

JUDAIC LOGIC: A Formal Analysis of Biblical, Talmudic and Rabbinic Logic

By **Avi Sion** PH.D.

© Copyright **Avi Sion, 1995. All rights reserved.**

Protected by international copyright conventions. No part of this book may be reproduced in any manner whatsoever, or stored in a retrieval system or transmitted, without express permission of the Author-publisher, except in case of brief quotations with due acknowledgement.

Slatkine edition 1997. Self-published through Lulu; CreateSpace & Kindle.

Website: www.TheLogician.net. E-mail: avi-sion@thelogician.net.

Judaic Logic can be freely read online at [The Logician.net](http://TheLogician.net) and in various other locations. It can be purchased in Amazon.com, Lulu.com and many other online booksellers.

The present document contains **excerpts** from this book, namely: The Abstract; the Contents; Sample text (Chapter 11); and the References.

Avi Sion (Ph.D. Philosophy) is a researcher and writer in logic, philosophy, and spirituality. He has, since 1990, published original writings on the theory and practice of inductive and deductive logic, phenomenology, epistemology, aetiology, psychology, meditation, ethics, and much more. Over a period of some 28 years, he has published 27 books. He resides in Geneva, Switzerland.

It is very difficult to briefly summarize Avi Sion's philosophy, because it is so wide-ranging. He has labeled it '**Logical Philosophy**', because it is firmly grounded in formal logic, inductive as well as deductive. This original philosophy is dedicated to demonstrating the efficacy of human reason by detailing its actual means; and to show that the epistemological and ethical skepticism which has been increasingly fashionable and destructive since the Enlightenment was (contrary to appearances) quite illogical – the product of ignorant, incompetent and dishonest thinking.

Abstract

Judaic logic: A Formal Analysis of Biblical, Talmudic and Rabbinic Logic is an original inquiry into the forms of thought determining Jewish law and belief, from the impartial perspective of a logician.

Judaic Logic attempts to **honestly estimate the extent to which the logic employed within Judaism fits into the general norms, and whether it has any contributions to make to them.**

The author ranges far and wide in Jewish lore, finding clear evidence of both inductive and deductive reasoning in the Torah and other books of the Bible, and analyzing the methodology of the Talmud and other Rabbinic literature **by means of formal tools** which make possible its objective evaluation with reference to scientific logic. The result is a highly innovative work - incisive and open, free of clichés or manipulation.

Judaic Logic succeeds in translating vague and confusing interpretative principles and examples into formulas with the clarity and precision of Aristotelian syllogism. Among the positive outcomes, for logic in general, are a thorough listing, analysis and validation of the various forms of **a-fortiori argument**, as well as a clarification of **dialectic logic**. However, on the negative side, this demystification of Talmudic/Rabbinic modes of thought (hermeneutic and heuristic) reveals most of them to be, contrary to the boasts of orthodox commentators, far from deductive and certain. They are often, legitimately enough, inductive. But they are also often unnatural and arbitrary constructs, supported by unverifiable claims and fallacious techniques.

Many other thought-processes, used but not noticed or discussed by the Rabbis, are identified in this treatise, and subjected to logical review. Various more or less explicit Rabbinic doctrines, which have logical significance, are also examined in it. In particular, this work includes a formal study of the **ethical logic** (deontology) found in Jewish law, to elicit both its universal aspects and its peculiarities.

With regard to Biblical studies, one notable finding is an explicit formulation (which, however, the Rabbis failed to take note of and stress) of **the principles of adduction** in the Torah, written long before the acknowledgement of these principles in Western philosophy and their assimilation in a developed theory of knowledge. Another surprise is that, in contrast to Midrashic claims, the Tanakh (Jewish Bible) contains a lot more than ten instances of *qal vachomer* (a-fortiori) reasoning.

In sum, *Judaic Logic* elucidates and evaluates the epistemological assumptions which have generated the Halakhah (Jewish religious jurisprudence) and allied doctrines. Traditional justifications, or rationalizations, concerning Judaic law and belief, are carefully dissected and weighed at the level of logical process and structure, without concern for content. This foundational approach, devoid of any critical or supportive bias, clears the way for a timely reassessment of orthodox Judaism (and incidentally, other religious systems, by means of analogies or contrasts). *Judaic Logic* ought, therefore, to be read by all Halakhists, as well as Bible and Talmud scholars and students; and also, by everyone interested in the theory, practice and history of logic.

Contents

I

1. INTRODUCTION.....	7
1. The Development of Jewish Law.....	7
2. A Logic Primer.....	11
a. Some propositional forms and their interrelations.....	12
b. Inductive logic.....	17
c. Deductive logic.....	19
2. ADDUCTIVE LOGIC IN THE TORAH.....	26
1. The Art of Knowing.....	26
2. Adduction in Western Philosophy.....	28
3. Adducing Prophecies and Prophethood.....	30
4. Logic and Mysticism.....	35
3. THE FORMALITIES OF A-FORTIORI LOGIC.....	40
1. The Valid Moods.....	40
a. Subjectal moods.....	41
b. Predicatal moods.....	41
c. Antecedental moods.....	43
d. Consequential moods.....	43
2. Validation Procedures.....	46
3. Additional Details.....	52
4. QAL VACHOMER.....	60
1. Background.....	60
2. Samples in the Torah.....	63
3. The <i>Dayo</i> Principle.....	69
4. Objections!.....	71
5. Rabbinic Formulations.....	75
5. REVISED LIST OF BIBLICAL A-FORTIORI.....	78
1. Problems Encountered.....	78
2. The Solution Found.....	79
3. The Data and their Analysis.....	81
4. Synthesis of Results.....	86
5. Talmudic/Rabbinic A-Fortiori.....	88
6. THE LANGUAGE OF BIBLICAL A-FORTIORI.....	91
1. Torah Books.....	91
2. Historical Books.....	93
3. Other Books.....	97
4. Rejects.....	102
7. WITHOUT PREJUDICE.....	105
1. Taking a Dilemma by its Horns.....	105
a. For the religious.....	106
b. For the secular.....	107
2. About Revision.....	109
3. Changes in the Law.....	114

8. INITIAL IMPRESSIONS.....	116
1. Methods and Contents.....	116
2. <i>Davqa</i> or <i>Lav-davqa</i> ?.....	121
3. <i>Kushya</i> and <i>Terutz</i>	127
4. Standards of Knowledge.....	130
9. TRADITIONAL TEACHINGS.....	132
1. Hermeneutics.....	132
a. Inferences of information.....	135
b. Elucidation of terms.....	137
c. Harmonization.....	138
2. Heuristics.....	142
3. A Methodical Approach.....	147
10. THE THIRTEEN <i>MIDOT</i> (I).....	152
1. Exposition and Evaluation.....	152
2. Inference of Information.....	154
3. Scope of Terms.....	164
11. THE THIRTEEN <i>MIDOT</i> (II).....	170
4. Harmonization.....	170
12. THE SINAI CONNECTION.....	195
1. Verdict on Rabbinic Hermeneutics.....	195
2. Artificial Blocks to Natural Development of the Law.....	202
3. How "Tradition" Keeps Growing.....	209
13. ON THE CONCEPT OF <i>MITZVAH</i>.....	214
1. Basic Properties.....	214
2. Complementary Factors.....	218
3. How to Count Mitzvot.....	224
4. Commanded vs. Personal Morality.....	230
14. LOGICAL ASPECTS OF <i>EMUNAH</i>.....	234
1. On Natural Proofs of Religion.....	234
2. Theodicy and the Believer's Wager.....	237
3. Faith and Justice.....	240
4. Legislated Belief.....	243
15. EPILOGUE.....	247
1. Motives of the Present Research.....	247
2. Conclusions of Our Study.....	249
16. APPENDICES.....	261
1. Further Notes on A-Fortiori Argument.....	261
2. Notions of Time.....	264
3. <i>Gematria</i>	271
4. Three Texts Reviewed.....	274
a. Feigenbaum's Understanding the Talmud.....	274
b. Rabinowich's Talmudic Terminology.....	276
c. The Ramchal's <i>Ways of Reason</i>	282
5. The Hebrew Language.....	284
6. Further Notes on Harmonization Rules.....	290

17. ADDENDA AND DIAGRAMMS	295
1. Addenda to <i>Judaic Logic</i>	295
2. Diagrams for <i>Judaic Logic</i>	307
REFERENCES	320

Tables

Table 3.1	Classification of A-Fortiori Arguments.	40
Table 5.1	Proposed list of Biblical A-Fortiori	82
Table 5.2	Frequencies of A-Fortiori Operators.	84
Table 5.3	A-Fortiori Arguments: By Whom, How Often, When.....	85

Diagrams

1. Rule 1, on A fortiori argument	307
2. Rules 4-5, on Scope of terms	308
3. Rules 8-9-10, on Harmonization	309
4. <i>Kol davar shehayah bikhlal veyatsa</i>	310
5. Rule 8a, <i>Lelamed oto hadavar</i>	313
6. Rule 8b, <i>Lelamed hefekh hadavar</i>	313
7. Rule 10, <i>Shelo kheinyano</i>	314
8. Rule 9, <i>Shehu kheinyano</i>	316
9. Rule 11, <i>Lidon badavar hechadash</i>	317
10. Rule 13, on Dialectic	318

Sample text (chapter 11)

In this second part of our analysis of the Thirteen Midot of R. Ishmael, we shall deal with Rules 8-11 and 13, which concern harmonization.

Broadly put, the five remaining hermeneutic principles, which we shall label 'harmonization rules', serve to resolve apparent redundancies, discrepancies, doubts, tensions or inconsistencies between propositions. In some cases, their results are identical with those of formal logic; in some cases, they favor a course which is only a possibility among others according to formal logic; and in some cases, they suggest a course which formal logic would not have recommended. Note that these principles constitute units of thought-process, which may be operative individually in simple situations, or eventually successively in complex combinations.

Note that my formal analysis in this section is based on a possibly limited sample, drawn from the derivative literature on the topic that I have consulted. The few examples which are there presented as representative of the Rabbinic tradition may not be fully representative of that tradition. Furthermore, even if these examples are fully representative, it remains possible, indeed likely, that direct and thorough empirical research into the Talmud and other Rabbinic literature would reveal a much larger variety of forms of thinking, legitimate or not, in actual use¹. The observations of the Rabbis of the past 2,000 years interested in these matters, and their conceptualizations and classifications of what they noticed, need not be taken for granted. On the contrary, as we show here, their failure to use formal methods make it very probable that they missed some of the available data and misjudged the data they had. Much work can still be done, and it is hoped that my initial efforts will be pursued further by others.

It should be noted that none of the harmonization rules here dealt with are mentioned in the Soncino index². So I have no inkling how often these rules are actually used in the Talmud.

Our interest here, note well, is not in the legal issues as such, but in the logical structure of the exegesis. I have no Halakhic ax to grind; my purpose is to institute a *methodology* for clarifying, classifying and evaluating Rabbinic exegesis, with reference both to its theoretical and practical aspects (that is, R. Ishmael's rules and their explanation by Rabbis, on the one hand, and examples of their application in Talmud and other Rabbinic literature, on the other hand). Our empirical data consists of traditional pronouncements and actions, but our analytic approach to this data will be strictly objective and scientific.

We shall now deal with the first three (actually, four) of the hermeneutic principles which begin with the phrase *kol davar shehayah bikhlal veyatsa...* (Rules No. 8-10), which means literally

¹ A case in point was indicated in the previous chapter (footnote 15): the inference, from the prohibition of shatnez and the prescription of tzitzit, that shatnez is allowed in the case of the tallit. But also, previously and further on, we find many tacit inferences in Rabbinic thought, which though allied to explicated principles, are not themselves aspects of those principles.

