an underlying thought-process which is *qal vachomer* in form. The argument is obviously 'if my advisors are capable of telling me what the dream was, then they are skilled enough to tell me what it means.' For this reason, an if-operator is lacking, though we may take it to be **lahen** (cognate to the by now familiar *hen*), since this is the word the king uses to express his precondition; likewise, we may consider **ve** as the then-operator of the argument, though in the king's statement it refers to the mental consequence in him of the satisfaction of the precondition he set.

5.   Rejects

Finally, some comments concerning cases which might superficially be interpreted as a fortiori, but which on closer scrutiny fail to make the grade for one reason or another.

Concerning 2 Chronicles 32:15. Sennacherib, king of Assyria (through his messengers) says:

> "For (*ki*): no god of any nation or kingdom was able to deliver his people out of my hand, and out of the hand of my fathers;
>
> likewise (*af*): therefore (*ki*), shall your God not be able to deliver you out of my hand."

The first statement is based on enumeration of past Assyrian experience; the second statement is an application

of the same predicate to a new subject, Judah's God. The argument is therefore essentially inductive, going from the relatively particular to greater generality, and then back down by subsumption (eduction or syllogism) to the new case. It is not an a fortiori argument; to have this form, the argument would need as major premise a statement that some of the gods of the already defeated nations were superior in power to the God of Judah, and no such statement seems even implied here.

Yet the argument gives an impression of being a fortiori, because it uses the characteristic *af ki* terminology (actually, this sentence uses the word *ki* twice, once redundantly, with intent to stress that an inference is involved). Perhaps the speaker wanted to give it more force, to scare his audience into submission. Note that a bit further on, in verse 17, essentially the same statement is repeated using another terminology, *ken/lo*; but there the style is clearly not a fortiori.

Note also: 2 Kings 18:23-24, and its repetition in Isaiah 36:8-9, might at first glance be construed as a fortiori in style. But try as I might, I have not been able to make a clear a fortiori argument out of it, however artificial and logically improbable. If we suppose the speaker is arguing: 'Even if I give you two thousand horses, you would not be able to set riders upon them; how then (*ve-ekh*) can you hope to defeat even the least of my master's captains?' - we are hard put to explain the rest of the statement about 'trusting in Egypt for chariots and for horsemen.' The text is unclear, even viewed simply.

Lastly, with regard to Esther 9:12. Ahasuerus says:

> "In (*be*) Shushan the capital, The Jews have slain and destroyed five hundred men and the ten sons of Haman;
>
> in (*be*) the rest of the king's provinces, what (**meh**) have they done?"

This is one of the ten *qal vachomer* arguments recognized by *Genesis Rabbah*. As the Rabbis see it (thus for instance, I read somewhere, does Malbim on the basis of the Talmud), the king was surprised and angry that Esther's People, the Jews, had been so threatened that at least 500 anti-Semites were found; this viewpoint would help explain why the king next asks Esther what else she requests of him (he was concerned, he evidently felt somewhat responsible).

But frankly I have some doubts as to the sentence's status as a *qal vachomer* argument. For a start, its language is *sui generis*: I have not found another a fortiori signaled by the word **meh**. This in itself is not proof, of course, for the linguistic habits of that place and time may have been distinctive (and I may well have missed other cases). And indeed, one can easily imagine the statement (perhaps accompanied by an up and down wave of his open hand[66] and an emphasis on the *mah*) as signifying that the king expected more people to have been killed in the rest of the kingdom. We of course know from verse 16 that in fact as many as 75,000 were killed elsewhere.

But the problem is not the king's expectations, but whether *an argument* (and specifically *an a fortiori*) was at all formulated (let alone, whether or not correctly). Given the premise, one could reasonably equally well expect that less

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66   This is not just a quaint Israeli gesture, but in my view signifies the act of weighing, whence 'how much?!'

people were killed elsewhere. One can as well conceive that most of the Jews' enemies were in the capital, as conceive that they were proportionately (or even more) frequent in the rest of the empire, according to our view of the sociological profile of anti-Semites. Thus, the king's question may well have been no more than an open question; and indeed, there is no indication within the text that his statement was other than a simple statement of amazement and curiosity.[67]

6.   Addendum (2005)

One More Example of A-Fortiori in the Tanakh[68]. An acquaintance of mine and reader of *Judaic Logic*, Mark Leroux, has in 2001 rightly pointed out to me an additional a fortiori argument in the Bible, in 1 Samuel 17:37. The passage reads[69]:

> "And David said, 'The Lord who saved me from the paw of the lion and the paw of the bear, He will save me from the hand of the Philistine'"

Although this statement is not per se an argument, but has an assertoric form (that of a blunt statement of fact), David's underlying thought-process is indeed *kal va-chomer* (we encountered a similar situation above, with reference to Daniel 2:9). I easily constructed a positive

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67   I have by chance found (this is June 1998) yet another a fortiori: Jonah 4:10-11, which goes to show, as I asserted earlier, that there are probably still more cases than those indicated thus far. This argument is uttered by the Lord, who says: "Thou art concerned about the castor oil plant, for which thou hast not laboured..., and should I not be concerned for Nineve, ..." The expression *vaani lo* (and should I not) is obviously similar in function to *halo*.

68   Addendum 4 of JL.

69   New York: Judaica Press, 1976.

predicatal a fortiori reflecting this thought-process, by proposing an appropriate middle term (say, *favoring by God*):

> "God must favor (R) someone at least as much to deliver him from big wild animals (P) as to deliver him from big seasoned warriors (Q); David (S) was favored by God (R) enough to be delivered from a lion and a bear (P); therefore, David (S) will be favored by God (R) enough to be delivered from Goliath (Q).

Notice that I used the egalitarian form of a fortiori (major premise with "*as much as*"), which suffices to make the point without too much assumption. But Mark Leroux suggested a bolder, and finally more convincing, interpretation to me.

He pointed out that the lion and bear were innocent animals, merely attempting to feed themselves, and yet God favored David over them. In contrast, the Philistine was a willful enemy of His people, so God had *all the more* reason to favor David over him.

In other words, David's argument could be cast as "If God gave me victory over innocent beasts obeying their natural impulses, he will surely give me victory over a rebellious brute out to upset God's plans." The result is the same, but the argument is more forceful.

Finally, looking at the Hebrew version, we note first that it contains no logical operators (such as *ki*); but this does not detract from its being an argument, as we have seen in many previous cases. Furthermore, it contains no keyword (such as *ve-ekh* or *halo*), let alone a novel one which might have helped us to discover yet other, similar cases through a concordance.

I want to underline here that Biblical a fortiori arguments usually require interpretation, in that they involve tacit elements, usually the major premise at least. This can also

be illustrated with reference to the following two cases (paraphrased).

In 2 Samuel 4:10-11, David states that if he sentenced to death the man who brought him tidings of Saul's death (whom the man claimed to have killed at the wounded Saul's own request, as narrated in 2 Samuel 1), how much more will he so deal with the two men who brought him tidings of Ish-Bosheth's death (whom they had murdered in his bed). The major premise of the argument being that the latter crime was greater than the former, either because of the circumstances or because of the comparative innocence of the victim.

Similarly, in 2 Samuel 16:11, David states that considering that his own son, Absalom, was seeking his life, how much more could one expect Shimei, a Benjamite supporter of the late Saul, to express opposition to David. Here, the major premise would be that Shimei compared to Absolom either had a better pretext for his actions or that they were less dangerous.

6.   MIRIAM'S A FORTIORI ARGUMENT

*Drawn from.*A Fortiori Logic *(2013), chapter 7:2,4*
(parts).

The a fortiori argument made by Miriam, the sister of
Moses, in Numbers 12:14-15, plays an important role in
rabbinical discussions relating to such arguments, notably
in the Gemara (the commentary on the Mishna). For this
reason, I have had to analyze it in considerable detail.

1. Formal validation of a fortiori argument

The paradigm of a fortiori argument, the simplest and most
commonly used form of it, is the positive subjectal mood[70],
in which the major and minor terms (here always labeled P
and Q, respectively) are subjects and the middle and
subsidiary terms (here always labeled R and S,
respectively) are predicates. It proceeds as follows[71]:

  P is R more than Q is R (major premise).

  Q is R enough to be S (minor premise).

  Therefore, P is R enough to be S (conclusion).

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70   Note in passing: the Hebrew name of a fortiori argument,
viz. *qal vachomer* (i.e. 'minor and major', suggesting minor *to*
major, since the word 'minor' precedes the word 'major'), is
indicative that the rabbis likewise viewed this mood as the
primary and most typical one. Otherwise, they might have called
it *chomer veqal*!

71   I leave out *a pari* or egalitarian a fortiori argument here
for the sake of simplicity. This has been mentioned and dealt
with in an earlier chapter (1). But briefly put, this deals with cases
where Rp = Rq.

An example of such argument would be: "*If her father had but spit in her face, should she not hide in shame seven days? Let her be shut up without the camp seven days, and after that she shall be brought in again.*" (Num. 12:14). This can be read as: if offending one's father (Q) is bad (R) enough to deserve seven days isolation (S), then surely offending God (P) is bad (R) enough to deserve seven days isolation (S); the tacit major premise being: offending God (P) is worse (R) than offending one's father (Q).

This form of argument can be logically validated (briefly put) as follows. The major premise tells us that P and Q are both R, though to different measures or degrees. Let us suppose the measure or degree of R in P is Rp and that of R in Q is Rq – then the major premise tells us that: if P then Rp, and if Q then Rp, and Rp is greater than Rq (which in turn implies: if something is Rp then it is also Rq, since a larger number includes all numbers below it[72]). Similarly, the minor premise tells us that nothing can be S unless it has at least a certain measure or degree of R, call it Rs; this can be stated more formally as: if Rs then S and if not Rs then not S. Obviously, since Q is R, Q has the quantity Rq of R, i.e. if Q, then Rq; but here we learn additionally (from the "enough" clause) that Rq is greater than or equal to Rs, so that if Rq then Rs; whence, the minor premise tells us that if Q then S. The putative conclusion simply brings some of the preceding elements together in a new compound proposition, namely: if P then Rp (from the major premise) and if Rs then S and if not Rs then not S (from the minor premise), and Rp is greater than Rs (since Rp > Rq in the major premise and Rq ≥ Rs in the minor premise), so that if Rp then Rs; whence, if P then S. The

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72   This is known as the Talmudic rule of *bichlal maasaim maneh*, although I do not know who first formulated it, nor when and where he did so.

conclusion is thus proved by the two premises (together, not separately, as you can see). So, the argument as a whole is valid – i.e. *it cannot logically be contested.*

Having thus validated the positive subjectal mood of a fortiori argument, it is easy to validate the negative subjectal mood by *reductio ad absurdum* to the former. That is, keeping the former's major premise: "P is R more than Q is R," and denying its putative conclusion, i.e. saying: "P is R *not* enough to be S," we must now conclude with a denial of its minor premise, i.e. with: "Q is R *not* enough to be S." For, if we did not so conclude the negative argument, we would be denying the validity of the positive argument.

We can similarly demonstrate the validity of the positive, and then the negative, predicatal moods of a fortiori argument. In this form, the major, minor and middle terms (P, Q and R) are predicates and the subsidiary term (S) is a subject.

  More R is required to be P than to be Q (major premise).

  S is R enough to be P (minor premise).

  Therefore, S is R enough to be Q (conclusion).

An example of such argument would be: "*Behold, the money, which we found in our sacks' mouths, we brought back unto thee out of the land of Canaan; how then should we steal out of thy lord's house silver or gold?*" (Gen. 44:8). This can be read as: if we (S) are honest (R) enough to return found valuables (P), then surely we (S) are honest (R) enough to not-steal (Q); the tacit major premise being: more honesty (R) is required to return found valuables (P) than to refrain from stealing (Q).

Here the validation proceeds (again briefly put) as follows. The major premise tells us that iff (i.e. if only if) Rp then P, and iff Rq then Q, and Rp is greater than Rq (whence if Rp then Rq). The minor premise tells us additionally that if S then Rs, and (since it is "enough") Rs is greater than or

equal to Rp (whence if Rs then Rp), from which it follows that if S then Rp; and since iff Rp then P, it follows that if S then P. From the preceding givens, we can construct the putative conclusion, using if S then Rs (from the minor premise), and Rs is greater than Rq (from both premises, whence if Rs then Rq); these together imply if S then Rq, and this together with iff Rq then Q (from the major premise) imply if S then Q. The conclusion is thus here again incontrovertibly proved by the two premises jointly. The negative predicatal mood can in turn be validated, using as before the method of *reductio ad absurdum*. That is, if the major premise remains unchanged and the putative conclusion is denied, then the minor premise will necessarily be denied; but since the minor premise is given and so cannot be denied, it follows that the conclusion cannot be denied.

Notice that the reasoning proceeds from minor to major (i.e. from the minor term (Q) in the minor premise, to the major term (P) in the conclusion) in the positive subjectal mood; from major to minor in the negative subjectal mood; from major to minor in the positive predicatal mood; and from minor to major in the negative predicatal mood. These are valid forms of reasoning. If, on the other hand, we proceeded from major to minor in the positive subjectal mood, from minor to major in the negative subjectal mood; from minor to major in the positive predicatal mood; or from major to minor in the negative predicatal mood – we would be engaged in fallacious reasoning. That is, in the latter four cases, the arguments cannot be validated, and their putative conclusions do not logically follow from their given premises. To reason fallaciously is to invite immediate or eventual contradiction.

Note well that each of the four arguments we have just validated contains only four terms, here labeled P, Q, R, and S. Each of these terms appears two or more times in the argument. P and Q appear in the major premise, and in

either the minor premise or the conclusion. R appears in both premises and in the conclusion. And S appears in the minor premise and in the conclusion. The argument as a whole may be said to be properly constructed if it has one of these four validated forms and it contains *only four terms*. Obviously, if any one (or more) of the terms has even slightly different meanings in its various appearances in the argument, the argument cannot truly be said to be properly constructed. It may give the illusion of being a valid a fortiori, but it is not really one. It is fallacious reasoning.

The above described a fortiori arguments, labeled subjectal or predicatal, relate to terms, and may thus be called 'copulative'. There are similar 'implicational' arguments, which relate to theses instead of terms, and so are labeled antecedental or consequental. To give one example of the latter, a positive antecedental argument might look like this:

Ap (A being p) implies Cr (r in C) more than Bq (B being q) does,

and Bq implies Cr enough for Ds (for D to be s);

therefore, Ap implies Cr enough for Ds.

Notice the use of 'implies' instead of 'is' to correlate the items concerned. I have here presented the theses as explicit propositions 'A is p', 'B is q', 'C is r' and 'D is s', although they could equally well be symbolized simply as P, Q, R, and S, respectively. The rules of inference are essentially the same in implicational argument as in copulative argument.

2.   The principle of deduction

This forewarning concerning *the uniformity throughout an argument of the terms used* may be expressed as a law of logic. It is true not just of a fortiori argument, but of all

deductive argument (for instances, syllogism or apodosis). We can call this fundamental rule 'the principle of deduction', and state it as: *no information may be claimed as a deductive conclusion which is not already given, explicitly or implicitly, in the premise(s)*. This is a very important principle, which helps us avoid fallacious reasoning. It may be viewed as an aspect of the law of identity, since it enjoins us to acknowledge the information we have, as it is, without fanciful additions. It may also be considered as *the fifth law of thought*, to underscore the contrast between it and the principle of induction[73], which is the fourth law of thought.

Deduction must never be confused with induction. In inductive reasoning, the conclusion can indeed contain more information than the premises make available; for instance, when we generalize from some cases to all cases, the conclusion is inductively valid *provided and so long as* no cases are found that belie it. In deductive reasoning, on the other hand, the conclusion must be formally implied by the given premise(s), and no extrapolation from the given data is logically permitted. In induction, the conclusion is tentative, subject to change if additional information is found, *even if* such new data does not contradict the initial premise(s)[74]. In deduction, on the other hand, the

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[73]   In its most general form, this principle may be stated as: what in a given context of information appears to be true, may be taken to be effectively true, unless or until new information is found that puts in doubt the initial appearance. In the latter event, the changed context of information may generate a new appearance as to what is true; or it may result in some uncertainty until additional data comes into play.

[74]   For example, having generalized from "some X are Y" to "all X are Y" – if it is thereafter discovered that "some X are not Y," the premise "some X are Y" is not contradicted, but the

conclusion is sure and immutable, so long as no new data contradicts the initial premise(s).

As regards the terms, if a term used in the conclusion of a deductive argument (such as a fortiori) differs *however slightly* in meaning or in scope from its meaning or scope in a premise, the conclusion is invalid. No equivocation or ambiguity is allowed. No creativity or extrapolation is allowed. If the terms are not exactly identical throughout the argument, it might still have some inductive value, but as regards its deductive value it has none. This rule of logic, then, we shall here refer to as 'the principle of deduction'.

The error of 'proportional' a fortiori argument. An error many people make when attempting to reason a fortiori is to suppose that the subsidiary term (S) is *generally* changed in magnitude in proportion (roughly) to the comparison between the major and minor terms (P and Q). The error of such **'**proportional' a fortiori argument, as we shall henceforth call it, can be formally demonstrated as follows.

Consider the positive subjectal mood we have described above. Suppose instead of arguing as we just did above, we now argue as do the proponents of such fallacious reasoning that: *just as 'P is more R than S' (major premise), so S in the conclusion (which is about P) should be greater than it is in the minor premise (which is about Q)*. If we adhered to this 'reasoning', we would have *two different subsidiary terms*, say S1 for the minor premise and S2 for the conclusion, with S2 > S1, perhaps in the same proportion as P is to Q, or more precisely as the R value for P (Rp) is to the R value for Q (Rq), so that S1 and

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conclusion "all X are Y" is indeed contradicted and must be abandoned.

S2 could be referred to more specifically as Sq and Sp. In that case, our argument would read as follows:

  P is R more than Q is R (major premise).

  Q is R enough to be S1 (minor premise).

  Therefore, P is R enough to be S2 (conclusion).

The problem now is that this argument would be difficult to validate, since it contains *five terms* instead of only four as before. Previously, the value of R sufficient to qualify as S was *the same* (viz. $R \geq Rs$) in the conclusion (for P) as in the minor premise (for Q). Now, we have two threshold values of R for S, say Rs1 (in the minor premise, for Q) and Rs2 (in the conclusion, for P). Clearly, if Rs2 is assumed to be greater than Rs1 (just as Rp is greater than Rq), we cannot conclude that $Rp > Rs2$, for although we still know that $Rp > Rq$ and $Rq \geq Rs1$, we now have: $Rp > Rs1 < Rs2$, so that the relative sizes of Rp and Rs2 remain undecidable. Furthermore, although previously we inferred the "If Rs then S" component of the conclusion from the minor premise, now we have no basis for the "If Rs2 then S2" component of the conclusion, since our minor premise has a different component "If Rs1 then S1" (and the latter proposition certainly does not formally imply the former).[75]

It follows that the desired conclusion "P is R enough to be S2" of the proposed 'proportional' version of a fortiori argument is simply invalid[76]. That is to say, *its putative*

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[75]   Of course, if Rs1 was assumed as greater than Rs2, we would be able to infer that $Rp > Rs2$. But this is not the thrust of those who try to "quantify" a fortiori argument, since the proportion between P and Q would be inversed between Rs1 and Rs2. Moreover, the next objection, viz. that "If Rs2 then S2" cannot be deduced from "If Rs1 then S1," would still be pertinent.

[76]   I put the adjective 'proportional' in inverted commas because the proportion of S2 to S1 is usually not exactly equal

conclusion does not logically follow from its premises. The reason, to repeat, is that we have effectively a *new* term (S2) in the conclusion that is not explicitly or implicitly given in the premises (where only S1 appears, in the minor premise). Yet deduction can never produce *new* information of any sort, as we have already emphasized. Many people find this result unpalatable. They refuse to accept that the subsidiary term S has to remain unchanged in the conclusion. They insist on seeing in a fortiori argument a profitable argument, where the value of S (and the underlying Rs) is greater for P than it is for Q. They want to 'quantify' the argument more thoroughly than the standard version allows.

We can similarly show that 'proportionality' cannot be inferred by positive predicatal a fortiori argument. In such case, the subsidiary term (S) is the subject (instead of the predicate) of the minor premise and conclusion. If that term is different (as S1 and S2) in these two propositions, we again obviously do not have a valid a fortiori argument, since our argument effectively involves five terms instead of four as required. We might have reason to believe or just imagine that the subject (S) is diminished in some sense in proportion to its predicates (greater with P, lesser with Q), but such change real or imagined has nothing to do with the a fortiori argument as such. S may well vary in meaning or scope, but if it does so it is not *due to* a fortiori argument as such. Formal logic teaches generalities, but this does not mean that it teaches uniformity; it allows for variations in particular cases, even as it identifies properties common to all cases.

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to that of P to Q. But whether this expression is intended literally or roughly makes no difference to the invalidity of the argument, note well. If it is invalid when exact, as here demonstrated, then it is all the more so when approximate!

People who believe in 'proportional' a fortiori argument do not grasp the difference between knowledge by a specific deductive means and knowledge by other means. *By purely a fortiori deduction*, we can only conclude that P relates to precisely S, just as Q relates to S in the minor premise. But this does not exclude the possibility that *by other means*, such as observation or induction, or even a subsequent deductive act, we may find out and prove that the value of S relative to Q (S1) and the value of S relative to P (S2) are different. If it so happens that we *separately* know for a fact that S varies in proportion to the comparison of P and Q through R, we can *after* the a fortiori deduction *further process* its conclusion in accord with such additional knowledge[77]. But we cannot claim such further process as part and parcel of the a fortiori argument as such – it simply is not, as already demonstrated in quite formal terms.

Formal logic cuts up our long chains of reasoning into distinguishable units – called arguments – each of which has a particular logic, particular rules it has to abide by. Syllogism has certain rules, a fortiori argument has certain rules, generalization has certain rules, adduction has certain rules, and so on. When such arguments, whether deductive or inductive, and of whatever diverse forms, are joined together to constitute a chain of reasoning (the

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[77] A neutral example would be: suppose we know that product A is more expensive than product B; knowing a certain quantity of product B to cost $1000, we could only predict by purely a fortiori argument that the same quantity of product A will cost 'at least $1000'. But this would not prevent us from looking at a price list and finding the actual price of that quantity of product A to be $1250. However, such price adjustment would be an *after the fact* calculation based on the price list rates, and not an inference based on the a fortiori argument. In fact, once we obtained the price list we would not need the a fortiori argument at all.

technical term for which is *enthymeme*), it may look like the final conclusion is the product of all preceding stages, but in fact it is the product of only the last stage. Each stage has its own conclusion, which then becomes a premise in the next stage. The stages never blend, but remain logically distinct. In this way, we can clearly distinguish the conclusion of a purely a fortiori argument from that of any other argument that may be constructed subsequently using the a fortiori conclusion as a premise.

Some of the people who believe that a fortiori argument yields a 'proportional' conclusion are misled by the wording of such conclusion. We say: "since so and so, therefore, *all the more*, this and that." The expression "all the more" seems to imply that the conclusion (if it concerns the major term) is *quantitatively more* than the minor premise (concerning the minor term). Otherwise, what is "more" about it? But the fact is, we use that expression in cases of major to minor, as well as minor to major. Although we can say "how much more" and "how much less," we rarely use the expression "all the less"[78] to balance "all the more" – the latter is usually used in both contexts. Thus, "all the more" is rather perhaps to be viewed as a statement that the conclusion is *more certain* than the minor premise[79]. But even though this is often our intention, it is not logically correct. In truth, the conclusion is always (if valid) *as* certain as the minor premise, neither more nor less. Therefore, we should not take this expression "all the more" too literally – it in fact adds nothing to the usual signals of conclusion like "therefore" or "so." It is just rhetorical emphasis, or a signal that the form of reasoning is 'a fortiori'.

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78   Not to be confused with "none the less".

79   This is evident in the Latin expression *a fortiori ratione*, meaning 'with stronger reason'.

3.   The argument *a crescendo*

Although 'proportional' a fortiori argument is not formally valid, it is in truth *sometimes* valid. It is valid under certain conditions, which we will now proceed to specify. When these conditions are indeed satisfied, we should (I suggest) name the argument differently, and rather speak of 'a crescendo' argument'[80], so as to distinguish it from strict 'a fortiori' argument. We could also say (based on the common form of the conclusions of both arguments) that 'a crescendo' argument is a particular type of a fortiori argument, to be contrasted to the 'purely a fortiori' species of a fortiori argument. More precisely, a crescendo argument is *a compound* of strictly a fortiori argument and 'pro rata' argument. It combines premises of both arguments, to yield a special, 'proportional' conclusion.

The **positive subjectal** mood of a crescendo argument has three premises and five terms:

P is more R than Q is R (major premise);

and Q is R enough to be Sq (minor premise);

and S varies in proportion to R (additional premise).

Therefore, P is R enough to be Sp (a crescendo conclusion).

The 'additional premise' tells us there is proportionality between S and R. Note that the subsidiary term (Sp) in the conclusion differs from that (Sq) given in the minor premise, although they are two measures or degrees of one thing (S). This mood can be validated as follows:

The purely a fortiori element is:

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80   The term is of Italian origin, and used in musicology to denote gradual increase in volume.

P is more R than Q is R,

and Q is R enough to be Sq.

(Therefore, P is R enough to be Sq.)

To this must be added on the pro rata element:

Moreover, if we are given that S varies in direct proportion to R, then:

since the above minor premise implies that: if $R = Rq$, then $S = Sq$,

it follows that: if $R = $ more than $Rq = Rp$, then $S = $ more than $Sq = Sp$.

Whence the a crescendo conclusion is:

Therefore, P is R enough to be Sp.

If the proportion of S to R is direct, then $Sp > Sq$; but if S is inversely proportional to R, then $Sp < Sq$. The **negative** subjectal mood is similar, having the same major and additional premise, except that it has as minor premise "P is R not enough to be Sp" and as a crescendo conclusion "Q is R not enough to be Sq."

The **positive predicatal** mood of a crescendo argument has three premises and five terms:

More R is required to be P than to be Q (major premise);

and Sp is R enough to be P (minor premise);

and S varies in proportion to R (additional premise).

Therefore, Sq is R enough to be Q (a crescendo conclusion).

As before, the 'additional premise' tells us there is proportionality between S and R. Note that the subsidiary term (Sq) in the conclusion differs from that (Sp) given in the minor premise, although they are two measures or degrees of one thing (S). This mood can be validated as follows:

The purely a fortiori element is:

More R is required to be P than to be Q,

and Sp is R enough to be P.

(Therefore, Sp is R enough to be Q.)

To this must be added on the pro rata element:

Moreover, if we are given that R varies in direct proportion to S, then:

since the above minor premise implies that: if S = Sp, then R = Rp,

it follows that: if S = less than Sp = Sq, then R = less than Rp = Rq.

Whence the a crescendo conclusion is:

therefore, Sq is R enough to be Q.

If the proportion of R to S is direct, then Rq < Rp; but if R inversely proportional to S, then Rq > Rp. The **negative** predicatal mood is similar, having the same major and additional premise, except that it has as minor premise "Sq is R not enough to be Q" and as a crescendo conclusion "Sp is R not enough to be P."

In practice, we are more likely to encounter subjectal than predicatal a crescendo arguments, since the subsidiary terms in the former are predicates, whereas those in the latter are subjects, and subjects are difficult to quantify. We can similarly construct four implicational moods of a crescendo argument, although things get more complicated in such cases, because it is not really the middle and subsidiary theses which are being compared but terms within them. These matters are dealt with more thoroughly in earlier chapters [of AFL], and therefore will not be treated here.

From this formal presentation, we see that purely a fortiori argument and a crescendo argument are quite distinct forms of reasoning. The latter has the same premises as the former, *plus* an additional premise about proportion, which makes possible the 'proportional' conclusion. Without the

said 'additional premise', i.e. with only the two premises (the major and the minor) of a fortiori argument, we cannot legitimately draw the a crescendo conclusion.

Thus, people who claim to draw a 'proportional' conclusion from merely a fortiori premises are engaged in fallacy. They are of course justified to do so, if they explicitly acknowledge, or at least tacitly have in mind, the required additional premise about proportion. But if they are unaware of the need for such additional information, they are definitely reasoning incorrectly. The issue here is not one of names, i.e. whether an argument is called a fortiori or a crescendo or whatever, but one of information on which the inference is based.

To summarize: Formal logic can indubitably validate properly constructed a fortiori argument. The concluding predication (more precisely, the subsidiary item, S) in such cases is identical to that given in the minor premise. It is not some larger or lesser quantity, reflecting the direct or inverse proportion between the major and minor items. Such 'proportional' conclusion is formally invalid, if all it is based on are the *two* premises of a fortiori argument. To draw an a crescendo conclusion, it is necessary to have *an additional* premise regarding proportionality between the subsidiary and middle items.

4.   The rabbis' *dayo* (sufficiency) principle

It is evident from what we have just seen and said that there is no formal need for a "*dayo* (sufficiency) principle" to justify a fortiori argument as distinct from a crescendo argument. It is incorrect to conceive, as some commentators do (notably the Gemara, as we shall see [in AFL]), a fortiori argument as a crescendo argument artificially circumvented by the *dayo* principle; for this would imply that the natural conclusion from the two

premises of a fortiori is a crescendo, whereas the truth is that a fortiori premises can only logically yield an a fortiori conclusion. The rule to adopt is that to draw an a crescendo conclusion an additional (i.e. third) premise about proportionality is needed – it is *not* that proportionality may be assumed (from two premises) unless the proportionality is specifically denied by a *dayo* objection.

In fact, the *dayo* principle can conceivably 'artificially' (i.e. by Divine fiat or rabbinic convention) restrain only a crescendo argument. In such case, the additional premise about proportion is disregarded, and the conclusion is limited to its a fortiori dimension (where the subsidiary term is identical in the minor premise and conclusion) and denied its a crescendo dimension (where the subsidiary term is greater or lesser in the minor premise than in the conclusion). Obviously, if the premise about proportionality is a natural fact, it cannot logically ever be disregarded; but if that premise is already 'artificial' (i.e. a Divine fiat or rabbinic convention), then it can indeed conceivably be disregarded in selected cases. For example, though reward and punishment are usually subject to the principle of 'measure for measure', the strict justice of that law might conceivably be discarded in exceptional circumstances in the interest of mercy, and the reward might be greater than it anticipates or the punishment less than it anticipates.

Some commentators (for instance, Maccoby) have equated the *dayo* principle to the principle of deduction. However, this is inaccurate, for several reasons. For a start, according to logic, as we have seen, an a fortiori argument whose conclusion can be formally validated is necessarily in accord with the principle of deduction. In truth, there is no need to refer to the principle of deduction in order to validate the conclusion – the conclusion is validated by formal means, and the principle of deduction is just an ex post facto observation, a statement of something found in

common to all valid arguments. Although useful as a philosophical abstraction and as a teaching tool, it is not necessary for validation purposes.

Nevertheless, if a conclusion was found not to be in accord with the principle of deduction, it could of course be forthwith declared invalid. For the principle of deduction is also reasonable by itself: we obviously cannot produce new information by purely rational means; we must needs get that information from somewhere else, either by deduction from some already established premise(s) or by induction from some empirical data or, perhaps, by more mystical means like revelation, prophecy or meditative insight. So obvious is this caveat that we do not really need to express it as a maxim, though there is no harm in doing so.

For the science of logic, and more broadly for epistemology and ontology, then, a fortiori argument and the 'limitation' set upon it by the principle of deduction are (abstract) natural phenomena. The emphasis here is on the word natural. They are neither Divinely-ordained (except insofar as all natural phenomena may be considered by believers to be Divine creations), nor imposed by individual or collective authority, whether religious or secular, rabbinical or academic, nor commonly agreed artificial constructs or arbitrary choices. They are universal rational insights, apodictic tools of pure reason, in accord with the 'laws of thought' which serve to optimize our knowledge.

The first three of these laws are that we *admit facts as they are* (the law of identity), *in a consistent manner* (the law of non-contradiction) *and without leaving out relevant data pro or con* (the law of the excluded middle); the fourth is the principle of induction and the fifth is that of deduction.

To repeat: for logic as an independent and impartial scientific enterprise, there is no ambiguity or doubt that an a fortiori argument that is indeed properly constructed, with a conclusion that exactly mirrors the minor premise, is valid reasoning. Given its two premises, its (non-'proportional') conclusion follows of necessity; that is to say, if the two premises are admitted as true, the said conclusion must also be admitted as true. Moreover, to obtain an a crescendo conclusion additional information is required; without such information a 'proportional' conclusion would be fallacious. A principle of deduction can be formulated to remind people that such new information is not producible *ex nihilo*; but such a principle is not really needed by the cognoscenti.

This may all seem obvious to many people, but Talmudists or students of the Talmud trained exclusively in the traditional manner may not be aware of it. That is why it was necessary for us here to first clarify the purely logical issues, before we take a look at what the Talmud says. To understand the full significance of what it says and to be able to evaluate its claims, the reader has to have a certain baggage of logical knowledge.

The understanding of *qal vachomer* as a natural phenomenon of logic seems, explicitly or implicitly, accepted by most commentators. Rabbi Adin Steinsaltz, for instance, in his lexicon of Talmudic hermeneutic principles, describes *qal vachomer* as "essentially logical reasoning"[81]. Rabbi J. Immanuel Schochet says it more forcefully: "*Qal vachomer* is a self-evident logical argument"[82]. The equation of the *dayo* principle to the

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81   P. 139. My translation from the French (unfortunately, I only have a French edition on hand at time of writing).

82   In   a   video   lecture   online   at: www.chabad.org/multimedia/media_cdo/aid/1158797/jewish/R

principle of deduction is also adopted by many commentators, especially logicians. For instance, after quoting the rabbinical statement "it is sufficient if the law in respect of the thing inferred be equivalent to that from which it is derived," Ventura writes very explicitly: "We are resting here within the limits of formal logic, according to which the conclusion of a syllogism must not be more extensive than its premises"[83].