² Though possibly "text, superfluous", which has only one reference, applies.

‘anything which was in a generality and came out...’³. Broadly put, in formal terms, these rules are concerned with the following exegetic situation:

Given:

All S1 are P1	(major premise),
and All S2 are P2	(minor premise),
where All S2 are S1, but not all S1 are S2,	(subjectal premise) ⁴ ,
and P1 and P2 are in some relation $f\{P1, P2\}$	(predicatal premise).

What are resulting relations:

**between S1 and P1, and between S2 and P2, other than the above given;
and between S1 and P2, and between S2 and P1** (conclusions)?

This, then, concerns two subalternative subjects (S1 and S2, whose genus-species relation is defined in what we shall call the ‘subjectal premise’), which are found in Scripture separately related to two distinct predicates (P1 and P2, whose relation is defined in what we shall call the ‘predicatal premise’)⁵. The given relation of the genus (S1, the major subject) to its predicate (P1, the major predicate) will be called the major premise; while that of the species (S2, minor subject) to its respective predicate (P2, the minor predicate) will be called the minor premise. The question asked is, what information can be inferred concerning the various subjects and predicates (conclusions)? *For us, this question is two-fold: (a) what conclusions does **Rabbinic tradition** propose, and (b) what conclusions does **pure logic** propose; comparing these sets, we might find them to coincide or intersect or entirely diverge.*

The major and minor premises are given explicitly in Scripture (presumably, though it is conceivable that they be only implicit, provided they are derived from the text *purely* deductively). The subjectal premise may be textually given (or, again, strictly implied), or, as often happens, it may simply be obvious (natural knowledge); likewise, for the predicatal premise. The form of the latter relation, $f(P1, P2)$, varies from rule to rule, and of course will affect the conclusions drawn. One of P1 and P2 may be subordinate to the other, or they may imply each other (being identical, or logically implicant); or P1 and P2 may be otherwise compatible (subcontrary or unconnected), or they may be incompatible (contradictory or contrary).

As for the ‘conclusions’ proposed, we shall see how they vary, and are generated, as we proceed; note that they may be inductive, as well as deductive. It should be remarked that in Rabbinic exegesis, one or more of the premises may be altered in the course of the argument: an initially general proposition may end up as contingent or as exclusive; such changes must be counted as ‘conclusions’ (or part of the overall ‘conclusion’), too.

³ Note that these rules differ from the *klalim uphratim* in that, rather than concerning the mutual impact of *terms*, they concern the mutual impact of *propositions*, estimated by careful scrutiny of the subjects and predicates they involve, as well as their various other formal features (polarity, quantity, modality, etc.).

⁴ Note carefully that it is the narrower subject S2 that implies the wider subject S1; for that reason, we say that S1 is subaltern to S2. On the other hand, since S1 includes S2, we say that S2 is subordinate to S1.

⁵ If two propositions have identical (or at least, logically implicant) subjects (both S, say), these rules do not apply. In such case, we are dealing with ordinary ‘oppositional logic’, so that the opposition of the propositions is in principle identical with the opposition of the predicates. However, if the quantity differs in the two premises, then it might be argued that their subjects are not technically equivalent, but merely subalternative (all S = S1 and some S = S2). Whether in the latter case the Rabbis would apply the rules in question, I do not know.

Needless to say, the Rabbis never formulated their rules in such formal terms; I have expressed them in this manner to clarify them and evaluate them with certainty. R. Ishmael's definitions (roughly, but passably) specify the major, minor and subjectal premises, as well as (though not always clearly) the putative 'conclusions', in ordinary language. But they do not specify, or do not more than hint at, the predicatal premises, which must be more or less guessed at, with reference to traditional examples; *our hypotheses in this regard are confirmed by the symmetry and exhaustiveness of the combinations they postulate.* As for logical evaluation, R. Ishmael and his contemporaries and successors do not make any effort at, or demonstrate any skill in, formal analysis of the processes; we will endeavor to fill the gap.

Furthermore, I very much doubt that these hermeneutic procedures were mechanically applied wherever their respective formal conditions were found; rather, I suspect, they were treated as a set of tools, which could be used, or ignored, as convenient, provided the Rabbis all approved. It is hard to imagine how they could proceed otherwise, because as we shall see the conclusions they draw are more often than not logically unnecessary (if not, in some contexts, illogical); whence it follows that inconsistencies are bound to arise in some cases, calling for a retreat from previous exegetic acts which caused the trouble. But to prove this prediction, one would have to study the Talmud in much more detail than I have done; ideally, one would need a well-ordered list of all the cases where exegesis took place.

Now, *by means of syllogism*, we can without further ado make the following inferences (side conclusions):

From the minor and subjectal premises, **Some S1 are P2** (mood 3/AAI).

From the major and subjectal premises, **All S2 are P1** (mood 1/AAA).

Yet other formal syllogisms may be possible, depending on the predicatal premise involved; such eventual inferences will be pointed out as we proceed.

In some cases, these various deductive inferences lead to no antinomy and are accepted by the Rabbis, though they may go beyond them and recommend some inductive process (for instance, an *a-contrario* reading or a generalization). In some cases, they lead to no antinomy, but are refused by the Rabbis (for reasons we shall see), who inhibit them in some way (for instance, by means of an anti-literal reading of the text or a particularization). In some cases, deductive logic from the given data results in a conflict, which must be resolved; and here again, the Rabbis may favor one reconciliation over another.

We have above considered, and will continue to do so, only the **copulative** forms of *kol davar shehayah bikhlal*; that is, forms involving *categorical* propositions. However, it should be clear that **implicational** forms of same are equally conceivable; that is, forms involving *conditional* propositions. Both types are used in Rabbinic examples, though perhaps the former more so than the latter. As shown below, the overall format of implicationals is similar to that of copulatives; all results are presumably the same, *mutatis mutandis*. We need not, therefore, treat both types; nor will we do so, to avoid repetitions. The significant difference between them is that, while copulatives involve four *terms*, implicationals involve four *theses*. Instead of the subjects (S1, S2) and predicates (P1, P2), we are concerned with antecedents (P1, P2 - not to confuse with the preceding symbols for Predicates; here P stands for Proposition) and consequents (Q1, Q2), respectively. Thus, for the record, we have, broadly put:

Given: If P1 then Q1 and If P2 then Q2 (major and minor premises),
where P2 implies P1, but P1 does not imply P2 (antecedental premise),
and Q1 and Q2 are in some relation $f\{Q1, Q2\}$ (consequential premise).

What are resulting relations:

between P1 and Q1, and between P2 and Q2, other than the above given;
and between P1 and Q2, and between P2 and Q1 (conclusions)?

The common phrase “*kol davar shehayah bikhlal veyatsa...*” can now be interpreted more precisely. “*Kol davar*” refers to the minor term (S2); “*shehayah bi-*,” to the latter’s subsumption under the major term (S1, through the subjectal premise ‘S2 is S1’); “*-khlal*,” to the major premise (S1 is P1); and “*veyatsa*,” to the minor premise (S2 is P2). Note that in all these rules, the underlying subject is, normally, a person or persons (even if a beast, plant or mineral is ever mentioned, the ultimate subject, to whom any law might be addressed, is human). The effective predicate is clearly a law or set of laws, by which we must in this context understand some prescription, prohibition, permission and/or exemption. Let us now look at the hermeneutic principles concerned in detail.

☆ **Rule No. 8** completes the said common phrase with the words *...min haklal lelamed, lo lelamed al atsmo yatsa, ela lelamed al haklal kulo yatsa*. Translated literally, the principle states: “anything which was in a generality and came out of the generality, is to be taught: it is not to be taught ‘about itself, it came out’; but it is to be taught that ‘about the whole generality, it came out’”.

We may suggest the following interpretation: “A subject (S2), by virtue of its subsumption under another (S1), was included in a generality (All S1 are P1); then it (S2) was treated distinctively (All S2 are P2). In such case, the distinctive predicate (P2) is to be taught: do not just teach it (P2) with reference to the singled-out species (S2), but also teach it (P2) with reference to the whole genus (S1) [so that All S1 are P2]”. Thus, “*atsmo*” refers to the minor term (S2); “*yatsa*,” to the minor predicate (P2); and “*haklal kulo*,” to the major term (S1).

Although R. Ishmael’s principle itself does not specify the following point, *judging by some examples given in the literature*, the rule of *lelamed* concerns cases **where the minor predicate P2 is subordinate to the major predicate P1**. Thus, in this context, the predicatal premise undefined in our earlier general formula is:

All P2 are P1, but not all P1 are P2 (predicatal premise),

and the main conclusion apparently suggested by R. Ishmael is:

All S1 are P2 (main conclusion).

According to deductive logic, the said predicatal premise does not provide us with any additional inferences, other than the ones already obtained by other means (see above). Therefore, R. Ishmael’s suggested conclusion is at best inductive. Deductive logic allows that a genus may have a generic predicate and a species of that genus have a more specific predicate; it does not insist

that the genus follows suit and have the more specific predicate, too. R. Ishmael, on the other hand, apparently considers that, with regard to the Torah, the minor premise, or more precisely, the implication of the minor and subjectal premises, ‘Some S1 are P2,’ has to be generalized to ‘All S1 are P2’.

The example, reported by Bergman, on which I based the above formalization is: Exod. 22:18 sentences a sorceress to death (generality), while Lev. 20:27 sentences a male or female medium or necromancers (“in whom is a ghost [ov] or familiar spirit [vidoni]”) to death by stoning (particularity); whence, granting mediums and necromancers to be included in the category of sorceresses (the textual basis for this subsumption is not given, note; also, commentators include sorcerers, arguing that the feminine is used only because most are women), it is inferred by such *lelamed* exegesis that sorceresses (of all kinds) are to be stoned. I noticed that the predicate change consists in adding a further precision (by stoning) to the original predicate (death sentence); and assumed this to be a *sine qua non* condition of application of this rule.

Note well that, according to natural logic, R. Ishmael’s suggested conclusion is not impossible (no antinomy ensues from it); it is just a non-sequitur (not formally inevitable). The minor premise’s implication is *lav davqa*, and may with equal possibility turn out to be general or contingent. Also, no redundancy would be involved in a *davqa* reading of ‘Some S1 are P2,’ contrary to R. Ishmael’s generalization, i.e. such that ‘Some S1 are not P2’. The suggested course is therefore an artificial one, recommended by a religious authority claiming Divine sanction. It is not essentially an inference, but a proposal that the minor premise *not* be read as exclusive.

Why the text did not simply say ‘All S1 are P2’ (instead of ‘All S2 are P2’) in the first place, if that is what it intended, is not explained; perhaps it would have been *contextually* inappropriate, suggesting false inferences from the surrounding context. Also, why the proposed inference is made, *rather than* reading the particularity as an exceptional provision, so that species of S1 other than S2 are *not* P2, though they are P1, is not explained. I would predict that the alternative reading of the particular, as a contingent, sometimes does occur in Rabbinic practice; but I have not searched for examples⁶. In any case, *deductively*, either outcome is formally acceptable; the proposed mood can only therefore be considered as an *inductive* preference, claimed as peculiar to Biblical exegesis.

☆ Bergman informs us that above is one version of the rule of *lelamed*, where the particular law teaches “about itself as well as the general law”. In another version, according to him, it teaches (not about itself but) “only about the general law”. From the example he gives, however, I would strongly disagree with his rendering of the latter version, while quite willing to grant that it exists in Rabbinic literature. But before discussing our differences, let me present this additional version in formal terms.

Let us first look at Bergman’s example. Lev. 22:3 sentences he who approaches holy offerings while impure to the ‘cut-off’ (excision, *karet*) penalty (generality); Lev. 7:20 sentences he who eats peace-offerings while impure to the same penalty (particularity); peace-offerings are listed as among other holy offerings in Lev. 7:37 (to be precise, this verse does not mention the general category of holy offerings, but only lists various kinds of offerings: burnt, meal, sin, guilt, consecration and peace). It is thence inferred that the consumption

⁶ Frankly, in my view, the *davqa* reading would seem the more likely of the two (though not inevitable), because that would immediately explain why Scripture did not simply say ‘All S1 are P2’.

(or approach?) of offerings of lesser holiness than peace-offerings, such as those for Temple maintenance (Bergman does not specify where in the text this distinction in degree of holiness is established), are *not* subject to cut-off.⁷

Although neither R. Ishmael nor his successors specify the following point, *judging by some examples given in the literature*, the variant rule of *lelamed* concerns cases ***where the major predicate P1 is subordinate or identical to the minor predicate P2***. Thus, in this context, the predicatal premise undefined in our earlier general formula is:

All P1 are P2

(predicatal premise),

and the main conclusion apparently suggested by Rabbis is:

Some S1 are *not* P2

(main conclusion).

Now, let us consider the syllogistic inferences we can make given this predicatal premise; there is only one, shown below. Notice that the result below is the same as the main conclusion of the original version of *lelamed*, except that here it is obtained by deduction, without need of an inductive extension.

From the major and predicatal premises, **All S1 are P2** (mood 1/AAA).

Note that ‘All P1 are P2’ does not tell us whether all P2 are P1 or not all P2 are P1; either possibility is acceptable in the present variant, presumably. In the case where P1 and P2 imply each other (i.e. are identical or logically equivalent), nothing more can be deduced from the given premises.

There is a formal **exception** to the application of the second variant of *lelamed*, namely in situations where the rules of the *klalim uphratim* type are applicable. For the compound propositions ‘G and S are P’ and ‘S and G are P’, where S is subordinate to G, are each formally equivalent to a conjunction of the two simple propositions ‘G are P’ and ‘S are P’. And according to R. Ishmael, the conclusions to be drawn in these situations are, respectively, ‘Only S are P’ (*davqa*, by rule No. 4) and ‘All G are P’ (general, by rule No. 5). It follows that, when we come across subalternative subjects with the same predicate, we must first decide which rule is applicable. According to Rashi (*Shevuot*, 7a), the *klalim uphratim* rules would be used when the subalternative subjects are close to each other in the text (in the same verse), while the said variant of

⁷ Note in passing that Scherman (p. 51) uses the same area of the text to illustrate the first variant of *lelamed*. From Lev. 7:19, which allows the ritually pure to eat [sacrificial] meat (and, therefore, supposedly, granting an exclusive reading of the text, forbids the impure from doing so), and v. 20, which decrees a penalty of *karet* for an impure person who eats peace-offerings, he infers the same penalty for *all* [holy] offerings. It is interesting that this sweeping conclusion is in disagreement with Bergman's more nuanced result obtained by means of the second variant of *lelamed*! I do not know which of them is considered Halakhically correct. However, my reading of v. 19 is that it refers to peace-offerings, since not only the previous verse but the two after concern these offerings, in which case Scherman's argument is not really a first-variant *lelamed*, but simply a generalization from peace offerings to all offerings (which does not mean Bergman is right, of course).

lelamed would come into play when the propositions are relatively far apart. The conclusion obtained is different from that of *lelamed* variant two, note well, in the case of ‘SG are P’; but in any case, the process as such is different even in the case of ‘GS are P’. Similar comments apply to other forms of *klalim uphratim*.

We thus see that, in this second variant of *lelamed*, the ‘conclusion’ postulated by the Rabbis, ‘Some S1 are not P2,’ is precisely the *contradictory* of the conclusion required by deductive logic (taking the premises at their face-value)! I am therefore very tempted to entirely reject this form of reasoning as antinomial. In any case, I would bet that this procedure is not invariably followed in the situation concerned, since it is very likely to lead to eventual inconsistencies; but I have not sought for demonstrative examples. However, we must try and understand what prompted the Rabbis to propose such twisted logic, and how it can be formally expressed.

Apparently, what prompted the Rabbis to opt for such a convolution, is the fact that the major predicate (P1) is less extended than the minor predicate (P2), or of equal extension, whereas the major subject (S1) is more extended than the minor subject (S2). Why would Scripture do so, rather than say ‘All S1 are P2’ in the first place, knowing that we could automatically draw such an inference? Therefore, the Rabbis supposedly reasoned, Scripture does not want us to draw such an inference.

With regard to logical means for such a position: granting the predicatal premise, which distinguishes this *midah* from the others and defines it, the only way we can prevent the conclusion ‘All S1 are P2’ from being drawn, is to deny the major premise, ‘All S1 are P1’. Note well that if we do so and say:

Some, but not all, S1 are P1

(particularization of major premise),

then the side conclusion that ‘All S2 are P1’ no longer follows, and the relation between S2 and P1 remains problematic.

Objections which can be raised to this Rabbinical position are the following. If the Rabbis are surprised in the present case that the text did not immediately say ‘All S1 are P2,’ why were they not equally surprised in the previous case that the text did not directly say it, if that was its intention?

Furthermore, in the case where P1 is subordinate to P2, there could be a *contextual* reason for giving the major premise a more specific predicate, to avoid some unwanted inference (such as a first variant *lelamed* from another minor premise) which could otherwise be drawn from a generic predicate. In the case where P1 and P2 are one and the same, the Rabbinical surprise can only be due to the different extensions of the subjects, S1 and S2; here again, a contextual explanation could be adduced: it is conceivable that undesirable inferences might have been drawn from a misplaced generic subject or specific subject.

God, the writer of the Torah, may have thought: ‘I can allow Myself such wording, since the Rabbis will recover My final intention eventually anyway, by syllogism through the predicatal premise.’ The mere facts that the text is considered as written by a conscious Being and that syllogism is easy, does not prove that God intended what the Rabbis say He intended. An alternative course is sustainable, so their discomfort with the apparent redundancy was not justified. So much for evaluation; let us go back to description.

In the new variant of *lelamed*, the putative ‘conclusion’ denies the major premise. It is not a deduction (since in deduction, a conclusion can never contradict a premise), nor a particularization in reaction to textual inconsistency (since there was no contradiction between the premises, no conflict calling for reconciliation). Strictly-speaking, therefore, it cannot be

called an inference, but at best a reading motivated by a vague discomfort with the logistics of the text. The Rabbis arbitrarily (without formal motive) reject literal reading of the major premise, 'All S1 are P1,' and tell us that it is not *davqa* general, but really contingent. Their alleged conclusion, that 'Some S1 are not P2,' is the cause, rather than the effect, of such reading. The anti-literal reading becomes necessary to prevent absurd consequences, only once the desired 'conclusion' has been artificially chosen; furthermore, that 'conclusion' does not necessarily follow such reading, it is only made possible by it.

Thus, the second variant of *lelamed* ends, rather than starts, with particularization of the major premise; no process is involved in getting to its main conclusion. Note that, in this context, the syllogistic inference from the original major premise (All S1 are P1) and the supposed predicatal premise (All P1 are P2), namely 'All S1 are P2', is Rabbinically interdicted.

It follows incidentally, from the main 'conclusion', as the Rabbis claim, that 'there is at least one species of S1 unlike S2, call it S3, which is not P2'; i.e. that the minor predicate is applicable only to the minor subject (and eventually others like it); the trouble with this eduction, however, is that it adds no concrete knowledge, since it cannot tell us *in what respect* other species are 'like' or 'unlike' the given species⁸. In effect, then, though the minor premise as such (All S2 are P2) remains unaffected, it becomes exclusive:

Only S2 are P2

(additional conclusion).

Note well that this exclusive proposition is not formally required as such, but is approximately true granting some leeway for the subject to expand somewhat (i.e. 'S2' here may include other species of S1 like S2, but in any case excludes some species of S1 unlike S2). The syllogistic inference that 'Some S1 are P2', from the minor premise and the subjectal premise (All S2 are S1), remains valid; and is of course to be conjoined to the Rabbis' conclusion 'Some S1 are not P2', to form a contingent proposition.

To repeat, the proposal of the Rabbis is logically untenable, unless we doctor the premises in a convenient manner. To *prevent* contradiction, the major premise 'All S1 are P1' has to be denied, i.e. particularized to 'Some, but not all, S1 are P1'. However, this measure does *not* result in the desired main 'conclusion' being inferred deductively; it remains a 'foregone conclusion' (a thesis without justification in the premises, old or new). All that the adjustment of the major premise does, is render the main 'conclusion' formally conceivable; its preference by the Rabbis remains an inductive act. ***This act would be acceptable to science, if put forward as a tentative hypothesis to be tested by other data; however, pronounced as a fixed fiat, not open to review, it becomes, from the scientific point of view, an arbitrary act.*** The Rabbis, of course, claim Divine sanction for it; but we must point out that such a claim is not verifiable by scientific means. We shall leave the matter at that and move on.

We can now return to criticism of Bergman's formulation. The distinction between the two variants of *lelamed* which he proposes is incorrect. In the first variant, we could, indeed, say that the particular law teaches "about itself as well as the general law," insofar as the minor predicate is Rabbinically applied to the

⁸ By definition, every species is in some respects different from, as well as in some respects the same as, other species of the common genus. In practice, the Rabbis rather arbitrarily propose divisions, without adductive control.

major subject. However, it cannot be said, in the second variant, that the particular law teaches (not about itself but) “only about the general law”. The particular law is in fact unaffected by the process, and the general law does not come to resemble it. The best we can say is that the particular law is viewed by the Rabbis as an *exception* to the general law; it makes the latter cease to be general. The minor predicate is reserved for the minor subject (and others eventually ‘like’ it), and other members of the major subject (‘unlike’ the minor subject) are deprived of the minor predicate.

Let us see, now, how we would have to interpret R. Ishmael’s *lelamed* formula, so that it covers the second variant. To adapt the sentence “*kol davar shehayah bikhlal veyatsa min haklal lelamed lo lelamed al atsmo yatsa ela lelamed al haklal kulo yatsa*”, we must read into it something to the effect that “A subject (S2), by virtue of its subsumption under another (S1), was included in a generality (All S1 are P1); then it (S2) was treated distinctively (All S2 are P2). In such case, the distinctive treatment (All S2 are P2) was intended to teach us something. It was not done just to teach us something about itself (S2) that the species was differentiated (in All S2 are P2), but also to teach us something [else] about the whole genus (S1) from which it was differentiated [namely, that Not all S1 are P2]”.

In this modified version, we read the implicit word “else,” meaning “other than the distinctive treatment,” into the formula, so that the ‘conclusion’ be different for the genus than it was the species. Here, “*yatsa*” refers to the whole minor premise, rather than to the minor predicate, note.

Thus, we might distinguish the two variants of *lelamed*, by labeling the first “*lelamed oto hadavar leshar haklal*” (teach the *same* thing, P2, with regard to rest of the genus, S1), and the second “*lelamed hefekh hadavar leshar haklal*” (teach the *opposite* thing, notP2, with regard to the rest of the genus, S1). Compare this to Bergman’s differentiation, “as well as the general” and “only the general,” and you can see that he was inaccurate.