However, as we shall discover further on [in AFL], the main reason the proposed equation of the *dayo* principle to the principle of deduction is ill-advised is that it incorrect. There are indeed applications where the *dayo* imperative happens to correspond to the principle of deduction; but there are also applications where the two diverge in meaning. Commentators who thought of them as equal only had the former cases in mind when they did so; when we consider the latter cases, we must admit that the two principles are very different.

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ules-One-and-Two-of-Torah-Elucidation.htm; note, however, that he accepts the Gemara's idea that the argument in Num. 12:14 would logically yield the conclusion of "fourteen days" instead of "seven days," were it not for the *dayo* principle. Another online commentary states: "Unlike a Gezeirah Shavah, the Kal va'Chomer inference need not be received as a tradition from one's teacher, since it is based upon logic;" see this at: www.dafyomi.shemayisrael.co.il/bkama/backgrnd/bk-in-025.htm.

83   In the Appendix to chapter 8 of *Terminologie Logique* (Maimonides' book on logic, p. 77). Ventura is translator and commentator (in French). The translation into English is mine. He is obviously using the word syllogism in a general sense (i.e. as representative of any sort of deduction, not just the syllogistic form).

5.   Analysis of Numbers 12:14-15

[Numbers 12:14-15 is a Torah passage which plays an important role in the Gemara, in Baba Qama 25a, where it is used as an illustration of the rabbinical hermeneutic rule of *qal vachomer* (a fortiori argument) and as a justification of its attendant *dayo* (sufficiency) principle which is formulated in the Mishna BQ 2:5.]

The reason why this Torah passage was specifically focused on by the Gemara should be obvious. This is *the only* a fortiori argument in the whole Tanakh that is both spoken by God and has to do with inferring a penalty for a specific crime. None of the other four a fortiori arguments in the Torah are spoken by God[84]. And of the nine other a fortiori arguments in the Tanakh spoken by God, two do concern punishment for sins but not specifically enough to guide legal judgment[85]. Clearly, the Mishna BQ 2:5 could only be grounded in the Torah through Num. 12:14-15. This passage reads:

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84   One is by Lemekh (Gen. 4:24), one is by Joseph's brothers (Gen. 44:8), and two are by Moses (Ex. 6:12 and Deut. 31:27). The argument by Lemekh could be construed as concerning a penalty, but the speaker is morally reprehensible and his statement is more of a hopeful boast than a reliable legal dictum.

85   The two arguments are in Jeremiah 25:29 and 49:12. The tenor of both is: if the relatively innocent are bad enough to be punished, then the relatively guilty are bad enough to be punished. The other seven a fortiori arguments in the Nakh spoken by God are: Isaiah 66:1, Jer. 12:5 (2 inst.) and 45:4-5, Ezek. 14:13-21 and 15:5, Jonah 4:10-11. Note that, though Ezek. 33:24 is also spoken by God, the (fallacious) argument He describes is not His own – He is merely quoting certain people.

"14. If her father had but spit in her face, should she not hide in shame seven days? Let her be shut up without the camp seven days, and after that she shall be brought in again. 15. And Miriam was shut up without the camp seven days; and the people journeyed not till she was brought in again."

Verse 14 may be construed as a *qal vachomer* as follows:

Causing Divine disapproval (P) is a greater offense (R) than causing paternal disapproval (Q). (Major premise.)

Causing paternal disapproval (Q) is offensive (R) enough to merit isolation for seven days (S). (Minor premise.)

Therefore, causing Divine disapproval (P) is offensive (R) enough to merit isolation for seven days (S). (Conclusion.)

This argument, as I have here rephrased it a bit, is a valid purely a fortiori of the positive subjectal type (minor to major)[86]. Some interpretation on my part was necessary to formulate it in this standard format[87]. I took the image of her father spitting in her face (12:14) as indicative of "paternal disapproval" caused presumably, by analogy to the context, by some hypothetical misbehavior on her

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[86]   Actually, it would be more accurate to classify this argument as positive antecedental, since the predicate S (meriting isolation for seven days) is not applied to Q or P (causing disapproval), but to the subject of the latter (i.e. the person who caused disapproval). That is, causing disapproval *implies* meriting isolation. But I leave things as they are here for simplicity's sake.

[87]   I say 'on my part' to acknowledge responsibility – but of course, much of the present reading is not very original.

part[88]. Nothing is said here about "Divine disapproval;" this too is inferred by me from the context, viz. Miriam being suddenly afflicted with "leprosy" (12:10) by God, visibly angered (12:9) by her speaking ill of Moses (12:1). The latter is her "offense" in the present situation, this term (or another like it) being needed as middle term of the argument.

The major premise, about causing Divine disapproval being a "more serious" offense than causing paternal disapproval, is an interpolation – it is obviously not given in the text. It is constructed in accord with available materials with the express purpose of making possible the inference of the conclusion from the minor premise. The sentence in the minor premise of "isolation" for seven days due to causing paternal disapproval may be inferred from the phrase "should she not hide in shame seven days?" The corresponding sentence in the putative conclusion of "isolation" for seven days due to causing Divine disapproval may be viewed as an inference made possible by a fortiori reasoning.

With regard to the term "isolation," the reason I have chosen it is because it is *the conceptual common ground* between "hiding in shame" and "being shut up without the camp." But a more critical approach would question this term, because "hiding in shame" is a voluntary act that can be done within the camp, whereas "being shut up without the camp" seems to refer to involuntary imprisonment by the authorities outside the camp. If, however, we stick to the significant distinctions between those two

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88   The Hebrew text reads 'and her father, etc.'; the translation to 'if her father, etc.' is, apparently, due to Rashi's interpretation "to indicate that the spitting never actually occurred, but is purely hypothetical" (*Metsudah Chumash* w/Rashi at: www.tachash.org/metsudah/m03n.html#fn342).

consequences, we cannot claim the alleged purely a fortiori argument to be valid. For, according to strict logic, we cannot have more information in the conclusion of a deductive argument (be it a fortiori, syllogistic or whatever) than was already given in its premise(s).

That is to say, although we can, logically, from "hiding in shame" infer "isolation" (since the former is a species the latter), we cannot thereafter from "isolation" infer "being shut up without the camp" (since the former is a genus of the latter). To do so would be illicit process according to the rules of syllogistic reasoning, i.e. it would be fallacious. It follows that the strictly *correct* purely a fortiori conclusion is either specifically "she shall hide in shame seven days" or more generically put "she shall suffer isolation seven days." In any case, then, the sentence "she shall be shut up without the camp seven days" cannot logically be claimed as an a fortiori conclusion, but must be regarded as a *separate and additional* Divine decree that even if she does not voluntarily hide away, she should be made to do so against her will (i.e. imprisoned).

We might of course alternatively claim that the argument is intended as a crescendo rather than purely a fortiori. That is to say, it may be that the conclusion of "she should be shut up without the camp seven days" is indeed *inferred* from the minor premise "she would hide in shame seven days" – in 'proportion' to the severity of the wrongdoing, comparing that against a father and that against God. For this to be admitted, we must assume a tacit *additional premise* that enjoins a pro rata relationship between the importance of the victim of wrongdoing (a father, God) and the ensuing punishment on the culprit (voluntary isolation, forced banishment and incarceration).

Another point worth highlighting is the punishment of leprosy. Everyone focuses on Miriam's punishment of expulsion from the community for a week, but that is surely

not her only punishment. She is in the meantime afflicted by God with a frightening disease, whereas the hypothetical daughter who has angered her father does not have an analogous affliction. So, the two punishments are not as close to identical as they may seem judging only with reference to the seven days of isolation. Here again, we may doubt the validity of the strictly a fortiori argument. This objection could be countered by pointing out that the father's spit is the required analogue of leprosy. But of course, the two afflictions are of different orders of magnitude; so, a doubt remains.

We must therefore here again admit that this difference of punishment between the two cases is not established by the purely a fortiori argument, but by a separate and additional Divine decree. Or, alternatively, by an appropriate a crescendo argument, to which no *dayo* is thereafter applied. We may also deal with this difficulty by saying that the punishment of leprosy was *already* a fact, produced by God's hand, before the a fortiori argument is formulated; whereas the latter only concerns the punishment that is *yet to be* applied, by human intervention – namely, the seven days' isolation. Thus, the argument *intentionally* concerns only the later part of Miriam's punishment, and cannot be faulted for ignoring the earlier part.

It is perhaps possible to deny that an a fortiori argument of any sort is intended here. We could equally well view the sentence "Let her be shut up without the camp seven days" as an independent decree. But, if so, of what use is the rhetorical exclamation "If her father had but spit in her face, should she not hide in shame seven days?" and moreover how to explain to coincidence of "seven days" isolation in both cases? Some sort of analogy between those two clauses is clearly intended, and the a fortiori or a crescendo argument serves to bind them together convincingly. Thus, although various objections can be raised regarding the a fortiori format or validity of the

Torah argument, we can say that all things considered the traditional reading of the text as a *qal vachomer* is reasonable. This reading can be further justified if it is taken as in some respects a crescendo, and not purely a fortiori.

What, then, is the utility of the clause: "And after that she shall be brought in again"? Notice that it is not mentioned in my above a fortiori construct. Should we simply read it as making explicit something implied in the words "Let her be shut up without the camp seven days"? Well, these words do not strictly imply that after seven days she should be brought back into the camp; it could be that after seven days she is to be released from prison (where she has been "shut up"), but not necessarily brought back from "without the camp." So, the clause in question adds information. At the end of seven days, Miriam is to be both released from jail *and* from banishment from the tribal camp.

Another possible interpretation of these clauses is to read "Let her be shut up without the camp seven days" as signifying a sentence of *at least* seven days, while "And after that she shall be brought in again" means that the sentence should *not exceed* seven days (i.e. "after that" is taken to mean "immediately after that"). They respectively set a minimum and a maximum, so that *exactly* seven days is imposed. What is clear in any case is that "seven days isolation" is stated and implied in both the proposed minor premise and conclusion; ***no other quantity, such as fourteen days, is at all mentioned***, note well. This is a positive indication that we are indeed dealing essentially with a purely a fortiori argument, since the logical rule of the continuity between the given and inferred information is (to that extent) obeyed.

As we shall see when we turn to the Gemara's treatment [in AFL] although there is no explicit mention of fourteen days in the Torah conclusion, it is not unthinkable that

fourteen days were implicitly intended (implying an a crescendo argument from seven to fourteen days) but that this harsher sentence was subsequently mitigated (brought back to seven days) by means of an additional Divine decree (the *dayo* principle, to be exact) which is also left tacit in the Torah. In other words, while the Torah apparently concludes with a seven-day sentence, this could well be a final conclusion (with unreported things happening in between) rather than an immediate one. Nothing stated in the Torah implies this a crescendo reading, but nothing denies it either. So much for our analysis of verse 14.

Let us now briefly look at verse 15: "And Miriam was shut up without the camp seven days; and the people journeyed not till she was brought in again." The obvious reading of this verse is that it tells us that the sentence in verse 14 was duly executed – Miriam was indeed shut away outside the camp for exactly seven days, after which she was released and returned to the camp, as prescribed. We can also view it as a confirmation of the reasoning in the previous verse – i.e. as a way to tell us that the apparent conclusion was the conclusion Moses' court adopted and carried out. We shall presently move on [in AFL], and see how the Gemara variously interpreted or used all this material.

But first let us summarize our findings. Num. 12:14-15 may, with some interpolation and manipulation, be construed as an a fortiori argument of some sort. If this passage of the Torah is indeed a *qal vachomer*, it is not an entirely explicit (*meforash*) one, but partly implicit (*satum*). In some respects, it would be more appropriate to take it as a crescendo, rather than purely a fortiori. It could even be read as not a *qal vachomer* at all; but some elements of the text would then be difficult to explain.

It is therefore reasonable to read an a fortiori argument into the text, as we have done above and as traditionally done

in Judaism. It must however still be stressed that this reading is somewhat forced if taken too strictly, because there are asymmetrical elements in the minor premise and conclusion. We cannot produce a valid purely a fortiori inference without glossing over these technical difficulties. Nevertheless, there is enough underlying symmetry between these elements to suggest a significant overriding a fortiori argument that accords with the logical requirement of continuity (i.e. with the principle of deduction). The elements not explained by a fortiori argument can and must be regarded as separate and additional decrees. Alternatively, they can be explained by means of a crescendo arguments.

In the present section, we have engaged in a frank and free textual analysis of Num. 12:14-15. This was intentionally done from a secular logician's perspective. We sought to determine objectively (irrespective of its religious charge) just what the text under scrutiny is saying, what its parts are and how they relate to each other, what role they play in the whole statement. Moreover, most importantly, the purpose of this analysis was to find out what relation this passage of the Torah might have to a fortiori argument and the principle of *dayo*: does the text clearly and indubitably contain that form of argument and its attendant principle, or are we reading them into it? Is the proposed reasoning valid, or is it somewhat forced?

We answered the questions as truthfully as we could, without prejudice pro or con, concluding that, albeit various difficulties, a case could reasonably be made for reading a valid a fortiori argument into the text. These questions all had to be asked and answered before we consider and discuss the Gemara's exegesis of Num. 12:14-15, because the latter is in some respects surprisingly different from the simple reading. We cannot appreciate

the full implications of what it says if we do not have a more impartial, scientific viewpoint to compare it to. What we have been doing so far, then, is just preparing the ground, so as to facilitate and deepen our understanding of the Gemara approach to the *qal vachomer* argument and the *dayo* principle when we get to it.

One more point needs to be made here. As earlier said, the reason why the Gemara drew attention in particular to Num. 12:14-15 is simply that this passage is the only one that could possibly be used to ground the Mishna BQ 2:5 in the Torah. However, though as we have been showing Num. 12:14-15 can indeed be used for this purpose, the analogy is not perfect. For whereas the Mishnaic *dayo* principle concerns inference by a rabbinical court from a law (a penalty for a crime, to be precise) explicit in the Torah to a law *not* explicit in the Torah (sticking to the same penalty, rather than deciding a proportional penalty), the *dayo* principle implied (according to most readings) in Num. 12:14-15 relates to an argument whose premises and conclusion are all in the Torah, and moreover it infers the penalty (for Miriam's *lèse-majesté*) for the court to execute by derivation from a penalty (for a daughter offending her father) which may be characterized as intuitively-obvious morality or more sociologically as a pre-Torah cultural tradition.

For if we regard (as we could) both penalties (for a daughter and for Miriam) mentioned in Num. 12:14-15 as Divinely decreed, we could not credibly also say that the latter (for Miriam) is *inferred* a fortiori from the former (for a daughter). So, the premise in the Miriam case is not as inherently authoritative as it would need to be to serve as a perfect analogy for the Torah premise in the Mishnaic case. For the essence of the Mishnaic sufficiency principle is that the court must be content with condemning a greater culprit with the same penalty as the Torah condemns a lesser culprit, rather than a proportionately greater penalty, on the

grounds that the only penalty explicitly justified in the Torah and thus *inferable* with certainty is the same penalty. That is, the point of the Mishnaic *dayo* is that the premise is *more authoritative* than the conclusion, whereas in the Num. 12:14-15 example this is not exactly the case. What this means is that although the Mishnaic *dayo* can be somewhat grounded on Num. 12:14-15, such grounding depends on our reading certain aspects of the Mishna *into* the Torah example. That is to say, the conceptual dependence of the two is mutual rather than unidirectional.

7.   LOUIS JACOBS' CONTRIBUTION

*Drawn from.*A Fortiori Logic *(2013), chapter 16:4.*

Rabbinic Thought in the Talmud (2005), by Louis Jacobs, contains an essay devoted to "The Qal Va-Homer Argument in the Old Testament"[89]. We shall here analyze the contributions made in this late essay of his (Jacobs *z"l* passed away in 2006). Having [before I came across this essay in 2013] read many of his works, and developed a true admiration for this scholar, I was very pleased to see more input from him. One thing that saddened me about it, though, was that Jacobs makes no mention in it of my contributions to the same subject in my *Judaic Logic* (1995), even though it was published about ten years before his essay. I am sure he would have been stimulated by it, had he read that work.

1. Comparing enumerations

We shall start by comparing the list of Biblical *qal vachomer* drawn up by Jacobs in his latest essay with the list in my *Judaic Logic* and later findings[90]. I feel obliged

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89   See chapter 12, pp. 109-116.

90   Namely, 1 Samuel 17:37, the case given in Addendum 4 of JL, which was pointed out to me orally by Mark Leroux (from South Africa, a colleague at an office where I worked) in 2001. Before that (in 1998), I found a further case, namely: Jonah 4:10-11, by happenstance. More recently (in Aug. 2012), I found yet another case, Ezekiel 14:13-21, by means of a search for key phrases at www.mechon-mamre.org/p/pt/pt0.htm. Incidentally, the latter search only yielded a total of 19 cases: 13 cases with

to engage in this accounting, so as to give everyone his due. If we merge the two lists together, we obtain a grand total of at least 46 instances [all listed and analyzed in chapter 7 of the present volume]. Jacobs' list is apparently based, largely if not entirely, on an early 19th century work by **Wolf Einhorn** of Grodno[91], which I have not seen, but which reportedly contains 40 instances[92]. Jacobs presumably rejected some of the latter, since he only lists a total of 35 instances; but he does not say which instances he rejected or even just why he did so[93]. Nor does Jacobs tell us whether any of the instances he lists are his own findings, or all are included in Einhorn's list.[94]

'how much more and 6 cases with 'how much less'; there were no cases with the key phrases 'all the more/less' and '(how/so) much the more/less'.

91   Zeev Wolf Einhorn (Maharzav), Grodno, Lithuania, 1813- 1862. *Sefer Midrash Tannaim*, 1838.

92   Jacobs adds that "other commentators [have] come up with similar results" – but he does not say which commentators, nor what these results were nor compare them.

93   He does tell us that some of the instances proposed by various researchers "must be rejected as far-fetched and dubious," but he unfortunately does not perform his triage in public, and all too confidently declares that his list "contains all the definite references."

94   Goltzberg, in his 2010 essay "The A Fortiori Argument In The Talmud" [which I review in AFL], mentions "the forgotten a fortiori arguments," without however saying how many he thinks there are or listing them. Apparently, he draws this information from Moshe Koppel's *Meta-Halakha. Logic, Intuition And The Unfolding Of Jewish Law* (Northvale, NJ, Jason Aronson, 1987). Not having seen the latter work, I cannot say if it is any more informative than that. Note that Jacobs does not mention Koppel's book, which is earlier than mine, either.

We both have	24
I have, he lacks	14
He has, I lack	8

Jacobs and I have 24 instances in common. These of course include the famous ten instances given in *Genesis Rabbah* 92:7; namely, Genesis 44:8, Exodus 6:12, Numbers 12:14-15, Deuteronomy 31:27, 1 Samuel 23:3, Jeremiah 12:5 (2 cases), Ezekiel 15:5, Proverbs 11:31, and Esther, 9:12. Interestingly, probably because the Genesis 44:8 instance is spelled out first and then R. Ishmael says: "This is one of the ten instances of *qal va-homer* in the Torah," Jacobs suggests that only the first of these ten instances was originally in the Midrash, saying: "In what is in all probability an editorial, or even later, gloss, the Midrash gives the other nine" after R. Ishmael's remark[95].

Jacobs uncovers another two instances mentioned in the same Midrash but not listed among the ten, namely: Genesis 4:24 ("If Cain shall be avenged sevenfold, truly Lamekh seventy and sevenfold."), which I already knew of thanks to Rashi; and Genesis 17:20-21, which I did not know about, and so have included under the category of "He has, I lack" further down[96]. It is interesting that the Midrash lists only ten instances of a fortiori argument in a later page, even though the very same volume mentions

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95   It is interesting that R. Ishmael does not here rather mention Num. 12:14-15, which plays such important role in the Gemara explication of Mishna Baba Qama 2:5.

96   But only, as it turns out as an implicit case; not as an explicit case.

another two earlier on! Such inconsistency certainly suggests that there was successive editing of the work.[97]

The failure of the Midrash to list its own 12 instances at once is otherwise inexplicable – unless its author used some unspecified selection criteria. Probably, the Gen. 4:24 case was left out as an "evil" case and Gen. 17:20-21 was left out as an "implicit" case[98]; another possible explanation is that there was later addition of these two cases. The question posed here is of course part of a larger one, which I already asked in my *Judaic Logic*: how is it that the author of the Midrash, who presumably knew the Tanakh by heart and was not half asleep, missed out on the numerous other a fortiori arguments that we have lately found there? This is a mystery. Jacobs acknowledges this mystery, saying: "the commentators to the Midrash and other scholars are puzzled by R. Ishmael's reference to only ten Scriptural cases."[99]

Note also in this context that I do not consider Esther 9:12, which the Midrash list includes, as a credible, sufficiently explicit instance of a fortiori argument. This example, which reads: "The Jews have slain and destroyed five

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97   Jacob's comment is based on a note by Theodor-Albeck, the editor of the Genesis Rabbah edition that he refers to. In that edition, 92:7 is on pp. 1145-6, and 4:24 and 17:20-21 are on p. 225. Jacobs also informs us (in endnotes, p. 116) that Yalkut, 1 Sam. 132 "refers to ten but lists only nine" (he does not say which one is left out); and that Gen. 4:24 is also mentioned as a qal vachomer in Avot de-Rabbi Nathan (version B) 44 and in JT Sanh. 10:1 (27d).

98   Wiseman claims "evil" qal vachomer to be a rabbinical category, pp. 174-6. As regards the "implicit" case, see further on.

99   In this context Jacobs mentions (in an endnote) A. Schwarz, Ch. Hirschensohn, Jofe Ashkenazi (in Yephe toar) and H. Strack.

hundred men in Shushan the castle, and the ten sons of Haman; what (*meh*) then have they done in the rest of the king's provinces!"[100] uses language that is to my knowledge nowhere else connected with a fortiori argument. The interpretation of the word *meh* as meaning "how much more" therefore seems a bit forced to me. I would at best consider this as an "implicit" a fortiori argument, in the sense of one read into the text (more on such arguments later), since no number greater than 500 is actually specified in the conclusion (which has the form of a question). Nevertheless, because this argument is so universally accepted as a fortiori, just because it is one of the main ten listed in the Midrash, I do exceptionally count it as an explicit a fortiori.

The remaining 13 instances *we have in common* are: 1 Samuel 14:29-30, 2 Samuel 12:18, 2 Samuel 16:11, 1 Kings 8:27, 2 Kings 10:4, Jonah 4:10-11, Proverbs 15:11, Proverbs 19:7, Proverbs 19:10, Proverbs 21:27, Job 4:18-19, Job 15:15-16, Job 25:5-6. That these instances were found independently by two or more parties is of course no surprise. Anyone looking out for arguments of a certain kind, who has some idea as to how they go about, will notice them as he reads through the Bible. In my case, the research was more systematic. I looked at the wording of known instances of a fortiori discourse, and then sought

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100   This quotation, as indeed all those from the Bible in the present section, is taken from the Mechon Mamre website at www.mechon-mamre.org/p/pt/pt0.htm, which is based on the 1917 edition of the Jewish Publication Society. Note that the word "then" is an interpolation by the translator; it is not found in the original Hebrew. Likewise, the exclamation mark is an addition; a question mark may have been more appropriate. Obviously, the translator was influenced by the tradition that this statement is a fortiori.

other Biblical passages with the same wording using a concordance.

As regards Jonah 4:10-11, where God says: "Thou hast had pity on the gourd, for which thou hast not laboured, neither madest it grow, which came up in a night, and perished in a night; and should not I (*vaani lo)* have pity on Nineveh, that great city, wherein are more than sixscore thousand persons that cannot discern between their right hand and their left hand, and also much cattle?" Although this case lacks distinctive a fortiori language, it clearly has a fortiori intent. I did not have this case in the early editions of my *Judaic Logic*, but after finding it by chance added it on (as a final footnote to chapter 6) as of June 1998.

Because of my use of a concordance, no doubt, I found numerous cases apparently previously unknown. The 14 instances *I have but Jacobs lacks* are: 1 Samuel 17:37, 1 Samuel 21:6, 2 Samuel 4:10-11, 2 Kings 5:13, 2 Kings 18:23-24 and its repetition in Isaiah 36:8-9, Ezekiel 14:13-21, Psalms 78:20, Psalms 94:9-10 (3 instances), Daniel 2:9[101], 2 Chronicles 6:18[102], 2 Chronicles 32:15. Note that since Jacobs only mentions 35 cases and Einhorn enumerates 40, it may well be for all I know that some of these 14 cases were known to the latter and rejected by the former. But it seems unlikely – why would Jacobs reject any of these cases, which are all pretty clear and explicit?

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101   As I explain in my *Judaic Logic* (6:3), although the given text of Daniel 2:9 is not directly a fortiori argument, since it consists of an order by the king coupled with a reflection as to its utility, the reasoning used by the king is indubitably a fortiori argument, so much so that it can be counted as effectively explicitly so.

102   This is a repetition of 1 Kings 8:27, which Jacobs does have.

Note that 1 Samuel 17:37 was publicized and analyzed in Addendum 4 of my *Judaic Logic* (as of 2001); I did not myself discover it, but had my attention drawn to it by a reader named Mark Leroux (from South Africa). Ezekiel 14:13-21 was not mentioned in my *Judaic Logic*: I only recently discovered it (in 2012). It may be paraphrased as saying: "More spiritual credit is required to stop more numerous negative Divine decrees than fewer ones; therefore, if holy men, like Noah, Daniel or Job, lack sufficient spiritual credit to prevent the execution of the four separate decrees of the sword, famine, evil beasts, and pestilence, then they lack enough credit to stop all four of these decrees together"[103]. The latter case was not easy to spot, because it is spread out over several verses; what helped me find it was the key phrase "How much more" (*af ki*, in Heb.) used in it.

As regards 2 Kings 18:23-24 and its word-for-word repetition in Isaiah 36:8-9[104], they are mentioned in my *Judaic Logic*, but I had considerable skepticism concerning them and so did not at the time count them as sure cases[105]. However, reviewing the argument involved at a later date, its a fortiori intent became clearer to me. Rab-shakeh (emissary of the king of Assyria) says: "Now therefore, I pray thee, make a wager with my master the king of Assyria, and I will give thee two thousand horses, if thou be able on thy part to set riders upon them. How then (*ve-*

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103   The original wording of this argument is given in chapter 8.2 of the present volume.

104   Such copy-and-paste repetition is surely useful for purposes of "higher criticism."

105   In chapter 6 [of JL], where I write: "Note also: 2 Kings 18:23-24, and its repetition in Isaiah 36:8-9, might at first glance be construed as a fortiori in style. But try as I might, I have not been able to make a clear a fortiori argument out of it, however artificial and logically improbable."

ekh) canst thou turn away the face of one captain, even of the least of my masters servants? and yet thou puttest thy trust on Egypt for chariots and for horsemen!" The Assyrian spokesman thinks that king Hezekiah is hoping for Egyptian chariots and horsemen; so he says to him: 'even if your force was increased by 2000 horses (which I am willing to give to you), you could not find warriors to ride them and therefore could not hope to defeat the invaders; all the more so, without such additional force, you cannot hope to defeat the invading force, even the least fraction of it'. I do, therefore, henceforth class these two identical cases as surely a fortiori.

2.   Cases new to me

Let us now look at the cases *Jacobs has but I lack*. Since I have never before analyzed these, I will do so now. I will first list the 8 instances I accept as explicit a fortiori argument, and thereafter deal with the instances he mentions that I consider as only at best implicit.

Judges 14:16. "And he (Samson) said unto her (his wife): Behold (*hine*), I have not told it my father nor my mother, and (*ve*) shall I tell thee?" This is a clear case of *qal vachomer*, using keywords (*hine/ve*) found elsewhere. So much so that I am surprised I missed it! The reason I did so was probably that the word *hine* is very often used in contexts where there is no a fortiori intent, so I did not closely examine every occurrence of it.

Isaiah 66:1. "The heaven is My throne, and the earth is My footstool; where (*eizeh*) is the house that ye may build unto Me? And where (*eizeh*) is the place that may be My resting-place?" This passage obviously echoes the message of 1 Kings 8:27 and 2 Chronicles 6:18, though the wording differs somewhat; viz. that God is too great to be housed in an earthly abode. I perhaps missed it because the Hebrew operator used in it, *eizeh* (אֵי-זֶה), meaning *what?* (or *which?* rather than *where?* as this JPS translation has it) does not

to my knowledge occur in other a fortiori contexts. Nevertheless, it is quite credible as a case of a fortiori discourse.

Jeremiah 25:29. "For, lo (*hine*), I begin to bring evil on the city whereupon My name is called, and (*ve*) should ye be utterly unpunished? Ye shall not be unpunished; for I will call for a sword upon all the inhabitants of the earth." Here again, we have the keywords *hine/ve*, sometimes indicative of *qal vachomer* intent. The a fortiori argument is that if God is willing to bring evil on the city whereupon His name is called, he is certainly willing to utterly punish less important kingdoms.

Jeremiah 45:4-5. "Behold (*hine*), that which I have built will I break down, and that which I have planted I will pluck up; and this in the whole land. And (*ve*) seekest thou great things for thyself? seek them not; for, behold, I will bring evil upon all flesh." Here again, we find the keywords *hine/ve* used. The a fortiori argument is that if God is willing to break down what He has built, etc., he is certainly willing to prevent the success of endeavors by Baruch ben Neriah.

Jeremiah 49:12. "Behold (*hine*), they to whom it pertained not to drink of the cup shall assuredly drink; and (*ve*) art thou he that shall altogether go unpunished? thou shalt not go unpunished, but thou shalt surely drink." Here again, note use of the keywords *hine/ve*. The a fortiori argument is that if God is willing to punish those who do not deserve it, he is certainly willing to punish those who do. Note the similar form of the three a fortiori arguments of Jeremiah mentioned here – it is indicative of their common authorship.

Ezekiel 33:24. "They that inhabit those waste places in the land of Israel speak, saying: Abraham was one, and he inherited the land; but (*ve*) we are many; the land is given us for inheritance." In this case, there is no keyword

indicative of a fortiori intent; but that happens. There clearly is an a fortiori intent, even if the argument is logically rather weak. Why should 'many' be more assured of inheritance than just 'one'? Indeed, this is precisely what the next two verses (25-26), which are spoken by God, contend – that it is not quantity but moral quality that determines ownership of that land:

"Ye eat with the blood, and lift up your eyes unto your idols, and shed blood; and (*ve*) shall ye possess the land? Ye stand upon your sword, ye work abomination, and ye defile every one his neighbour's wife; and (*ve*) shall ye possess the land?"

This case is very interesting, because it provides a Biblical example of *rebuttal* of a weak a fortiori argument by attacking the major premise. Note well that God's reply is not itself an a fortiori argument, but an objection to such argument. This form of counter-argument is later practiced routinely by the rabbis of the Talmud, under the heading of *pirka* (in Aramaic) or *teshuvah* (in Hebrew). No doubt there are many such counter-arguments in the Bible, which we should henceforth lookout for and register. I have not looked for or noticed such rebuttals in the past.

Job 9:13-14. "God will not withdraw His anger; the helpers of Rahab did stoop under Him. How much less (*af ki*) shall I answer Him, and choose out my arguments with Him?" Job considers himself as less worthy than "the helpers of Rahab," therefore he is more than them bound to incline before God's judgment. This is a clear case of *qal vachomer*, using keywords (*af ki*) found elsewhere. I am very surprised I did not spot it!

Nehemiah 13:26-27. "Did not Solomon king of Israel sin by these things? yet among many nations was there no king like him, and he was beloved of his God, and God made him king over all Israel; nevertheless even (*gam*) him did the foreign women cause to sin. Shall we then (*ve*) hearken

unto you to do all this great evil, to break faith with our God in marrying foreign women?" The gist of the argument is: If even Solomon could be caused to sin by foreign women, will not the lesser men of today be likewise caused to sin? This is clearly a fortiori argument, even if the operators (*gam, ve*) are rarely used.

We have thus drawn eight new, credible and pretty explicit, a fortiori arguments from Jacobs' (or Einhorn's) list. Six use known operators: four use *hine/ve*, one uses *af ki*, one uses *gam/ve*; one involves only the ubiquitous conjunction *ve*; and one involves the previously unheard of operator *eizeh*.

Jacobs lists in his paper another three Biblical passages that in his opinion involve a fortiori arguments. The first of these, which he has found mentioned in *Genesis Rabbah*, is:

Genesis 17:20-21. "And as for Ishmael, I have heard thee; behold, I have blessed him, and will make him fruitful, and will multiply him exceedingly; twelve princes shall he beget, and I will make him a great nation. But (*ve*) My covenant will I establish with Isaac, whom Sarah shall bear unto thee at this set time in the next year." Jacobs casts this in a fortiori form as follows: "If Ishmael, the son of the handmaiden will be blessed in this way then all the more will Isaac, the son of Sarah, be blessed."

Although I can see that such an a fortiori argument can certainly be read into the text, I do not agree that it is the only way the passage can be read. God may simply be saying to Abraham: I have blessed Ishmael thus and thus, but My covenant I will not establish with Ishmael but only with Isaac. The emphasis in this alternative reading is clearly different, and not a fortiori. Note moreover, that whereas Jacobs' a fortiori interpretation makes no mention of the covenant, it is central to my reading. For this reason,

I would say that the proposed a fortiori argument qualifies as implicit rather than explicit. This is using the word "implicit" in the sense Jacobs uses it when presenting the next two cases. These instances are mentioned in the so-called *Baraita* of R. Eliezer b. R. Jose the Galilean:

Psalms 15:4. "He that sweareth to his own hurt, and changeth not." This verse could be read, as Jacobs has it, as saying that if he (i.e. the good man that the psalmist is describing) doesn't go back on his word when it is hurtful not to, then he certainly won't do so when it is for his good. But we could simply read this as saying that when the good man utters an oath, he sticks to it no matter how strong the pressure to break it increases. There is no necessity for the a fortiori interpretation; it is read into the text, rather than drawn from it. There is no call for it, because if the man utters an oath which causes him pleasure rather than pain, he obviously will be under no pressure to break it. This is not a conclusion obtained by a fortiori inference, but something everyone can confirm by introspection. So, really, this a fortiori reading is rather artificial. No doubt, it was concocted simply because its author needed some examples for teaching purposes.

Psalms 15:5. "Nor taketh a bribe concerning (*al*) the innocent." Two translations of this verse are possible, the Hebrew word *al* (meaning: on) being a bit equivocal (even in English).

Let us first consider the translation used by Jacobs: "Nor taketh a bribe *to side with* (*al*) the innocent." This verse can be read, as Jacobs has it, as saying that if he (i.e. the good man) won't take bribe to rule in favor of an innocent person, then he certainly won't do so regarding a guilty party. But we could simply read this as saying that the good man would not take a bribe even if he was being bribed to judge a matter as he would without being bribed, i.e. in favor of the innocent. It is true that, in this case (in contrast

to the previous one), the a fortiori argument just indicated can additionally be constructed, and it makes a valuable prediction. So, here we are justified in referring to an "implicit" a fortiori argument. It is not explicit, because the text can be read in a first phase without an a fortiori thought. But it is implicit, in that, if we dig deeper into it, we can indeed use it to make a useful a fortiori inference.

Let us now consider the alternative translation of the same verse given in the JPS 1917 edition: "Nor taketh a bribe *against* (*al*) the innocent." We can interpret this translation like the previous one, albeit with an interpolation: if he (i.e. the good man) won't take a bribe *not* to rule against an innocent person, then he certainly won't do so regarding a guilty party; and we can say more about it as before. However, a quite different, more literal approach to this translation is also possible: we could simply read it as saying that the good man would not take a bribe against an innocent person, i.e. in favor of a guilty one. We might now attempt the following a fortiori argument: if he (i.e. the good man) won't take a bribe to rule against an innocent person, then he certainly won't do so regarding a guilty party. But this argument is a *non sequitur*, since someone might well refuse to rule against the innocent for a bribe, but accept to rule against the guilty for a bribe, thinking that since he intended to rule against the guilty anyway, no harm is done by taking a bribe for it. Therefore, in this translation and reading there is no a fortiori adjunct, whether explicit or implicit.

Thus, if we qualify as "explicitly" and "implicitly" a fortiori argument, respectively, "a text that can only be read as a fortiori" and "a text that can be read as a fortiori but can also readily be read otherwise (i.e. more simply)" – we would have to say that Gen. 17:20-21 is implicit, that Ps. 15:4 is not a fortiori at all, and that Ps. 15:5 is implicit if read one way and not a fortiori at all if read another way. This is contrary to Jacobs, or rather to the rabbinic sources

he refers to, who read these arguments as respectively explicit, implicit and implicit. As for the two examples of explicit a fortiori, which Jacobs mentions as given in the said *Baraita*, namely Jeremiah 12:5 and Esther 9:12 – we would for our part agree that the Jeremiah instances are explicit, but insist (for reasons already put forward) that the Esther example is (if at all a fortiori) at best implicit[106].

Clearly, we have here a serious divergence of views. I have to say that I have in the past, until I read Jacobs' present article, assumed that the distinction made by Eliezer ben Jose, between a fortiori arguments that are *meforash* (explicit) and those that are *satum* (implicit), was referring to how much of the argument's elements are laid out in the text at hand. If the a fortiori premises and conclusions, with all their terms or theses, are all fully laid out in the given text – then that text is a fully explicit a fortiori argument. If one premise or the conclusion are missing, or some of the terms or theses involved are missing – then that text is partly implicit to varying degrees. By that standard, of course, most if not all arguments in Scripture are partly implicit.

But Jacobs' article suggests that the rabbis' "explicit" means *sufficiently* explicit that there can be no interpretation other than an a fortiori one, while their "implicit" means *not so* explicit that there can be no interpretation other than an a fortiori one. At least, this is how I now understand these expressions. It could be that the rabbis do not draw the lines so clearly, and understand them sometimes this way, sometimes that way. In any case, to conclude this discussion, the three arguments above listed are – as far as I am concerned, in the light of the

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106   Although, to repeat, I am still counting the Esther example as explicit, so as not to go against this too well-established tradition.

above analyses – not to be listed among the explicit a fortiori arguments. They are possible interpretations of the texts, or artificially read into the texts, but the texts in themselves allow of readings that are not a fortiori.

Why is this issue important? Because it relates to attribution and dating. When a Biblical text clearly has an a fortiori intent, we may regard it as an explicit instance of Biblical a fortiori argument. If, however, the a fortiori intent of the Biblical text is not so obvious, and has only been brought out later in time by a rabbinical or other commentator, we must count it as only implicitly a fortiori, and attribute the a fortiori argument as such to the historically later commentator. It is not an issue of who discovers the a fortiori argument, note well, but of whether or not the author of that passage of the Bible worded it with a manifest a fortiori intent. If the a fortiori argument has later been read into the text, rather than found in it, then its author is really the person who proposed the interpretation. This is commonsense hermeneutics.

Of course, the rabbis consider that whatever they read into a Biblical text was indeed intended by that text, since God – its ultimate author – is all-knowing. But, even granting their premises, their conclusion does not follow. That is to say, God may well have foreseen the rabbinical interpretation, but that does not make it any the less an interpretation. Such foreknowledge is not indicative of an actual or direct intent, but only at best of a potential or indirect one. The explicit text constitutes the primary message; other information that can eventually be derived from that message is not strictly part of it, but at best an implicit adjunct to it. Sometimes, of course, it is highly debatable that the original text allows for a certain interpretation; and in such case, the interpretation must be

characterized as forced rather than implicit[107]. It would be irrational to accept unquestioningly whatever the rabbis claim; they are, after all, just human beings.

3.   Three rejects

Jacobs additionally mentions (in an endnote) three Biblical passages presented as a fortiori arguments by **Chaim Hirschensohn**[108]. Jacobs rejects these examples as "extremely doubtful," and I incline to agree with him. To my mind, they are at best implicit a fortiori arguments, but certainly not explicit ones. The first two texts in question are the following:

Genesis 3:22. "Behold (*hen*), the man is become as one of us, to know good and evil; and now (*ve-atah*), lest he put forth his hand, and take also of the tree of life, and eat, and live for ever. Therefore (*ve*), [He] sent him forth from the garden of Eden, to till the ground from whence he was taken."

Genesis 11:6-7. "Behold (*hen*), they are one people, and they have all one language; and this is what they begin to do; and now (*ve-atah*) nothing will be withholden from them, which they purpose to do. Come (*habah*), let us go down, and there confound their language, that they may not understand one another's speech."

It is interesting that the two verses, though chapters apart, use the same language (*hen/ve-atah*) and have similar form. Also note that in both cases, one of the operators used (*hen*) is sometimes indicative of a fortiori discourse, and

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107   An important case in point that we have seen is the Gemara (Baba Qama 25a) interpretation of Numbers 12:14-15.

108   Israel, 1857 – 1935. The work cited is *Berure Ha-Middot* (Jerusalem, 1929), pp. 40-45.

the argument is concerned with increasing magnitudes of something. The argument involved can be paraphrased as follows: *This event is bad enough, therefore to avoid an even worse event we had better take certain precautions.* This is an interesting form of reasoning in itself, but it is clearly causal and ethical, rather than a fortiori as Hirschensohn reportedly claims.

We could admittedly formulate an a fortiori argument from it as follows: P is worse (R) than Q, and Q is bad (R) enough to be combated (S); therefore, P is bad (R) enough to be combated (S). But where in the text does it say that Q was fought against? It only says that P is to be fought against. So, this a fortiori argument, if at all implied, must be characterized as implicit. It is anyway not the essence of the explicit discourse facing us, which has it that a minor problem (the "bad enough" clause) *could well eventually develop into* a major problem (the "even worse" clause), and for that reason *some preemptive action* against the latter is called for before it happens. The said a fortiori argument is perhaps implied by the text, but the text evidently tries to communicate considerably more than just that.

The third text is: **Genesis 17:17**. "Then Abraham fell upon his face, and laughed, and said in his heart: Shall a child be born unto him that is a hundred years old? and shall Sarah, that is ninety years old, bear?" It is difficult to perceive the a fortiori argument Hirschensohn had in mind here. Perhaps his thought was that it is unlikely enough for a hundred year old man to have a child, and therefore *even more* unlikely for a ninety year old woman to do so. But frankly, was that Abraham's thought? No, he was simply saying that it is unlikely for both a hundred year old man and a ninety year old woman to have a child. It is a statement, not a process of inference.

Certainly, in this case, the literal reading is not a fortiori, so that if an a fortiori argument be read into the text, it is at best implicit. But moreover, the a fortiori reading seems rather forced. Since we can fully understand the text without it, it serves no purpose other than to inflate the list of Biblical a fortiori arguments. Therefore, I would not even include this case as an example of implicit a fortiori. Thus, while the first two examples could conceivably qualify as involving an a fortiori discourse implicitly, the third is much less credible. In any event, none of these three cases is explicit.

4.   General observations

Let us now take a closer look at various general observations in Jacobs' essay. To begin with, it is evident that even in 2005 he had not yet grasped the actual form of a fortiori argument, since he here still describes it very superficially as "If A is so then B must surely be so; if the 'minor' has this or that property, then the 'major' must undoubtedly have it." This is what he has in the past called 'simple' a fortiori argument. He still, note also, fails to detect the use of what he has called 'complex' a fortiori argument in the Bible. He rightly remarks that the Rabbis learnt this form of inference from its occurrences in the Bible itself, and then used it "as one of their hermeneutical principles by means of which they expand and elaborate on the Biblical teachings." And this fact stimulates his present research into the actual examples of the argument in the Bible.

However, it is very surprising to see Jacobs assert (in an endnote) that "There does not appear to be, in fact, any real parallel to the *qal va-homer* in Greek thought." This is, as demonstrated in the present volume [AFL], quite off the mark – a fortiori argument is quite present, and consciously so, in Greek (and then Roman) literature, even if not as

frequently as in rabbinical literature. He is here going further than he has in the past, where he only (and rightly) contended, against the apparent claims of Adolf Schwarz, that the identification of this form of argument with Aristotelian syllogism is "untenable." That a fortiori argument is not syllogistic does not imply that it was not used by the Greeks! The latter did not only think syllogistically, any more than the rabbis only thought by means of a fortiori argument. Moreover, to admit that the Greeks used a fortiori argument is of course not the same as to claim that the rabbis learnt it from them. So, Jacobs' position in this matter, even if expressed offhandedly, is very surprising.

It is a pity that Jacobs did not push his analysis of the a fortiori arguments he lists more deeply. While he acknowledges the rabbis' debt to the Biblical occurrences of *qal vachomer*, he does not sufficiently examine how they actually interpreted those arguments. Notably, while he reads the *qal vachomer* in Numbers 12:14 correctly, saying: "if when [Miriam's] human father showed his disapproval of her actions she would hide herself in shame for seven days then when the Lord shows His disapproval all the more should she be shut away for seven days," he does not look further into the matter and discover the significantly different interpretation given by the Gemara in Baba Qama 25a, and the Pandora's Box of interesting problems (and opportunities) that the latter creates.

Nevertheless, Jacobs makes some valuable general observations:

> "From all that has been said it is surely well established that the argument from the minor to the major is used frequently throughout the Old Testament. Its use is not limited to any single phase in Israel's history but, it would appear, was

employed in all periods. Neither is the usage
confined to any single book of the Old Testament
nor to any particular document, stratum, and
trend… Moreover, as in many of the examples
quoted, its use is generally of a formal nature,
beginning with *hien* or *hinneh* and concluding with
'eykh or *'aph*."

I came to similar conclusion in my *Judaic Logic*. But
Jacobs takes the reflection further, raising "important
questions, hitherto barely considered by Old Testament
scholarship, regarding the use of rhetoric in ancient Israel."
He cites O. Eissfeldt[109], who suggested that there were men
and women "specially skilled in speech," using
argumentative techniques acquired through "tradition and
'training'," resorting to "certain fixed forms for speech"
and rhetorical devices such as "first obtaining from the
person addressed an admission which does not appear to be
relevant to the matter in hand," which "then compels him
to grant the request which is really involved." Jacobs
concurs, in view of the evidence provided by his listing of
Biblical *qal vachomer*.

Such tradition and training is, of course, evident in the
rabbinic period, Jacobs adds, when "formal argument was
consciously and extensively cultivated" and "there are
certain stereotyped rules" of argumentation. He then asks:
"Was there anything like this in the Old Testament
period?" and replies: "there seems to be no doubt that the
answer should be in the affirmative." He admits, however,
that "it is hard to find anything like an explicit reference
anywhere in the Old Testament to schools in which rhetoric

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109   In *The Old Testament: An Introduction* (Oxford, 1965),
pp. 12-15.

was taught." He could have buttressed his case by adducing that the rabbis did and do believe that such schools (*yeshivot*) existed throughout the past. The patriarch Jacob is said to have studied in the tents of Shem and Eber (*Genesis Rabbah* 63:10); king David is said to have studied with his counselor Ahithophel (*Pirqe Avot* 6:2); and so on.

In my view, to be honest, such claims are largely anachronistic, projecting later mores onto earlier times. It is not inconceivable that there were, very early on, educational institutions of sorts that organized common study of and reflection on knowledge inherited from the past. The issue is, as of when such institutions can be credibly claimed, and what it is that was studied in them. While transmission of knowledge and skills by village adults and elders to children and youth can be classified under the heading of education and is as old as mankind, it is less certain as of when in history the formal study of Torah and related argumentative skills began in Israel. I would say it developed apace in the period after the Return from Babylon after the First Exile, i.e. the formative period of the rabbinical doctrine and class. This is suggested, for instance, in the Mishnaic *Pirqe Avot*, which refers (1:1) to the *Knesset Hagedolah* (the Great Assembly).

This hypothesis seems most likely, in view of what was happening at the same time in other nations near and far. What is evident when we study world history is that cultural developments tend to be (increasingly over time) worldwide rather than local. Many major developments occurred as of the middle of the first millennium BCE, as if a new phase in human intellectual evolution was taking place. Suddenly, it seems, existing civilizations burst with newfound energy, producing religious and philosophical thoughts more sophisticated (at least on the surface) than ever before. Though scattered, they awoke simultaneously, in various directions, but also somewhat comparably.

In India, the ancient Vedic religion began its transformation into Hinduism, and Buddhism was founded. In China, Confucianism and Taoism emerged. In Greece, philosophy flowered in earnest, with the advent of Socrates, Plato, Aristotle, and many others. In Israel, Judaism came increasingly under the authority of Torah scholars[110]. This 'rabbinic' Judaism was apparently planted at the beginning of the Second Temple period and gradually grew and took shape in the following generations, till it fully flowered in the Mishna (which then stimulated the Gemara and subsequent rabbinic works). The intellectual growth in Israel, involving increasingly legalistic thinking, and therefore to some extent logical reflection, was thus rather typical of that epoch, and can only with difficulty be projected backwards into earlier ones.

Be that as it may, Jacobs ends his reflections with an interesting suggestion, also drawn from Eissfeldt, that the Hebrew root *dbr*, used to refer to 'speech', may in fact often be used with the intention to mean 'argument'. An example he gives is Gen. 44:18, where Judah begins his plea before Joseph by saying: "O my lord, let thy servant, I pray thee, speak a word in my lord's ears." Jacobs comments: "Since the expression *yedabber dabhar* is used, should it be translated as 'present an argument'?" Similarly, in other passages, 'speak rightly' might be taken

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110   Perhaps starting with "Also we made ordinances for us," in Nehemiah 10:33. The Hebrew word used is mitsvot, which is usually translated as commandments. The laws gradually enacted by Jewish lawmakers were, it is worth noting, distinctively based on Torah law. They were not arbitrary, but guided and circumscribed by the strong moral standards already instituted by that document. The 'legalism' involved here is of a very different sort than that found in the same period of history in, say, China.

to mean 'argue convincingly', 'these are the words' might be taken to mean 'these are the arguments', and so forth. This insight seems credible to me. All this goes to show in what directions and how far Jacobs' research into Biblical use of *qal vachomer* drove his reflections.

8.   A FORTIORI DISCOURSE IN THE JEWISH BIBLE

*Drawn from.*A Fortiori Logic *(2013), appendix 1.*

Some 18 years after I published *Judaic Logic*, I returned to the subject of a fortiori argument in the Tanakh in *A Fortiori Logic*, and in this context discovered many additional instances.

1. Introduction and summary

There are at least 46 instances of a fortiori discourse in the Tanakh (the Jewish Bible). Their dating is traditionally referred to the dates of the events in books concerned, viz. Genesis (Lamekh in 'antediluvian' times; Joseph's brothers in patriarchal period); Exodus, Numbers, and Deuteronomy (Moses in the Sinai), 1 & 2 Samuel (Davidic kingdom), and so forth (subsequent history till the 1st Exile period)[111].

Of the 46 cases listed below, only 11 are given in the Midrashic work *Genesis Rabbah*; these are here marked as "Listed by GR." In my *Judaic Logic* (1995), I listed another 24 cases[112] found through independent research, to which I

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111   I do not here give traditional chronology, based on Seder Olam calculations, because modern secular historians do not advocate quite the same dates. The present work is obviously not the place here to debate this hot issue.

]112   Although in chapter in 5.5 above, I rejected three of the instances here counted as genuine a fortiori, I now see more clearly how they can be so construed. See 2 Kings 18:23-24 and its repetition in Isaiah 36:8-9, and 2 Chronicles 32:15.

later added 1 case in a footnote at the end of JL chapter 6 (which I found by chance in June 1998) and 1 case in Addendum 4 (which was suggested to me by a reader in 2001). However, I discovered while writing the present book that 13 of the additional cases listed in my book were in fact known to others (all apparently found by Wolf Einhorn in 1838, according to Louis Jacobs in 2005); these cases in common are here not marked at all. Still, the remaining 13 of the additional cases listed in my book seem to have been unknown to others; these are here marked as "New from AS." To these must be added 1 more case, that I only recently discovered, namely Ezekiel 14:13-21. On the other hand, Louis Jacobs listed 8 cases (presumably found in Wolf Einhorn) that I had not previously found; these are here marked as "New from WE."[113]

I have put the arguments in 'if–then' form, showing the minor premise and conclusion, but leaving the major premise tacit. If the subjects are different and the predicates are the same, the mood is subjectal. If the subjects are the same and the predicates different, the mood is predicatal. If there is 'enough of' the middle item, the mood is positive; if there is 'not enough of' the middle item, the mood is negative. I have formulated all the arguments in copulative form, even when an implicational form might have been closer to the original. If the mood is positive subjectal (marked +s), or negative predicatal (marked –p), the argument is from the minor term to the major term. If the mood is negative subjectal (marked –s), or positive

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113   The transliteration of Heb. words in "(italics)" are sometimes given here because they were helpful indices in the research process. The remarks in square brackets "[xxx]" are my own interpolations to facilitate the proposed a fortiori reading where necessary. I also on occasion reorder the clauses involved to accord with the perceived sequence of reasoning or show up the utility of an operator.

predicatal (marked +p), the argument is from the major term to the minor term. Most arguments are purely a fortiori, but some are clearly intended as a crescendo (these are marked by a **&**). Note that some classifications here differ from those in my *Judaic Logic*; those here are more reliable[114].

The following table shows the number of instances of a fortiori argument in the Tanakh, classified by mood of copulative argument concerned. We see that the distribution is about even for the first three moods (14, 13, 15), while there are only 4 instances of the fourth (still, it is significant). It is interesting that 41% (19/46) of the arguments are predicatal, considering how little attention this form has received from most commentators. Only 13% (6/46) of the arguments are a crescendo, and yet many commentators have assumed this form to be the essence of a fortiori argument.

Table 7.1   Classification of a fortiori in Tanakh

Mood	Instances	Of which &
Positive subjectal {+s}	14	3
Negative subjectal {–s}	13	3
Positive predicatal {+p}	15	0
Negative Predicatal {–p}	4	0

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114   I there (in chapter 5.4 [here, 4.4]) had Dt. 31:27 as +p (here it is +s), 1 Sam. 23:3 as +a (here it is +p), Jer. 12:5 as +a (here they are –p).

2.   A fortiori arguments in the Tanakh

Genesis 4:24. Lemekh ben Methushael: "If (*ki*): Cain shall be avenged sevenfold, then (*ve*): Lemekh [shall be avenged] seventy and seven-fold." (Listed by GR.) {–s &} If an intentional killer is not abhorred enough to be punished immediately, then an unintentional killer will remain unpunished for a much longer time.

Genesis 44:8. Joseph's Brothers: "Behold (*hen*): the money, which we found in our sacks' mouths, we brought back unto thee out of the land of Canaan; then (*ve*): how (*ekh*) should we steal out of thy lord's house silver or gold?" (Listed by GR.) {+p} If the accused were honest enough to return found goods, then they must have been honest enough not to steal anything.

Exodus 6:12. Moses: "Behold (*hen*): the Children of Israel have not hearkened unto me; then (*ve*): how (*ekh*) shall Pharaoh hear me?" (Listed by GR.) {–s} If the Israelites, who have much faith, have not had enough of it to listen to Moses, then the chief of the Egyptians, who has far less faith (if any), will not have enough of it to do so.

Numbers 12:14. God: "[Granting that:] if (*ve*) her father had but spit in her face, should she not (*halo*) hide in shame seven days? [Similarly, since God is angry with her,] let her be shut up without the camp seven days." (Listed by GR.) {+s} If someone causing paternal anger is culpable enough to deserve seven days isolation, then someone causing Divine anger is culpable enough to deserve seven days isolation.

Deuteronomy 31:27. Moses: "Behold (*hen*): while (*be*) I am yet alive with you this day, ye have been rebellious against the Lord; how much more (*af*): in the time (*ki*) after my death, so (*ve*) [i.e. ye will be rebellious]?" (Listed by GR.) {+s} If the people during Moses' lifetime are unfaithful enough to rebel, then they after his death will be unfaithful enough to rebel.

Judges 14:16. Samson to his wife: "Behold (*hine*), I have not told it [the solution to my riddle to] my father nor my mother, and (*ve*) shall I tell [it to] thee?" (New from WE.) {–p} If Samson was not trusting enough to tell the secret to his parents, then he won't be trusting enough to tell it to his wife.

1 Samuel 14:29-30. Jonathan: "See (*reu*): because (*ki*) I tasted a little of this honey, how (*ki*) mine eyes are brightened. How much more (*af*): if (*ki*) haply the people had eaten freely today of the spoil of their enemies which they found, then (*ki*) would there not have been a much greater slaughter among the Philistines?" {+s &} If someone eating a little honey is energized enough to have his eyes brighten, then people eating lots of food are energized enough to do that and much more.

1 Samuel 17:37. David: "The Lord who saved me from the paw of the lion and the paw of the bear [= innocent animals], He will [surely] save me from the hand of the Philistine [= willful enemy]." (New from AS[115].) {+p} If David had spiritual credit enough to be saved from

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115   But actually found by Mark Leroux.

innocent creatures, then he has credit enough to be saved from evil ones.

1 Samuel 21:6. David: "Of a truth (*ki*): when (*be*) I came out, though (*ve*) it was but a common journey, yet (*im*) women have been kept from us about these three days, and (*ve*) the vessels of the young men were holy; how much more (*af*): when (*ki*) today there shall be holy bread in the vessels, so (*ve*) [i.e. have we avoided women and kept the young men's vessels holy]." (New from AS.) {+p} If we were virtuous enough to practice abstinence on a common journey, then we are virtuous enough to do so on a special day like today.

1 Samuel 23:3. David's men: "Behold (*hine*): here in (*be*) Judah [= our own territory], we are afraid; how much more (*af*): if (*ki*) we go to Keilah [= enemy territory], so (*ve*) [i.e. will we be afraid]?" (Listed by GR.) {+p} If we lack confidence enough that we feel fear while on our own territory, then we will lack confidence enough that we will feel fear when on enemy territory.

2 Samuel 4:10-11. David: "If (*ki*): [when] one told me saying, 'behold, Saul is dead' and (*ve*) he was in his own eyes as though he had brought good tidings, then (*ve*) I took hold of him and (*ve*) slew him in Ziklag in the way of reward. How much more (*af*): when (*ki*) wicked men have slain a righteous man in his own house upon his bed, then (*ve*) now shall I not (*halo*) require his blood of your hand and (*ve*) take you away from the earth?" (New from AS.) {+s} If someone who merely announced the death of Saul, David's respected adversary, was judged wicked enough to deserve execution, then the people who actually killed a respectable man, Ish-bosheth the son of Saul, who did

David no harm, must be judged wicked enough to deserve execution.

2 Samuel 12:18. David's servants: "Behold (*hine*): while (*be*) the child was yet alive, [David's sorrow was so great that] we spoke unto him, and (*ve*) he hearkened not unto our voice; then (*ve*): how (*ekh*) shall we tell him that the child is dead, so that (*ve*) he do himself some harm?" {+s &} If David while his child still lived was sorrowful enough to be utterly distracted, then David now that the child has died will be sorrowful enough to cause himself some harm.

2 Samuel 16:11. David: "Behold (*hine*): my son, who came forth from my body, seeketh my life [still, I do not react]; how much more (*af*): in the case of (*ki*) this Benjamite now [who is less close], and curseth [me], then (*ve*) should I let him alone; for the Lord has bidden him." {+p} If David was self-controlled enough to avoid reacting under attack from his own son, then David will be self-controlled enough to avoid reacting under attack from a more remote enemy.

1 Kings 8:27. Solomon: "Behold (*hine*), heaven and the heaven of heavens cannot contain thee; how much less (*af*): in the case of (*ki*) this house that I have builded, will (*ki*) God in very truth dwell on the earth [i.e. be contained in this house]?" This is repeated in 2 Chronicles 6:18. {–s} If the heavens are not big enough to contain God, then an earthly house is not big enough to do so.

2 Kings 5:13. Naaman's servants: "Granting (*ki*): had the prophet bid thee do some great thing, wouldst thou not (*halo*) have done it? how much rather (*af*): he [merely]

saith to thee: wash and be clean? then (*ve*) [you should do it]" (New from AS.) {+s} If the prophet making some difficult request would have seemed powerful enough in your eyes to succeed in healing you, causing you to obey him, then his making an easy request suggests he may be more powerful than you expected and indeed powerful enough to heal you, and should cause you to obey him.

2 Kings 10:4. The rulers of Jezreel in Samaria: "Behold (*hine*): the two kings [Joram and Ahaziah, who were powerful men], stood not before him [Jehu]; then (*ve*): [we, who are relatively weak,] how (*ekh*) shall we stand [before him]?" {–s} If the two kings were not strong enough to resist Jehu, then we are not strong enough to do so.

2 Kings 18:23-24. Rab-shakeh (emissary of the king of Assyria): "[Since] thou puttest thy trust on Egypt for chariots and for horsemen, I will give thee two thousand horses, if thou be able on thy part to set riders upon them. [But you are not able to do even that, and so cannot hope to defeat us.] How then (*ve-ekh*) canst thou [without gift of horses] turn away the face of one captain, even of the least of my masters servants?" (New from AS.) This is repeated in Isaiah 36:8-9. {–s &} If you had 2000 horses, you would not have enough power to defeat the Assyrian army, then without such a gift you do not have enough power to do so, not even to defeat a minor captain of it.

Isaiah 36:8-9. Rab-shakeh (emissary of the king of Assyria): "[Since] thou puttest thy trust on Egypt for chariots and for horsemen, I will give thee two thousand horses, if thou be able on thy part to set riders upon them. [But you are not able to do even that, and so cannot hope to defeat us.] How then (*ve-ekh*) canst thou [without gift of horses] turn away the face of one captain, even of the least

of my masters servants?" (New from AS.) This is the same as 2 Kings 18:23-24. {–s &}

Isaiah 66:1. God: "The heaven is My throne, and the earth is My footstool; where (*eizeh*) is the house that ye may build unto Me? And where (*eizeh*) is the place that may be My resting-place?" (New from WE.) This is comparable to 1 Kings 8:27 and 2 Chronicles 6:18. {–s} If the heavens are not big enough to contain God, then an earthly house is not big enough to do so.

Jeremiah 12:5. God: "If (*ki*): thou hast run with the footmen and (*ve*) they have wearied thee, then (*ve*): how (*ekh*) canst thou contend with horses [and not be wearied]? and if (*u*): in the land of peace, thou dost [hardly] feel secure; then (*ve*): in the wild country of the Jordan, how (*ekh*) wilt thou do [feel secure]?" (2 instances, listed by GR.) (Both –p) If you are not strong enough to cope with the easier challenges, then you are not strong enough to cope with the more difficult ones.

Jeremiah 25:29. God: "For, lo (*hine*), I begin to bring evil on the city whereupon My name is called, and (*ve*) should ye [who is less virtuous] be utterly unpunished?" (New from WE.) {–s} If those calling on my name are not absolved enough to escape my wrath, then you less virtuous folk are not absolved enough to escape my wrath.

Jeremiah 45:4-5. God: "Behold (*hine*), that which I have built will I break down, and that which I have planted I will pluck up; and this in the whole land. And (*ve*) seekest thou [who is less valued] great things for thyself?" (New from WE.) {–s} If the things I worked for are valued by Me not

enough to escape being undone, then the things you work for are valued by Me not enough to escape being undone.

Jeremiah 49:12. God: "Behold (*hine*), they to whom it pertained not to drink of the cup shall assuredly drink; and (*ve*) art thou [who is more guilty] he that shall altogether go unpunished?" (New from WE.) {+s} If people who are not reprehensible are implicated enough to be punished, then people who are reprehensible are implicated enough to be punished.

Ezekiel 14:13-21. God: "Son of man, when a land sinneth against Me by trespassing grievously, and I stretch out My hand upon it… and send famine upon it… [Or] if I cause evil beasts to pass through the land… Or if I bring a sword upon that land… Or if I send a pestilence into that land… though Noah, Daniel, and Job, were in it, as I live, saith the Lord God, they shall deliver neither son nor daughter; they shall but deliver their own souls by their righteousness… How much more (*af ki*) when I send My four sore judgments against Jerusalem, the sword, and the famine, and the evil beasts, and the pestilence, to cut off from it man and beast." (New from AS.) {–p} If such holy men lack sufficient spiritual credit to prevent the execution of each of the four negative decrees separately, then they lack enough to stop all four of these decrees together.

Ezekiel 15:5. God: "Behold (*hine*): when (*be*) it [the vine-tree] was whole, it was not meet for any work; how much less (*af*): when (*ki*) the fire hath devoured it and (*ve*) it is burned, shall it then (*ve*) yet be meet for any work?" (Listed by GR.) {–s} If when whole the vine-tree was not in good condition enough to be useful; then now when damaged it is not in good condition enough to be useful.

Ezekiel 33:24. God: "They that inhabit those waste places in the land of Israel speak, saying: Abraham was one, and he inherited the land; but (*ve*) we are many; the land is given us for inheritance." (New from WE.) {+s} If one man is important enough to inherit the land, then many men are important enough to inherit the land. (Obviously, though God is reporting this argument, He is not its author. It is not very credible, and rightly rebutted in the verses 25 and 26: it is not numbers but moral worth that makes possible inheritance of the land.)

Jonah 4:10-11. God: "Thou hast had pity on the gourd, for which thou hast not laboured, neither madest it grow, which came up in a night, and perished in a night; and should not I (*vaani lo)* have pity on Nineveh, that great city, wherein are more than sixscore thousand persons that cannot discern between their right hand and their left hand, and also much cattle?" {+s} If a mere gourd etc. can be appreciated enough to be cared for (as by Jonah), then a great city etc. can be appreciated enough to be cared for (by God).

2 Chronicles 6:18. Solomon: "Behold (*hine*), heaven and the heaven of heavens cannot contain Thee; how much less (*af*): in the case of (*ki*) this house that I have builded, will (*ki*) God in very truth dwell on the earth?" (New from AS.) This is the same as 1 Kings 8:27. {–s} If the heavens are not big enough to contain God, then an earthly house is not big enough to do so.

2 Chronicles 32:15. Sennacherib, king of Assyria (through his messengers) says: "For (*ki*): no god of any nation or kingdom was able to deliver his people out of my hand, and out of the hand of my fathers; likewise (*af*): therefore (*ki*), shall your God [presumed by the messengers as no

different from other gods] not be able to deliver you out of my hand." (New from AS.) {–s} If other national gods were not powerful enough to deliver their respective nations, then the God of Judah is not powerful enough to deliver his nation. (This of course wrongly equates God with non-gods, but it is how the Assyrian king thinks.)

Psalms 78:20. Asaph: "Behold (*hen*): He struck a rock, then (*ve*) waters flowed and (*u*) streams burst forth. In that case (*gam*): bread He can give; is there any doubt that (*im*): He will prepare meat for His people?" (New from AS.) {+p} If God is powerful enough to draw water from a rock[116], then He is powerful enough to feed His people with bread and meat.

Psalms 94:9-10. Moshe: "He who implanted the ear, does He not (*halo*) hear?" "If (*im*) He formed the eye, does He not (*halo*) see?" "He who chastises nations, does He not (*halo*) reprove [the individual]?" (3 instances, New from AS.) (All 3 +p) If God is powerful enough to implant the ear and form the eye, then He is powerful enough to hear and see. If God is powerful enough to chastise nations, then He is powerful enough to reprove individuals.