Let us now review the technical similarities and differences between these two versions of *lelamed*, other than their common grounds with the other rules of the type *kol davar shehayah bikhlal veyatsa*. (a) In both, the predicatal premise, which serves as the distinctive condition to application of the rule, asserts implication between the predicates; however, in the first version, which we have called *lelamed oto hadavar*, the minor predicate is subordinate to the major predicate; whereas in the second version, called *lelamed hefekh hadavar*, the major predicate implies the minor predicate. (b) The main conclusion of the first is general positive (All S1 are P2), while that of the second is particular negative (Some S1 are not P2); they agree, however, that Some S1 are P2.

Finally, (c) they involve distinct thought-processes: *lelamed oto hadavar* proceeds by inductive generalization of a particular implication of the minor premise (viz. Some S1 are P2), whereas *lelamed hefekh hadavar* proceeds by arbitrarily postulating a conclusion contradictory to an implication of the major premise (viz. All S1 are P2) and consequent reconciliatory particularization of the major premise itself. Neither process is called-for or necessary according to natural logic, neither constitutes deduction from the predicatal premise which prompts it; but the artifice involved in the former is relatively straightforward, while that involved in the latter is more twisted.

In view of the similar predicatal premises, the traditional classification of *lelamed hefekh hadavar* with *lelamed oto hadavar* seems sound. But at the same time, in view of the radical differences in process and conclusion, we may well doubt that the second variant was intended in the original definition of R. Ishmael. I suspect its formulation was a later development, even if it was used unconsciously earlier. It could equally

well have been instituted as a distinct rule of the *kol davar shehayah bikhlal veyatsa* type. It resembles the rule of the *liton toan acher, shelo kheinyano* type (see below) in that it involves a particularization of the major premise, though for quite different reasons.

The next two rules (Nos. 9 and 10) continue the common phrase *kol davar shehayah bikhlal veyatsa...* with the words *...liton toan acher*. We shall now analyze these.

☆ Let us first deal with **Rule No. 10**, which is easier. It completes the preceding clauses with the phrase *...shelo kheinyano, yatsa lehaqel ulehachamir*, and may be translated literally as “anything which was in a generality and came out to posit another thesis, which is *incompatible*, came out to lighten and to harden”. The expression ‘*shelo kheinyano*’ tells us that the major and minor predicates are, by their very nature (or by virtue of some other part of the text, perhaps), incapable of conjunction in one and the same subject. They are not merely different, but mutually exclusive; there is a radical cleavage between them.

Thus, although neither R. Ishmael nor his successors specify the following point, *judging by some examples given in the literature*, the rule *liton toan acher, shelo kheinyano* concerns cases **where the major predicate P1 and the minor predicate P2 are contrary or contradictory**. Thus, in this context, the predicatal premise undefined in our earlier general formula is, minimally:

No P1 is P2 (and No P2 is P1)

(predicatal premise).

Note that this gives a minimal definition of the incompatibility between P1 and P2 referred to. The bracketed clause is redundant, being implied anyway. In the case of contradictories, we must additionally say: **No nonP1 is nonP2** (which implies No nonP2 is nonP1). While in the case of contraries, we must add: **Some nonP1 are nonP2** (which implies Some nonP2 are nonP1).

A comment should be made here regarding *compound predicates*. If one predicate X consists of two concepts a + b, while the other predicate Y consists of only one of these concepts (say, a), *without mentioning the other* (b), then three readings are possible⁹.

- (i) X = ‘a + b’ and Y = ‘a + b’ or ‘a + notb’. Here, knowing that either event may actually occur; the result is that X is included in Y, or in other words, Y is a *genus* of X (as well as of some other species, Z = a + notb). Therefore, we would apply the rule *lelamed*; opting for the variant *hefekh hadavar* if P1=X and P2=Y, or the variant *oto hadavar* if P1=Y and P2=X.
- (ii) X = ‘a + b’ and Y = ‘a + b’. Here, we have generalized factor ‘b’ from the ‘a’ in the case of X, to ‘a’ in all cases, including that of Y; the result is that X and Y are *identical*. Therefore, whether P1=X and P2=Y, or P1=Y and P2=X, we would apply the rule *lelamed hefekh hadavar*.
- (iii) X = ‘a + b’ and Y = ‘a + notb’. Here, we have generalized from the *non-mention* of ‘b’ with regard to Y, to the *actual absence* of ‘b’ in Y; the result is that X and Y are *incompatible*¹⁰. Therefore, whether P1=X and P2=Y, or P1=Y and P2=X, we would apply the rule *shelo kheinyano*.

⁹ If more than two concepts are involved, we can easily reduce them to two. Thus, for instance, if X = ‘a + b + c’ and Y = ‘a + b’, then ‘a + b’ are effectively one concept and ‘c’ the other, for our purposes. However, note well, if there is, as well as a missing element in one of the compounds, any explicit incompatibility within them (for instance, X = ‘a + b + c’ and Y = ‘a + notc’), then they (i.e. X and Y) are automatically contrary.

¹⁰ Note that, *granting ‘a’ to be true*, ‘a+b’ and ‘a+notb’ are no longer merely (indefinitely) incompatible, but become contradictory (i.e. not only they cannot be both true at once, but they cannot be both false at once).

Often, as Bergman acknowledges, Scripture displays a discrepancy, not *by commission* (assigning incompatible predicates to subalternative subjects), but *by omission* (as just described). As the above analysis shows, in the latter case, before we can apply one of the hermeneutic rules, a decision process must be followed¹¹. Thereafter, if the compounds involved are found incompatible, we apply *shelo kheinyano*; otherwise, one of the variants of *lelamed*. It is noteworthy that the rule *shehu kheinyano*, as defined further on, never comes into play in this context!¹²

Now, let us consider the syllogistic inferences we can make given the said predicatal premise, 'No P1 is P2':

From the minor and predicatal premises, No S2 is P1	(mood 2/EAE),
From the major and predicatal premises, No S1 is P2	(mood 1/EAE).

No additional inference is possible with the additional clause (No nonP1 is nonP2) of contradictory predicates, nor with that (Some nonP1 are nonP2) of contrary predicates, note. Now, comparing these new results to the implications of the major and minor premises in conjunction with the subjectal premise, namely 'All S2 are P1' and 'Some S1 are P2', we see that they are respectively contrary and contradictory propositions. Thus, if, in the text, we come across subjects in a genus-species relation which have incompatible predicates, we are facing a situation of *formal inconsistency*. This is not an antinomy due to a Rabbinic interpretation, but one inherent in the text, note well. A formal resolution of the conflict is absolutely required.

It is a principle of inductive logic that harmonization is to be sought by effecting the *minimum* retreat from generalities, necessary to restore consistency; this is the most likely outcome¹³. If it can be shown that the subjects are not subalternative and/or that the predicates are not incompatible, we are of course no longer in the same situation and some other process may be appropriate. But, granting that the subjectal and predicatal premises are correct, the *only* way to achieve the required result is to *particularize the major premise*. With regard to the minor premise, if it is particularized alone, a conflict remains; it may of course also be particularized, but that does not affect the result. That is, logic indisputably demands that:

Some, but not all, S1 are P1	(resolution of conflict, leading conclusion).
-------------------------------------	---

¹¹ The decision depends, in part, on the known relationships between the elements 'a' and 'b'. They must be compatible, since 'a+b' occurs, in our situation. If 'a' implies 'b', then 'just a' implies 'a+b'. In all other cases, the combination 'a+notb' remains logically possible, though in some cases it may be *materially* absent or even impossible, for natural or Scriptural reasons.

¹² However, the situation of *shehu kheinyano* can indeed be predicted *in a wider perspective*, which consists in defining the two predicates, initially, as P1='a' and P2='b', then considering the logical possibilities of conjunction between the various combinations of a, b, and their negations. For P1 may equal 'a+b' or 'a+notb' or 'a+b or a+notb', while P2 may equal 'a+b' or 'nota+b' or 'a+b or nota+b'. These 3+3 combinations (of which 2 are disjunctive) imply nine conjunctions. Of these conjunctions, five are between incompatibles (*shelo kheinyano*), and four are between compatibles; of the latter, one yields 'P2 implies P1' (*lelamed oto hadavar*), one yields 'P2 is implied by P1' and one yields 'P2, P1 imply each other' (*lelamed hefekh hadavar*), and, finally, one (namely, the conjunction of the two disjunctions) admits of 'P2 being unconnected or subcontrary to P1'. This last case allows for *shehu kheinyano*.

¹³ We cannot go into the complex proof of this principle here. It has to do with factorial analysis (see my work *Future Logic* on this topic).

The proof of what we have just said will now be presented:

- If we particularize only the minor premise, so that ‘Some, but not all, S2 are P2’, and we keep the major premise, then the following sorites remains possible: ‘All S2 are S1’ (subjectal) and ‘All S1 are P1’ (major) and ‘No P1 is P2’ (predicatal), therefore ‘No S2 is P2’; but the latter conclusion disagrees with ‘Some S2 are P2’ (from minor); therefore, we still have an inconsistency.
- On the other hand, if we particularize only the major premise, so that ‘Some, but not all, S1 are P1’, and we keep the minor premise, then the following sorites remains possible: ‘Some S1 are S2’ (converse of subjectal) and ‘All S2 are P2’ (minor) and ‘No P2 is P1’ (converse of predicatal), therefore ‘Some S1 are not P1’; and the latter conclusion agrees with ‘Some, but not all, S1 are P1’ (altered major); therefore, this measure resolves our contradiction.
- If we particularize both premises, no such sorites can be constructed. The results are equally acceptable; but this measure involves a more radical reaction than necessary, it goes beyond logical necessity. Thus, the minor premise might or might not be denied; what counts is denial of the major premise. The difference in behavior is due to the minor term being narrower than the major term.

That is, we must say that the text, which at first sight led us to believe ‘All S1 are P1’, was not intended to be taken literally, but only to suggest that ‘a great many, perhaps most, but not all’ of S1 are P1. The syllogistic consequences of this new result on the relations between S1 and P2 and between S2 and P1 are as follows.

From the minor and subjectal premises, Some S1 are P2	(3/IAI).
From the major and predicatal premises, Some S1 are not P2	(1/EIO).
From the major and subjectal premises, no conclusion	(1/IA?).
From the minor and predicatal premises, Some S2 are not P1	(2/EIO).

The latter consequence is true whether the minor premise is particularized or not. If the minor premise *is not* particularized, we can moreover infer ‘**No S2 is P1**’; if, however, it *is* particularized (for independent reasons, for we have here no reason to do so), then whether ‘No S2 is P1’ or ‘Some S2 are P1’ remains an open question, formally. These consequences, together with the altered major premise (Only some S1 are P1), constitute our conclusions, according to formal logic. Now, let us turn to the Rabbis, and see what they say.

An example of *liron toan acher shelo kheinyano* given by Scherman: Exod. 21:2-6 presents a set of laws relating to the release of a Hebrew slave (*eved ivri*, this is taken to refer to a thief sold by the courts to repay his theft, as per Exod. 22:2; for the self-sold poor, see Lev. 25:39-43); then Exod. 21:7-11 presents a very different set of laws for the release of a daughter sold as maid-servant (*amah*); conclusion, the initial set was for male Hebrew slaves only, and the laws of each group cannot be applied to the other group.¹⁴

¹⁴ This is not a very good example, in my view, since the text describes the slave as possibly having a wife (implying him a male), and concerning the maid-servant says "she shall not go out *as the men-servants do*" (referring apparently to the preceding verses concerning the Hebrew slave), so that the subjects obviously do not overlap and the proposed inference is unnecessary. I wonder, too, if female thieves are sold by the courts; in any event, the daughter is not sold by the courts. However, ignoring all that, we may use the differing laws of release as a partial illustration. Better examples are given further on.