Job 4:18-19. Eliphaz the Temanite: "Behold (*hen*): He puts no trust in His servants, and (*u*) His angels he charges with folly; how much more (*af*): those who dwell in houses of clay, whose foundation is in the dust [does He distrust and charge with folly]?" {+p} If God is perspicacious enough

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116   The subject of "he struck a rock" could be Moses, but the cause of the water gushing from it must be God. Likewise, it is God that provides bread and meat. This is obvious from the Torah account (Ex. 17:6, 16:12).

to judge His servants/angels as untrustworthy and unwise, then He is perspicacious enough to judge mere human beings as untrustworthy and unwise.

Job 9:13-14. Job: "God will not withdraw His anger; the helpers of Rahab did stoop under Him. How much less (*af ki*) shall I answer Him, and choose out my arguments with Him?" (New from WE.) {–s} If Rahab's helpers were not worthy enough to argue with God, then Job is not worthy enough to do so.

Job 15:15-16. Eliphaz the Temanite: "Behold (*hen*): He puts no trust in His holy ones; and (*ve*) the heavens are not clean in His sight. How much less (*af*): one who (*ki*) is abominable and filthy, man, who drinks iniquity like water [does He trust or consider clean]!" {+p} If God is demanding enough to judge His holy ones as untrustworthy and the heavens as unclean, then He is demanding enough to judge mere human beings as untrustworthy and unclean.

Job 25:5-6. Bildad the Shuhite: "Behold (*hen*): even the moon has no brightness, and (*ve*) the stars are not pure in His sight; how much less (*af*): man, that (*ki*) is a worm [is bright and pure in His sight]?" {+p} If God is perfectionist enough to judge the moon as obscure and the stars as impure, then He is perfectionist enough to judge mere human beings as obscure and impure.

Proverbs 11:31. Solomon: "Behold (*hen*): the just man shall be recompensed on earth: how much more (*af*): the wicked and the sinner, so (*ki*) [i.e. shall be recompensed on earth]." (Listed by GR.) {+s} If the just man is imperfect enough to be recompensed on earth, then the wicked and sinner are imperfect enough to be recompensed on earth.

Proverbs 15:11. Solomon: "If (*ki*): hell and destruction are before the Lord; how much more (*af*): the hearts of the children of men [are before the Lord]?" {+p} If God is powerful enough to look into hell and destruction, then He is powerful enough to look into people's hearts.

Proverbs 19:7. Solomon: "If (*ki*): all the brethren of the poor do hate him, how much more (*af*): do his friends go far from him?" {+p} If the poor man is disliked enough that his brothers avoid him, then he is disliked enough that his friends avoid him.

Proverbs 19:10. Solomon: "If (*ki*): for a fool to have luxury is not seemly; how much less (*af*): for a servant to have rule over princes [would be seemly]." {+s} If for a fool to have luxury is inappropriate enough to be unseemly, then for a servant to have rule over princes is inappropriate enough to be unseemly.

Proverbs 21:27. Solomon: "If (*ki*): [even brought with a 'sincere' intent] the sacrifice of the wicked is an abomination; how much more (*af*): brought with a wicked intent [is it abomination]?" {+s} If the sacrifice of the wicked brought with a 'sincere' intent is abominable enough to be rejected, then the sacrifice of the wicked brought with a wicked intent is abominable enough to be rejected.

Esther 9:12. Ahasuerus says: "In (*be*) Shushan the capital, the Jews have slain and destroyed five hundred men and the ten sons of Haman; in (*be*) the rest of the king's provinces, what (*meh*) have they done? [i.e. surely many more!]" (Listed by GR.) {+s &} If the Jews in Shushan

have found and destroyed as many as 500 anti-Semites, then the Jews in provinces have found and destroyed many more than 500 of their enemies. (Not sure of a fortiori intent, in my view; but kept because traditional.)

Daniel 2:9. Nebuchadnezzar: "Thus (*lahen*): tell me the dream, and (*ve*): I shall know that you can declare its interpretation to me [since it is more difficult to tell it than to interpret it]." (New from AS.) {+p} If Daniel is powerful enough to tell the dream, then he is powerful enough to interpret it.

Nehemiah 13:26-27. Nehemiah: "Did not Solomon king of Israel sin by these things? yet among many nations was there no king like him, and he was beloved of his God, and God made him king over all Israel; nevertheless even (*gam*) him did the foreign women cause to sin. Shall we then (*ve*) hearken unto you to do all this great evil, to break faith with our God in marrying foreign women?" (New from WE.) {+s} If king Solomon, who was not very weak, was weak enough to be brought to sin by foreign women, then we, who are much weaker, are weak enough to be brought to sin by foreign women.

9.   A FORTIORI ARGUMENTS IN THE CHRISTIAN BIBLE

Drawn from. A Fortiori Logic *(2013), chapter 10:1-3,5.*

1. Disclaimer

In this chapter, I am called upon for the sake of comprehensiveness to comment on some of the a fortiori discourse found in Christian literature, especially the Gospels. I must stress that I do not intend the following treatment to be exhaustive. I am merely breaking ground for a more extensive treatment by others. Being personally not very interested in the Christian religion, I am not sufficiently motivated to do a thorough job on the subject. I do hope someone else will take up the challenge and do the necessary research.

Needless to say, although I am a Jew, I have no desire to engage here in religious polemics against Christianity. Jews do not normally try to convert non-Jews to their views. My interest here is entirely logical. The proof is that I am not always critical. When I am critical, it is with an impartial, scientific spirit – the same spirit I apply to assessment of a fortiori and other forms of reasoning found in Jewish texts or texts of other traditions.

2.   Primary findings

Using a Kindle edition of the Christian Bible[117], the *Revised King James New Testament* edited by Brad Haugaard (2008), I searched mechanically for the main key words and phrases of a fortiori argument and found 28 instances[118].

These were: *How much more* (17) in Matthew 7:11, 10:25, 12:11-12; Luke 11:13, 12:24, 12:28; Romans 5:8-9, 5:10, 5:15, 11:12 (2 instances), 11:24; 1 Corinthians 6:3; 2 Corinthians 3:11; Philemon 1:15-17; Hebrews 9:13-14, 10:28-29. Other *much more* (4) in Matthew 6:26, 6:30; Romans 5:17; Hebrews 12:9. *Much less* (1) in Hebrews 12:25. *Even more* (1) in 2 Corinthians 3:7-8. No distinctive wording (5) in Luke 13:15-16, 16:11, Romans 11:15, 2 Corinthians 3:9, 1 John 4:20 (the connectives used in these five cases were, respectively: *ought not*, *if not – who*, *if – what, but, far more* and *how*).

This list may, of course, not be exhaustive, since a fortiori argument is not always distinctively worded. Key words or phrases for which no hits were registered are not here mentioned, for brevity's sake. Sometimes, words or phrases that usually signal a fortiori argument turn out not to do so, their intent being merely to express increasing magnitude; this occurred, for example, with the 2 instances of *so much the more* and all 10 instances of *all the more* (their intent here is simply *a lot more*). I did not bother to look at residual hits of *all the*, *more*, *less*, and *therefore*,

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117   The books constituting the Christian Bible are referred to by Christians as the "New Testament" (abbr. NT), while those constituting the Jewish Bible as the "Old Testament" (abbr. OT).

118   Please note that I have more recently come across 8 additional instances. These I report in a separate section of the present chapter, further on. The total is now therefore 36.

although there were over a hundred hits for each of these search strings; so I may have missed a few cases.

As can be seen, the 28 instances of a fortiori argument were found in the following 8 books: Matthew (5), Luke (5), Romans (8), 1 Corinthians (1), 2 Corinthians (3), Philemon (1), Hebrews (4) and 1 John (1). Note that the epistles to the Romans, 1 & 2 Corinthians and Philemon (13 inst.) were written by Paul; the author of the epistles to the Hebrews is unknown[119]. No cases were found in the other 19 books, namely: Mark, John, Acts, Galatians, Ephesians, Philippians, Colossians, 1 Thessalonians, 2 Thessalonians, 1 Timothy, 2 Timothy, Titus, James, 1 Peter, 2 Peter, 2 John, 3 John, Jude, and Revelation.

No one has to my knowledge spotted all 28 a fortiori arguments in NT here listed. As we shall see further on, Neusner discusses one example in some detail, namely Matthew 12:11-12. Jacobs mentions three examples, namely: Matthew 12:11-12, Luke 13:15 and Romans 5:10[120]. As we shall see further on, Maccoby cites four examples, all from Romans, namely: 5:10, 5:17, 11:15 and 11:24. Abraham, Gabbay and Schild give the same three examples as Jacobs. I did not discover Luke 13:15 and Romans 11:15 through mechanical search, but only thanks to Jacobs and Maccoby mentioning them. I discovered 1

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119   Paul was in the past assumed by some to have also authored the epistles to the Hebrews, but this assumption was not universally accepted; nowadays, most experts reject it.

120   In *Rabbinic Thought in the Talmud,* pp. 113-114. Note that Jacobs also cites three examples from the Biblical Apocrypha: Ecclesiasticus 10:31, 14:5, and Wisdom of Solomon 13:3. I have not searched through the Apocrypha, or for that matter the Pseudepigrapha, for a fortiori arguments, but clearly this is a job worth doing and likely to reap a rich and interesting harvest. Even if such literature is non-canonical, it is historically significant.

John 4:20 thanks to H.W.B Joseph[121]. I came across Luke 16:10 and 2 Corinthians 3:9 more or less by chance, due to their proximity to other cases found mechanically.

Out of the 28 instances of a fortiori discourse found, 18 are positive subjectal and 6 are positive antecedental in form; 2 are positive predicatal and 2 are negative predicatal; the other standard forms are not used. Thus, we can safely say that the overwhelming majority of a fortiori arguments in NT are of the most obvious type (positive subjectal or antecedental); however, it is interesting that four of them are more complicated (predicatal). Of the arguments, 17 are purely a fortiori and 9 are clearly or probably intended as a crescendo (i.e. proportional)[122], while the remaining two can safely be classed as logically invalid. One of the a crescendo arguments[123] may be said to breach the rabbinic rule of *dayo* (sufficiency) against inferring a stronger penalty from a lesser penalty given in the Torah.

Needless to say, to acknowledge an argument as 'valid' in form is not necessarily to agree with its content. An argument is valid if its premises, be they true or false, do indeed logically imply its conclusion, be it true or false; and argument is invalid it its premises and conclusion are not related in this way. A false premise may, in a valid argument, imply a true conclusion, i.e. a proposition whose truth can be established by other means; and true premises may, in an invalid argument, wrongly seem to imply a false

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121   See AFL 31:2, about this finding.

122   Namely: Matthew 12:11-12; Luke 13:15-16; Romans 5:10, 11:15, 2 Corinthians 3:7-8, 3:9, 3:10-11; Hebrews 9:13-14, 10:28-29. For example, in Luke 13:15-16 the increase is from 'untying an animal from its stall so as to allow it to drink water' to 'cutting loose a woman from a demonic bond so as to heal her'; these are obviously two degrees of 'setting free and relieving'.

123   Namely, Hebrews 10:28-29.

conclusion. Thus, we may well accept an argument as valid without accepting its premises and conclusion, or as invalid without rejecting its premises and conclusion.

Moreover, it should be said that the NT arguments listed above are all in rather abridged form. They do not consciously lay out all the premises involved and all their terms, including all material necessary to draw the putative conclusion. In all cases, the major premise is left tacit, though the middle term is sometimes explicitly stated. This is excusable in most cases, insofar as the minor and major terms are readily apparent, so that given or injecting a middle term, the major premise can in fact be reconstructed; however, in certain cases, some effort and ingenuity may be needed for such reconstruction. In all cases, most of the minor premise and conclusion are explicit; but usually, if not always, the minor premise lacks the necessary information that the subject has *enough of* the middle term to gain access to the predicate. Strictly speaking, without this crucial factor of 'sufficiency', the conclusion cannot logically be drawn.[124]

Furthermore, in cases of a crescendo argument, i.e. where the subsidiary term is not identical in the minor premise and conclusion, but varies 'proportionately' to the values of the middle term in relation to the major and minor terms, the NT does not explicitly specify the third premise, the premise about proportionality (pro rata variation), which is logically needed to justify the conclusion. We must take it for granted that the speakers subconsciously had the necessary information in mind when they formulated their conclusions. That these various details are missing from their discourse of course indicates that they did not have

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124   Though all these remarks are made with regard to 'copulative' a fortiori arguments, similar ones can be made with regard to 'implicational' arguments.

full awareness of the formal conditions of a fortiori argument or a crescendo argument. Nevertheless, we are not here to test their abstract knowledge of logic, but are satisfied with making reasonable demands on their actual thinking processes.

Thus, we can be generous and say: if the a fortiori or a crescendo intent of an argument is obvious enough, and the argument can, even though some required elements of it are missing, potentially be fitted into a credible template, i.e. one of the standard forms validated by logic theory, then we may accept it as a 'valid' argument for our purposes here. This remains true, even if due to rhetorical flourishes the terms used in an argument vary somewhat (but of course, not if they vary too wildly). We are not interested in a nitpicking evaluation of abstract knowledge, but in a fair assessment of practical knowhow. Of course, we must remain attentive to detail and make sure the argument is not invalid. With these considerations in mind, 26 of the arguments found in NT have been assessed as formally valid, although 2 were declared invalid.

The 10 arguments in Matthew and Luke are attributed to Jesus, the initiator of Christianity, who is regarded by Christians as the son of God. Of these arguments, 9 are positive subjectal in form, including 1 a crescendo; and 1 is negative predicatal. The language used by Jesus (in the translation here used, at least) is: *how much more* (6), simply *much more* (2), and non-distinctive (2). All 10 arguments can be considered as formally valid[125].

It should be noted that 4 of the arguments in Luke correspond to 4 in Matthew, so that the net number by Jesus is 6 (rather than 10). That is, Luke 11:13, 12:24, 12:28 and

125   However, before surmising that Jesus is infallible, see the section on Additional findings (10.5), where it is shown that Jesus commits one error of reasoning (in Luke 16:10).

13:15-16 correspond to Matthew 7:11, 6:26, 6:30 and 12:11-12, respectively. It is interesting to note that the wording in these pairs of equivalents is not identical, implying one or both of them not to be verbatim accounts. The variations may be indicative of poetic license or of interpolation of interpretations, but they are anyway relevant to historical studies. The gospel of Matthew is considered as earlier than that of Luke. Matthew was a Jew living in Israel in Jesus' day, and may have been an eyewitness to many or most events he recounts; whereas Luke (ca. 1-84 CE) was a Greco-Syrian from Antioch, who did not witness what he reports. Modern scholars suggest both writers based their books partly on the book of Mark and partly on a hypothetical Q document that no longer exists.

The argument in 1 John 4:20 is by John himself; i.e. he is not quoting anyone else. Concerning Paul, as already said 13 arguments are attributed to him, as the author of Romans, 1 & 2 Corinthians and Philemon. Of these arguments, 6 are positive subjectal in form, including 4 a crescendo; 5 are positive antecedental, including 1 a crescendo; and 2 are positive predicatal. The language used by Paul (in the translation used, at least) is: *how much more* (9), simply *much more* (1), and non-distinctive (3). Only 11 of these arguments can be considered as formally valid; and 2 (being a contrario in form) must be classed as invalid.

Some of the arguments by Paul are very similar, repeating the same idea in perhaps slightly different words. Compare: Romans 5:8-9 and 5:10; Romans 5:15 and 5:17; Romans 11:12 (which itself contains two similar minor premises with a common conclusion) and 11:15; 2 Corinthians 3:7-8 and 3:9. Here, the same author is rewording his thoughts in different ways, to get his points across. Paul (Tarsus, ca. 5 CE – Rome, ca. 47 CE) was apparently a diaspora Jew who lived for some time in Israel. Initially actively anti-Christian, he later converted to

Christianity, and became one of its foremost leaders and missionaries. Paul may be said to have turned the Christian movement into a distinct religion, or at least given the evolving religion a new impetus.

Finally, let us mention the 4 a fortiori arguments in Hebrews. Of these, 3 are positive subjectal in form, including 2 a crescendo; and 1 is positive antecedental. The language used in them (in the translation here used, at least) is: *how much more* (2), simply *much more* (1), and *much less* (1). All 4 arguments can be considered formally valid. However, one argument (namely, Hebrews 10:28-29) goes against the rabbinic principle of *dayo* (sufficiency) which forbids using an a crescendo argument to infer a stronger penalty from a lesser penalty given in the Torah. Although the Epistle to the Hebrews was in the past regarded by many authorities as written by Paul, most modern scholars have come to reject the idea. However, if I may weigh in on this debate, judging only by the tortuous style of most of the a fortiori arguments in this book (compared to the straightforward style of the arguments found in Matthew and Luke), the hypothesis of Pauline authorship of Hebrews looks rather probable to me. Alternatively, Hebrews was written by someone else, but he cited a fortiori arguments by Paul or he wrote the arguments in the style used by Paul.

3.   Analysis of arguments found

Let us now look at some of the arguments in more detail. First, let us look at the two arguments by Paul that I have classed as invalid. **Romans 5:15** reads: "If through the offence of the one [i.e. Adam's original sin] many died, how much more did the grace of God, and the gift that came by the grace of the one man, Jesus Christ, overflow to many." That is to say, more formally: If offence by one (Q) caused many to die (S1), all the more grace by one (P)

caused many to receive grace (S2). Note that the minor term (Q) and the major term (P) are opposites ('offence' *v.* 'grace'), even if they have a common factor ('by one'); also, the subsidiary term has opposite values ('to die' *v.* 'to receive grace') in the minor premise (S1) and conclusion (S2), even if there is a common factor ('many').

Similarly, **Romans 5:17** reads: "If by one man's [Adam's] offence death reigned through that one; much more shall those who receive abundance of grace and the gift of righteousness reign in life through the one, Jesus Christ." The argument is much the same: Q is identical ('offence by one') and P is similar ('abundance of grace and the gift of righteousness', instead of just 'grace'); also, S1 is similar ('death to reign', instead of 'many to die') and S2 is similar ('reign in life', instead of 'receive grace'). So, we can treat these as one and the same thought, slightly differently verbalized.

In either case, what is sure is the invalidity of the argument. The argument is presented as an a contrario one, with contrary minor and major subjects ("the offence of one man" and "the gift of grace of one man") and contrary subsidiary predicates ("the death of many" to "the grace of many"). Such reasoning by inversion seems reasonable enough, at first sight. The minor and major terms, though contrary, might well be placed in a continuum running from negative to positive values; and likewise, the subsidiary terms, though contrary, might well be placed in a continuum running from negative to positive values. Even though this double a crescendo idea is not in itself objectionable, the conclusion cannot be claimed to follow from the available premises, because the parallelism between the two negative values (in the minor premise) and the two positive values (in the conclusion) cannot be proposed as a premise without begging the question. That is, the argument inevitably involves a circularity, needing

the conclusion to make possible deduction of the conclusion.

Such complicated argument, trying to express many thoughts at once, in tortuous ways, seems to me rather typical of Paul[126]. However, it should be pointed out that there are instances of similar invalid reasoning in the Talmud. For instance, in Mishna Makkoth 3:15, which reads: "R. Hananiah the son of Gamaliel said: If in one transgression a transgressor forfeits his soul, how much more should one who performs one precept have his soul granted him!" So, while the form of Paul's reasoning here does suggest some mental confusion, it does not prove (as Maccoby has insisted) that he had no Pharisaic influence.

Let us now look at **Hebrews 10:28-29**, which fails to apply the rabbinical *dayo* (sufficiency) principle. It reads: "He who despised Moses' law died without mercy on the testimony of two or three witnesses: How much more severe punishment do you suppose he shall deserve, who

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126   See for instance: Romans 5:10: "If, when we were enemies, we were reconciled to God by the death of his Son, how much more, having been reconciled, shall we shall be saved by his life." Here, the argument is valid, although the subjects 'who were enemies' and 'who have been reconciled' are contrary, the predicates 'reconciliation with God' and 'being saved' are two degrees of the same thing, even if they are given an a contrario flavor by their further qualifications, viz. "by the death of his Son" and "by his life." We could here too argue that the conclusion cannot be drawn from the premises without taking the conclusion as a premise; but because of the vagueness of the contrast between the predicates here, we can generously say that the conclusion is not really needed as a premise to draw the conclusion, especially if we ignore the said further qualifications. On this basis, I have counted the argument as valid; but it is admittedly a borderline case. Romans 5:8-9 is not very different, though a bit less unsure. Note that although I have counted it as purely a fortiori, it could be considered as a crescendo.

has trodden under foot the Son of God, and has counted the blood of the covenant, with which he was sanctified, an unholy thing, and has affronted the Spirit of grace?" More formally put, the argument runs: If one who breached Mosaic law (Q) was punished with death (S1), all the more he who has done all these un-Christian things (P) will be more severely punished still (S2).

This argument clearly intends an a crescendo movement from 'punished with death' (S1) to 'more severely punished' (S2). Since it is an inference from alleged Torah law (although where in it does 'despising Mosaic law' entail 'death without mercy' is not specified), it should not (according to the rabbinical rule of *dayo*, to repeat) conclude with a more severe punishment (for whatever greater sin). So, this argument is invalid under Judaic logic, even if it could be regarded as sound (that is, if we grant the implicit major premise) under general logic. Thus, whoever (it was Paul, I suspect) formulated it cannot claim to be reasoning in accord with Pharisaic standards. Moreover, of course, there is no mention in Mosaic law or lore of any "Son of God," or "blood of the covenant, with which he was sanctified," or "Spirit of grace." These being all Christian concepts and values, quite foreign if not contrary to the Torah context, it is absurd to appeal to the Torah in relation to them.

Let me also here comment on **Luke 16:11**, in which Jesus says: "If you have not been faithful with worldly wealth, who will entrust you with true riches?" Although this sentence uses no special key words or phrase, it is obviously a fortiori. More formally put, it says: If you (S) have not been [trustworthy (R) enough to be] faithful with worldly wealth (Q), then you (S) will not be [trustworthy (R) enough to be] faithful with spiritual wealth (P). This is a valid purely a fortiori argument, of negative predicatal form.

I found this case through mechanical search for the key word *much*, which led me to Luke 16:10, viz. "He who is faithful in that which is least is faithful also in much: and he who is dishonest in the least is also dishonest in much." These two sentences are clearly not a fortiori arguments. In my opinion, they are even non-sequiturs – for to my mind one may be scrupulously honest in little things, but be tempted into dishonesty by the prospect of a big gain; or inversely, be merrily dishonest in little things, but steadfastly refuse to engage in a big crime. Nevertheless, it is while looking at Luke 16:10 that I noticed the a fortiori argument in 16:11. However, here too I would like to point out that the word "therefore" which links these two verses is logically quite unjustified. At best, it indicates some further logical confusion; at worst, it reveals a manipulative intent.

Paul makes a positive predicatal argument in **Romans 11:24** (which we shall analyze further on) and another one in **1 Corinthians 6:3**. The latter reads: "Do you not know that we shall judge angels? how much more, things that pertain to this life?" This is a valid purely a fortiori argument: If we (S) can [i.e. have the authority (R) to] judge (R) angels (P), all the more we (S) can [i.e. have the authority (R) to] judge things of this world (Q). I will not here bother to unpack all a fortiori arguments found in the NT, as I think most of the others can be sorted out without too much difficulty by the interested reader.

I have to say that, although I have many years ago read the whole Christian Bible in the way of an intellectual duty, I did not greatly enjoy doing so and remember little of it. I can see that it contains some wisdom and good, but there are also in it many things that I find hard to swallow. As a philosopher, I find the idea that God might have a son of flesh and bones untenable. I also find references by Jesus to demons possessing people quite silly. I understand that people at that time did believe in such things; there are

echoes of this even in the Talmud, although such belief does not play any role in Judaism today. Additionally, I am rather put off by Jesus' occasional fits of bad temper and verbal abuse of people[127]. Such behavior does not look very 'high-minded' to me.

Moreover, as a Jew, I find Paul's frequent denigration of Jews and Judaism quite offensive and painful, since clearly lacking in objectivity and truth. He obviously had a personal axe to grind in this matter. I also suffer at the thought of all the innocent Jews that were persecuted through the centuries due to the unflattering narrative concerning "the Jews" given in the Christian Bible as a whole. For these reasons, it is with great reluctance that I wrote the present chapter, quoting some passages from this document. I did not want to give the impression I was endorsing it.

Anyway, I think I have managed here to give a new impetus to logic research in Christian sources. I hope other people, more at ease in this particular field than me, will

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127   Haï Bar-Zeev, in *Une lecture juive du Coran*, on p. 62, cites some anti-Semitic statements by Jesus: "You brood of vipers. How can you speak good, when you are evil?" (Matt. 12:34), "O faithless and perverse generation, how long shall I be with you? how long shall I suffer you?" (Matt. 17:17), "O ye of little faith" (Luke 12:28), "Ye are of your father the devil" (John, 8:44), "All [i.e. the rabbis] that ever came before me are thieves and robbers" (John, 10:8). Obviously, these are not pondered, empirical and rational judgments, but emotional outbursts. Note also the episode when Jesus initiated physical violence against certain merchants and caused them material losses (see Mark 11:15-16; Matt. 21:12; Luke 19:45; and John 2:13-16). One cannot avoid reflecting on the many Christians who, over the past two thousand years, have felt justified by such statements and stories to kill and otherwise persecute many, many innocent Jews.

take up the challenge and look further into the matter. It is not a religious issue, but has to do with the history of logic.

4.   Jesus of Nazareth

In the present section, we will focus on one of the ten (or six, if we exclude repetitions) a fortiori arguments attributed to Jesus in the Christian Bible, and discuss its substance as well as its form. I will show some of the complications that may surround the reading of such arguments. Needless to say, although I am a Jew, I have no desire to engage here in religious polemics against Christians or any other denominations. Jews do not normally try to convert non-Jews to their views[128]. My interest here is entirely logical. The proof is that I am not always critical. When I am critical, it is with an impartial, scientific spirit – the same spirit I apply to assessment of a fortiori and other forms of reasoning found in Jewish texts.

In an essay entitled "Comparing Gospels and Rabbinic Writings: a Halakhic Instance"[129] Jacob Neusner, a Jew, draws attention to the following argument by the founder of Christianity, Jesus son of Joseph (ca. 7-2 BCE to 30-36 CE), in **Matthew 12:10-12**, which may be construed as a fortiori:

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128   However, I would want to challenge the Christian inclinations of some contemporary Jews, those who call themselves "Jews for Jesus" or "messianic Jews." Christianity is not a sect of Judaism, but a quite different religion, even if the two have some common beliefs and one is historically an offshoot of the other to a large extent. Similarly, the differences between Judaism and Islam, and between Christianity and Islam, are sufficiently marked to be significant, even if Islam was originally largely plagiarized from its two predecessors.

129   In *Rabbinic Literature: An Essential Guide*, pp. 144-149.

"And they [the Pharisees present] questioned Jesus, asking, 'Is it lawful to heal on the Sabbath?' – so that they might accuse him. And he said to them, 'What man is there among you who has a sheep, and if it falls into a pit on the Sabbath, will he not take hold of it and lift it out? How much more valuable then is a man than a sheep! So then, it is lawful to do good on the Sabbath.'"

This exchange occurred as Jesus was about to "heal" a man's withered hand in a synagogue on a Sabbath. As Neusner points out, this passage displays ignorance of Jewish law, which in fact definitely allows and indeed recommends saving a person's life on the Sabbath, intervening however necessary even if the life is not directly and imminently endangered (citing Tosefta Shabbat 15:11-12); and as for a sheep fallen in a pit, the law allows and recommends that it be cared for where it is and later pulled out (Tosefta Shabbat 14:3); moreover, in the Halakhah "healing" does not constitute "work" forbidden on the Sabbath; so it is unlikely that "they" (i.e. some "Pharisees," i.e. some rabbis[130]) would "accuse him" on account of "healing on the Sabbath!"

There are other passages in the Christian Bible pointing to the same story, by the way, although they do not repeat the a fortiori argument. In **Luke 6:9**, Jesus says: "Then said Jesus unto them, I will ask you one thing: Is it lawful on the Sabbath to do good, or to do evil? to save life, or to destroy it?" And in **Mark 3:4**, "Then he turned to his critics and asked, "Does the law permit good deeds on the Sabbath, or is it a day for doing evil? Is this a day to save life or to destroy it?" The latter adds: "But they wouldn't

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130   *Mepharshim* – interpreters of Scripture.

answer him," which shows that the "Pharisees" concerned could not have been learned rabbis, but at best common people ignorant of Jewish law; for rabbis would have easily answered this tendentious query. Note the logically misleading phrasing of Jesus' questions: "to do good, or to do evil?" "save life, or destroy it?" etc. – as if there is no middle ground, as if the refusal of certain types of doing good implies a permission or imperative to do evil, as if such choices are the fundamental issue throughout every Sabbath.

One wonders if Jesus ever personally kept the Sabbath. Had he done so, he would surely have experienced the peace of it and known that it is not a time when one feels like getting involved in emotional disputes. Certainly, at the time of the episode here discussed Jesus was not, or at least his disciples were not, Sabbath observant. This is made evident in the text, just before the above-mentioned exchange in the synagogue: "Jesus went on the sabbath day through the grainfields; and his disciples were hungry, and began to pluck the heads of grain, and to eat." Some Pharisees reprove them, but he signifies that he is above the law, saying of himself: "the Son of man is Lord of the Sabbath"[131].

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131   Matt. 12:1-8. Similarly, Luke 6:1-5. If Jesus and his disciples traveled further away from human habitation than the law permits, they were breaking the Sabbath. In any case, plucking grain standing in a field is definitely breach of Sabbath law. (Moreover, although Deut. 23:26 permits "plucking ears with thy hand" in "thy neighbour's standing corn," the rabbis interpret this permission as applicable only to laborers working in that field – and not as an invitation to all passersby to serve themselves without the owner's permission.) The text does not say that Jesus plucked grain, but only specifies his disciples as doing it. However, would his disciples have done that if their leader disapproved of such acts? Obviously, Jesus' unconcern with Sabbath laws does not only relate to "healing" sick people; it

But more to the point to the present logical inquiry, as Neusner also remarks, with reference to the argument in Mathew: "Saving life is not at issue in the story, only doing good;" and, further on: "The Halakhic definition of doing good on the Sabbath is feeding the beast in the pit, not raising it up." That is to say, aside from the issue of the truth or falsehood of its premises, the a fortiori argument (presumably intended here, since the signal expression "how much more" is used) is logically questionable, because its apparent conclusion does not quite follow from its premises. This can be seen if we try rewriting the argument more formally:

A man (P) is much more valuable (R) than a sheep (Q).

A sheep (Q) is valuable (R) enough to be lawfully lifted out a pit on the Sabbath (S1).

Therefore, a man (P) is valuable (R) enough to be lawfully healed on the Sabbath (S2).

Note that it is I who has added the words "valuable (R) enough to be lawfully" to the minor premise and conclusion, so as to make the argument true to a fortiori form and thus logically credible; but I think no one would contest this addition. The implicit major premise must have an appropriate middle term R, such that a man has more R than a sheep; and the vague term "value" seems appropriate in this context. As for the addition of "lawfully," this is

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looks like a general indifference to this most important area of Jewish practice. The Sabbath is one of the first commandments given to the Jews in Sinai (Ex. 16:23), and has been considered by Jews throughout history as one of the most precious features of Judaism. It is the very heart of this belief system, constituting a symbolic acknowledgement of God as creator of the world and as active liberator of the Jews from Egyptian bondage.

inserted to reflect the question "Is it lawful to heal on the Sabbath?" asked by the Pharisees and Jesus' conclusion that "It is lawful to do good on the Sabbath;" more will be said on this specification further on.

What we have here, evidently, is an attempt at positive subjectal a fortiori argument. Notice that the major and minor terms (P and Q) are subjects, the minor premise and conclusion are positive, and the inference goes from minor to major. Since the subsidiary term (S) is not identical in minor premise and conclusion, the argument intended must be a crescendo. If the argument intended were purely a fortiori, the correct conclusion would simply be that "a man is valuable enough to be lifted out of the pit on the Sabbath (S1)." Here, Jesus (according to Matthew) concludes that "a man is valuable enough to be healed on the Sabbath (S2)" – not exactly the same thing.

So, we must assume a hidden additional premise to the effect that: "S varies in proportion to R." What is "S," here? That is, what is the common ground between "being lifted out of a pit" (S1) and "being healed" (S2) on the Sabbath? It is, as the proof-text has it, "being saved" from some danger on the Sabbath, or more broadly to be the recipient of some "good" deed. So, the hidden premise is that the amount of "saving" (S) permissible is proportional to the "value" (R) of the creature being saved. If a sheep, which is worth less than a man, is worth saving, then all the more is a man worth saving and in more ways. This is the a crescendo reading of the argument.

I above say that Jesus draws a conclusion more specifically about healing, with reference to the question posed to him, viz. "Is it lawful to heal on the Sabbath?" to which he is presumably implicitly answering when he compares sheep and men. In fact, the conclusion explicitly drawn by Jesus, viz. that "it is lawful to do good on the Sabbath," is more general. We could alternatively, then, read the argument as

purely a fortiori, by referring to the common ground of the two apparent predicates as the real predicate. That is, we could formulate the argument rather as follows:

A man (P) is much more valuable (R) than a sheep (Q).

A sheep (Q) is valuable (R) enough to be legitimately saved in some way on the Sabbath (S).

Therefore, a man (P) is valuable (R) enough to be legitimately saved in some way on the Sabbath (S).

This argument is not strictly correct, because though the predicate "saved in some way" is made to seem the same in the minor premise and conclusion, it is in fact different below the surface. This difficulty could be overcome by suggesting, instead, that what the speaker had in mind was to generalize from the more specific formal conclusion, "lifting a man out of a pit on the Sabbath," to *any* act of "doing good" or "saving" on the Sabbath," and then to apply this general principle to the more specific case of "healing a man on the Sabbath." If we view his reasoning thus, we might justify it as a logical chain (a sorites) comprising a purely a fortiori deduction, a generalization (induction) and an application (syllogistic deduction).