Thus far, the formal conclusions apparently suggested by R. Ishmael are *identical* to those of natural logic, in the present rule. However, the above example suggests that the Rabbis take a more definite position and additionally conclude:

No S2 is P1

(additional conclusion).

Whether the Rabbis invariably go that far, or only occasionally, I cannot say without a full list of examples; but offhand, it seems pretty typical. This conclusion can be due to either of two policies. Either the Rabbis consider that the minor premise ought to be kept general, i.e. as ‘All S2 are P2’; in which case, the said additional conclusion follows from the minor and predicatal premises deductively. Or the Rabbis consider that the minor premise ought to be particularized; in which case, their arrival at the additional conclusion is due to a generalization from the implication ‘Some S2 are not P1’ of the minor and predicatal premises. The first alternative is preferable to formal logic, in that no unnecessary doctoring of given data is involved. The second alternative, if used by the Rabbis, would constitute an inductive act (regarding which we can reiterate the remarks previously made in similar circumstances; namely, that such an act is arbitrary, if presented as a fixed rule; though scientifically acceptable, if presented as a tentative hypothesis).

☆ **Rule No. 9** completes the common phrase *kol davar shehayah bikhlal veyatsa...* with the words *...liton toan acher, shehu kheinyano, yatsa lehaqel velo lehachamir*, and may be translated literally as “anything which was in a generality and came out to posit another thesis, which is compatible, came out to lighten and not to harden”. The expression ‘*shehu kheinyano*’ is at first unclear; but we can arrive at its intended meaning by a process of elimination. ‘*Shelo kheinyano*’ (see rule No. 10, above) clearly refers to an incompatible predicate; so, ‘*shehu kheinyano*’ must refer to some kind of compatible predicate; however, it cannot refer to a minor predicate which subalternates or mutually implies or is subalternated by the major predicate, as such relations have already been treated under the headings of *lelamed*; therefore, ‘*shehu kheinyano*’ must specifically refer to a subcontrary or an unconnected predicate. That is, here, though the two predicates are by their natures different, in the sense of distinguishable, they are not mutually exclusive, but *conjoinable*.

Traditionalists may not agree with this definition of *shehu kheinyano*. They might distinguish it from *shelo kheinyano*, by saying that both concern somewhat divergent predicates, the former’s are ‘of similar subject-matter’, while the latter ‘of different subject-matter’, or something to that effect. But such a distinction is of little practical value, because it is difficult to determine by its means what is “different, but not very” and what is “very different”; the distinction in practice becomes pure guesswork, or (they might say) a matter of ‘oral tradition’.

Though I try my best, I see no way to enshrine such a distinction in formal terms. It cannot, for instance, be ascribed to the issue of compound predicates (see above). A genetic explanation may be the relation between two degrees of a concept X, say X1 and X2, and an incompatible of it, say Y (implying nonX): we could say that the greater X (X2) is further than the lesser X (X1) to nonX (considered as X=0); but both X1 and X2 remain in conflict with Y. The notion of “less” or “more” incompatible is, strictly speaking, a mixed bag. For formal logic, all incompatibilities are equivalent, without degrees; things either *cannot* coexist, or they *can* coexist (under certain conditions).

The examples which commentators usually give for the two processes are clearly identical from a formal point of view: substitute symbols for the terms, and you will see that the predicates are formally

incompatible in both sets of examples. It follows that there is no way to justify different procedures for the two situations. Furthermore, if both rules of *liron toan acher* indeed referred to incompatible predicates, then R. Ishmael's hermeneutics would be short of a comment on compatibles (in the sense, unconnecteds or subcontraries).

Thus, although neither R. Ishmael nor his successors specify the following point, we can say that the rule *liron toan acher, shehu kheinyano* concerns cases **where the major predicate P1 and the minor predicate P2 are unconnected or subcontrary**. This hypothesis is based on the said process of elimination, and *hopefully will eventually be confirmed by some examples given in the literature*. In this context, then, the predicatal premise undefined in our earlier general formula is, minimally:

Some P1 are P2 and some P1 are not P2, and

(some P2 are P1 and) **some P2 are not P1**

(predicatal premise).

Note that this gives a minimal definition of the sort of compatibility between P1 and P2 referred to. The clause 'Some P1 are P2' serves to eliminate incompatibilities, which are dealt with under the heading of *shelo kheinyano*; the bracketed clause 'Some P2 are P1' is implicit in it, and so could be left out. The clauses 'Some P1 are not P2' and 'Some P2 are not P1' serve to eliminate implicational relationships, which are dealt with under the heading of *lelamed*. In the case of subcontraries, the clause '**All nonP1 are P2**' (which implies 'All nonP2 are P1') would have to be added; in that case, the clauses 'Some P1 are not P2' and 'Some P2 are not P1', being both implied by the larger clause, could be left out. In the case of unconnecteds, the clause '**Some nonP1 are not P2**' (which implies 'Some nonP2 are not P1') would be added, instead.

Now, let us consider the syllogistic inferences we can make given the said (compound) predicatal premise. In conjunction with the major premise, all we can formally infer is that **Some P2 are not S1** (mood 2/OAO). However, this information tells us nothing of the relation of S1 to P2 (in that order), other than what we already know from the minor and subjectal premises, viz. that Some S1 are P2 (which is indefinite, note). Similarly, we can infer, from the predicatal and minor premises, that **Some P1 are not S2**; but this information tells us nothing of the relation of S2 to P1 (in that order).¹⁵

Before we can present and evaluate, by formal means, the conclusion(s) proposed by the Rabbis in such case, we have to find a statement or example which somewhat clarifies the matter, as we did in other cases. The problem, here, is that the statements and examples I have so far come across concerning the present rule are ambivalent¹⁶. So we have to proceed in a different manner, and look for an example which, had the Rabbis been more aware of the formal issues involved, they might well have classified under this heading. This proposed approach is admittedly highly hypothetical. For the present research project is not essentially prescriptive, but descriptive; its

¹⁵ For the record, note also that, in the case where P1 and P2 are subcontrary, nothing more can be deduced from the given premises.

¹⁶ An acquaintance of mine, Mr. S. Szmerla, pointed out to me, when I asked him for examples, that it is quite possible that some of the hermeneutic rules have only one or two actual instances. It is therefore not at all sure that we will find a sample, which is recognized by both the Rabbis and logicians like me as *shehu kheinyano*. A systematic listing and analysis of all exegetic acts in the Talmud is highly desirable, evidently.

purpose is primarily, not to tell the Rabbis how they *should* interpret texts, but to discover how they *do* interpret texts. We wish to evaluate *their* methods, not invent methods for them. A value-judgment is ultimately intended, but only after we have something of theirs to evaluate.

Nevertheless, remember, we arrived at our hypothesis concerning the form of *shehu kheinyano*, not out of the blue, but by a gradual discovery of the forms of the other subdivisions of *kol davar shehayah bikhlal veyatsa*. Our hypothesis was therefore grounded in Rabbinic practice to that extent, being the only leftover form available. It is, of course, conceivable that R. Ishmael and his successors never had to deal with the situation of compatible (but not subalternative or implicant) predicates in practice, and therefore had no need to develop a hermeneutic response and corresponding rule. This empirical issue is hard for me, personally, to resolve at this time, since I do not have a full inventory of the instances of Rabbinic exegesis at hand. However, I have found a couple of examples in the literature, in which the predicates are *objectively* in the required relation, even though they are classified differently by tradition (see **Appendix 6**).

Objectively, these examples should be classed as *shehu kheinyano*; but traditionally, one of them is classed as *shelo kheinyano* (rule No. 9, above), and the other as *lidon badavar hechadash* (rule No. 11, below; but note, regarding the latter example, that it may also be classed as *shelo kheinyano*, according to how the major premise is read). Thus, the conclusions they yield vary in form. But we cannot, in any case, presume to predict, on the basis of such reclassifications, what the formal conclusions preferred by the Rabbis might be for *shehu kheinyano* situations; for if they had been aware of the compatibility of the predicates in the suggested examples, they may have proposed other conclusions than those they proposed while unaware. To know for sure, we need an example which is both objectively *shehu kheinyano* and regarded as such by tradition, which to date I have not found.

The issue must therefore be left open, pending the gathering of more data. That is not a big problem, because, whatever the response of the Rabbis happens to be, we have by now made clear the method by which such response is to be treated: it is to be formalized (substituting symbols for content) and compared to the results syllogistic logic.

We shall now venture some remarks regarding the final clauses of R. Ishmael's *liton toan acher* rules, concerning **leniencies and severities**. Rule No. 9, *shehu kheinyano*, ends with the phrase ...*yatsa lehaqel velo lehachamir* (meaning: was singled out to alleviate *and not* to aggravate); and rule No. 10, *shelo kheinyano*, ends with the phrase ...*yatsa lehaqel ulehachamir* (meaning: was singled out to alleviate *and* to aggravate). Traditionally, these phrases are taken to characterize the result of exegesis, by comparing the general and particular law.

Examples. (a) 'Alleviation and not aggravation': Scripture prescribes the death sentence for killing someone, except in a case of manslaughter, for which the sentence is exile instead of death; thus, for manslaughter, the sentence is lighter and not heavier. (b) 'Alleviation and aggravation': Scripture prescribes payment of a ransom for his life to the master of an ox which kills someone, except in a case where the victim is a slave; in the latter case, the ox's master pays the slave's master a fixed sum (30 silver shekels), whatever the market value of the slave; since the market value of the slave may be more or less than the fixed sum, the latter sentence involves both leniency and severity.¹⁷

¹⁷ Example (a) is from Scherman. Example (b) is Abitbol's. However, it should be clear that, in the latter example, the focus of comparison is incorrect: we should not be comparing the fixed sum to the market value of the

These characterizations have no formal moment, according to our analysis. We cannot predict, on *formal* grounds, how the general and particular laws, so-called, will compare with respect to leniency or severity. It is clear that such characterizations are essentially *ex post facto* summaries based on *material* data¹⁸. If it so happens that wherever *shehu kheinyano* or *shelo kheinyano* exegesis has been used, the results are found to have this or that character, the summaries are true; otherwise, not. It is conceivable that Scripture and Rabbinic exegesis happen to conform to those patterns, but there is no logical necessity that they do. For as far as logic is concerned, anything goes in this respect. This means that the phrases in question do not play a role in getting us to the conclusions; they are technically useless in determining the Halakhah.

With regard to the material issue, I have no direct interest. But it is worth pointing out that R. Ishmael's said clauses do not seem to be based on *complete enumeration*, as they ought to be, but on *generalization* from a few instances. This is suggested by Bergman's comment concerning *shehu kheinyano* that "(Although the formulation of this rule states 'to be more lenient rather than more severe,' the converse also holds true.) If the item is specified for purposes of stringency, it is not given the leniencies of the general law." It is also evident, in several Rabbinic examples, that the characterizations are often forced, in an effort to fit R. Ishmael's statements. Clearly, R. Ishmael based these phrases on overly hasty generalization, from observation of a limited sample of cases. Therefore, they are not only formally unjustifiable, but empirically inaccurate. Consequently, R. Ishmael's formulations are overly restrictive, in practice.

Nevertheless, let us look further and see whether we can anyway draw some useful information from R. Ishmael's last clauses, of a formal or methodological sort.

A possible formal interpretation is the following.

If we consider the overall outcome of *shelo kheinyano* exegesis, what essentially happens is that the major and minor premises are respectively narrowed down and made exclusive, so that the major and minor subjects end up with *separate* predicates. We could say, loosely speaking, that this result 'both alleviates and aggravates', in that, whatever they are, the leniencies and stringencies of the major premise are not applied to the minor term and the leniencies and stringencies of the minor premise are not applied to the major term. Thus, the final clause of R. Ishmael captures the 'spirit' of this rule, though not its 'letter'.

If, now, we turn to the *shehu kheinyano* rule, and R. Ishmael's final clause 'alleviates but does not aggravate', and we assume that, here too, he was referring to the 'spirit', rather than the 'letter', of this type of exegesis, we might suppose that the conclusions he would recommend, in situations where subalternative

slave (as Abitbol does, following tradition, presumably), but to the ransom for the ox master's life. If the ransom for a free man's life is uniformly greater than the fixed sum for a slave, then the law for the slave case 'alleviates but does not aggravate'. If the ransom may be greater or smaller than the fixed sum, then we might say the fixed sum 'alleviates and aggravates', in this sense (instead of Abitbol's). Another criticism: in any event, none of these interpretations allows the phrase 'alleviate *and* aggravates' to be used; the accurate rendering would have to be 'alleviates *or* aggravates', judging by this traditional example. However, this may be judged an issue of translation, since 've-' is in other contexts read as 'or' as often as 'and'. All that goes to show the approximateness and unreliability of Rabbinic thinking.

¹⁸ Another example worth noting. Concerning the Hebrew slave and maid-servant case, considered earlier: Scherman explains that the maid-servant benefits from certain leniencies and stringencies denied to males, such as that she may go free even before six years of service and her master can betroth her against her will. But, I say, these differentia are given by the text, they are not outcomes of exegesis; it would change nothing to the reasoning process if there were *only* comparative leniencies or *only* comparative stringencies, *so long as* at least one pair of predicates was incompatible.

subjects have compatible predicates, are such that the minor premise ends up 'lighter' than the major premise. A relatively formal interpretation of this (with reference to a number of predicates), would be that the minor subject ends up with only its own predicate exclusive of the other predicate, while the major subject exclusive of the minor subject ends up with both predicates¹⁹.

I offer this remark very speculatively, without even looking for examples; I very much doubt that that was R. Ishmael's formal intention. Note that, in any case, some residue from the original text must remain: at least some S1 have to be P1 and at least some S2 have to be P2²⁰.

Our best bet is a *methodological* interpretation, which goes as follows. This explanation refers to advice broader in scope than the concerns of deductive or formal-inductive logic.

With reference to *shelo kheinyano*, we could impute R. Ishmael as saying that, since the major premise has been proven, by ensuing inconsistencies, not to be universal, we must henceforth proceed very carefully and, unless or until otherwise demonstrated, look askance at any *other* statement we encounter in the text concerning the major term, before extending it to the minor term (through some other exegetic rule). This is reasonable and wise advice. As examples show, such a recommendation does not exclude in advance the possibility that the major and minor terms have some legal predicate(s) in common (they are bound to at least have some non-legal predicates in common, else they would not be subalternative); it only serves to instill caution in the exegetic process.

Our usual epistemological approach is to accept appearances or statements at their face-value, barring reason to deny them; this might be called 'the easygoing approach'. In the *shelo kheinyano* situation, however, in view of our having encountered one inconsistency, we have grounds to expect others; so we would be wise to withhold immediate credulity from subsequent appearances or statements, barring reason to affirm them; this might be called 'the cautious approach'. These approaches may be analogized to the ways people can be judged: as 'innocent until proven guilty' or 'guilty until proven innocent'. The former gradually excludes certain items (which prove untenable), the latter gradually includes certain items (which prove tenable). In practice, we operate somewhere in the range between those two extremes.

With reference to *shehu kheinyano*, accordingly, since no inconsistency is implied, the appropriate approach would be 'easygoing'. Obviously, whatever leniency or stringency is introduced by the minor premise, exempts its subject from incompatible stringencies or leniencies applicable to the major subject in other propositions; but such exemptions emerge from distinct arguments, under the *shelo kheinyano* rule; so they are not, properly speaking, a direct outcome

¹⁹ A more material interpretation (ignoring Bergman's above-mentioned comment), would be the following. If P2 is *more lenient* than P1, then people in group S2 should not receive the greater burden of P1, but remain P2 only; while the rest of those in group S1 may remain P1 only, or be both P1 and P2; this is the most fitting case, of course - probably just what R. Ishmael had in mind. However, if P2 is *more stringent* than P1, then either people in group S2 should have their burden decreased, by being both P2 and P1, while the rest of those in group S1 remain P1 only; or alternatively, people in group S2 remain P2 only, while the rest of those in group S1 should have their burden increased, by being both P1 and P2; but in either of these cases, note, the burden of S2 people is still greater than that of the rest of S1 people, at the end. (Taking Bergman's comment into account, the predicates in the latter event would be kept separate, as in the former case.) It is evident, in view of the multiplicity of possible hypotheses, that R. Ishmael's phrase 'alleviates but does not aggravate' is very ambiguous, and therefore no sure guide.

²⁰ This is true in all exegesis: it is granted by the Rabbis, who said *ain miqra yotse miyedei feshuto* ("a Scriptural verse never loses its plain meaning", *Enc. Jud.* referring us to *Shab.* 63a, *Yev.* 24a). In formal contexts, 'simple meaning' refers to the minimum necessary implication of any proposition, namely an indefinite particular.

of the *shehu kheinyano* rule. However, residual factors specified or implied somewhere in the text with regard to the major subject, which have not been explicitly or by implication eliminated by the minor premise, may reasonably be assumed to remain applicable to the latter's subject, unless or until we have reason to believe otherwise.

In this perspective, the phrase *lehaqel velo lehachamir*, used for *shehu kheinyano*, is especially intended to *contrast* with the phrase *lehaqel ulehachamir*, used for *shelo kheinyano*, with respect to this issue of methodology.

☆ **Rule No. 11**, the last of the principles starting with the common phrase *kol davar shehayah bikhlal veyatsa...*, completes it with the words *...lidon badavar hechadash, y ata yakhol lehachaziro likhlalo, ad sheyachazirenu hakatuv likhlalo beferush*. Translated literally, it says: "anything which was in a generality and came out to be dealt with within a new matter, you cannot return it to its [initial] generality until Scripture returns it to its [initial] generality explicitly". This rule, albeit superficial appearances is very different from the preceding three. It may be stated as 'if a member of a certain class, subject to certain predicate(s), *becomes* a member of a new class entirely, subject to other predicate(s), then again *becomes* apparently subsumed under its initial classification, it should not recover the predicates of that classification, except in the event that Scripture clearly grants such recovery'. In symbolic terms, this definition says the following:

- (i) at first, **x, an individual, is S1, a subject-class,
and All S1 are P1, a predicate (whence x is P1);**
- (ii) later, **x ceases to be S1 and becomes S2, another subject-class,
and All S2 are P2, another predicate (whence x is P2);**
- (iii) yet later, **x ceases to be S2 and becomes S1 (though No S2 is S1);**
- (iv) in such eventuality,
**though x is (again) S1, it is *not necessarily* (again) P1, and
though x is not (any longer) S2, it is *not necessarily not* (any longer) P2.**

A note on terminology, with regard to this rule. It consists of three (compound) premises, with an underlying subject (x), two subject-concepts (S1, S2) and two predicates (P1, P2). We shall refer to the premises as the major (i), minor (ii) and middle (iii), though their conceptual levels are independent; and to the respective subjects and predicates of the major and minor premises accordingly. The (compound) 'conclusion' (iv) is a modal statement (of the logical type), forewarning us *not to* draw certain hasty inferences from the premises.

Let us analyze this situation. We are concerned, here, not with the various classifications of different individuals (extensional modality), but with actual travels of an individual from one class to another and back (natural modality). In the preceding three hermeneutic rules (Nos. 8-10), the issue was how to handle a static situation, where Scripture treats subjects belonging to a subclass seemingly somewhat differently from the way they are treated in the framework of an overclass. The individual subjects *are* members of the two classes simultaneously; they are not undergoing change, in the sense of *becoming*, actually ceasing to be one thing and then reemerging as something else. In the present rule, we confront the issue of metamorphosis, which

has very distinct logical properties²¹; specifically, the issue is a circular movement: membership in one class, then shift over to a *new* class, and finally *return* to the original class.

I derived my reading of the rule from an illustration given by Scherman. Lev. 22:10-11 inform us that common Jews (non-priests) and tenants or hired servants of priests are forbidden to consume 'holy things', while servants bought by priests or born in their house may do so. We know (either by a *davqa* reading of the latter verses, or a *gal vachomer* from home-born servants, or from an unstated verse) that a priest's daughter (our symbol, x), whether as a member of her father's household before she marries a commoner or as the wife of another priest (S1), is permitted such food (P1). Verses 12-13 tell us that it is, however, forbidden (P2) to her (x) while married to a commoner (S2); though if she is thereafter widowed or divorced... and returns to her father's house, as in her youth (S1), she may consume it (P1). In our example, Scripture happens to explicitly grant reentry of the daughter under the category of priest's household for the purpose of eating holy things; but the fact that this had to be specified is in itself significant, implying that it could not be simply presumed from the mere fact of her return home (or coupled with a-fortiori from v. 11 concerning bought servants, who are newcomers to the household).

In the rule of *lidon badavar hechadash*, unlike the others, *the categories of subject (S1, S2) are not overlapping, they are at variance (they have a common member, x, but at different times)*; as for the predicates (P1, P2), their mutual relationship is irrelevant, here. The major predicate (P1) applies to our individual *qua* (in his capacity as, by virtue of) his belonging to the first subject-concept (S1); similarly, the minor predicate (P2) comes to apply to it *qua* the second subject-concept (S2). With reference to the third premise, a legitimate question arises, was the original subject-class (S1) intended broadly enough to include returnees from an alternate subject-class (like S2), so that the earlier predicate (P1) again applies; or does the later predicate (P2) remain in force (or, perhaps, some third predicate come into play)?

From the point of view of syllogistic logic, granting the premises at their face-value, the general element of the major premise, 'All S1 are P1', combined with the final element of the middle premise, 'x is (again) S1', would formally yield the conclusion 'x is (again) P1'. As for the elements 'x is no longer S2' of the middle premise and 'All S2 are P2' of the minor premise, they do not clarify whether x has remained P2 or is no longer P2 (of course, if P1 and P2 are incompatible, x must cease to be P2; but if they are compatible, the final predicate of x is undetermined). R. Ishmael is clearly aware of these two logical consequences; however, he forewarns us not to blindly follow the first (though, concerning the second, he and formal logic agree).

If we accept the first premise as literally general, our conclusion has to be that the first predicate again comes into force. However, in view of our knowledge that (a) *changes of the kind considered do occur in nature and Scripture*, and keeping in mind that (b) *the intent of general statements in the Torah is occasionally not literal*, we cannot presume such an automatic conclusion, and are wise to leave the question open, awaiting Scripture's answer (directly or indirectly). The literal option is deductive, the anti-literal one is inductive. This hermeneutic rule, instead of advocating some conclusion, preempts any eventual conclusion; its purpose is to ensure that deductive logic is not mechanically used, when the events described take place, unless the text justifies it.

²¹

See our logic primer, ch. 1.2.

More precisely, according to this rule, if Scripture reiterates the subsumption of the ambulant individual under the major premise (after the said changes), then the major premise's generality is confirmed; if, however, Scripture fails to do so explicitly, the suggested reaction is, effectively, to *particularize the major premise* to 'Not all S1 are P1'. These alternative further proceedings (confirmation or particularization of the major premise) constitute a finite conclusion; so the process *lidon badavar hechadash* can be said to have conditional conclusions (rather than merely inhibiting any conclusion).