Still, let us go back and look at the argument as it is presented. Jesus is not actually saying that the sheep legally *may or ought to be* lifted out. Rather, he is suggesting that a sheep owner *would anyway*, out of self-interest, irrespective of the law, pull out the sheep. That is, even if Jewish law forbade such action (which it does, in fact, as we have seen), the sheep owner can be expected to be so attached to his material possession that he will ignore the prohibition and save his sheep. There is an implicit insult there, a suggestion that most if not all religious Jews are hypocrites; and indeed that very word is used in a similar context (Luke 13:15). The image thus projected of Jews as

'interested' (i.e. as essentially materialists, not spiritually inclined) has no doubt been very satisfying to anti-Semites in the past two millennia.

Granting this reading, the argument is not really about law – i.e. that saving a sheep's life is legal and therefore, all the more, saving a human life must be legal. The implication is rather that saving a sheep (by pulling it out of a pit) is *not* legal, but is nevertheless done in practice. Whence the conclusion ought logically to be that even if saving a human (in the same way) is likewise not legal, *it will likely be done in practice*. Such a conclusion would not answer the question posed, viz. "Is it *lawful* to heal on the Sabbath?" – but it would serve to make the legal question seem irrelevant. So, this is really revolutionary discourse, aimed at encouraging that the law of the land (or religious law) be ignored or discarded.[132]

That may explain the (alleged) reaction of "the Pharisees" (as e.g. reported in the parallel episode in Luke 6:11) – viz. "But the Pharisees and the teachers of the law were furious and began to discuss with one another what they might do to Jesus." We may suggest that they were not angry because he had done something illegal on the Sabbath by healing, but because he had defied the authority of the law as such by means of false premises and invalid reasoning.

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132   A Christian apologist presents this argument as follows: "Jesus exposes the fallacy in his critics' logic using an a fortiori argument. He points out that they would be willing to work in order to rescue a distressed sheep on the Sabbath. If that is true, then how much more should they be willing to restore a man who is created in the image of God." Norman L. Geisler in *Christian Apologetics* (Grand Rapids, MI: Baker, 2009), p. 71. It should be clear from my above analysis that Jesus did not expose "the fallacy in his critics' logic," but on the contrary engaged in fallacious reasoning!

It was no doubt his *hostile attitude*[133] that worried them the most, for mere doctrinal disputes are commonplace and generally accepted among Jews. So, the purpose of the story is to give a false impression regarding the reaction of the Pharisees: to make them seem intolerant; whereas they were in fact reacting normally to an unfair attack.

I personally do not believe stories like the one about Jesus healing people miraculously. But let us suppose for the sake of argument that it was true. We can first ask what his motive was in performing such healing. If it was simply kindness, why did he choose to do it in such a demonstrative manner and precisely on the Sabbath? Presumably, if he had done it in private and on a weekday, he would not have provoked such negative reactions. Certainly, the person he healed could have waited one more day, having presumably been sick for years. So, we must assume that Jesus' intent was confrontational. It was not merely to heal, but to publicly contend. He was out to show his (alleged) miraculous powers and thus claim for himself a religious authority above that of the Pharisees.

However, in Deuteronomy 13:2-4, it is expressly stated: "If there arise in the midst of thee a prophet, or a dreamer of dreams – and he give thee a sign or a wonder, and the sign come to pass, whereof he spoke unto thee – saying: 'Let us go after other gods, which thou hast not known, and let us serve them'; thou shalt not hearken unto the words of that prophet, or unto that dreamer of dreams." "If there arise in

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133   Jesus' petulant behavior towards the rabbis reminds me of present-day anti-religious secularists, some of who go out of their way to upset religious people; it seems that the anti-establishment attitude of some Jews is not a new phenomenon. In my view, there is nothing wrong in challenging the establishment – I myself often criticize orthodox views, and so would hardly object; what is wrong is the antagonistic tone some people use to do that.

the midst of thee, etc." refers to anyone who challenges the religious status quo, for whatever reason – even a Jew. "Going after other gods" refers to any proposed deviation from the Torah, as traditionally understood by the Jews. So, the Pharisees were under no Torah-given obligation to submit to Jesus following such fancy demonstrations. On the contrary, their religious duty was to be extremely cautious with such a man.

Many Christians who read such stories simply cannot understand why the Jews rejected Jesus – in Christian eyes the performance of a miracle like the healing above described should have sufficed to convince the Jews to accept him. For such Christians, the Jews' negative response could only be explained as obstinacy and bad faith. Indeed, Jesus' own negative statements on several occasions, concerning Jews who did not accept his claims, shows he felt unjustly rejected by them[134]. What he and Christians have failed to understand is that Jews are positively *obligated* by their Scriptures to be very suspicious of anyone who makes extravagant claims, even if he comes on with impressive miracles[135].

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134   See Jesus' harsh words in Matt. 12:34, 17:17and John 8:44, 10:8. Surely, if Jesus acknowledged the Torah, he would have known that Deut. 13:2-4 and 18:21-22 fully justified the rejection of his claims by most Jews. As Bar-Zeev points out (pp. 57-64), the Jews who rejected Jesus were typically those most knowledgeable of Torah, while his followers were mostly ignorant people or social outcasts, "the poor in spirit" (Matt. 5:3), "tax collectors and sinners" (Matt. 9:10), "the lost sheep of the house of Israel" (Matt. 10:6). I should add that, as far as I can tell (I could be wrong), Jesus did not enjoin or even give leave to his future followers (i.e. Christians) to persecute Jews. His words were bitter, but not intended to incite hatred and violence.

135   In Sanhedrin 107B (in the uncensored editions of the Talmud) Jesus is presented as a pupil of the Pharisee sage R. Joshua ben Perachya, who publicly "excommunicated him"

Let us return now to Neusner's critique. As he points out, no one denies Jesus' explicit principle that "It is lawful to do good on the Sabbath." The issue is: what constitutes "good" in the present context? For Jesus, it is (in a generous reading) pulling the sheep out of the pit; whereas for the rabbis, it is feeding the sheep in the pit until the Sabbath ends. Precisely because a sheep is not as valuable as a human being, it is not worth breaking the Sabbath for; nevertheless, as one of God's creatures, it should be treated in a kindly manner. But as regards a human being, according to the halakhah (i.e. established Jewish law), if one falls in a pit, he not only may but must be pulled out as soon as possible and using any means, and as Tosefta puts it: "it is not necessary to get permission [ad hoc] from a court" (i.e. the general permission suffices).

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following some inappropriate behavior (apparently, just judging a woman by her looks); the master was criticized by his peers for his rigor in "repulsing Yeshu with both hands," saying: "Let the left hand repulse but the right hand always invite back." It is also there said that Jesus "practised magic and led Israel astray." (See the Soncino ed. footnotes 13 and 17.) In Berachot 17B (uncensored ed.) Jesus is referred to as someone "who disgrace[d] himself in public." (See the Soncino ed. footnote 5.) However, the Sanhedrin 107B story does not seem factually credible, because: (a) it contains an anachronism, since it is said to have taken place at the time of king Alexander Jannai (c. 107-78 BCE); and (b) it is unclear what Jewish law would justify excommunicating a Jew for merely judging a woman by her looks! (Maybe this explanation of Jesus' excommunication is intended as a metaphor; but I cannot imagine what that metaphor might be.) There may be some truth to the story, but the details were apparently forgotten and then fancifully filled in. Nevertheless, the said passages of the Talmud are still noteworthy, as they illustrate how later rabbis, at least, looked upon the founder of Christianity. Note that, contrary to what some apologists claim nowadays, there is no suggestion here or elsewhere that Jesus was regarded as a rabbi (even if a dissident one), let alone that he was ordained as one.

Clearly, the legal context and related rabbinical attitudes are very different from what Jesus here assumes and implies them to be. Lifting a sheep out of a pit is a good deed that is not allowed, though that does not exclude a less drastic good deed from being done (viz. feeding the sheep where it is for a while). Lifting a man out of a pit is a good deed that is allowed and indeed prescribed – not by a fortiori inference from the sheep, as Jesus seems to think, but for an entirely other reason, viz. (if I am not mistaken) that Jewish law is intended to preserve and prolong our life and not needlessly endanger or sacrifice it (except in certain very special cases[136], of which the present case is not one).

So, not only is Jesus' apparent a fortiori argument built on very unflattering insinuations and on quite false legal premises, but its conclusion is a non-sequitur and irrelevant to the question asked! It is more a sophistical exercise is misrepresenting facts and sowing doubt than a serious attempt at legal proof. If Jesus was as some claim a rabbi, even a dissident one, he would not have indulged in such confused and misleading discourse. All the more so if he was God incarnate or the son of God, as some claim[137].

If we try to understand Jesus' discourse from his own point of view, we must declare his incoherence. On the one hand, he gets angry at and insults some Jews for taking care of their animals – thus suggesting that he believes Jewish law

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136   One should rather die than engage in idolatry, murder or illicit sexual relations (Pesachim 25a-b).

137   See e.g. John 3:17, 10:30. The concepts of God incarnating or having a son are, needless to say, totally foreign to Judaism; so, we can well cite Deut. 13:2-4 in this context. These concepts are clearly imported from other cultures. In Greek and Roman mythology, for instance, gods (including the chief among them, Zeus or Jupiter) often visit humans under human guise and often beget children with human partners.

to be against all such actions on the Sabbath (which it is not, in fact). On the other hand, he is willing for his part to dismiss the law's interdiction (as he wrongly assumes) of "healing" and more broadly "doing good." This is inconsistent discourse – he surely cannot both defend and dismiss the law at his convenience.

Perhaps the thrust of his argument is that even if "healing" is in actuality illegal it is in principle permissible; i.e. he is effectively advocating that the law currently accepted be changed. But if this was his purpose, a local synagogue was hardly the right forum – he ought to have addressed himself to the accredited lawmakers (ultimately, the Sanhedrin). But the legislative process is obviously not the center of interest here. Note that nowhere are the "Pharisees" in question named, as is customary in legal debate among Jewish rabbis. They are just presented as stereotypes, typical representatives of a monolithic class slated for contempt. No counter-arguments by them are cited, either; no exposition or explanation of their legal posture.

In any case, as Neusner rightly stresses and explains in detail, "healing" (by 'miraculous' or 'magical' means, like 'pronouncing prayers or incantations' or 'laying on of hands') does not in itself fit into the definition of "work" that Jewish law prohibits on the Sabbath, and so it is not and never was forbidden. It is only concrete acts that fall under one or more of the 39 categories of work (Heb. *melakhah*) which constitute breach of the Sabbath. It is true that the rabbis decreed that in a situation that is not life-threatening medical intervention should be avoided; but here their main concern was that the doctor or patient would likely prepare herbs for medication purposes (for this would involve *melakhah*). The rabbis were certainly never opposed to curing the sick! As regards chronology, these 39 categories were certainly known before Jesus'

time, being given in the Mishna[138]. When after the above speech Jesus (allegedly) dramatically "heals" a man who had a "withered hand," using no material equipment, he has in fact done no forbidden work!

In view of this, it is absurd to suppose that the rabbis would ever *have even asked* Jesus the specific question: "Is it lawful to heal on the Sabbath?" or even the vaguer question: "Is it lawful to do good on the Sabbath?" Why would they have done so, if a positive answer from him would have been correct? And why would they have been angered by his right answer and sought to obstruct him? It doesn't make sense. Whoever reported this incredible episode obviously misunderstood what was going on. More likely, the whole narrative is made up ex post facto so as to throw opprobrium on "the Pharisees." It can reasonably be considered an imaginary tale.[139]

5.   Paul of Tarsus

Hyam Maccoby, a Jew, wrote several interesting books expressing his ideas about the narratives in the Christian Bible that many Christians, though presumably not all,

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138   See Mishna Shabbat, and the corresponding Talmudic tractate (for the figure of 39, see on p. 69a: "The primary forms of labour are forty less one"), available in English at: www.halakhah.com/shabbath/index.html. A brief exposé on this topic can be read on Wikipedia at: en.wikipedia.org/wiki/Activities_prohibited_on_Shabbat.
Though the Mishna was completed in about 200 CE, the discussions in it date from at least about 100 BCE.

139   I must say some passages in the Christian Bible give me the impression of recounting a bad dream or a hallucination, the kind where people speak verry slowly in loww-pitched voices and say and do things quitte out of touch with ordinary reality and logic.

have found objectionable. One of these books was *The Mythmaker: Paul and the Invention of Christianity*[140]. Basically, as I see it, Maccoby's intent was to harmonize as much as possible Christian lore with Jewish doctrine, and his means for this end was to place the responsibility for the divergences between them mainly on Paul of Tarsus (5-67 CE). I have no interest in the present context in Maccoby's larger theories or in the objections of some Christians to them, although needless to say I would likely be more receptive to the former's viewpoints.

What interests me here is Maccoby's objections to Paul's claim to having a "Pharisee," i.e. rabbinical, background. This claim is made in **Acts 22:3**: "I am a Jew, born in Tarsus, a city in Cilicia, yet brought up in this city at the feet of Gamaliel, and taught according to the strict manner of the law of our fathers…"[141]. Presumably this refers to

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140   I have found three excerpts from this book posted on the Internet. One, called "The Problem of Paul," which presents Maccoby's   general   view   of   Paul,   is   at: www.positiveatheism.org/hist/maccoby2.htm; and the second, called "Paul's Bungling Attempt at Sounding Pharisaic" is at: www.positiveatheism.org/hist/maccoby3.htm. The third is at: books.google.com/books?id=co_CxizRbTAC&printsec=frontco ver&dq=Hyam+Maccoby+Paul+and+the+Invention+of+Christia nity&hl=en&ei=BRmHTeJriYI6t4_w7wg&sa=X&oi=book_result &ct=result&resnum=1&ved=0CDAQ6AEwAA#v=onepage&q&f =false.

141   And again in Philippians 3:5, where Paul describes himself as "Circumcised the eighth day, of the people of Israel, of the tribe of Benjamin, a Hebrew of Hebrews; regarding the law, a Pharisee." However, Paul (to my knowledge) gives no exact dates regarding his alleged Judaic studies. How old was he when he started? How long did he study? His conversion to Christianity is dated as ca. 31-36 CE, i.e. when he was about 26-31 years old. That is not old enough to have made very advanced rabbinical studies (to be sure, there have occasionally

Gamaliel the Elder (d. ca. 50 CE), grandson of Hillel the Elder and grandfather of Judah the Prince (the redactor and editor of the Mishna); if so, Paul is claiming a very high-level master, who was probably presided over the Sanhedrin at some time. Maccoby's discussion is mainly to be found in his book's chapter 7: "Alleged Rabbinical Style in Paul's Epistles" (pp. 62-71). There, Maccoby considers some of Paul's arguments, principally those apparently in the style of rabbinic *qal vachomer*; and he attempts to show that most are technically faulty to a degree that excludes the possibility that Paul may indeed have been trained as a Pharisee. Essentially, Maccoby argues that Paul constructed his arguments rhetorically, more in the manner of the sophists in the surrounding Hellenistic culture than in accord with rabbinic norm and practice.

Obviously, the evaluation of Paul's claim to rabbinic antecedents, cannot be based solely on the style of his discourse, but must focus mainly on his knowledge of Jewish law. I do not propose to here look into this matter, which requires a lot more study than I am willing to invest[142]. But offhand, I would certainly doubt that Paul was very knowledgeable. The ease with which he dropped out of normative Judaism and adopted religious ideas and attitudes, some of them pagan, from other traditions is indicative of a certain lack of grounding in Jewish belief and law. His defection sounds all the more incredible, considering his claim to have been a student of no less a personage than Gamaliel I[143]. Of course, he may have

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been some brilliant young rabbis – but Paul does not claim or appear to have been one).

142   There is no doubt already plenty of literature on the subject. The writers would need to be very knowledgeable in both Jewish law and Christian literature.

143   A Christian tradition claims that this Gamaliel was eventually baptized, and remained a secret Christian even while

studied in the latter's academy (*yeshiva*) for a short while, without this implying that he reached a high level in his studies. That he sat "at the feet of Gamaliel" does not necessarily mean that he was a star student, or at all remarkable.

As I said earlier, based on inspection of all of Paul's a fortiori discourse, I do not entirely agree with Maccoby's sweeping assessment. I do agree with him that Paul's a fortiori arguments are often distinctive, often confused, and often incredible. Paul had apparently a tendency to pack many thoughts into a single statement, and his was not exactly an orderly mind. But comparable errors are found, even if very infrequently, in rabbinical discourse. So, we cannot draw a hard and fast conclusion concerning Paul's Pharisee background or qualifications from his psycho-epistemology. He certainly resorts more than any other speaker in the NT to argument that looks a fortiori – at least thirteen times (and four more if the Epistles to the Hebrews are attributed to him). In only two cases, viz. Romans 5:15 and 5:17, would I declare his argumentation hopelessly invalid. Nevertheless, Maccoby's criticism has some justification.

Maccoby cites four examples of apparent *qal vachomer* from Paul, all from the Epistles to the Romans. Their analysis here is my own, independently of Maccoby, whose thinking will be examined further on. The first example runs as follows:

> **Romans 5:10**. "For if, when we were God's enemies, we were reconciled to him through the

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he sat in the Sanhedrin so as to protect the new sect. This claim strikes me as an utterly incredible ex post facto fabrication.

death of his Son, how much more, having been reconciled, shall we be saved through his life!"

This looks like some sort of *a crescendo* discourse: (a) God's enemies are, through the death of his son, reconciled to him; (b) those who have been reconciled [to God] are, through the life of his son, saved by him. This would be logically okay if presented as two independent statements of fact. But the difficulty arises due to use of the expression "how much more," which ordinarily implies an a fortiori type of argument, in which (a) would be a premise and (b) a conclusion. Six terms are mentioned here: enemies; death of son; reconciled; reconciled; life of son; saved; the premise and conclusion have one term in common, viz. reconciled, though this term is predicate in the premise and subject in the conclusion. This is not a known format of a fortiori argument.

The movement of thought involved here seems somewhat akin to first-figure syllogism: A is B and B is C, where B is the middle term ("reconciled") and A and C (God's enemies and friends, respectively) are the major and minor terms. But there is no intent at drawing the conclusion A is C. Rather, the intent seems to be: A is B is the premise, and B is C is the conclusion. So, this is not syllogism, either. What is involved is step by step increase in proximity to God: from enmity to reconciliation, and from reconciliation to salvation. One difficulty is that, though the two propositions are apparently intended to be in chronological sequence, life comes after death. Presumably, then, 'death' here refers to the crucifixion and 'life' to the resurrection; or alternatively, maybe, 'death' refers to the Christian's reflection on the crucifixion and 'life' refers to his or her remembrance of Jesus' life.

Albeit these difficulties, let us try to formulate an a fortiori argument, by making a number of changes in the given data. I would say that Paul intended to argue as follows:

> Friends of God (P) are more redeemable (R) than enemies of God (Q);
>
> and, enemies (Q) are redeemable (R) enough to be reconciled through the crucifixion (S1);
>
> also, proximity to God (reconciliation/salvation) (S) is proportional to redeemability (R);
>
> therefore, friends (P) are redeemable (R) enough to be saved through the resurrection (S2).

This is a formally acceptable, positive subjectal a crescendo argument. The term "friends" here introduced is taken to be applicable to people who "have been reconciled" (in the minor premise), and is suggested by opposition to "enemies." The crescendo movement is suggested by the use of different predicates, and by the fact that the first (in the minor premise) is relatively negative (referring to death) while the second (in the conclusion) is relatively positive (referring to life). The premise about proportionality is needed to give the argument more formal validity. Presumably, Paul had it in mind as he formulated his argument.

This is a generous rewriting by me on Paul's behalf, to align his argument with a standard form. Whether any of the premises is true or not need not concern us here, we are only verifying formal validity. The use of parallel contrasts between terms is rather typical of Paul's a fortiori discourse. It is conceivable that he intended to say this, but at the same time wanted to add other ideas, and so spoke with his logical mouth a bit too full. Is this argument by Paul rabbinic in style? Truthfully, I do not remember

coming across a rabbinic argument of similar form, although further research might discover one or more. Note that a very similar argument by Paul, not mentioned by Maccoby, is **Romans 5:8-9**. This reads:

> "But God shows his love toward us, in that while we were yet sinners, Christ died for us. Having been justified by his blood, how much more shall we be saved from the wrath of God through him."

Here again, Paul seems to intend an a crescendo argument, viz.: if people who are still sinners (Q) are redeemable (R) enough to be justified by the death of Jesus (S1), then converts (i.e. those already "justified") are redeemable (R) enough to be saved from punishment through him (S2). It is all a bit confusing, but can with a bit of effort be standardized.

I should add that both these arguments, i.e. Romans 5:8-9 ad 5:10, are not strictly speaking formally valid, but they are at least potentially so. They lack a clear middle term and major premise; and they lack a premise on proportionality, and furthermore a clear formula for calculation of the proportional change. For all that, I have accepted these two concrete arguments as (more or less) 'valid', for reasons that I have already laid out in my earlier theoretical treatment of such arguments. My position is, simply put, that we are not here concerned with the scientific truth of the premises and conclusion, or with the logical precision of the argument put forward, but merely with a rough estimate of its general credibility as a unit of ordinary discourse. If these arguments were Talmudic, I would accept them as reasonable in this loose sense; therefore, even if I do not agree with their content, I must to be fair grant their form the same 'pass' status.

The second example Maccoby gives is the following:

> **Romans 5:17**. "For if, by the trespass of the one man, death reigned through that one man, how much more will those who receive God's abundant provision of grace and of the gift of righteousness reign in life through the one man, Jesus."

This takes a while to understand, but when one looks at the context it becomes clearer. The minor premise refers to the 'original sin' by Adam – when that one man (Adam) trespassed (ate the forbidden fruit), death reigned (humanity became mortal) through that one (thanks to Adam). The conclusion refers to the benefits, according to Paul, of following Jesus – when the recipients of grace and righteousness (the Christian converts) follow the other one man (Jesus), life will reign (for them, thanks to him). Whether or not we agree with what he is saying, this seems to be Paul's thought, although it is expressed by him in unnecessarily tortuous fashion. The way Paul puts it is rather confusing at first sight, but if we reshuffle the terms a little his intent becomes clearer. Thus, his argument might be construed as a positive subjectal a crescendo, as follows:

Following Jesus (P) is more powerful (R) than the trespass by Adam (Q);

and, the trespass by Adam (Q) was powerful (R) enough to cause many to die (S1);

also, existential consequences (life/death) (S) are proportional to the power (R) of causal acts;

therefore, following Jesus (P) is powerful (R) enough to cause many to live (S2).

Not all details of the original argument are carried over, but the gist of it is clearly there. I have inserted a middle term (R), viz. the "power" of causal acts, and used it to reconstruct the tacit major premise (which requires Christian faith in Jesus) and the tacit additional premise about proportionality (which seems reasonable enough as a generality). Now, the question is: is this valid reasoning? I would say—no.

Although this argument somewhat resembles the preceding, the intention here is clearly a contrario, i.e. if Q causes S1, then P, the opposite of Q, must cause S2, the opposite of S1. These two causations may happen to be both true, but it cannot be said that one necessarily proceeds from the other. The given premises by themselves do not allow us to infer the putative conclusion. Even if the crescendo from S1 to S2 is conceivable, it is not easy to provide an additional premise which guarantees that the switch from Q to its opposite P is *precisely correlated* with the switch from S1 to its opposite S2 – this degree of precision is very difficult to demonstrate. The argument is effectively a circular one, because we only imagine the correlation by virtue of the conclusion. Thus, the argument must be considered invalid.

It is true that the preceding argument, Romans 5:10 also seems a contrario, since it goes from enemies being 'reconciled through a death' to friends (the opposite of enemies) being 'saved through a life'. But there, even though the contrast between death and life does give the argument an a contrario flavor, the two predicates are not strictly-speaking antithetical, because reconciliation and salvation are within the same polarity even if the latter is more positive than the former. Although such argument could also be rejected as tenuous on formal grounds, I have as earlier indicated let it pass as reasonable ordinary discourse. Similarly for the comparable argument of Romans 5:8-9.

On the other hand, in Romans 5:17, the two predicates (death and life) are diametrically opposed, and the argument is a clear case of a contrario, and therefore invalid. The same goes for another argument by Paul, not mentioned by Maccoby, namely **Romans 5:15**. This reads:

> "If through the offence of the one [i.e. Adam's original sin] many died, how much more did the grace of God, and the gift that came by the grace of the one man, Jesus Christ, overflow to many."

More formally put: If the offence by Adam (Q) was powerful (R) enough to cause many to die (S1), then the gift by Jesus (P) will be powerful (R) enough to cause many to receive grace (S2). Here again, notice the radical opposition between Q and P and between S1 and S2, and the consequent difficulty of formulating some additional premise that would justify the simultaneous switchover from negative to positive of both these variables. For this reason, the argument must be viewed as invalid.

Thus, as regards the second example of a fortiori argument by Paul that Maccoby draws attention to, we have to agree with him that it is invalid, even if the reasons we have given are (as we shall see) different from the reasons he gives. As regards the question as to whether similar reasoning is found in rabbinic discourse, the answer this time is—yes. I have found at least one a contrario argument in a Jewish source. It is in the Mishna Makkoth 3:15, which reads:

> "R. Hananiah the son of Gamaliel said: If in one transgression a transgressor forfeits his soul, how much more should one who performs one precept have his soul granted him!"

It is interesting to note that Paul's thought in Romans 5:17 (and indeed in 5:15) is essentially much the same as this Mishnaic saying, except that Paul has injected Adam and Jesus into the equation. It is conceivable that Paul had this very maxim in mind when he formulated his own[144]. In any event, in my opinion (I could yet be wrong on this one), the said argument in the Mishna is formally as invalid as the said two in Romans[145]. Thus, although Paul's formulation is a bit more complicated than R. Hananiah's, he may have made it under Pharisaic influence!

Regarding the third example put forward by Maccoby:

> **Romans 11:15**. "For if their [the Jews'] rejection is the reconciliation of the world, what will their acceptance be but life from the dead?"

Here, Paul seems to suggest that God's rejection of the Jews brought about His reconciliation with the world, and

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144   I do not think that this R. Hananiah was a son of the Gamaliel referred to earlier as Paul's Pharisee teacher; that Gamaliel (the Elder) does not seem to have had a son of that name. It looks like the reference may be to the Tanna of the 1st-2nd cent. Hananiah/Hanina b. Gamaliel II, i.e. to a great-grandson of the aforesaid Gamaliel, since Gamaliel II was a son of Shimon, the son of Gamaliel I. In that case, the said Mishnaic statement would be later than Paul's. But Paul may have heard a similar statement from earlier lips, maybe even from another rabbi with the same name. In any case, the fact that Paul's statement is more complicated the Mishnaic one suggests that it came later, since the reverse direction of influence is extremely unlikely.

145   As you can see, I am not playing favorites. Although I personally accept the content of R. Hananiah's statement and do not accept the content of Paul's statements, I recognize that their forms are the same, i.e. equally a contrario, and thus judge them equally invalid.

therefore when He accepts them again something even better will occur, namely a general resurrection of the dead. Or maybe, that the Jews' rejection of Jesus made possible his acceptance among the Gentiles, and therefore if the Jews decided one day to accept Jesus something even better will occur, namely a general resurrection of the dead. Or something like that – the subjects and objects intended are far from clear. Either they were not clear in Paul's mind, or he had difficulty expressing his thought. Be that as it may, what we need to note is that Paul is saying that *since* "rejection" leads to "world reconciliation," *it follows that* "acceptance," which is obviously a more friendly attitude, must lead to proportionately more than mere "world reconciliation," i.e. to "life from the dead." More formally presented, Paul's argument can be construed roughly as follows:

Acceptance (P) is a more positive attitude (R) than rejection (Q);

and, rejection (Q) is positive (R) enough to result in world reconciliation (S1);

therefore, acceptance (P) is positive (R) enough to result in life from the dead (S2).

Formally, what we have here is a positive antecedental a crescendo argument, since it progresses from "world reconciliation" to "life from the dead." So, an additional premise about proportionality is required and presumably implicitly involved; something like "the desirability of the consequences (S1, S2) is proportional to the positivity (R value) of the antecedent events (Q, P)," which is not

unreasonable[146]. So, the argument as such can be said to be valid, even if its terms are far from lacking in ambiguity and its minor premise, however it is interpreted, is open to doubt.

This argument, like that in Romans 5:10, has an a contrario flavor, insofar as its subjects (vaguely put, "rejection" and "acceptance") are antithetical and its predicates look a bit like opposites (because "life from the dead" includes mention of death, whereas "world reconciliation" does not). But of course, it is in truth not a contrario, since the term "life from the dead" is in fact positive and indeed more positive than the term "world reconciliation." So, it can, like Romans 5:10, be considered valid. This is, of course, after generous rewriting by me on Paul's behalf, for the purpose of standardization. Here again, notice Paul's signature style, depicting a rising progression from negatives to positives and from lesser things to greater things. I do not know if similar rhetoric occurs in in rabbinical discourse; but if it does, it must be quite rare. So, the form of the argument could perhaps eventually pass as rabbinical, even if its content would definitely not.

Note that a very similar argument by Paul, not mentioned by Maccoby, is **Romans 11:12**. This reads:

> "If their [the Jews'] fall means riches for the world, and their failure riches for the Gentiles; how much more will their fullness bring?"

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146   Note in passing that there is no occasion to apply the *dayo* principle to this a crescendo argument for the simple reason that the conclusion is more positive than the minor premise.

This sentence in fact contains two arguments with the same thrust: If the Jews' fall means riches for the world, then their fullness will bring about something better. And: If the Jews' failure means riches for the Gentiles, then their fullness will bring about something better. Here again, some negative remarks by Paul about the Jews, claiming them to have fallen and failed, presumably because they did not acknowledge Jesus as divine. The statement is no doubt viewed by Paul as positive, since he considers that their recalcitrance did not prevent (or maybe enabled) spiritual enrichment for the world, and he predicts that if they change their mind, even better things will result (this being tacit, but obviously intended in the rhetorical question). The use of a rhetorical question in lieu of a definite conclusion is stylistically very rabbinic.

The fourth example of Pauline a fortiori argument considered by Maccoby is:

> **Romans 11:24**. "After all, if you were cut out of an olive tree that is wild by nature, and contrary to nature were grafted into a cultivated olive tree, how much more readily will these, the natural branches, be grafted into their own olive tree!"

We see at once that this statement makes sense, and would be acceptable in rabbinical disputation. It can easily be recast in the following, positive predical form (note how it proceeds from major to minor, from the more difficult act to the easier one):

More compatibility (R) is required to graft cuttings into another olive tree (P) than to do so into the same olive tree (Q);

and, a wild olive tree cutting (S) is compatible (R) enough to be grafted into another, cultivated tree (P);

therefore, a wild olive tree cutting (S) is compatible (R) enough to be grafted into its own, wild tree (Q).

Note that this argument is purely a fortiori (since the subsidiary term, S, remains constant), whereas all the preceding instances were a crescendo. Although it can be considered valid, Paul's habitual mental gymnastics are evident in it: a branch is "grafted," as against "cut out," in a manner "contrary to nature," as against "natural," into a "cultivated," as against "wild by nature," olive tree. It is clear that Paul enjoys such entangling thoughts.

We have thus far looked at seven of Paul's a fortiori arguments, four mentioned by Maccoby and another three not mentioned by him. These are all the a fortiori arguments in Romans. There are another five a fortiori arguments by Paul in: 1 Corinthians 6:3; 2 Corinthians 3:7-8, 3:9, 3:10-11; and Philemon 1:15-17. There are additionally four a fortiori arguments which *might* be (could well be, in my view) by Paul in Hebrews 9:13-14, 10:28-29, 12:9, 12:25. None of these arguments are mentioned, or taken into consideration, by Maccoby. I will not list them all here; but if the interested reader looks them up, he or she will see that most of them (including those in Hebrews) have features very similar to those highlighted above. Paul's distinctive style is easily recognized in them.

The following is just one example, found in Hebrews 9:13-14: "For if the blood of bulls and of goats, and the ashes of a heifer sprinkling those who are unclean, sanctifies them so their flesh is clean: How much more shall the blood of Christ, who through the eternal Spirit offered himself without spot to God, cleanse your consciences from dead works to serve the living God?" Notice the contrasts: between animal sacrifices and Jesus' self-sacrifice;

between the uncleanness of those who are sprinkled with ashes and the spotlessness of Jesus; between the cleansing of the flesh in the first instance and the cleansing of consciences in the second; between dead works and the living God. The underlying argument form is simply a crescendo; but the suggestive play of light and shade looks very Pauline.

As regards the four arguments in Romans brought to our attention by Maccoby, following our own analysis above we can say the following about them in the way of a summary. In all four cases, the wording is far from straightforward, and not entirely clear; but with a bit of effort and imagination the intended arguments can be recast in standard forms. The first two can be construed as positive subjectal, the third as positive antecedental, and the fourth as positive predicatal. The first three are a crescendo arguments, and the fourth is purely a fortiori argument. Three of the arguments may be considered valid; but one is invalid. The validity of the first and third arguments is here accepted, even though in a stricter perspective it is open to debate. The invalid argument is the second, and its invalidity is due to its peculiar a contrario form. As for whether Paul's discourse has or lacks "rabbinical style" – the question is difficult to answer conclusively. He has his own peculiar style – that is all that can be said with certainty.

Maccoby's assessment of the four arguments differs considerably from mine, due to his different theoretical understanding of the nature and conditions of validity of a fortiori argument. He judges the first three of the said arguments by Paul as invalid and the fourth as valid. He regards the three invalid arguments as invalid because the predicate in each putative conclusion is never identical to the predicate in the minor premise. This, according to Maccoby, does not conform to the rabbinic *dayo* (sufficiency) principle, which he sees as interdicting all

'proportional' a fortiori argument (i.e. all a crescendo argument).

Maccoby is right in his observation that, as regards the first three arguments, the predicates in the minor premise and conclusion do not match. But in my opinion, he is wrong in his assumption that this is necessarily a breach of the *dayo* principle. This principle, as I have shown in earlier chapters (AFL, 7-8), only forbids the inference, from the penalty prescribed in the Torah for a certain crime, to a greater penalty (not prescribed in the Torah) for a greater crime. It is not a general proscription of proportionality. If we look at the three arguments in question, viz. Romans 5:10, 5:17 and 11:5, we see that none of them are to do with inference of a penalty – they all conclude with what Paul perceives as an increased good.

In fact, looking at all 28 a fortiori arguments found in the Christian Bible, only one might be construed as involving a breach of the *dayo* principle. This is the argument in Hebrews 10:28-29 – of which Paul could well be the author, in view of its tortuous style. I have analyzed this argument in more detail in a previous section (AFL, 10.1). Suffices here to point out that it argues from an (alleged) death sentence for breach of Mosaic law to a "more severe punishment" for various unchristian attitudes or acts. Insofar as Mosaic law is mentioned in the premise, and an increase in punishment is mentioned in the conclusion, this may be said to be a breach of *dayo*.

Of course, no rabbi would accept this inference anyway, since the conclusion concerns matters that have nothing to do with Judaism. That is, the rabbis would strongly object to its (tacit) major premise, which places Christian values above Jewish ones. But as regards application of the rabbinical *dayo* principle, this is the only place where it might conceivably be formally applied; and its effect would be to declare the conclusion excessive, i.e. lacking

conformity with Judaic standards of inference. But this constitutes a religious norm – not as Maccoby imagines a logical one. Logically, the argument is passable. This does not mean that its content is necessarily true, but simply means that if the required major premise and premise about proportionality were given, the conclusion would follow from the minor premise. The missing premises are, however, open to doubt.

Furthermore, it should be said that it would be inaccurate to say that the *dayo* principle is regarded by the rabbis as an absolutely unbreakable rule. We have seen in our study of the Baba Qama 25a that some rabbis allowed its occasional breach. Maccoby fails to mention that—not, I think, out of dishonesty, but because he regards the *dayo* principle as identical with the principle of deduction (i.e. the logical rule that the conclusion of a deductive inference cannot contain information not given explicitly or implicitly in the premises). This belief of his is based only on the Sages' objection to the first argument of R. Tarfon in the Mishna, without regard to their objection to R. Tarfon's second argument (which Maccoby fails to notice and take into consideration).

Due to his limited understanding of the *dayo* principle, Maccoby does not give credence to the Gemara which throws some doubt on it. He does not admit the possibility that it might have been Torah-decreed, as claimed by the Gemara. Maccoby rejects the Gemara as a late interpolation by some comparatively ignorant Amora. He does not notice the fact that the Gemara presents this thesis as being of Tannaic origin (i.e. as a *baraita*), in which case it was historically much earlier than he supposes. Anyway, since the Gemara was settled, its account is accepted as kosher; that is to say, rightly or wrongly most rabbis do accept that a fortiori argument may occasionally be performed without regard to *dayo*. Indeed, they generally believe, following the Gemara, that the natural conclusion

of an a fortiori argument is 'proportional', and that an artificial decree is necessary to prevent such conclusion. Maccoby does not convincingly take these givens of Judaism into consideration.[147]

Anyhow, returning to Maccoby's criticism of Paul, his analysis proceeds as follows. Since only Paul's fourth argument can be considered as valid, a success rate of one out of four can hardly be regarded as skillful performance. As well, every student in rabbinic academies knows the *dayo* principle; so Paul, who did not apply this rule, cannot have been a Pharisee. But as we have seen, of the three arguments by Paul considered invalid by Maccoby, two are in fact valid; and the remaining invalid argument is not invalid for the reason given by Maccoby. Moreover, the *dayo* principle is not an issue in any of the arguments that Maccoby focused on. So, Maccoby's criticism here was unjustified.

Of course, Paul can still be criticized on other grounds, mainly the evident confusion in his way of thinking and verbal expression, not to mention his unorthodox religious ideas and values. A Christian commentator, one James Patrick Holding[148], unhappy with negative judgments of Paul by Maccoby, engages in ad hominem and other fallacious attacks on him, and then complains as follows:

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147   I am greatly simplifying the issues here; the reader is referred to the AFL chapters on Talmudic a fortiori argument (7-8) for more precise treatment. Funnily enough, Maccoby and the Gemara have in common the failure to have noticed the significance of the second argument of R. Tarfon and the Sages' objection to it.

148   "Hyam Maccoby: A Critique" posted online at: www.tektonics.org/lp/maccobyh01.html. I do not know when this essay was published – obviously sometime between 1986, when Maccoby's book was published, and 2011, when I found the essay.

> "Maccoby gives Paul a failing grade on 3 out of 4, accusing him of 'woolly, imprecise reasoning' and going 'far beyond the conclusion warranted' – the bottom line being, Paul cannot be a Pharisee or a rabbinic exegete, because he 'was arguing for a doctrine of which the Pharisees would have disapproved strongly.' (pp. 65-6). Now, did the reader catch that? Paul can't be a Pharisee or a rabbinic exegete, because he comes to conclusions that are false by Pharisee thinking... i.e., because he asserts that Christianity is true. All 4 of these arguments, in fact, are quite sensible if what Paul argues is based on what is true; but that is the very point at issue, and Maccoby has merely started by assuming from the get-go that Christianity as we know it is a Pauline fraud. Once again, all he does here is argue in circles."

This is an unfair counterargument disingenuously posing as logical criticism. Holding is saying that Maccoby denies Paul's Pharisee credentials simply because he dislikes his Christian conclusions. But this is evidently not Maccoby's approach. Maccoby clearly bases his rejection of Paul's Pharisee pretentions on his (alleged) demonstration of Paul's inability to reason correctly and in accord with rabbinic standards and practices (as he sees them). There is no prejudice on Maccoby's part, no circularity in his argument. His denial of Pharisee status to Paul is Maccoby's conclusion, not his premise. He does not primarily question Paul's concrete conclusions, but the process through which Paul drew them, which he judges (albeit incorrectly) to be pseudo-logical. It is not the content of Paul's discourse Maccoby attacks, but its form.

Contrary to Holding's claim, the invalidity of Paul's arguments (according to Maccoby) does not depend on the truth of the premises – it is an issue of process. Whether the premises are true or false, conclusions obtained by such means are invalid. Invalid does not mean false – the conclusions may still be true for other reasons – but they cannot be true for the reasons advanced, since the process is faulty. This is elementary logical doctrine, which Holding has evidently not yet grasped. Let us recall that Maccoby has demonstrated his intellectual integrity with regard to Judaism, too – he does not fear to criticize apparent wrong reasoning by the Amoraic writer of the Gemara Baba Qama 25a. He evidently tries to be an unbiased observer. So, he is not some Jewish fanatic blindly attacking Christian doctrine, as Holding tries to depict him.

Maccoby's critical attitude of Paul is, in my opinion, most fitting with regard to **Romans 7:1-6**, which reads as follows:

> "You cannot be unaware, my friends – I am speaking to those who have some knowledge of law – that a person is subject to the law so long as he is alive, and no longer. For example, a married woman is by law bound to her husband while he lives; but if her husband dies, she is discharged from the obligations of the marriage-law. If, therefore, in her husband's lifetime she consorts with another man, she will incur the charge of adultery; but if her husband dies she is free of the law, and she does not commit adultery by consorting with another man. So, you, my friends, have died to the law by becoming identified with the body of Christ, and accordingly you have found another husband in him who rose from the dead, so

that we may bear fruit for God. While we lived on the level of our lower nature, the sinful passions evoked by the law worked in our bodies, to bear fruit for death. But now, having died to that which held us bound, we are discharged from the law, to serve God in a new way, the way of the spirit, in contrast to the old way, the way of a written code."

I agree with Maccoby's analysis of this passage and his conclusion that Paul is "muddle-headed." Paul here claims an analogy between a widow who consorts with a man (since her husband is dead, her act is not adultery), and converts (i.e. ex-Jews, presumably) who have taken up a new religion (Christianity). Whereas it is the widow's husband's death that frees her from the law against adultery, in the case of the converts it is claimed that it is *they* who have died "to the law," and that "having died" they are "discharged from the law." Moreover, the man ("another husband") they consort with is someone who "rose from the dead," so that the predicate of death originally applied to the widow's husband is now implicitly applied to the widow's *consort*. Such discourse can rightly be characterized as "muddle-headed."

Of course, Paul is saying something comprehensible. He is saying that the converts being no longer bound to their "lower nature," having adopted the "way of the spirit," have no need of the "old way, the way of a written code" (i.e. the Torah), which was designed to control their "sinful passions" and indeed perhaps "evoked" them. But the issue here is not *what* he is saying, but *how* he is saying it. His form of discourse is faulty, whatever its content might be – and that reveals something negative about his intellectual abilities, i.e. his psycho-epistemology. In short, Paul does

not have a very logical mind[149]. An amusing comment in this regard is passed on by Solomon Schechter: "Harnack makes somewhere the remark that, in the first two centuries of Christianity, no man understood Paul except that heathen-Christian Marcion, and he misunderstood him."

This study of Paul's attempts at logic is of course not exhaustive, and an exhaustive study would of course be welcome. But enough evidence has been adduced for us to draw a rather negative overall conclusion as suggested by Maccoby. Personally, I have always found Christian discourse a bit befuddling; I now better understand why. I do however understand that Paul's language may sound pleasant to Christians. To their ears, its illogical structure is not a problem, but music and poetry. The message of love and salvation is, finally, all that matters to them. They are not concerned with technical issues.

To conclude our brief study: it is not possible to judge whether Paul did or did not receive a Pharisee education merely by looking at his a fortiori argumentation. The only way to really answer this question is to examine the degree

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149   Boaz Cohen, in "Letter and Spirit in Jewish and Roman Law," in: *Essential Papers on the Talmud*, pp. 399-428, seems to agree with this proposition, when he says: "Paul contradicted himself, when he claimed that the promise made to the seed of Abraham could not be annulled. Using the argument a fortiori, he argued as follows: 'Brethren, I speak after the manner of men. Though it be but a man's testament, yet if it be confirmed none disannulleth, or addeth thereto' (Galatians 3:15). How much more is it true, he argues [further on], of the promise given to Abraham, which was confirmed before God" (p. 35). However, while Cohen may be justified in accusing Paul of inconsistency, I cannot confirm his claim that an a fortiori argument is involved here: he is using the King James NT, and the words "how much more" do not appear there (or in any other version I looked at). Note that Cohen's paper originally appeared in *Jewish and Roman Law: A Comparative Study* (New York: JTSA, 1966).

of Paul's knowledge (or lack of knowledge) of Jewish law, which we have not done here. What is evident from Paul's discourse is that he had, after his conversion to Christianity, a very negative opinion of Judaism. This can be seen for instances in the two a fortiori arguments in **2 Corinthians 3:6-9**:

> "Who has also made us able ministers of a new covenant; not of the letter, but of the spirit: for the letter kills, but the spirit gives life. For if the ministry of death, written and engraved in stone, was glorious, so that the children of Israel could not steadfastly behold the face of Moses because of the glory of his countenance; and that glory fading: Shall not the ministry of the spirit be even more glorious? For if the ministry of condemnation had glory, far more does the ministry of righteousness exceed it in glory."[150]

Notice the very negative characterizations of Judaism as "the letter [that] kills," "the ministry of death," and "the ministry of condemnation." Whether this strong antipathy was the result of a close contact with Judaism in the past which ended in deep disillusionment or was the result of very superficial past acquaintance with it needs

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150   For the record, these arguments are both positive subjectal, since they go from minor to major. Also, the words "even more glorious" and "exceed it in glory" suggest they are intended as a crescendo. Note in passing Paul's usual rhetorical resort to opposites: the letter kills vs. the spirit gives life, the ministry of death vs. that of the spirit, the ministry of condemnation vs. that of righteousness. However, the arguments are formally valid, because they are not a contrario, i.e. their subsidiary term (glorious, having glory) remains the same in minor premise and conclusion, varying only in degree.

investigating. My personal impression offhand – I claim no expertise in the matter – is that Paul's criticism of Judaism was very overall, very vague: it was not the criticism of an ex-scholar, i.e. someone able to formulate detailed and conclusive arguments. As regards Paul's substantive accusation, here, viz. that Judaism is a religion concerned with 'the letter' (i.e. soulless rituals) instead of 'the spirit' (i.e. soulful consciousness of God), this can easily be refuted.

While it is true that Jewish worship is always in danger of being an empty shell, it is also true that we are always expected to overcome this natural tendency and put some life into our worship. This problem of form without content is present in all religions, because it is part and parcel of the human condition. It is present even in Christian ritual – someone can regularly go to church, yet spend his or her time there idly chatting with a neighbor; or someone can be always nattily dressed as a bishop, yet behind the scenes engage in despicable pederastic orgies. Even in Zen meditation, which is in principle devoid of ritual, it is easy to lose one's concentration and be carried away by random thoughts. The human mind is fickle and readily wanders off[151]; repeated effort is required to produce and sustain full presence of mind. Sometimes, the mind perversely does the opposite of what one wants it to do.

In Judaism, as in other religions, external observance without inner commitment is not regarded very highly. In Isaiah 29:13, God is reported as complaining that: "this people draw near, and with their mouth and with their lips do honour Me, but have removed their heart far from Me, and their fear of Me is a commandment of men learned by

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151   As the *Dhammapada* suggests (v. 35).

rote" [152]. Jewish teachers today are well aware of the danger, and they enjoin people to add *kavanah* (intention) to their observance, and not just practice in a mindless manner. That is, when praying to be aware of the words and to mean them; when donning phylacteries to do it attentively, aware of the significance of the act; and so forth. No doubt it was the same in Paul's day, i.e. during the Mishnaic period. However, Judaism does not condemn inattention outright, as Paul seems to have done. Performing the *mitzvot* (commandments) in a mechanical manner is not recommended, but it is certainly accepted as better than not performing them at all. Judaism is realistic and aware that it is not easy for most people to attain the ideal of full attention and intention.

Another common interpretation of Paul's letter-spirit dichotomy is that, whereas Judaism was a religion which put the emphasis on "works," Christianity was to stress "faith." To be "saved," a Jew had to "perform," whereas a Christian needed only to "believe." This, I would say, was a lure, a sales pitch – for I cannot conceive of anyone being accepted as a good Christian who does not eventually behave in a certain way, a way Christians consider acceptable. Of course, entrance into the fold has to be free of charge, or almost so, to attract converts; but once in, the convert must to a large extent conform to the norms and mores of the group he or she has joined, or face rejection. This is true in all religions. Faith and conduct cannot logically be dissociated: good conduct expresses sincere faith; whereas bad conduct expresses insincere faith, which means: lack of faith. Conduct is the seal of truth and measure of faith. Actions speak louder than words. One

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152   Mendell Lewittes mentions this passage, and others drawn from the Tanakh and the Talmud to the same effect, p. 7.

can, of course, argue about which actions are best; but
some sort of action is necessary.

The importance of faith (in God and in the Torah) is not
denied in Judaism, but on the contrary it is emphasized. For
instance, the Gemara (Makkoth 24a) teaches, in the name
of R. Simlai: "But it is Habakuk who came and based them
[the 613 commandments] all on one [principle], as it is
said: 'But the righteous shall live by his faith'." This
passage (Habakuk 2:4) just means that faith is necessary
for religious practice, not that it replaces it. The 613
commandments are "based on" faith; it is they, and not
merely the faith underlying them, which make a man
"righteous" and make possible for him to "live" spiritually.
Faith is indeed part of the spiritual path, but it cannot by
itself take a man very far along it. Additional acts are
required, on the material, mental and spiritual planes, to
progress further.[153]

So, Paul's criticism of Judaism is unfair. I am not saying
that he had no right to criticize it, note well. I would and do
say that Judaism deserves criticism in many respects. But I
just do not think Paul zeroed in on precisely what, in it,
deserves criticism. Note also that his criticism is not
logically applicable to all Jewish law. Although many
Jewish laws have to do with ritual (laws relating to animal
sacrifices, permitted/forbidden foods, ritual purity, and so
forth), many Jewish laws have nothing to do with ritual.
They are aimed at ensuring justice, peace and social
cohesion; they are about murder, theft, damages,

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153   Of course, faith in whom or in what is another question
to ask here. In Judaism, the faith needed is faith in the existence
of God and in His having revealed the Torah. In Christianity, the
faith needed is faith in the divinity of Jesus and in his saving
power. In Islam, Buddhism and other religions, the faith needed
in each case is something else again.

commerce, inheritance, marriage, divorce, charity, and so on. Surely Paul was not against such laws, which are necessary (in some form or other) for any functioning society! Certainly, Christian societies also had to and do have such laws. So, his comments lack precision in this respect too.

We might further speculate that Paul was a man ahead of his time, who found the rigid regulation by Judaism of all aspects of people's lives all the time to be oppressive and antithetical to genuine spirituality. This was the rule (i.e. the dominion) of the "letter"– always having to follow some regulation or other – and he advocated in its stead the rule of the "spirit" – a freer, more spontaneous approach to worship of God. Many of today's Jews would, in truth, agree with this more secular vision of religion, although those with some experience of Judaism know this to be something of a caricature. Some religious people are indeed spiritually inert; but others manage to lead inspired, lively lives. But was Paul really as modern as this reading suggests? Remember that before his conversion to Christianity Paul was by his own admission an extremist, persecuting Christians[154] against the advice of his Pharisee teacher Gamaliel. Judging by the negative tone of his subsequent statements against Judaism and Jews, it does not seem that his character radically changed through

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154   Bar-Zeev makes the interesting suggestion that Paul may have, in Acts 22:4, exaggerated his persecution of Christians ("to the death, binding and delivering to prison both men and women") so as to make his conversion appear all the more radical. We have, after all, only his word for it.

conversion. He was still antagonistic; only the target of his animus changed.[155]

Judging by his harsh words, I think Paul had a personal ax to grind. He verbally degrades Jews, speaking of their "fall," "failure," and "rejection." The term "ministry of condemnation" is perhaps indicative of his feeling rejected by fellow Jews. The term "ministry of death" is perhaps indicative of the deep pain such rejection caused in him. These terms may also allude to the condemnation and killing of Jesus, and thus perhaps intend a blood libel, but their main intent is clearly criticism of the Torah, the doctrine "engraved in stone." Considering Paul's Jewish roots, one can't help comparing his behavior to that of 'self-hating' Jews of the present day, like Noam Chomsky, George Soros or Yariv Oppenheimer, to name but three, who due to some obscure personal resentment against other Jews, perhaps merely wounded pride, go abroad sowing seeds of ill-will against the Jewish people. The irony of their position is that it is precisely because they are born Jews that their words are given weight. Such Jews forget the Torah's admonition (Leviticus 19:18):

> "Thou shalt not take vengeance, nor bear any grudge against the children of thy people, but thou shalt love thy neighbor as thyself."

Note that this is a purely spiritual instruction, without an iota of ritual in it. One cannot fulfill the letter of it without fulfilling the spirit of it. One cannot fake it, or go through the motions of it half-heartedly. It enjoins us to be

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155   As far as I know (I might be mistaken), however, Paul did not instruct or even merely permit Christians to persecute Jews. Anti-Semitic acts were probably a later development.

conscious of our passions and learn to actually dominate them. This is not easy to do, when one's feelings are hurt and one yearns to get back at those who hurt them. Did Paul practice this commandment? I suspect not. It is doubtful, anyway, that he took it and others like it into consideration when he accused Judaism of consisting of "letter" without "spirit."

But the bottom line in any Jewish criticism of Paul is his Christian belief that Jesus was "the Son of God." This was a radical break from Judaism. The concept is not, has never been and will never be part of Judaism. The idea of a "messiah" is Jewish – but this refers to a human being, not to an incarnation or offspring of God; a spiritually exceptional man, to be sure, but still a man. The moment any Jew accepts the idea of a "son of God," he places himself outside the bounds of Judaism; he belongs to a very different religion, called Christianity. This is not "a sect" of Judaism, even if historically rooted in it and sharing many beliefs and values with it; it is something apart, with its own course and destination. It is not a Jewish path at all, even though there are some people today – the "Jews for Jesus" and other Christian missionaries – who pretend that it is.

6.   Additional findings

Surfing again through the Internet more recently, after writing all the above, I discovered (to my dismay) that there are many passages of the NT that are considered as a fortiori and that I have not included in my list. I found these additional instances in various websites, where they are used for preaching purposes; but I did not note down the names of the websites. There are, I have little doubt, more instances to be found; but I did not pursue the matter further. The instances I found were: Matthew 10:29-31, Luke 16:10 (2 instances, of which 1 invalid) and Luke

16:12, Luke 18:6-8, Romans 8:32, John 7:23 and John 10:35-6. Of these 8 instances, as we shall now see, 7 are technically valid while one is invalid.[156]

In **Matthew 10:29-31**, Jesus says: "Are not two sparrows sold for a penny? Yet not one of them will fall to the ground outside your Father's care. And even the very hairs of your head are all numbered. So, don't be afraid; you are worth more than many sparrows." The a fortiori argument here is: if a sparrow (Q), whose is worth (R) little, is under God's protection (Sq), then you (P), who are worth (R) much more, is under God's protection even more (Sp) – so, don't be afraid. This is clearly an a crescendo argument of positive subjectal form, going from minor to major, and therefore valid.

Concerning **Luke 16:10 and 12**. In Luke 16:1-9, Jesus tells the parable of a manager who is asked by the property owner, who suspects him of "wasting his possessions," to give an account of his work; so, the manager uses his position to cancel a portion of the owner's debtors' debts, so as to gain their favors in case he loses his job; whereupon (surprisingly[157]) the owner commends the manager for shrewdness! Presumably, then, the owner was initially dissatisfied with the manager, not because he wasted his possessions in worldly economic terms, but because he wasted them on material pursuits instead of using them in spiritual pursuits; for Jesus uses this story to

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156   All quotations are from the New International Version, given at: www.biblegateway.com.

157   This is a weird parable. A man gives away, without permission, his boss' money to third parties, in order to gain favor with them – and his boss would praise him? Surely, there is a big moral difference between being generous with one's own possessions, and stealing and distributing someone else's wealth to make friends.

illustrate the dictum: "use worldly wealth to gain friends for yourselves, so that when it is gone, you will be welcomed into eternal dwellings." Then in Luke 16:10-12, Jesus makes four statements, apparently connected to this parable, which seem intended as a fortiori arguments. The problem with them is that while the last two are valid, only one of the first two can be valid.

Verse 10 states: "Whoever can be trusted with very little can also be trusted with much, and whoever is dishonest with very little will also be dishonest with much." These would appear to be two purely a fortiori arguments: (a) If someone (S) is trustworthy (R) with very little (Q), then he (S) is trustworthy (R) with much (P); and (b) if someone (S) is not trustworthy (R) with very little (Q), then he (S) is not trustworthy (R) with much (P). Granting that "very little" and "much" refer to *responsibilities*, then the argument of v. 10(b) would be valid since it is minor-to-major and negative predicatal; but the argument of v. 10(a) would be invalid since it is minor-to-major and positive predicatal. If we tried to fix this problem by interpreting "very little" and "much" as referring to *demands for rewards*, say, then argument (a) would be major-to-minor and valid, but (b) would be minor-to-major and invalid. Therefore, Jesus is here contradicting himself, however we interpret his words in v. 10.[158]

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158   His discourse is partly nonsensical, either way. If we say that the intent was 'responsibilities', then argument (a) is questionable, since obviously just because an employee can handle easy tasks, it does not follow that he can handle difficult ones. If we say that the intent was 'demands for rewards', then argument (b) is questionable, since obviously just because an employee is unreliable when dissatisfied with the rewards, it does not follow that he will be unreliable when rewarded as he wishes. Note well I say 'it does not follow', which does not

Verses 11-12 state: "So, if you have not been trustworthy in handling worldly wealth, who will trust you with true riches? And if you have not been trustworthy with someone else's property, who will give you property of your own?" These two arguments are purely a fortiori, negative predicatal in form, and apparently intended to go from minor to major, which means they are valid. Moreover, they resemble argument (b) of v. 10 – which suggests that the missing word in v. 10 is 'responsibilities'; in which case we can say with some certainty that it is argument (a) of v. 10 which is invalid. In any case, it is sure that Jesus commits an error of logic somewhere in this passage. Obviously, someone who makes such an error cannot claim to be infallible (or at least, the document where the error is made cannot be claimed to be an accurate report). Note that I have already mentioned Luke 16:11 in my earlier list, so I do not count it as an additional instance here.

Concerning **Luke 18:6-8**. In Luke 18:1-5 Jesus tells the parable of "a judge who neither feared God nor cared what people thought" who was repeatedly approached by a widow demanding justice in a case against someone; at first the judge refuses to get involved, but finally decides to do her justice so as to get her off his back. Jesus uses this story to encourage his disciples to "always pray and not give up." Then in Luke 18:6-8 he proposes the following argument: "Listen to what the unjust judge says. And will not God bring about justice for his chosen ones, who cry out to him day and night? Will he keep putting them off? I tell you, he will see that they get justice, and quickly." This can be read as a purely a fortiori argument, as follows: if even an unjust human judge (Q) is (say) wise (R) enough to eventually relent and do justice if insistently appealed to

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exclude that the antecedents and consequents may on occasion occur together.

(S), then God who is just (P) is wise (R) enough to eventually relent and do justice if insistently appealed to (S). We could also read the argument as a crescendo, if we mention the "widow" in the subsidiary term in the minor premise and the "chosen ones" in the subsidiary term in the conclusion; and it seems clear that the latter interpretation is the more accurate one. In any case, the argument is positive subjectal, and goes from minor to major, and is therefore valid.

In **Romans 8:32**, the author (Paul) argues: "He who did not spare his own Son, but gave him up for us all – how will he not also, along with him, graciously give us all things?" The a fortiori argument intended here is: if God (S) cared for humans (R) enough to give up his son for them (P), then He cares for them (R) enough to graciously give them all things (Q). This is purely a fortiori, positive predicatal argument, going from major to minor, and therefore valid. We could throw some doubt on Paul's reasoning here, if we consider that the predicate of the minor premise is "give up his son" and that of the conclusion is originally "give up his son and graciously give people all things" – for then the latter is clearly "more" caring than the former, and the argument becomes minor-to-major and therefore invalid. However, we can just retort that the conjunction between "give up his son" and "graciously give people all things" occurs after the valid a fortiori argument has concluded.

In **John 7:23**, Jesus argues: "if a boy can be circumcised on the Sabbath so that the law of Moses may not be broken, why are you angry with me for healing a man's whole body on the Sabbath?" That is to say: if circumcision on the Sabbath (Q) is important (R) enough not to be contrary to Mosaic law (S), then healing a man's whole body on the Sabbath (P) is important (R) enough not to be contrary to Mosaic law (S). This is purely a fortiori argument, of positive subjectal form, going from minor to major, and therefore technically valid. Regarding the material issue at

hand, as I explain in an earlier section of the present chapter, the dispute seems to have been unnecessary, since Mosaic law does not in fact forbid, but rather encourages (when the danger is serious enough), curing a sick person on the Sabbath.

In Judaism, the protection of life is considered a paramount value, which makes all other values possible; there are some exceptions to this rule, but Sabbath observance is not one of them. Moreover, it is doubtful that "healing" in the sense here used constitutes Sabbath "work," in which case it is not forbidden as such (though it might be forbidden as sorcery). So, what is Jesus trying to prove, by means of this a fortiori argument? Not that Mosaic law allows healing people on the Sabbath, but that he is above Mosaic law. According to him (or to the book's author, John), Mosaic law does – absurdly, inhumanely – forbid healing on the Sabbath, and Jesus – who is "sent" by God (v. 18) – decrees otherwise. Thus, the a fortiori argument is not intended as a proof within the Mosaic system of law, but as a rejection of that system (at least in the said instance). Note Jesus' adversarial attitude, indeed his paranoia, implied by his statement (in v. 19) "Why are you trying to kill me?" – to which the crowd incredulously replies (in v. 20) "Who is trying to kill you?"

In **John 10:34-6**, Jesus argues: "Is it not written in your Law, 'I have said you are gods'? If he called them 'gods', to whom the word of God came—and Scripture cannot be set aside—what about the one whom the Father set apart as his very own and sent into the world? Why then do you accuse me of blasphemy because I said, 'I am God's Son'?" The a fortiori argument intended here is: if people to "whom the word of God came" (Q) are sufficiently exalted (R) to be called 'gods' (Sq), then a person "whom the Father set apart as his very own and sent into the world" (P) is sufficiently exalted (R) to be called "God's Son" (Sp). This is clearly an a crescendo argument, of positive

subjectal form, going from minor to major, and therefore technically valid.

However, it should also be pointed out that the argument is circular, or at least 'custom made' to yield the desire conclusion. The context for it is given in verses 30-33 – there we see Jesus claiming: "I and the Father are one." Some people then pick up stones to stone him. He apparently does not understand why they would want to do that, saying: "I have shown you many good works from the Father. For which of these do you stone me?" To which they reply: "We are not stoning you for any good work, but for blasphemy, because you, a mere man, claim to be God." Whereupon Jesus offers the said a fortiori argument. But it is clear that this argument does not prove him to be "God's son," since it is premised on the already controversial idea that he is a person "whom the Father set apart as his very own and sent into the world;" and moreover, though the purely a fortiori conclusion that he is to be called a 'god' might follow from that, we have only his say-so that the argument ought to be a crescendo and conclude with a proportionately higher title.

Summing up. Thus, to conclude, there are at least eight more a fortiori arguments in the NT to add to our earlier list of such arguments. Of these, 1 is in Matthew, 4 are in Luke, 1 is in Romans and 2 are in John. One of those in Luke is, as we have shown, invalid, while all the others are formally valid (even if we may disagree with their contents). All these arguments are spoken by Jesus, except the one in Romans which is authored by Paul.

As regards the forms of argument used[159]: 4 are positive subjectal, 2 are positive predicatal and 2 are negative

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159   Matthew 10:29-31 {+s &}, Luke 16:10 {+p, –p}, Luke 16:12 {–p}, Luke 18:6-8 {+s &}, Romans 8:32{+p}, John 7:23 {+s}, John 10:35-6{+s &}.

predicatal; also, 5 are purely a fortiori, while 3 are a crescendo. As regards the language used in them to suggest a fortiori reasoning: in Matthew 10:29-31, the words "even" and "more" seem to play that role; in Luke 16:10, the words "very little," "much" and "also" are involved; in Luke 16:12, the rhetorical "if not, then who?" is used; in Luke 18:6-8, it is "will not?"; Romans 8:32 similarly has: "how will he not also?"; John 7:23 resorts to "why?"; and John 10:35-6 to "what about?". Evidently, the language used is not distinctively a fortiori, even if we clearly intuitively see in each case that the intent is so.

I have not tried to merge the results of my earlier and more recent research more seamlessly, partly so as to avoid rewriting the present chapter altogether, and partly so as to show readers how to proceed with new findings – since it is possible if not probable that there will be still more instances found in the future. But I can briefly sum up as follows: we have thus far discovered a grand total of 28 + 8 = 36 instances of a fortiori argument in the NT.

10.   LOGIC IN THE KORAN AND HADITHS

Drawn from. A Fortiori Logic *(2013), chapter 11:1-3.*

1. Disclaimer

In this chapter, I am called upon for the sake of comprehensiveness to comment on some of the a fortiori discourse found in Moslem literature. I must stress that I do not intend the following treatment to be exhaustive. I am merely breaking ground for a more extensive treatment by others. Being personally not very interested in the Moslem religion, I am not sufficiently motivated to do a thorough job on the subject. I do hope someone else will take up the challenge and do the necessary research.

Needless to say, although I am a Jew, I have no desire to engage here in religious polemics against Islam. Jews do not normally try to convert non-Jews to their views. My interest here is entirely logical. The proof is that I am not always critical. When I am critical, it is with an impartial, scientific spirit – the same spirit I apply to assessment of a fortiori and other forms of reasoning found in Jewish texts or texts of other traditions.

It should of course be unnecessary for me to make such a disclaimer, but we sadly live again in an age where tempers easily flare in relation to religion (which is understandable) and even sometimes lives are threatened (which is inexcusable). Some decades ago, this was not the case (at least not in the Western world), although a few centuries ago the threat against free speech was indeed high (in Europe as well as in Islamic regions). But nowadays, there are unfortunately some dangerous fanatics around, so

speaking one's mind freely takes a bit of guts. I am determined to do so, and not let myself be intimidated.

2.   Initial findings in the Koran

A bit of systematic research: I have carefully searched through an English translation (from Arabic) of the Koran, looking for instances of a fortiori argument, or indeed any other logical argument I might find, by means of the same key words and phrases used in other contexts – and to my great surprise I found exactly *none!* The Koran seems to be a long harangue, with no resort to logical argument, let alone a fortiori argument.

The translation of the Koran I relied on is that by John Medows Rodwell, which dates from 1861, with a 2nd ed. in 1876. I acquired a Kindle edition (2011) of this document, which can be searched through using the Kindle reader. The following is a summary of the results of this research by means of key words or phrases in the Koran (to the exclusion of hits in the introductory and explanatory notes by the translator):

I first looked for idiomatic words or phrases that are often indicative of a fortiori argument. I found no instances of the specific key phrases *much the* (more/less) or *much more/less*; the vaguer key word *much* occurs 14 times, but none of these constitutes an a fortiori. The key phrases *all the more/less/same* were likewise not found; the vaguer phrase *all the* occurs 8 times, but again none of these involves a fortiori. The key phrases *still more/less* were likewise not found; the vaguer phrase *still* occurs 17 times (including 2 instances of *still the*, though none of *still the more/less*), but again none of these involves a fortiori. I found one instance of each of the key phrases *even more, less*, but neither involves a fortiori. There were no hits for the key phrases *more so, less so*, although each of the key

words *more, less* registered over 100 hits (I did not look through the latter).