The above treatment of the rule is different from the traditional, but I think there is no possible doubt that the situation we have described is what R. Ishmael was trying to project. His use here of the qualifier *chadash* (new), rather than *acher* (other) as in the preceding two rules, confirms my view, as it suggests actual change of something, instead of a mere intellectual separation between different things. In any event, it would certainly be a wise rule to have; and traditional formulations, as we will now show, do not add anything of practical value to the previous rules and so cannot be appropriate.

If we read this rule as traditionally done, the formalities are indistinguishable from those of the rule *shelo kheinyano*, if not also the rule *shehu kheinyano*²². But there is no way for formal logic to discriminate between 'degrees of difference' between incompatible classes, so that any principle formulated on such basis is bound to be subjectively used. The traditional reading is thus, for all practical purposes, indistinguishable and useless. If we are to assume R. Ishmael to have been saying something meaningful and valuable, the reading I have proposed (based, note well, on an accepted example) seems a better candidate.

It has to be said that *the forms ascribed to material cases by the Rabbis are often wrong*. Because of their lack of formal tools, the Rabbis often misread the hermeneutic principles; that is, they misplace examples, and since their understanding of the principles is largely based on examples, they are often at a loss to clarify the whys and wherefores of their reasoning processes and to distinguish them from each other. One might have supposed that, since *they* formulated the principles in the first place, they ought to know more than anyone else just what they mean by them and be free to classify examples under the headings of their choice. But the issue is more complicated than that.

It is evident that the theory and practice of Rabbinic exegesis developed in tandem, over time. The Rabbis observed themselves thinking in a certain manner in certain situations, and subsequently were encouraged to think in the same manner again in other situations. Very often, the similarity between the situations was 'forced', and we can see a very artificial effort to jam the example into a mold, to make it fit-in to the desired format²³. The fact that the formats were themselves rather vaguely defined, facilitated such square-peg-in-a-round-hole antics. But also, we see an uncertainty concerning the opposition of terms or theses: 'different' is often confused with incompatible; incompatibility is thought to have degrees; the formal opposition of compounds is not analyzed; and so forth.

²² The traditional reading of *shehu* is formally indistinguishable from *shelo*; so in that reading both are indistinguishable from *lidon badavar hechadash*. But if we read *shehu* as concerned with compatible predicates, as I do, then it is not comparable to the traditional reading of *lidon*.

²³ This effect is sometimes achieved by *passing over some relevant detail* in the written text, as we see in an example given further on. We might regard this as a non-formal issue; or refer to it as a failure to take into consideration the full context of information available. There are no doubt other ways 'molding' occurs. The reason for this practice is that it 'legitimizes' an argument, gives it a semblance of being traditional.

All this is further complicated by the existence, in Rabbinic thought processes, of implicit (hidden or not consciously acknowledged) generalizations and exclusive readings, which are just taken for granted. The claim of Sinaitic tradition which gradually developed, and the intimidation it occasioned (the reluctance to question past authorities for fear of rejection by one's peers), caused the accumulation and perpetuation of such errors, because the process of repeated peer review which normally would uncover and correct errors was considerably inhibited. At best, we can call it incompetence; at worst (to the extent that the authors concerned sensed that they were misrepresenting the principles or contriving the compliance of examples) deception and manipulation.

As a consequence of the various circumstances just described, exegetic acts are wrongly classed, under rule 10 instead of 9 or 9 instead of 10, or 11 instead of 9 or 10, for instances (examples of such misclassification are presented and analyzed in **Appendix 6²⁴**).

Before closing the discussion of the five *kol davar shehayah bikhlal veyatsa...* rules, I want to again emphasize that my analysis was ***based on formalization of a limited number of examples***. It therefore depends on generalization; for it is not inconceivable that examples exist where the Rabbis have drawn conclusions of objectively other forms than those here encountered (whatever their theoretical claims). Ideally, our study should have been based on *comprehensive enumeration* of all Talmudic (and post-Talmudic) exegetic acts; such a feat is beyond my reach, since I lack the necessary linguistic tools (Hebrew and Aramaic) and since as far as I know no one has drawn up the required listing (let alone in English) - but I hope someone will one day perform the feat. Nevertheless, what is reasonably certain is that I have formalized the examples available to me accurately, so that we now have an at least partial formal picture of actual Rabbinic thinking processes, enough to formulate a verdict of sorts (comparing the empirical data to Rabbinic pronouncements and to formal logic).

In any case, this research at least has served to establish ***a clear and sure methodology for the independent audit of Rabbinic harmonization rules and acts***. That is in itself a highly important finding, which took time and effort to develop, since no one had done it before and it was not immediately evident.

☆ Finally, we come to **Rule No. 13**, which states: ***vekhen, shnei khetuvim hamakhechishim zeh et zeh ad sheyavo hakatuv hashlishi veyakhriyaa beneihem***. This means, clearly, 'two writings which deny each other until a third comes which reconciles them'. It refers to a situation where we come across two propositions in Scripture, say P and Q, which appear conflicting; the *midah* recommends we find a third proposition in the text, R, which somehow or other resolves the disagreement between them. Such reconciliation may logically result in neither, or either, or both, the initial two propositions being modified by the third, depending on the role the latter plays:

²⁴ I apologize to readers for going into such detail, but it is necessary, to substantiate my serious accusations. I hope one day someone takes the trouble to analyze all extant Rabbinic arguments in equal, and indeed greater, detail; it bothers me when people get away with fallacious reasoning. It should be clear that it is not the *content* that concerns me, I do not care what the Halakhic outcome is; what is important is that the *process* be valid.

- **P and Q remain finally unaffected by R; but R shows that *the presumed conflict* does not in fact occur in their case.**

An example given in *Enc. Jud.*: according to Exod. 19:20, “the Lord came down upon Mount Sinai”, and according to Deut. 4:36, “out of heaven He made you hear His voice”. These passages seem to imply that God was both *down* close to the Earth and *up* in the heavens; but the apparent antithesis is dissolved, by *Sifra* (1:7), which alleges²⁵, with reference to Exod. 20:19, “ye yourselves have seen that I have talked with you from heaven,” that God brought the heavens down with Him when He spoke. Here, the assumption that the heavens stayed in their normal place (up), which was the source of conflict, is denied.

- **P and Q are finally admitted to be in conflict; but R shows P and/or Q to be *more limited* than presumed, one or both being in fact conditional rather than (as apparent) categorical, or contingent rather than (as apparent) general.**

An example given by Bergman, Num. 7:89 says that “Moses went into the Tent of Meeting” to speak with God, whereas Exod. 40:35 says that he “was not able to enter into” it, adding “because the cloud dwelt thereon”. The latter clause was needed to resolve the contradiction between the first two statements, making them both conditional: Moses came in and spoke with God *when* the cloud departed, and he stayed out *when* it was there.

Note the distinct symbolization used in the present rule, in comparison to the other hermeneutic rules: here, we refer to whole propositions (P, Q, R) of whatever form, rather than to propositions of specified forms (as with a-fortiori argument or with the preceding rules of harmonization), or to terms (as with *klalim uphratim*). The 13th rule is the least structured and mechanical of the harmonization rules: we must look all over the text for a premise which is not formally pre-defined, so that our intuitive faculty is more active. Whereas in the other rules, the result is arrived at (for good or bad) more directly and virtually automatically.

The processes involved here are perfectly natural inductive processes, widely used to harmonize apparent divergences in the ever-changing context of empirical and rational knowledge. In natural contexts, they serve to restore consistency when it seems momentarily lost, adducing that either the apparent conflict was illusory for some reason, or that one or both of the conflicting theses were over-generalized or under-particularized or otherwise off-the-mark. In a Scriptural context, it is hopefully the text itself which provides the solution to the problem, informing us of some natural event or specification, or in certain cases a miracle, which modifies our reading of the situation and removes any antinomy.

Note that, according to *Jew. Enc.*, R. Akiba considered the resolution to be adoption of one of the conflicting propositions, whereas R. Ishmael opted for the view that both are to be modified. But I stress that, formally speaking, there are many possible resolutions, as here specified.

It has to be said that the conflict may not be immediately obvious; often, it is only noticed centuries after the Talmud, sometimes by a picky commentator out to make some point. Also, as originally formulated, the rule of *shnei khetuvim* predicts that a third proposition, *hakatuv*

²⁵ The reading in *Sifra* is by no means that I can see obvious; so this is not an example of Scriptural reconciliation, but merely one of Rabbinical reconciliation. See further on.

hashlishi, will be found in the text to restore the lost equilibrium. However, that is often not literally the case; often, the conflict is actually resolved only by Rabbinic intervention, with reference to a commentary well-established in the oral tradition or by means of a new commentary (with, in many cases, different commentators making different suggestions). In my view, such external intervention requires no special dispensation, since the process, as already noted, is quite legitimate according to generic logic; provided, of course, that it is properly carried out, that is to say, *flexibly willing to revise postulates which eventually cause difficulties of their own*.

Some commentators (Bergman cites *Tosefos Haazarah*) have felt a need to justify Rabbinic intervention, and did so with reference to the phrase *vekhen*, which begins the formulation of this rule by R. Ishmael. They read *vekhen* as “and, similarly,” and refer it to the preceding rule (No. 12), claiming that the present rule concerns situations where no harmonization is given by the immediate context (*meinyano* or *misofo*), and empowers the Sages to decide the issue²⁶. However, this attempted justification does not account for the reference to a third *Scriptural* passage (*hakativ hashlishi*). Indeed, according to that view, when Scripture explicitly resolves the conflict, no exegesis has actually taken place, and the rule only refers to situations where Scripture remains silent!

But, in my view, the phrase *vekhen* could equally well, and more credibly, be read as “and, also,” and taken to refer loosely to all the preceding hermeneutic rules, merely implying that the present rule is the last in the list (or, perhaps, last but not least). When Scripture provides a solution of the problem, it is still exegesis, insofar as we have to find the relevant passage; the rule, in such case, serves to remind us to look for it. As for where Scripture does not seem to provide a solution, why not say that such cases are dealt with using R. Ishmael’s other rules of harmonization. In practice, it is a very fine line which divides the two situations: many allegedly Scriptural resolutions are not automatic, but presuppose a certain Rabbinic reading of the text (e.g. the *Sifra* reading in the above given example).

The last of the Thirteen *Midot* is the prototype for the series of rules concerned with harmonization, in that it most clearly depicts the form of reasoning known as **dialectic**, whose pattern is *thesis-antithesis-synthesis*²⁷. Its hierarchical position is ambivalent. It should, in a way, have been listed first among them, because it is the one most deeply anchored in the text (*lidon badavar hechadash* has a similar distinction). Before applying any other form of harmonization, we would naturally try to find *within the text itself* some resolution of the perceived conflict. Failing to find an explicit remark directly or indirectly capable of resolving the difficulty, we might then apply more mechanical procedures, especially that of *shelo kheinyano* (since *lelamed*, *shehu kheinyano* and *lidon* relate to perceived redundancies, discrepancies, doubts or interpretative tensions, rather than formal inconsistencies).

However, the Rabbis also, apparently, occasionally appeal to the 13th rule to justify more intuitive reconciliations. In that sense, it is also a last resort, and is well placed in the list. If we wish to explicitly acknowledge such reasoning in cases where no Scriptural passage explicitly, or indirectly through one of the other rules of exegesis (assuming them not to be exhaustive), settles

²⁶ In other words, according to this view, rule No. 13 concerns, not explicit (*meforash*) reconciliations, by the Torah itself, but implicit (*satum*) ones, by the Sages. Bergman adds, characteristically, “and the Torah requires us to follow their determinations”, but he does not state where it does so.