Next, I looked for descriptive expressions, which might signal a fortiori argument or some other form of argument. The expression *a fortiori* occurs zero times. *Argue, argued, arguing* never occur; *argument(s)* occurs twice. *Prove* occurs 31 times (including *proved* twice and *proven* twice); *proof(s)* occurs 48 times[160]. *Deduce* and its derivatives never occur, except for *deduction* which occurs once (in "make no deduction"). *Infer* and its derivatives never occur. *It follows* never occurs, and *not follow* occurs 3 times. *Logic* or its derivatives never crops up. *Therefore* occurs over 100 times. However, although words or phrases relating to logical processes do (rarely, as these statistics show) occur – none of the cases found turned out to concern logical processes (I examined all the instances here mentioned, though only a sample of those with *therefore*).

There are no logical arguments ("since this and that, therefore so and so") – there are only *rhetorical* claims. For example: "Say: I only follow my Lord's utterances to me. This is a clear proof on the part of your Lord, and a guidance and a mercy for those who believe." The mere use of a term (such as "proof") normally associated with logic is not proof that logic is being used. Thus, it would appear from this research effort that there is no logic use in the Koran. The sweet voice of reason is never actually used. This is quite a shocking finding, which goes some way to explain the dogmatic style of Islam.

Note that this conclusion does not exclude the possibility that closer reading might reveal some use of logic, because

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160   Note that this includes cases where the meaning of 'to prove' is to test the faith or loyalty of a person, rather than to show the logic of a proposition.

it is based on mechanical search of key words and phrases. However, in similar research efforts elsewhere – in the Jewish Bible, or the works of Plato or Aristotle, or the Christian Bible – such mechanical search has always yielded some results, even if admittedly incomplete results. So, it looks as if there is no use of logic in the Koran.

In truth, after writing the above I discovered that there is in the Koran at least one passage that can reasonably be admitted as a fortiori, namely **36:78-79**:

> "He [man] says, 'Who will give life to bones while they are disintegrated?' Say [to him], 'He [God] will give them life who produced them the first time; and He is, of all creation, knowing.'"

Although here there is no key phrase indicative of a fortiori argument, there is a connection between the sentences in the fact that the first is a question and the second is an answer to it. Moreover, since the reply "He will give them life" would have sufficed, it is obvious that the clauses "who produced them the first time" and "He is, of all creation, knowing" are intended as additional explanations for that reply. The argument here is clearly that if God (S) was powerful (R) enough to create man in the first place (P), He (S) is surely just as able (R) to resurrect him long after he dies (Q). This is a positive predicatal argument[161], since the subsidiary term S (God) is the subject of the minor

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161   Note that the identification of the argument as predicatal in form is mine; I have found no evidence so far that Islamic commentators are at all aware of the differences between predicatal and subjectal arguments. As we shall see further on, they seem to have only noticed the subjectal form.

premise and conclusion. It would be counted as *a pari*, since the premised act P (initial creation) is not presented as more or less difficult than the concluding act Q (resurrection)[162]. Indeed, the additional comment that God fully knows creation implies that both these acts are equally easy for Him[163]. Lastly, the argument is purely a fortiori, not a crescendo, since the subject (God) is the same in the minor premise and conclusion.

So, there is, after all, at least one a fortiori argument in the Koran. Maybe there are others, but so far this is all I have found – a pretty poor harvest, anyway.

3.   al-Ghazali's findings

Additionally, there are some syllogisms and other arguments in the Koran. The Moslem commentator Abu Hamid al-Ghazali (11th-12th cent. CE) draws attention to a number of them in his book *al-Qistas al-mustaqim* (The Correct Balance)[164]. Incidentally, he wrote this book, not

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162   The major premise of the argument is clearly: "As much power is required to produce new life as to recover past life." But it could be "More power is required, etc."

163   This Koran argument from one power of God to another is reminiscent of some in the Jewish Bible: Psalms 78:20, which states that if God is powerful enough to draw water from a rock, then He is powerful enough to feed His people with bread and meat; and Psalms 94:9-10, which states that if God is powerful enough to implant the ear and form the eye, then He is powerful enough to hear and see, and if God is powerful enough to chastise nations, then He is powerful enough to reprove individuals.

164   The title is drawn from a statement in the Koran. A free .pdf version of this work is available online at: www.ghazali.org/books/jb-4.pdf. Chapters 2, 3 and 4 concern respectively 1st, 2nd and 3rd figure syllogism; chapters 5 and 6

as one might expect in defense of rationalism, but in order to show that logic was used in the Koran long before Greek logic made its way into Islamic discourse. Nevertheless, it is evident from his systematic treatment, starting with the first three figures of Aristotelian logic and continuing with the hypothetical and disjunctive arguments of Stoic logic, that he was himself strongly influenced by that logic. Despite this and other logical works, he is regarded, rightly, in view of his overall philosophical and religious orientation, as an anti-rationalist.

A syllogism is suggested in **Koran 2:258**, where Abraham says to Nimrod: "God brings up the sun from the east, so bring it up from the west." Ghazali explains that Abraham argued thus because "Nimrod claimed divinity" and he wanted to prove him wrong, so his argument in full would have been: "Whoever can make the sun rise is God; but my God can make the sun rise; [therefore] my God is God – and not you, Nimrod" (1/AAA). Ghazali justifies the major premise by saying that "'God' is a designation for the omnipotent, and making the sun rise belongs to the totality of those things [which he can do]; this principle is known by convention and agreement." He justifies the minor premise by saying that "'The one who can make the sun rise is not you [Nimrod]' is known by seeing."

The first figure argument proposed by Ghazali is formally valid. Its major premise can be justified as he suggests on purely rational grounds: given the definition of God as omnipotent (not to mention omniscient and all-good), it would follow that He can well cause the sun to rise (from the east or west or anywhere). But Ghazali's justification of the minor premise is clearly fallacious. For granted that Nimrod can evidently not make the sun rise (in the west or

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concern respectively hypothetical and disjunctive apodoses. More on Ghazali further on.

anywhere else), it does not follow that Abraham's God can do so. To assume the minor premise on this basis would be to argue in a circular manner. The argument implied by the Koran rather proceeds as follows. First, we reason: "Whoever cannot make the sun rise is not God; Nimrod cannot make the sun rise (differently than it does, i.e. in the west instead of the east); therefore, he is not God (1/EAE)[165]. This syllogism does not in itself prove that the God Abraham believes in is one and the same as the God defined as omnipotent. For that conclusion we must take for granted the Koran's implicit disjunctive proposition: Either Abraham's God or Nimrod is God. On this basis we can then argue: Since Nimrod is not God (as just proved syllogistically), then Abraham's God must be God.

Thus, the argument implied by the said Koran passage is not as Ghazali describes it. A syllogism is implied, but not the one he proposes. Additionally, there is a disjunctive apodosis he has not discerned. Moreover, the premise that either Abraham's God or Nimrod is God remains unproved, although obviously presented approvingly by the Koran. It can only be truly proved by eliminating all other possibilities, including the thesis of atheism. In other words, merely observing the sun rise in the east does not suffice to prove that it is God as Abraham conceives or experiences Him, or even the omnipotent Being men generally define as God, Who in fact *made* the sun rise. We might well assume so on faith, but to scientifically prove it is more difficult. Therefore, the Koran cannot truthfully be said to have produced a proof of the existence of God, or

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165   The argument is valid even though the middle term ("cannot make the sun rise") is negative in content, because it is the same in both premises.

even a proof that Abraham's God is God, through this argument[166].

Another example of syllogistic reasoning is found in **Koran 6:75-78**:

> "And thus did We show Abraham the realm of the heavens and the earth that he would be among the certain [in faith]. So, when the night covered him [with darkness], he saw a star. He said, 'This is my lord'. But when it set, he said, 'I like not those that disappear'. And when he saw the moon rising, he said, 'This is my lord'. But when it set, he said, 'Unless my Lord guides me, I will surely be among the people gone astray'. And when he saw the sun rising, he said, 'This is my lord; this is greater'. But when it set, he said, 'O my people, indeed I am free from what you associate with Allah. Indeed, I have turned my face toward He who created the heavens and the earth, inclining toward truth, and I am not of those who associate others with Allah'."

Although Abraham's thinking here is not made fully explicit, it is reasonable to suppose it was syllogistic. The three syllogisms involved here would have the form 2/EAE: God does not disappear; the stars, moon and sun do disappear; therefore, these cannot be God. So well and good; except that the content of these arguments is not very convincing. We can criticize them by pointing out that disappearance does not necessarily imply cessation of being – something may disappear by merely ceasing to be visible. To be hidden from view is not to be non-existent.

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166   Note well, I am not personally denying the proposition, but merely showing it to be unproved. See § 17-19.

For example, since God is formless, He is not perceivable through the senses[167], yet this 'invisibility' does not imply His non-existence. Thus, the proposed middle term is inaccurate, and the major premise ought rather to be: Since God is eternal, He cannot be *impermanent*. In that case the minor premise would need to be: the stars, moon and sun are *impermanent*. Only then would the putative conclusion that 'these cannot be God' be logically justified.

Abraham could well on the basis of observation say that the stars, moon and sun disappear daily; but to state that they are impermanent, he would have to rely on extrapolation – i.e. on the assumption that when these heavenly bodies disappear they actually cease to exist. Such extrapolation would, of course, constitute an inductive act – a generalization from experience. In his day, and maybe even at the time the Koran was written, such a supposition might have seemed credible. But of course, nowadays we know it is nonsense. The stars, moon and sun do not cease to exist when they disappear – we just no longer see them from where we happen to stand, although they remain or become visible elsewhere. They are indeed impermanent, but not for the reason given – i.e. not because they disappear daily. They are impermanent because they undergo changes (visible with telescopes) all the time, and because they will cease to have their present forms (as stars, moon or sun) in a few billion years.

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167   Although, to be sure, it is said that God makes his presence known to prophets indirectly through sounds or sights, and perhaps also to ordinary people who are open to it through intuition. So, in one sense He can be said not to appear and therefore not to disappear, and in another sense He can be said to both appear and disappear. Indeed, God does eventually appear to Abraham in various ways: the Lord "said unto Abraham" (Gen. 12:1, 13:14); "appeared unto Abraham" (12:7); "came unto Abraham in a vision" (15:1); and so on.

Of course, Abraham could hardly know that. Maybe also the much later author of this story in the Koran could hardly be expected to have this knowledge, which we have thanks to modern astronomy and all the technology it is based on. Still, the author of this story ought to have realized the logical weaknesses in it, if he knew logic. This story seems designed to establish that knowledge of the existence of God can be known through intellectual means, i.e. that it is rationally obvious. But as we have just shown, it is not very successful in demonstrating that possibility. This shows that, even if Abraham, or at least the author of the Koran, could think syllogistically, he was not sufficiently skilled in logic to see that the proposed argument was not watertight and needed improvement. We can still say there is some (although not very much) syllogistic reasoning in the Koran, but it cannot be said that these three occurrences are demonstrative of the Divine source of the document, since God, being omniscient, would not make errors of fact or of reasoning.

Note that Ghazali only mentions 6:76, regarding the moon; but it is clear that the Koran additionally contains two similar arguments, regarding the stars and the sun. Moreover, while he correctly quotes the Koran as there saying "I love not the things which set," for some reason he seems to assume this refers to the moon, instead of the stars; for he then describes the argument as: "The moon is a thing which sets; but God is not a thing which sets; therefore, the moon is not a God" (2/EAE). Be that as it may, he admits that this argument is not fully laid out in the Koran, since he adds that the latter is "its foundation by way of concinnity and ellipsis." He claims to draw its two premises, viz. that the moon sets whereas God does not, from the narrative. But in my view, it would be more accurate to say that the narrative implies the minor premise (the moon sets, from "when it set") and the conclusion (the moon is not God, from Abraham's stated rejection of

"things which set"), while the reader must provide the major premise (God does not set), which is obvious enough.

However, Ghazali does not see the latter as obvious, saying: "that God is not a thing which sets I know neither necessarily nor by sensation." He then argues that Abraham must have known the latter indirectly through knowledge that "God is not a thing which changes [a changer]. And… setting is changing." Here, he is introducing a new syllogism: God is not subject to change; and setting is changing; therefore, God does not set (2/AEE). This comment of Ghazali's is interesting, in that it brings into play the more radical concept of *change*. As I point out above, the proposed syllogism, even if formally okay, is contentually weak without this narrower middle term. Nevertheless, Ghazali introduces this term only in order to establish that God does not set, and not in the way of a criticism of the proposed argument as I did. This shows he has not fully understood the issues involved.

In fact, it cannot rightly be said that "setting is changing." Although setting is disappearing and changing is disappearing, it does not follow that setting is changing (this would constitute a 2nd figure syllogism with two positive premises, which is invalid). Things may disappear (or more specifically, set) without changing: stars disappear in daylight because the strong light from the sun eclipses their light, not because they cease to be or go away; the sun disappears at night because it goes over the horizon, due to the rotation on its own axis of the earth and not to revolution of the sun round our planet; the moon's disappearances are due partly to its own movements and partly to ours. Thus, the minor premise of Ghazali's second syllogism is false, and the Koran's argument in the name of Abraham is wobbly. Even so, we can grant Ghazali's

main claim that a syllogism[168] is (or rather, a set of them are) embedded in the said passage of the Koran.

After that, Ghazali lays claim to two more examples of syllogistic reasoning in the Koran, and hints that there are more of them besides these. More precisely, he states that Allah taught Mohammed "to weigh by this balance in many places in the Koran, to follow the example of his father, the Friend [i.e. Abraham];" and he adds: "Be content with my calling attention to two places and seek the rest in the verses of the Koran."[169]

The first additional example he gives is **Koran 5:18** – "But the Jews and the Christians say, 'We are the children of God and His beloved'. Say, 'Then why does He punish you for your sins?' Rather, you are human beings from among those He has created." Ghazali's comment on this passage is that the Jews and Christians "claimed to be the sons of God," so Allah taught Mohammed how to "expose their error by means of the correct balance [i.e. the appropriate argument]," namely: "Sons are not chastised; but you are chastised; therefore, you are not sons" (2/EAE). He adds that the major premise of this syllogism is "known by experience," its minor premise is "known by seeing," and "from these two necessarily follows the denial of son-ship."

Here again, while the argument is formally okay, its content is open to much criticism. When and where do Jews and Christians claim to be "the sons of God" instead of human beings subject to chastisement? If this is an argument against the Jews' belief they are 'the chosen

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168   Which he clearly identifies as being in the second figure, since he defines its principle as: "that of which is denied what is affirmed of another is different [distinct] from that other." This discussion is found in § 36-40.

169   § 42-43.

people'[170], it is nonsensical since this concept is not believed to exclude punishment for sins (but on the contrary, makes it more likely)[171]. The Koran argument can only be credibly directed at the Christian belief in the divinity of Jesus and that he was crucified; yet elsewhere (4:157) it denies Jesus died on a cross, so that would be inconsistent. Clearly, the fact that the Koran includes some syllogistic reasoning should not be taken to imply that its reasoning is materially sound.

Note moreover that while Ghazali makes a show of specifying the empirical sources of the premises of the syllogism ("by experience," "by seeing"), he takes for granted without questioning it the Koran's unsubstantiated claim that Jews and Christians say: "We are the children of God and His beloved." This issue of historicity is not incidental. The Koran's syllogism is formulated with the express purpose of contradicting the statement attributed to Jews and Christians. If, as a matter of historical fact, they never made such a statement – then the whole argument is spurious rant. A logician is duty-bound to be scientific all the way, not just as convenient to his convictions. Fiction cannot be treated as fact.

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170   As is written or implied in the Tanakh countless times; e.g. in Deut. 14:2 – "For thou art a holy people unto the Lord thy God, and the Lord hath chosen thee to be His own treasure out of all peoples that are upon the face of the earth."

171   See, for instance: Amos 3:2 – "You only have I known of all the families of the earth; therefore, I will visit upon you all your iniquities." The covenant between God and the Jews is conceived as a demanding régime of noblesse oblige rather than as one (such as the Moslems claim for themselves) of supremacist privilege and domination immune from judgment. According to it, the Jews are given more responsibilities rather than more pleasure and power.

The second additional example Ghazali gives is **Koran 62:6-7** – "Say, 'O you who are Jews, if you claim that you are allies of God, excluding the [other] people, then wish for death, if you should be truthful.' But they will not wish for it." He explains this as follows: the Jews "claimed friendship [with God]," and as everyone knows "the friend desires to meet his friend;" yet "it was also known that they did not desire death, which is the cause of the meeting:" whence "it follows of necessity that they are not the friends of God." He then proposes the following more formal presentation: "Every friend desires to meet his friend; but the Jew does not desire to meet God; therefore, he is not the friend of God" (2/EAE). Excuse me for laughing out loud at this anti-Semitic drivel!

For a start, the latter presentation is formally invalid, since the middle term is differently formulated in the major premise (friend) and minor premise (God); a syllogism cannot have four terms. Ghazali's preceding explanation is closer to formally correct; this is in fact a succession of two arguments (a sorites). The first argument is: Whoever wants to meet God must desire death; but the Jews do not desire death; therefore, they do not want to meet Him. The second argument is: Whoever one is a friend of is someone one wants to meet; but the Jews do not want to meet God (as just concluded); therefore, they are not friends of God (contrary to what they claim). Both these arguments are substitutive syllogisms of form 1/AEE (or negative apodoses, *modus tollens*). Therefore, Ghazali did not manage to correctly pinpoint the logical structure of the Koran's argument.

Moreover, the argument's content is absurd. The Koran suggests that one has to die to meet with God. Yet, it also evidently claims that Mohammed met with God (if only through an angel) without having to die. Therefore, the Koran is using double standards. It is inventing an excuse for pouring on the Jews scorn that they do not deserve. The

Koran's 'reasoning' here is ridiculous: why would truthful friends of God need to wish for death? The Jewish perspective is that God wants us to love life; to love life is to show God appreciation for His kindness in giving it to us. We do not yearn for death, for we believe that we can well through virtuous behavior "meet with" God in the midst of this very life. Indeed, that is the purpose of life and the reason for our creation. Therefore, the major premise of the first argument is, in Jewish eyes, wrong – not only factually erroneous, but also morally reprehensible. It is obviously just an expression of the Koran's hatred for Jews, a wish for their death.

A bit further on[172], Ghazali does in fact propose one more example of syllogistic reasoning, in **Koran 6:91**. This passage is yet another moronic diatribe against "the Jews." The relevant part reads: "And they [the Jews] did not appraise God with true appraisal when they said, 'God did not reveal to a human being anything'. Say, 'Who revealed the Scripture that Moses brought as light and guidance to the people?'" According to Ghazali, the argument's premises are: "Moses is a man" and "Moses is one upon whom the Book was sent down;" and its conclusion is: "some man has had sent down upon him the Book" (3/AAI). The first premise is "known by sensation;" and the second is "known by their own admission," since the Koran says of them: "You [Jews] make it into pages, disclosing [some of] it and concealing much." The particular conclusion they yield suffices to refute the Jews' "general claim that Scripture is not sent down upon any man at all."

Ghazali's third figure argument is sound, but quite incidental. The Koran's focus here is on the statement "God did not reveal to a human being anything." This

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172   § 47-48.

proposition is of course one more fabrication by the Koran, expressing the anti-Semitic feelings of its author(s). When and where did the Jews say that God did not reveal anything to anyone, as the Koran here claims? They may well have said that God did not reveal anything to Mohammed specifically, but they surely never ever collectively made that general statement (at least in those days, even if some Jews nowadays are skeptics). The rebuttal of the said proposition is not as Ghazali claims a syllogism. It is simply a rhetorical question by the Koran, viz. "Who revealed the Scripture that Moses brought as light and guidance to the people?" The assertoric implication of this rhetorical question is: God revealed the Scripture to Moses, and it is this implication that contradicts the allegation that God has made no revelation to anyone. This is the essence of the argument here, and not Ghazali's syllogistic proof that revelation to Moses is revelation to some man.

The Koran's logic here is therefore oppositional rather than syllogistic. This is also in itself interesting, of course. Ghazali's 3rd figure syllogism is, admittedly, present in the background of the Koran's argument – but only in the sense that syllogistic logic is always present when we apply or deny a generality. So, we can say that Ghazali is, in this instance, a bit artificially reading a syllogism into the Koran. Note moreover that here again he shows no aptitude for historical criticism. He takes for granted without questioning it the Koran's unsubstantiated claim that the Jews denied the occurrence of any revelation by God to humans. Nevertheless, albeit the deficiencies in Ghazali's understanding pointed out in the present analysis, his contribution to the search of logic in the Koran is very valuable.

Ghazali additionally points out three examples of counterfactual hypothetical argument (negative apodoses, *modus tollens*). They are: **Koran 17: 42** – "If there had

been with Him [other] gods, as they say, then they [each] would have sought to the Owner of the Throne a way;" **Koran 21:22** – "Had there been within the heavens and earth gods besides God, they both [the heaven and earth] would have been ruined;" and **Koran 21:99** – "Had these been gods, they would not have come to it [Hell], but all are eternal therein." He rightly explains the reasoning involved as follows, for instance: "If the world has two gods, heaven and earth would have gone to ruin. But… they have not gone to ruin. So [the] necessary conclusion [is] the denial of the two gods."[173] Finally, Ghazali also points out an example of disjunctive argument, namely **Koran 34:24** – "We or you are either upon guidance or in clear error." He rightly interprets this as: "We or you are in manifest error. But… We are not in error. So… you are in error."[174]

I think this exhausts the examples of reasoning in the Koran pointed out by Ghazali in his *Qistas*[175]. If these examples are all the logic there is to be found in the Koran, it is not very much. But of course, there may be other instances, which may have been pointed out by Ghazali elsewhere or by other commentators, but which I have not come across to date. Note that Ghazali does not mention a fortiori argument in his *Qistas*, even though I have found one instance of it in the Koran. This shows two things: (a) that his treatment in this work is not exhaustive; and (b) that he was not very aware of a fortiori argument. In conclusion,

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173   § 53-54.

174   § 60.

175   It is worth mentioning that Ghazali takes a passage of the Koran as a justification for the use of reasoning, namely 16:125– "Invite to the way of your Lord with wisdom and good instruction, and argue with them in a way that is best." (See chapter 9.)

having found in the Koran a total of about a dozen arguments, including one a fortiori argument and a few arguments of other forms, we cannot say that there is no logic in Islam's founding document, but we can still say that there is rather little. This is surprising, considering that this document dates from the 7th century CE or later, over a thousand years after Aristotle.

4.   Sticks and carrots

There is rather little logic in the Koran – unless, that is, we count *threats of punishment* and *promises of reward* (*wa'id* and *wa'd*, in Arabic) as logical arguments. For of such 'stick and carrot' arguments, there are many in the Islamic Koran, as indeed in the Jewish Tanakh and the Christian New Testament. For example: Koran 9:5 teaches that idolaters who consent to convert to Islam should be granted freedom, whereas those that do not should be killed. These arguments take the following forms:

1. If you do this vicious deed (or don't do that virtuous deed), then such and such negative consequences (punishments) will befall you; therefore, don't do this (or do do that)—and such and such harm won't happen to you.

2. If you do this virtuous deed (or don't do that vicious deed), then such and such positive consequences (rewards) will befall you; therefore, do do this (or don't do that)—and such and such benefit will indeed come upon you.

Quite often, the promised reward or threatened punishment referred to in such statements is, respectively, heaven or hell. This is rather convenient, since there is no way to empirically verify such otherworldly claims, at least not till

one dies! Sometimes, however, the reward or punishment referred to is an earthly one. But even then, such statements have to be taken on faith, since the reward or punishment follows, not mechanically, but only on condition that God wills it to. Since God may occasionally choose, for His own reasons, not to make the consequences follow, there is no way for people to empirically verify such earthly claims. Sometimes, the reward or punishment is not specified, but left tantalizingly or terrifyingly vague. Thus, when such statements concern Divine retribution, for good or bad, they necessarily rely on faith. Sometimes, of course, as in the example given above (9:5), such statements are intended to be realized by human agency – that is, the specified reward or punishment for the stated action or inaction is to be effected by some specified or even unspecified person(s), such as a court of law, or maybe the monarch, or even some self-appointed executor(s). But even the latter statements, unless they fit in with our natural sense of justice, are proposed as "revelations" to be taken on faith – there being no way to prove them true, let alone to prove their source to be Divine.[176]

From a formal perspective, statements of this sort, which threaten or cajole, are indeed logical arguments insofar as they involve apodosis: either the *modus ponens* 'If X, then

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176   The point being made here is not denial that God exists or denial that God instructs mankind, but only to emphasize our inability as mere human beings to determine God's existence and will with the utter certainty claimed by sundry "prophets." Such claims can only be taken on faith, and therefore must always be taken with a healthy dose of skepticism if we are to avoid fanatic excesses. It is doubtful that God, whose intelligence is surely the highest conceivable, wishes people to behave like idiots and believe whatever they are told without asking questions and demanding credible answers. Faith is valuable and necessary, but blind faith is dangerous.

Y, and X, therefore Y' or the *modus tollens* 'If X, then Y, and not Y, therefore not X'. We are enjoined to behave in certain ways *in order to* obtain certain desirable things and/or avoid certain undesirable things; and action in conscious accord with purposes is a prerogative of all conscious beings (animals), and most obviously of human beings (rational animals). However, the logical aspect of such discourse is only the surface of it. The purpose of such statements is not to invite rational deliberation and decision, but essentially to preempt or banish all thoughtful reflection and bring about blind compliance. This may be characterized as irrational argument; it is appeal to emotions – namely, fear (*hawf*) or hope (*raga*). The message is not really: 'think about it carefully and do what you think is right', but more radically: 'just do and obey'. The talk of good or bad consequences of action or inaction is only intended to exploit the worries and appetites of people, and make them do what they are told to do and not-do what they are told not to do. There are no ifs or buts about it—it is commandment and interdiction.

This is, to be sure, the very nature of law. Even in a democratic state, when representatives of the people freely convene to enact just laws, after they have debated an issue, they make a decision in accord with the procedural norms, and once a ruling is handed down the citizens are required to abide by it. If the process has been truly democratic, individual citizens or groups of citizens are not expected to short-circuit the legislative process and point-blank refuse to abide by the decisions of the majority, even though in a democratic society the dissenters may well try by all legal means to have the laws they regard as unjust reviewed by the legislative body and possibly repealed. All the more so, in a non-democratic state, laws are intended as orders to be executed by the populace, like it or not; although here, of course, the laws, being tyrannous due to the way they have been enacted, are inherently unjust, and citizens indeed

ought to rebel against them on principle, whatever their content, until the people's natural rights as human beings are clearly upheld.

As regards the Koran, it is not hard to see that its purpose in formulating threats and promises is simply to ensure compliance to the decrees of some human legislator(s) claiming to speak, directly or indirectly, on behalf of God. No discussion is allowed regarding ends, though the means may occasionally require some reflection and debate. The Koran, typically, claims that its commands and prohibitions, and indeed its permissions and exemptions, to be Divinely-ordained. But this is just the Koran's say-so; there is no "proof" for such claims to revelation. It may be argued that such a document instills fear and love of God in people, and makes them do good and eschew evil, and thus improves society. But this is just a circular argument, in that what the speaker (Mohammed or whoever) regards as good or evil is merely his personal assumption and certainly not something he has scientifically proved, or even could conceivably prove. There may be some truth in it; but there may also be a lot of falsehood. The only way to test and judge the matter is with reference to reason. No one may claim something so important arbitrarily, without being subject to rational examination and evaluation. To uncritically accept claims that are so consequential is to invite disaster somewhere down the line for sure.

It is easy to see in this context, regarding the issue of legitimacy of laws, the importance of freedom of conscience (to choose this or that faith, or even non-faith), free thought and free speech, as against "blasphemy" laws. The latter laws, which play a major role in Islam, are clearly intended to block at the outset all attempts to question and challenge Islamic belief in general and the

temporal hegemony of its ruling classes in particular**177**. To physically enforce laws having to do with spiritual belief is in direct contradiction to the claim that such laws are 'ethical' – for what is ethical is by definition a matter of free choice under the guidance of reason. The Koran's legal philosophy is to *coerce* everyone, Moslems and non-Moslems alike, to submit to its will (which it calls the will of Allah or of his messenger Mohammed); this is what the word "Islam" literally means: utter submission, with no right of dissent or review. But mindless conviction and compliance, like an automaton, out of oppressive fear of punishment or abject hope for rewards, is surely the antithesis of human dignity, the very negation of human spirituality. It is the depths of darkness, the death of the light of life.

5.   About the Koran

The paucity of logic in the Koran is seen to be all the more predictable considering the declamatory, peremptory, and mostly rancorous, tone the author adopts (or authors adopt) throughout the document. The 'voice' heard in the Koran is very different from that heard in the Jewish Bible. The

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177   Even negative comments directed at their alleged prophet, Mohammed, or at the Koran, are considered "blasphemy." Apostasy, adultery, and many other violations of Islamic law are, it seems, also sometimes characterized as "blasphemy." Clearly, this word has for Moslems a wider applicability than speaking ill of God. It should be pointed out that such expansion of meaning is not innocuous. To denote criticism of Mohammed or of the Koran as "blasphemy" is in effect to deify the said person or book. To deify a mere person or book is nothing less than idolatry, since the implication is that God is not the One and Only. This is surely the very essence of blasphemy – an insult to God. Thus, to expand the meaning of blasphemy as Moslems do is itself an act of blasphemy.

Allah of the Koran does not sound like the God depicted in the Tanakh, who (besides) is differently named and described. The word 'Allah' (etym. *al-ilah*, the god) was, before the advent of monotheistic Islam, the name of a deity worshiped by idolatrous Arabs. Although the word is etymologically close to the Hebrew words 'El' and 'Elohim' – it is not necessarily equivalent to them. The Koran verbally claims its god to be great and merciful; but the effective message of this document is one of pettiness and antagonism – perpetual enslavement for Moslems and implacable hostility towards all non-Moslems[178].

Admittedly, the word 'Allah' has since the advent of Islam been generally taken – even by non-Moslems – as referring to what everyone means by the English word 'God', and we shall here use the two terms as equivalent in various contexts. But I want to first briefly draw attention to the discursive difficulties this terminological equation presents. It is not innocuous, for if we say that 'Allah' is equivalent to 'God', we seem to accept as true the Moslem claim that their deity is indeed God (as understood in other traditions, notably the Jewish and Christian, and in Western philosophy). If, instead, on the basis of evident differences in the name, character, behavior and sayings of the Islamic deity, we say that 'Allah' is never equivalent to 'God', we would be in error, for there is much philosophical discourse in Islam, whether right or wrong, which is effectively about God although (naturally, since it is in Arabic) it is said to be about Allah. Thus, we must say that the term 'Allah' is, objectively, *sometimes but not always* equivalent to the

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178   One can only feel pity for Moslems as human beings, for the mental, social and political prison Islam condemns them to from day one and for their whole life. Even their rabid Jew-hatred is pitiful, indicative of their great inner confusion and turmoil. There seems to be no way out for them. Very, very few have the wit and courage to break free.

term 'God'. The term 'Allah' of course always refers to God for Moslems; but for non-Moslems (yours truly included) it need not do so – it depends on the precise context.

The Koran (or *Qur'an*), the holy book of the Moslems, is traditionally regarded as having been composed by their alleged prophet, Mohammed (Arabia, ca. 568-632 CE), mostly under dictation from the angel Gabriel[179]. However, it was put together much later. Some twenty years later, during the reign of the Rashidun caliph Uthman (644-656 CE), according to Moslem tradition. More like as of some sixty years later, during the reign of the Umayyad caliph Abd al-Malik (685-705 CE), according to some modern critics, who also raise doubts as to the authorship of the document[180]. Some of the latter suggest the document was largely fabricated[181], for essentially political purposes, as

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179   Koran 2:97 – "Jibrael [Gabriel], for indeed he has brought it [this Quran] down to your heart by Allah's permission." Also, 53:5 – "He has been taught [this Quran] by one mighty in power [Jibrael]." And 53:10 "So did [Allah] convey the inspiration to His slave [Muhammad through Jibrael]." These are Muhsin Khan translations; note that the material in square brackets is not present in the original but constitutes interpretation by the translators and presumably by Moslem commentators before them.

180   The editor, and perhaps largely the author, of the Koran seems to have been Hajjaj ibn Yusuf, governor of Iraq under Abd al-Malik. He then distributed this Koran throughout the Moslem world.

181   If you think such outright fabrication is unthinkable, consider *The Urantia Book*, which was produced anonymously probably in the second quarter of the 20th cent. (first published in 1955). This strange book (which I read once, out of curiosity) is designed to look like a new revelation. Though this has not happened so far, one can well imagine a group of people adopting it as their scripture and founding a new religion with it; thereafter, some centuries later, when people have forgotten

convenient ideology for an already established (not yet Moslem) Arab empire. They point out the lack of solid historical evidence for an earlier date of composition. On the contrary, the little historical evidence found suggests the non-existence of a religion called Islam and its founding document the Koran till the late 7th or early 8th century CE. The personage of Mohammed described in it might, therefore, be partly based on a vaguely remembered past teacher or even be entirely mythical.[182]

The Koran contains many internal and external inconsistencies. That is, contradictions between propositions in it, and possibly some illogical propositions in it; as well as discrepancies between it and documents it refers to (mainly the Jewish and Christian Bibles), and between it and various scientific and historical facts[183]. This is not very surprising, being true to varying extents of all religious texts (including the Jewish and Christian Bibles). Of course, the frequency and nature of these inconsistencies are significant, and need to be closely examined. In any case, internal contradictions and contradictions with scientific and historical facts must surely be considered as unerring signs that the document is not, or at least not wholly, of Divine origin – since it is

how it initially emerged, they will look upon it as a holy book. More details on this book at: en.wikipedia.org/wiki/Urantia.