²⁷ With regard to this three-word description of dialectic, the following is worth noting. At first sight, “thesis” and “antithesis” refer to the two ideas in conflict, and “synthesis” to their reconciliation. But we could also say, upon reflection, that “thesis” refers to *both* the ideas in conflict, “antithesis” to the *realization that they are in conflict*, and “synthesis” (as before) to the resolution of the conflict.

the observed difference between two passages, we would have to add a clause to the 13th rule, to the effect that, ‘under those conditions, some credible and consistent reconciling postulate needs to be found’. I think it is fair to say that this added clause has been tacitly accepted and used by all commentators, including R. Ishmael himself. As already said, the pattern of thought involved is natural, and therefore needs no special certification in Biblical contexts, *if properly used*.

The way certain postulates have come to be preferred to others over time, is simply through the process of peer group review; this consisted in debate among experts to ensure the credibility and consistency of such postulates. That kind of process is, in principle, normal and healthy, effectively a process of collective knowledge development, a *garde fou* found in every scientific discipline. Of course, peculiar to Rabbinic thinking (and similar enterprises in other religions), are its historically evident authoritarian aspects.

The above comments are based on the data I have for the 13th rule. However, it may be that, with a larger data base, we could formulate the rule with more precision. Among the possible outcomes or alternative theories are the following:

- It could be that rule 13 is concerned, distinctively, with cases *where the subjects (or antecedents) of the conflicting propositions are one and the same* (or, though different concepts, logically mutual implicants). This is confirmed by the above given two examples; and would distinguish it from rules 8-10, where the major and minor subjects (or antecedents) are subalternatives, and from rule 11, where they are incompatible. In that event, the 13th rule would be defined more precisely, as an argument where ‘All S are P1’ (major premise), ‘All S are P2’ (minor premise), ‘No P1 is P2’ (predicatal premise), whose conclusion consists in denying at least one of those three premises.
- Alternatively, the rule in question may be wider than that in application, and include all cases where the predicates are incompatible (whatever the relation of the subjects). In that event, *shelo kheinyano* would be a special case of *shnei khetuvim hamakhechishim*, and the latter would cover additional situations, such as where the corresponding predicatal premise is denied or where the subjects are identical.
- It is also possible that rule 13 was intended to cover, not merely inconsistencies in the strict sense, but in the wider sense understood by the Rabbis, who look upon any discrepancy or redundancy or source of doubt as calling for a harmonizing response of some sort. This outlook was evident in the rules of *lelamed*, *shehu kheinyano* and *lidon badavar hechadash*. In that event, rule 13 would add to rules 8-11 the function of ‘conflict resolution’ by alteration of subjectal or predicatal premises. It might similarly embrace the *klalim uphratim* rules and others still²⁸.

We must also keep in mind that, from a formal point of view, the conclusions recommended by the Rabbis in many of the previous rules are not logically necessary. It follows that they are likely to occasionally lead to inconsistencies, and must be regarded as at best tentative. The resolution of such a derivative inconsistency, merely by retreat from the results of application of an unnecessary *midah*, might have been intended by R. Ishmael as subsumed under the present rule.

²⁸ For instance, the weird *semukhim* argument, offered by Bergman (see footnote 15 of previous chapter), might be regarded as a "resolution of conflict" of sorts (though one of very doubtful validity).

Concerning **adduction**, which we saw (in ch. 2) is a Torah-given reasoning process, though one not noticed as such by the Rabbis, nor enshrined by them as a hermeneutic rule. It might be argued that, since adduction is *harmonization between conceptual prediction and empirical findings*, it belongs under Rule 13. However, to there subsume it, we would have to expand R. Ishmael's statement, since the latter relates specifically to textual harmonization - it does not discuss confrontations and reconciliations between the Book, or interpretations thereof (by Rabbis or other people), and external reality. Nevertheless, if the rule is adapted, as above suggested, to allow for harmonization by human (at least, Rabbinic) insight, then it may be considered as also including adductive issues.

© Copyright Avi Sion, 1995. All rights reserved.

Protected by international copyright conventions. No part of this book may be reproduced in any manner whatsoever, or stored in a retrieval system or transmitted, without express permission of the Author-publisher, except in case of brief quotations with due acknowledgement.

Judaic Logic can be freely read online at [The Logician.net](http://TheLogician.net) and in various other locations. It can be purchased in Amazon.com, Lulu.com and many other online booksellers.

References

- Abehsera, A. *The Universal Language I: Bavel Revisited*. Jerusalem: Egev, 1991.
- Abitbol, Gabriel. *Logique du droit talmudique*. Paris: Edition des Sciences Hébraïques, 1993.
- Akmajian, Adrian, Richard A Demers and Robert M. Harnish. *Linguistics: An Introduction to Language and Communication*. 2nd ed. Cambridge, Mass.: MIT P, 1984.
- Bentwich, Norman. *Hellenism*. Philadelphia: Jewish, 1919.
- Bergman, Rabbi Meir Zvi. *Gateway to the Talmud*. New York: Mesorah, 1985.
- Biberfeld, Philip. *Universal Jewish History*. 4 vols. Vol. I: New York: Spero Foundation, 1948. Vol. II-IV: New York: Feldheim, 1962, 1973, 1980.
- Carmel, Aryeh. *Aiding Talmud Study*. Rev. ed. Jerusalem, New York: Feldheim, 1991.
- Carson, D. A. *Exegetical Fallacies*. Grand Rapids, Mich.: Baker, 1984.
- Chavel, Charles B. *Encyclopedia of Torah Thoughts*. New York: Shilo, 1980.
- Cohen, Rev. Dr. A., ed. *The Soncino Books of the Bible*. London: Soncino, 1949 (*Samuel*), 1950 (*Kings*).
- Cohen, Rev. Dr. A., ed. *The Soncino Chumash: The Five Books of Moses with Haphtaroth*. 2nd ed. London: Soncino, 1983.
- Concordantiae Hebraicae atque Chaldaicae*. Ed. Dr. Solomon Mandelkern. Jerusalem: Shocken, 1955.
- Dictionary of Philosophy*. London: Pan, 1979.
- Encyclopaedia Judaica*. Jerusalem: Keter, 1972.²⁹

²⁹ Occasionally referred to as *Enc. Jud.* or *E.J.*

Encyclopedie Philosophique Universelle. II. Les notions philosophiques: Dictionnaire. Paris: PU de France, 1990.

Feigenbaum, R. Yitzchak. *Understanding the Talmud: A Systematic Guide to Talmudic Structure and Methodology.* 2nd rev. ed. Jerusalem: Darche Noam, 1988.

Foucault, Michel. *The Order of Things: An Archeology of the Human Sciences.* New York: Vintage, 1973. (A translation of *Les mots et les choses*. Translator(s) unnamed.)

Frank, Yitshak. *The Practical Talmud Dictionary.* Jerusalem: Ariel, 1992.

Glazerson, M. *Hebrew: The Source of Languages.* Trans. J. Weil. Jerusalem: Raz-Ot, 1987.

Guggenheimer, Heinrich. *Logical Problems in Jewish Tradition.* The Great Society: Confrontations with Judaism. A Symposium. Ed. Philip Longworth. London: Blond, 1966.

Horowitz, Edward. *How The Hebrew Language Grew.* New York: Ktav, 1960.

Kahan, Rabbi Aharon Yisroel. *Taryag Mitzvos.* New York: Keser Torah, 1987.

Kelemen, Lawrence. *Permission to Believe: Four Rational Approaches to God's Existence.* Southfield, Mich.: Targum, 1990.

Lalande, André. *Vocabulaire technique et critique de la philosophie.* Paris: PU de France, 1972.

Lewittes, Mendell. *Principles and Development of Jewish Law.* USA: Bloch, 1987.

Lichtenstein, Aaron. *The Seven Laws of Noah.* New York: Berman, 1981.

Luzatto, R. Moshe Chaim. *The Ways of Reason.* Trans. Rabbis D. Sackton and Ch. Tscholkowski. Jerusalem: Feldheim, 1989. (Original Hebrew title, *Derech Tevunot*.)

Maccoby, Hyam. *The Mythmaker: Paul and the Invention of Christianity.* London: Weidenfeld, 1986.

Maimonides, Moses. *Guide for the Perplexed.* Trans. M. Friedlander. 2nd ed. New York: Pardes, 1946.

Malbim, R. Meir Leibush. *Malbim on Mishley: the Commentary of Rabbi Meir Leibush Malbim on the Book of Proverbs*. Trans. R. Charles Wengrov and Avivah Gottlieb Zornberg. Jerusalem: Feldheim, 1982.

McEvedy, Colin. *The Penguin Atlas of Ancient History*. Harmondsworth, Middx.: Penguin, 1967.

Mitchell, T.C. *The Bible in the British Museum: Interpreting the Evidence*. London: British Museum, 1988.

Mozeson, Isaac E. *The Word: The Dictionary That Reveals the Hebrew Source of English*. New York: Shapolsky, 1989.

Munk, R. M. *The Wisdom in the Hebrew Alphabet*. New York: Mesorah, 1990.

Proceedings of the Associations of Orthodox Jewish Scientists. 2 vol. Jerusalem: Feldheim, 1970.

Quinton, Anthony. *Francis Bacon*. Past Masters. Gen. ed. Keith Thomas. Oxford: Oxford UP, 1980.

Rabinowich, R. Nosson Dovid. *M. Mielziner's Talmudic Terminology*. Jerusalem: Ahavath Torah, 1988.

Roberts, J. M. *The Pelican History of the World*. Rev. ed. London: Penguin, 1980.

Scherman, R. Nosson, ed. *The Complete ArtScroll Siddur*. 2nd. ed. New York: Mesorah, 1986.

Scholem, Gershom. *On the Kabbalah and Its Symbolism*. Trans. R. Manheim. New York: Schocken, 1969.

Schroeder, Gerald L. *Genesis and The Big Bang*. New York: Bantam, 1990.

Shereshevsky, Esra. *Rashi: The Man and His World*. New York: Sepher-Hermon, 1982.

Sion, Avi. *Future Logic: Categorical and Conditional Deduction and Induction of the Natural, Temporal, Extensional and Logical Modalities*. 1995; rev. ed. Geneva: Sion, 1996.

Steinsaltz, R. Adin. *The Talmud. The Steinsaltz Edition. A Reference Guide*. Trans. and ed. R. Israel V. Berman. New York: Random, 1989.

Taylor, Edwin F. and John Archibald Wheeler. *Spacetime Physics*. San Francisco: Freeman, 1963.

The Babylonian Talmud. Index Volume. Ed. Rabbi Dr. I. Epstein. London: Soncino, 1952.

The Encyclopedia of Philosophy. New York: Macmillan, 1967.

The Jerusalem Bible: The Holy Scriptures. Jerusalem: Koren, 1992.

The Jewish Encyclopedia. New York: Funk, 1968. (Occasionally referred to as *Jew. Enc.* or *J.E.*)

The Living Webster Encyclopedic Dictionary of the English Language. 1977 ed.

The Metsudah Tehillim. Trans. Rabbi Avrohom Davis. New York: Metsudah, 1983.

The New Encyclopaedia Britannica: Macropaedia. 1989 ed.

Windelband, Wilhelm. *History of Ancient Philosophy*. Trans. H. E. Cushman, from 2nd German ed. New York: Dover, 1956.