182   In this context I highly recommend Robert Spencer's very interesting books on Islam: *The Truth about Muhammad*. (Washington, D.C.: Regnery, 2006). *The Complete Infidel's Guide to the Koran*. (Washington D.C.: Regnery, 2009). *Did Muhammad Exist? An Inquiry into Islam's Obscure Origins*. (Wilmington, Del.: ISI, 2012). Spencer refers in the latter to many other, similarly skeptical, past and present authors.

183   See the very interesting list and discussion of contradictions and confusions in the Koran at: answering-islam.org/Quran/Contra/index.html. See also in this regard the very interesting work of Haï Bar-Zeev.

inconceivable that God makes such errors. Just as the external contradictions in a document can only be due to human ignorance, so, the internal contradictions in it are indicative of human fallibility. Many of the contradictions within the Koran are between earlier and later laws; Moslems presumably view such developments as implying that God changed his mind, but this is an essentially absurd notion. An Omniscient Being would surely forewarn that a temporary or otherwise circumscribed law is so intended when promulgating it.

Islamic jurisprudence has developed complex hermeneutics for dealing with internal contradictions in the Koran (and other recognized sources). When two texts are found to be in conflict, various means may be used to reconcile them: they might upon further scrutiny be found to be more harmonious than they seemed at first sight, or one might be considered an exception to the other, or their scopes might be particularized to exclude each other, or the two might be somehow merged into one; alternatively, as a last resort, one might be considered as abrogating the other[184]. In the latter event, the decision as to which supersedes the other is mainly made with reference to chronology, the later text being considered as intended to replace the earlier[185]. Of course, it is not always easy to

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184   I have described the formal logic of these different responses in a 1998-9 paper entitled "Islamic Hermeneutics," which was posted in my website in 2001 as an annex to my Judaic Logic, and then published in my Ruminations in 2005. This essay is still online at: www.thelogician.net/3_judaic_logic/3_islam_1.htm.

185   This harmonization is reminiscent of the 13th hermeneutic principle of Rabbi Ishmael (Israel, 90-135 CE), though they are not identical. At: wikiislam.net/wiki/List_of_Abrogations_in_the_Qur%27an there is a list of verses abrogated and verses they were abrogated by.

establish chronology, but various criteria are agreed on as reasonable. Note that the Koran is *not* arranged in chronological order[186]. We need not go into more detail here, but only remark that all this goes to show that Moslem commentators admit the existence of internal contradictions within their source documents (and indeed between them). This shows commendable respect for logic on their part; but it also shows the logical imperfection of their proof-texts.

As regards discrepancies with earlier religious documents, although the Koran is manifestly (as anyone can see by making comparisons) largely based on the Jewish Bible (Torah and Nakh), and to a lesser extent on the Talmud and some Midrashim, as well as on the Christian Bible and some related books, it is obvious that whoever wrote the Koran he or they had a very superficial knowledge of these various books. The snippets of these books referred to in the Koran are obviously only known second-hand, by hearsay, or from casual perusal, not from intensive personal study and mastery. Either those who taught the Koran's author(s) parts of these books were themselves not very knowledgeable, or the Koran's author(s) had acute problems of attention and memory! This is evident from the ridiculous inaccuracies and bloopers in it, such as the anachronistic confusion between Miriam, the sister of Aaron, and Mary, the mother of Jesus, who existed some

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186   In my past essay on Islamic hermeneutics, I wrongly stated that the Koran "is supposed chronologically ordered." Perhaps I meant to say: "is supposedly chronologically ordered"? In any case, it is generally agreed that it is not chronologically ordered, and besides that it is not always possible to determine the temporal order with certainty. For assumed   order,   see: wikiislam.net/wiki/Chronological_Order_of_the_Qur%27an.

thirteen centuries apart[187]; or the unsubstantiated claim that Jews were wont to kill their prophets[188]! There are many details in Judaism and Christianity that the Koran displays ignorance of; and a lot of the information it apparently

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187   Koran 19:16-34 and 66:12. Another confusion I find hilarious is the Koran's presentation of Haman as a contemporary of Pharaoh (28:4 and 8), and as being ordered by the latter to "make for me a tower that I may look at the God of Moses" (28:38). The idea of a tower reaching up to God comes from the Tower of Babel episode (Gen. 11:4), which occurs in the Babylon region some 500 years before Moses' time. The character of Haman comes from the Book of Esther (as of 3:1), which tells of events in Persia over 900 years after the Exodus. Yet another instance I find revealing is the conflation in the Koran (2:67-73) of two unrelated passages of the Torah (Num. 19, on the red heifer, and Deut. 21:1-9, on another heifer altogether). And there are many more such mix-ups.

188   Koran 2:61, 91; 3:21, 112, 181, 183; 4:155. None of these passages mention which prophets were supposed to have been killed; indeed, they seem to be saying that all the prophets were killed. Two more passages suggest that only some prophets were killed; namely, 2:87 and 5:70. Perhaps the author of the Koran here again demonstrates his confusion, and has in mind the killing by the prophet Elijah of the 'prophets' of Baal in 1 Kings 18:40? Or maybe he is referring to 1 Kings 19:10, where Elijah says: "the children of Israel have… slain Thy prophets with the sword"? But this passage in fact relates to Ahab, the renegade king of the northern kingdom, or more precisely to his non-Jewish (Zidonian) Baal-worshipping consort Jezebel, as it is written: "Jezebel cut off the prophets of the LORD" and "Jezebel slew the prophets of the LORD" (1 Kings 18:4, 13). Or maybe the Koran author has Jesus in mind, and thinks the Jews killed him, unaware of the role the Romans played in that episode; but then why in 4:157 would it say that Jesus was not killed (by anyone)? Clearly, this repeated accusation, that Jews are either habitually or occasionally prophet-killers, is a deliberate lie aimed at making the Jews look as bad as possible. It is sheer calumny, mere hate speech.

relays from them is erroneous[189]. How then can this document be regarded as credible?

To protect itself from this accusation of ignorance and confusion, the Koran claims that Jews and Christians falsified their own Scriptures[190], and that Islam is older than Judaism and Christianity, whose prophets it claims were really Moslems![191] This is like hijacking a couple of

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189   Note that the Koran does not say: "the story told in the Jewish Bible or the Christian Bible is thus and thus, but I inform you that it was really so and so" – the Koran just tells a story, obviously unaware of its contradicting the older sources, i.e. thinking it is in accord with them!

190   Jews and Christians (at least those who disagree with Islam, which means almost all of them) make "statements other than that which had been said to them" (2:59); they "conceal testimonies" (2:140); they "alter the Scripture" and "speak untruth" (3:78); they "distort words" (5:13); they "forget portions" (5:14); and so forth. This thesis of falsification was, according to Bar-Zeev (p. 134), later much stressed by Ibn Hazm (a convert from Christianity in Andalusia, 994-1064), Samuel al-Mograbi (a convert from Judaism, 12th cent.) and Ibn Taymya (d. 1328, who is often referred to by modern Salafists and Wahabists). Bar-Zeev also suggests (p. 135) that the original intent of such passages of the Koran may have been to refer to the false prophets mentioned in 2 Kings 17:9, Ezek. 13, Jer. 14:13-15 and Jer. 23.

191   Consider the 'logic' of such claims. In 3:65: "O People of the Scripture, why do you argue about Abraham while the Torah and the Gospel were not revealed until after him? Then will you not reason?" This is a claim that, since Abraham preceded the Torah and the Gospel, his religion cannot have been theirs. Fair enough; but then the Koran infers that, since Abraham was neither Jewish nor Christian, he must have been Moslem! This is the intent of 3:67: "Abraham was neither a Jew nor a Christian, but he was one inclining toward truth, a Muslim" (Tr. Sahih International). Notice the double standard: the fact that Abraham preceded the Koran, too, is blithely ignored. Another fallacy in this argument is that of equivocation: it could well be said that

vehicles, and then accusing their real owners of theft. The main purpose of the Islamic claim to an earlier date is of course to deny that it was largely derived from Judaism and to a lesser extent Christianity; i.e. to occult the plagiarism on which it was founded[192]. The claim that Judaism and Christianity falsified their Scriptures is thus a subsidiary one, designed to explain differences in detail found in the Koran. Since Judaism and Christianity in fact, judging by concrete historical evidence, including third party records, antedate Islam by some 2,000 and 600 years, respectively

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Abraham was a musliman with a small m, meaning someone submissive towards God; but it does not follow from that that he was a Muslim, meaning a member of the religion of Islam, which did not yet exist. No one denies that the patriarch Abraham preceded the Torah – the Torah itself affirms it, and indeed is the source of our knowledge of his existence. Moreover, the Torah does not go against the teachings of Abraham, as the Koran suggests, but on the contrary lovingly transmitted them and was inspired by them. The Koran seems to be claiming that if someone antedates a religious document, having inspired it (as in the case of Abraham, Isaac, Jacob and his sons) or written it (as in the case of Moses), he may not be counted as a member of that religion, since it did not yet exist. But if we accept this idea, not only were the Israelites mentioned in the Jewish Bible not Jews, but Jesus and his Apostles were not Christians and Mohammed and his Companions were not Moslems! Surely, anyone able to reason would see the absurdity of such claims.

192   I can only here refer the reader to the important work of Bar-Zeev, *Une lecture juive du Coran*. This rich and illuminating study by a learned rabbi (the author adopted a pseudonym, no doubt to avoid becoming a victim of Moslem insults and threats) shows in detail the Judaic sources of much of the Koran's alleged prophecies. Moreover, it proposes a credible detailed theory regarding how the Koran was probably composed and put together from these sources. Ironically, Moslems proudly challenge others to "produce a sura like it," unaware of the foreign literary sources of their holy book. This may rightly be called plagiarism, in that material is drawn from other sources without acknowledging those sources.

– this is a claim that whole peoples for two millennia or several centuries had nothing better to do than combat and conceal a religion that they had never even heard of! Can such a wacky retroactive argument (to justify the Koran's misinformation) be taken seriously by anyone with intelligence and good faith? Surely this accusation of falsification is a cynical attempt at falsification by Moslems![193]

Imagine what would happen if the methodology thus proposed by Islam were to be applied in courts of law. In the abstract, it is conceivable that an innocent man be wrongly accused of some crime after some people maliciously hiding evidence in his favor and planting evidence against him. But no judge in his right mind would

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193   And they keep up the tradition of lying and pretending to this day, claiming that Arabs are the original inhabitants of the holy land, which all historical records show the Jews inhabited long before any Arab arrived, and claiming that Israelis persecute them, while the exact opposite is the truth. They destroy archeological evidence of the Jewish Temples under the Temple Mount, and assert no such edifice ever existed, blithely claiming Jerusalem as their eternal capital. And the witless and wicked mass media, BBC, CNN, and all their ilk, and even the British Museum and sundry Western universities, shamelessly pass on such nonsense as undeniable fact. Another shocking example of this disregard for facts by Moslems is their lately concocted claim that Moslems discovered America before Christopher Columbus! This new invention is being propagated ostensibly in order to suggest that Moslems have from its beginnings been part of the USA and therefore they have an equal share in what was until very recently thought to be only a "Judeo-Christian civilization." But its ultimate purpose is obviously to stake a Moslem claim of ownership on that country, and indeed the rest of the continent, in order to eventually turn it into the 'Amerabia' province of the world caliphate which it is their stated ambition to create. Distortions of history are never innocent.

consider such abstract possibility as relevant in a trial where zero evidence is brought to bear that substantiates it in the particular case under consideration (and moreover where much evidence is available with opposite effect). Indeed, in a sane society, a judge who based his judgments on such fantasy would surely soon lose his job. If this fanciful argument was allowed by historiology, historicity would disappear from historiography. There would be no reliable history, only fictional accounts. While it is true that history books cannot be fully objective, and entirely based on facts demonstrable through documents and other physical traces, to say this is a far cry from regarding all allegedly historical accounts as equally valid (or equally invalid).

Some interpretation is inevitable and indeed necessary in history, but this must always be done within the framework of unbiased methodological criteria. History is an inductive discipline, subject to empirical evidence, critical verification and other rational considerations; it cannot be allowed to become the product of arbitrary assertions in the service of some ideology. Some accounts are, therefore, more credible than others. The notion that a book could have traversed centuries or millennia in a subterranean manner, leaving no mark on history, no mention anywhere, no archeological vestige, is one found in many religions. In Buddhism, for instance, Mahayana sutras are routinely pre-dated to Buddha's time. Just as I do not accept such Buddhist claims, or the unsubstantiated claim by some Jews that the Zohar, which appeared in 13th century CE Spain, originated in 2nd century CE Israel, I would not grant any credence whatsoever to the Islamic claim as to the antiquity, let alone perennity, of the Koran. The same criteria of evidence apply to all.

Moreover, the Koran's central thesis is preposterous. It claims that God, i.e. the God of the Jews, the children of Israel, sent a non-Jewish messenger to them (as well as to

the Arabians, and everyone else eventually); and that when "the Jews" – i.e. only the few hundred or thousand Jews living in a certain corner of Arabia at that time, note well – refused to believe this alleged messenger, God became super angry with Jews in general, insulting them and cursing them all forever![194] Such a narrative is logically incredible for anyone truly acquainted with Jewish Scriptures, which teach God's justice and mercy, his patience and benevolence. Moreover, nowhere in them does God indulge in rude language, as when the Koran refers to Jews as "apes and pigs"[195]. The Koran's Jew-hatred is certainly not God's. It is the emotional reaction of

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194   See 2:89, 3:181, 5:13, 5:41, 5:60, 5:64, 98:6. The Koran of course claims the Jews to be accursed so as to reassign the role of 'chosen people' to the Moslems. However, such replacement is impossible according to many passages of the Tanakh. See for instance Jer. 31:34-36: "Thus saith the LORD, Who giveth the sun for a light by day, and the ordinances of the moon and of the stars for a light by night, who stirreth up the sea, that the waves thereof roar, the LORD of hosts is His name: If these ordinances depart from before Me, saith the LORD, then the seed of Israel also shall cease from being a nation before Me for ever. Thus saith the LORD: If heaven above can be measured, and the foundations of the earth searched out beneath, then will I also cast off all the seed of Israel for all that they have done, saith the LORD;" indeed, read the whole chapter, a beautiful prophetic promise of eternal love by God for the Jewish people.

195   See 5:60; also 2:65 and 7:166. Lest this seem like a misunderstanding of the Koran's intention, note the characterization in 2010 by the Moslem Brotherhood president of Egypt, Mohammed Morsi, of Jews as "the descendants of apes and pigs." Needless to say, he was not referring to Darwin's theory of evolution!

some quite ordinary person(s) filled with resentment of some sort[196].

Throughout the Tanakh, God professes *eternal love* for the people of Israel[197]. It is not conceivable that He would then, ever, change His mind. When the Jewish people fail to sufficiently obey His Torah, He may for a while seem angry with them. But then (at least in ancient times, according to the Tanakh), He sends them a prophet to call them to order. Always a Jewish prophet, one of their own brethren; never a foreigner. The Torah explicitly commands it[198], and the whole Tanakh repeatedly confirms it (i.e. all prophets and leaders of Jews therein were Jewish). All Jewish prophets were well versed in the Torah, and considered particularly wise and virtuous; and they had to be to have credibility in the Jewish people's eyes. It is unthinkable that God would suddenly choose to send the

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196   If the Koran is attributed to Mohammed, then the insults and curses can be explained with reference to his having been slighted by the Jews of Medina. If the Koran is a later product, the anti-Semitism evident in it was probably due to more diffuse Christian and other cultural influences. In any case, we see how rudely and hotly many Arabs and Moslems still today react when their pride is hurt.

197   Needless to say, it is not my purpose here to defend the idea of Jews as the 'chosen people', but only to show the absurdity of the Islamic (and before that, Christian) attempt at 'replacement theology'. The point made is that since such attempts refer to Jewish Scriptures they cannot consistently ignore what is in them.

198   See Deut. 13, 17:2-20, and 18:9-22. Online at: www.mechon-mamre.org/p/pt/pt0513.htm. Note especially: 17:15 – "One from among thy brethren shalt thou set king over thee; thou mayest not put a foreigner over thee, who is not thy brother;" and 18:15 – "A prophet will the LORD thy God raise up unto thee, from the midst of thee, of thy brethren," and 18:18 – "I will raise them up a prophet from among their brethren."

Jews someone ignorant of Jewish law and lore, and demand that they obey him. Someone who, to boot, engaged in highway robbery, murder, wife-stealing and pedophilia, to mention only some of the remarkable 'achievements' attributed to Mohammed by the Koran itself as well as by later reports[199].

God would surely have anticipated that the Jews were not likely to follow foreign religious leadership, all the more someone of doubtful morality. Indeed, they are specifically forbidden to do that, according to the Torah[200]. Only one of their own can lead them spiritually, and it must be someone of proven spiritual elevation. So, it can hardly be claimed that He sent them an Arab messenger, and then got terribly upset when the Jews did not accept him as a prophet! Moreover, God had no reason to be angry with the Jews at that period of history, the early 7th century CE. They were doing rather well spiritually – learning, praying and following the Torah assiduously (this was the period of the Geonim in Babylonia, remember) – so, why would God resent them? So, the whole scenario concerning them that the Koran blithely projects is absurd.

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199   As regards murder, the Moslem historian Ibn Ishaq (8th cent. CE) reported that, after the Jewish Banu Qurayzah tribe surrendered to Mohammad, their men "were brought out to him in batches," and he "struck off their heads," thus massacring with his own hands at least 600, maybe as many as 900, unarmed innocent people. (Quoted in Spencer's *The Truth about Muhammad*, pp. 129-131. See the same book for details Mohammed's other 'achievements'.)

200   See references in preceding footnote. E.g. "Neither shall he multiply wives to himself, that his heart turn not away; neither shall he greatly multiply to himself silver and gold." (Dt. 17:17.)

Funnily enough, unfortunately—Mohammed may have been Jewish![201] If Mohammed was indeed Jewish through his mother, it does not follow that he was qualified to preach to the Jews. His evidently sketchy knowledge of Torah and Talmud, and his immoral personal behavior, naturally disqualified him from such a mission. If he was a Jew, it can be said, in view of his many anti-Jewish statements, that he was a 'self-hating' Jew, i.e. a Jew who for whatever reason (in this case probably due to feeling rejected by his mother's tribe) hated the Jews in general (and therefore, by implication, himself too). The irony of all this is that when Moslems express their hatred for Jews in general they may be abusing their own leader as well as

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201   This speculation is based on a report by the Islamic historian Ibn Hisham (d. ca. 833), following of a report by his predecessor Ibn Ishaq (ca. 704-761/7 CE), whose works are lost. These sources are both generally respected by Moslems. It seems that Mohammed's mother may not have been Amina (an Arab), as orthodox tradition has it, but was an unnamed Jewish woman, sister of Waraqa Ibn Naufal. The latter, according to these historians, "belonged to the religion of Moses, before embracing that of Jesus." Mohammed's Arab father, Abdallah, died before his son was born. Still young, Mohammed went to live with Waraqa, who referred to him as his nephew. Waraqa seems to have been Mohammed's main teacher in religious matters. When Mohammed was six, his mother took him to Medina, to visit her family in the Jewish clan of the Beni al Najjar. Later, when Mohammed left Mecca for Medina, he first went to live with this clan. All this information is drawn from the book by Bar-Zeev, p. 17. Needless to say, the thought that Mohammed might have been a Jew is not a source of pride for us, but – in view of the havoc and bloodshed he has caused in the past 1400 years and continues to cause today – a source of acute shame. Hopefully he was not Jewish; but if he was, we have much reason to be sorry – as with Karl Marx and other lasting trouble makers.

his relatives! This is something Moslems ought to think about.

6.   On logic in the Hadiths

As we have seen, not only does the Koran involve almost no use of logic, i.e. of rational argument, but also the Koran involves a great deal of illogic. In view of this, we have to wonder how a bit of logic did come to appear in Islam at a later stage. A full study of this question would require us to first look for all a fortiori arguments and other logical processes in the *hadiths*[202]. These are the next layer of Islamic material, in principle closest in time and in perceived holiness to the Koran, being allegedly statements of the companions of Mohammed, purporting to recall things he (and to a lesser extent his companions) said and did. In view of the contradictions between some of these accounts, not to mention other absurdities, many hadiths are considered even by Moslems to be unreliable; but Moslems do believe many of them. This is rather optimistic on their part, seeing as these sayings and stories only began to appear on the stage of verifiable history in the late 7th cent. and early 8th cent. CE; that is, many decades after the purported date of Mohammed's death. Many hadiths are of much later date than that; some perhaps are from as late as the 9th cent. CE.

The following are two commonly given examples of logic in the hadiths[203]:

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202   The plural of hadith, in Arabic, is ahadith; but here we shall give the word an English plural, hadiths.

203   The references given for these examples in the source I used are, respectively, "Moslem" and "Ahmed," without further specification.

"Ibn Abbas narrated: A woman said, 'O Messenger of Allah, my mother died owing a vow to fast; should I fast for her?' He said, 'What if your mother owed a debt and you paid it back for her, would that settle it?' She said, 'Yes.' He replied, 'Then, fast for your mother.'"

"Abdullah ibn Zubair narrated: A man from Khath'an [a tribe] came to the Messenger of Allah and said, 'My father embraced Islam at an old age, and he cannot ride the camel and at the same time he is obligated to perform Hajj [the pilgrimage to Mecca]. Should I perform Hajj for him?' The Prophet said, 'Are you the eldest son?' He said, 'Yes.' The Messenger replied, 'What if your father owed a debt and you paid it back, would that settle it?' He said, 'Yes.' The Prophet said, 'Then perform Hajj for him.'"

These are both, of course, simple arguments by analogy, and their resemblance (both refer to paying off debt) is noteworthy. They constitute inductive, rather than deductive, logic – since the conclusion, though reasonable enough, is not necessary; i.e. we could well conceive Mohammed giving the contrary answers to the questions put to him without being guilty of illogic. An inductive argument is one whose conclusion can be assumed true on the basis of the given premises, *unless or until* some contrary information is found that puts it in doubt. Such simple argument by analogy may be all the logic that Moslems have found in the hadiths, judging by the fact that they are often given as the justification and illustration of Islamic hermeneutic techniques. They are considered as justifying the use of reasoning to develop the law, because they show Mohammed in the act of using such reasoning and therefore apparently inviting imitation by later

authorities. Although some commentators did not accept this implication of the examples, arguing that while Mohammed could well do it, it does not follow that his successors were qualified to do it, the mainstream posture has been to accept some development of the law through reasoning.

However, as we shall see further on [in JL], Islamic jurisprudence in fact usually resorts to a more complex form of analogical argument. In the above examples, a religious obligation, whether voluntary or fixed, is simplistically *likened* to a financial debt; so, the conclusion is based on a mere impression of similarity[204]. In the more complex form of the argument, however, the two things compared are considered to have an alleged or demonstrated *common ground*; so, the conclusion is based on a more intricate rational process. In simple analogy, the comparison between the two terms involved is unmediated, direct; whereas in complex analogy, it is mediated, indirect. I do not know whether examples have been found in the hadiths themselves of such more elaborate form of argument by analogy. There may be other examples. There may also be examples of other logical processes – this question can only be answered through close study of all the hadith collections by competent logicians.

But judging from the data I have some far come across offhand, logic does not seem to be much more present in the hadiths than in the Koran. The following story tells us something about the level of logic to be expected in them.

Muhammad Ibn Ishaq, author of *Sirat Rasul Allah* (*Biography of the Prophet of Allah*), wrote about an alleged rabbi of Medina, called al-Husayn, also known (possibly

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204   Such simple analogy seems to be called qiyas al-shibh, judging by a comment by Arnaldez, p. 43 (see reference further down).

after his conversion to Islam) as Abdullah bin Salam, who asked Muhammad "about three things which nobody knows unless he be a Prophet." Follow three silly questions which I will not bother repeating, to which Muhammad readily gives three silly answers, which again are not worth the trouble of retyping. Whereupon, highly impressed for his part, the questioner immediately converts to Islam, testifying that Muhammad is the messenger of Allah[205]. Obviously, the purpose of this story is to 'prove' Muhammad's status as an envoy of God, by having a Jewish rabbi test him and testify to his having successfully passed the test. Why a Jewish rabbi? Because that would connect Muhammad's mission to earlier Scriptures, and thus enhance his authority.

But what is the 'logic' of this attempted proof? First, there is no evidence whatsoever that this story is historically true; without our having any means to verify the fact, we have to keep in mind that it could have been invented by Ibn Ishaq or someone before him. Who is this rabbi? He must have been an important fellow, to have been entrusted with such an important secret. Yet no Rabbi al-Husayn of Medina is known to us Jews, or to historians at large. Second, even supposing that this Jew existed and was a rabbi and did indeed ask Muhammad those questions and did indeed find his answers correct – how can we be sure that he did not simply invent the questions with the intent to admit Muhammad's answers whatever they were (in order to please him and gain his favor)? In other words, what tests did al-Husayn first pass to prove *his own* reliability as an examiner? None that we know of. The story

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205   This story is reported and discussed in some detail by Spencer in his The Truth about Muhammad, pp. 92-5. He analyzes it further in his more recent book Did Muhammad Exist? pp. 107-9.

told, of course, implies that al-Husayn knew the three questions to ask of a prophetic candidate and the three answers to them, from his own, Jewish tradition; but we know of no such tradition in Judaism[206] (the Moslems would of course reply that we lie when we say that, claiming that we have falsified our tradition in order to hide its anticipation of Muhammad's mission). Third, there is an internal inconsistency to this story. If (as al-Husayn claims) the answers to the three questions are knowable *only* to a prophet, how does al-Husayn (who is *not* claimed to be a prophet) know them? To claim that someone *not* privy to information *is* nevertheless privy to it, is a self-contradiction.

From this parody of logic we can conclude without doubt that the story is made up. Whoever made it up, either he did not himself have the intelligence to notice its inherent paradox, or he was confident that his target audience was composed of simpletons who would not spot its absurdity. I do not suppose any Moslem commentator through the ages ever belied this story on logical grounds.

The dating of hadiths is of course very relevant to the issue of the sources and development of Islamic logic. A considerable effort of collection and translation of non-Islamic texts into Arabic began already in the Omayyad

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206   If we have any tradition concerning prophets it is that they must be extremely 'disinterested' – devoid of lust for political power or material possessions or sexual gratification. See for examples, regarding worldly gains, Numbers 16:15 (where Moses declares: "I have not taken one ass from them, neither have I hurt one of them.") and I Samuel 12:3-4 (where Samuel asks: "Whose ox have I taken, or whose ass have I taken? Whom have I defrauded or whom have I robbed? From whom have I taken a bribe to look the other way?"). Very different was the behavior of Mohammed, according to Moslem sources.

period (661-750 CE). This effort increased greatly during
the Abbasid period (750-1258 CE). Thus, the influx of
foreign philosophy and logic into Islamic culture
accelerated over time. Knowing this, we may expect the
hadiths appearing in the later period to involve more logic
than those in the earlier period. This is just a speculative
prediction on my part, which may or may not be
empirically confirmed. In any case, even before any
translations of texts occurred, there was bound to be some
measure of cultural osmosis from the population and
institutions of the conquered peoples to their conquerors.
The conquerors took over the existing institutions, without
at first modifying them greatly. It is only over time that
they tailored them to their own philosophy.

7.   The intellectual poverty of Islam

In any event, Islamic law (called the sharia) is often based
to a large extent on material found in hadith collections,
rather than in the Koran. These collections constitute the
'oral law' of Islam, as against the 'written law' given in the
Koran. It is reasonable to suppose that some logic might be
found in the hadiths, though this question can only, to
repeat, be answered empirically by actual detailed research
in these compilations, some of which are massive.
However, it is safe to predict that most of the logic that
eventually makes its appearance in Islam, in legal
discussions leading to the formulation of laws (constituting
the sharia), was learned from Jewish, Christian, and
eventually Persian and Greek, and later Indian, logical
traditions[207]. This could have occurred by observation

207   Hallaq considers that logic "made an entry to legal
theory" after the 11th cent. CE (p. 257). But I would say that
though this may well be true of conscious efforts of application

during discussions with non-Moslems of their logical practices, as well as through learning from oral and written theoretical teachings. But I suspect that logic came into Islam mainly though diverse converts to it, who brought it with them as cultural baggage. In any case, while Islam was apparently little touched by logical thought in its presumed Arabian cradle, it was very soon in close contact with the rich traditions of the countries the Arabs and their successors conquered with the sword, and from then on could absorb and assimilate much of the knowledge in these other cultures.

It should be kept in mind that the Arabs produced no philosophical reflection, at least not in writing (even though they had an alphabet very early on), till the late 8th or early 9th century CE, when the bulk of writings in Greek, Persian and Syriac, and possibly Hebrew, among others, were translated into Arabic (notably under commission of the Abbasid caliph al-Mansur, who reigned in Baghdad 754-775 CE). Indeed, the Arabs hardly had any literature till the Koran appeared, as they themselves admit when they refer to the earlier era as the "period of ignorance" (*Jahiliyyah*). In short, to put it bluntly, the Arabs were not exactly an intellectual people, at least not till very late in human history compared to other peoples in their region. It is therefore not very surprising to find almost no logic, and much illogic, in the Koran and in many hadiths. And it is accordingly not very surprising that the Arabs, and likewise later conquerors[208], were greatly impressed by the

of formal logic to Islamic law, logic must have be intuitively used and/or seeped in from the outside two or three centuries before that, as of the start of legal discourse, for the simple reason that no such discourse is possible without "reasoning" of some sort.

208   The Turks who later conquered Arab territories adopted Islam because it seemed great in their eyes compared to what they had before. The Mongols were less inclined to become

discourse of the Koran and hadiths: they simply knew no better!

That the Arabs and later conquerors were willing to learn from their subject-peoples is certainly to their credit, and it made possible their eventual entry into the field of philosophy. However, while Islamic philosophy flourished for a while[209], between the 9th and 12th centuries CE, with the likes of al-Kindi (Arab, ca. 801-873), al-Farabi (Turk, ca. 872-950) and ibn-Sina (aka Avicenna, Persian, ca. 980-1037), under external influences, it soon came to an abrupt halt due to strong fundamentalist reaction. This reaction began early on, with the anti-rationalism of al-Ash'ari (Arab, ca. 874-936), and came into full force later on, through al-Ghazali (Persian, 1058/9-1111). Even if ibn-Rushd (aka Averroës, Andalusian, ca. 1126-98) made a last-ditch effort to rebut Ghazali, his writings had little effect on Moslem thought in the East. Free thought and free speech in Islamic philosophy effectively never recovered. There were also, of course, political causes for this reversal, notably the Mongol conquests in the 13th century. Islamic philosophy was thenceforth largely limited to the task of theological defense of faith against rational doubt (and Islam against other faiths, as well as disputes between Sunni and Shia Islam), and this has remained its essential role to this day.

This course of events may be described as follows in more sociological terms. A backward people (the Arabs) were suddenly confronted with bits and pieces of the thoughts of

Moslems, remaining largely aloof rulers – Moslem in name only, if at all.

209   Of course, this refers to the Moslems collectively. The philosophers were no doubt a small élite, the masses of the people remaining very ignorant. Still, some knowledge must have trickled down.

more advanced societies (mainly Jewish and Christian to start with, then many others), spurring them into a period of considerable spiritual and cultural progress. However, when they reached the limits of the developmental potential of their core doctrine (the Koran and hadiths), rather than question it and go beyond it they clung to it and erected it into an unassailable dogma. At that critical juncture, Moslems effectively gave up evolving intellectually and chose permanent stagnation instead. For this reason, their societies stagnated politically and economically thereafter, prospering intermittently only by looting other societies. For a while, in the past couple of centuries, it looked a bit as if Western (i.e. European and American) modernity might stimulate them into reviving their own slumbering spirits[210]. But in the last few decades we have seen a violent reaction to such liberating influences, in the form of 'Islamism'.

Not having looked into the hadith collections, or studied subsequent developments in Islamic law, I cannot for the time being propose a more precise analysis of how logic filtered into Islam. However, I propose to next briefly look into a modern work on Islamic law and legal reasoning, and see what we can learn from it about use of a fortiori argument, and eventually other forms of argument, in Islam. In this regard, I will refer mainly to a work by Hallaq[211], a contemporary scholar whose books seem at first blush particularly clear and instructive.[212]

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210   The Al-Nahda (Renaissance) movement is a notable example of such attempted awakening.

211   Arab, b. 1955, in Nazareth, Israel. More on this author at: en.wikipedia.org/wiki/Wael_Hallaq.

212   The rest of this essay can be read in AFL, chapter 11. This is available online at: http://www.thelogician.net/A FORTIORI-LOGIC/Islamic-Logic-11.htm.

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(Some additional references are mentioned in footnotes. Note that the above list is not meant as a bibliography, but simply details the books referred to within the text.)

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Avi Sion is the author of several works on logic and philosophy: *Future Logic* (1990); *Judaic Logic* (1995); *Buddhist Illogic* (2002); *Phenomenology* (2003); *The Logic of Causation* (1999, 2003, 2010); *Volition and Allied Causal Concepts* (2004); *Ruminations* (2005); *Meditations* (2006); *Logical and Spiritual Reflections* (2008-9); *A Fortiori Logic* (2013).

These works can be freely studied at: www.TheLogician.net and www.AviSionBooks.com.

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