RUMINATIONS:
Sundry Notes and Essays on Logic

By **Avi Sion** PH.D.

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Ruminations can be freely read online at The Logician.net and in various other locations.
It can be purchased, in print and e-book editions, in Amazon.com, Lulu.com and many other online booksellers.

The present document contains **excerpts** from this book, namely: The Abstract; the Contents; and Sample text (Chapter 9).

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

Ruminations is a collection of sundry notes and essays on Logic. These complement and enrich the author's past writings, further analyzing or reviewing certain issues.

Among the many topics covered are:

- the importance of the laws of thought, and how they are applied using the logic of paradox;
- details of formal logic, including some important new insights on the nesting, merger and splitting up of hypothetical propositions;
- details of causal logic, including analogical reasoning from cause to cause;
- a cutting-edge phenomenological analysis of negation.

Additionally, this volume is used to publish a number of notes and essays previously only posted in the Internet site www.TheLogician.net, including a history of Jewish logic and an analysis of Islamic logic.

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Sample text (chapter 9)

About Negation

1. Negation in Adduction

Concepts and theories are hypothetical constructs. They cannot (for the most part) be proven (definitely, once and for all), but only repeatedly confirmed by experience. This is the positive side of adduction, presenting evidence in support of rational constructs. This positive aspect is of course indispensable, for without some concrete evidence an abstraction is no more than a figment of the imagination, a wild speculation. The more evidence we adduce for it, the more reliable our concept or theory.

But, as Francis Bacon realized, the account of adduction thus far proposed does not do it justice. Just as important as the positive side of providing evidence, is the negative aspect of it, the rejection of hypotheses that make predictions conflicting with experience. As he pointed out, even if a hypothesis has numerous confirmations, it suffices for it to have *one* such wrong prediction for it to be rejected.

Stepping back, this means that the process of adduction is concerned with selection of the most probable hypothesis among two or more (already or yet to be conceived) explanations of fact. Each of them may have numerous 'positive instances' (i.e. empirical evidence that supports it); and so long as they are all still competitive, we may prefer those with the most such instances. But, the way we decisively advance in our conceptual/theoretical knowledge is by the successive *elimination* of propositions that turn out to have 'negative instances' (i.e. empirical evidence against them).

Now all the above is well known and need not be elucidated further. This theory of inductive logic has proven extremely successful in modern times, constituting the foundation of the scientific method.

But upon reflection, the matter is not as simple and straightforward as it seems at first!

Consider, for example, the issue of whether or not there is water on Mars. It would seem that the proposition "There is water on Mars" is far easier to prove inductively than the contradictory proposition "There is no water on Mars". Both propositions are hypotheses.

The positive thesis would be somewhat confirmed, if it was discovered using certain instruments from a distance that there are serious indices that water is present; the thesis would be more solidly confirmed, if a sample of Mars was brought back to Earth and found upon analysis to contain water. In either case, the presence of water on Mars would remain to some (however tiny) degree unsure, because some objection to our instrumental assumptions might later be raised or the sample brought back may later be found to have been contaminated on the way over. Nevertheless, something pretty close to certainty is conceivable in this matter.

The negative thesis, by contrast, is much more difficult to prove by experience. We can readily assume it to the extent that the positive thesis has not so far been greatly confirmed. That is, so long as we have not found evidence for the positive thesis (i.e. water on Mars), we should rather opt for the negative thesis. But the latter is only reliable to the degree that we tried and failed to

confirm the former. If we earnestly searched for water every which way we could think of, and did not find any, we can with proportionate confidence assume there is no water.

Thus, in our example, the negative thesis is actually *more difficult* to establish than the positive one. It *depends on a generalization*, a movement of thought from "Wherever and however we looked for water on Mars, ***none was found***" to "***There is no*** water on Mars". However, note well, it remains conceivable that a drop of water be found one day somewhere else on Mars, centuries after we concluded there was none.

Granting this analysis, it is clear that Bacon's razor that "What is important is the negative instance" is a bit simplistic. It assumes that a negative is as accessible as (if not, indeed, more accessible than) a positive, which is not always the case.

In practice, a negative may be inductively more remote than a positive. Granting this conclusion, the question arises – is the negative instance *ever* more empirically accessible than (or even as accessible as) the positive one? That is, *when* does Bacon's formulation of induction actually come into play?

If we look at major historical examples of rejection of theories, our doubt may subsist. For example, Newtonian mechanics was in place for centuries, till it was put in doubt by the discovery of the constancy of the velocity of light (which gave rise to Relativity theory) and later again by the discovery of various subatomic phenomena (which gave rise to Quantum mechanics). In this example, the 'negative instances' were essentially 'positive instances' – the only thing 'negative' about them was just their negation of the Newtonian worldview!

Such reflections have led me to suspect that the 'negation' referred to by Bacon is only meant *relatively* to some selected abstraction. His razor ought not be taken as an advocacy of absolute negation. If we look at the matter more clearly, we realize that the data used to thus negate an idea is essentially positive. A deeper consideration of the nature of negation is therefore patently called for.

2. Positive and Negative Phenomena

People have always considered that there is a difference between a positive and a negative term. Indeed, that is why logicians have named them differently. But logicians have also found it difficult to express that difference substantially. Yet, there are significant phenomenological differences between positive and negative phenomena**.**

a. The concrete material and mental world is evidently composed only of positive particular phenomena, some of which we perceive (whether through the bodily senses or in our minds). These exist at least as appearances, though some turn out to seem real and others illusory. This is an obvious phenomenological, epistemological and ontological truth.

To say of phenomena that they are 'particular' is to express awareness that they are always limited in space and time. They have presence, but they are finite and transient, i.e. manifestly characterized by diversity and change.

We do not ordinarily experience anything concrete that stretches uniformly into infinity and eternity (though such totality of existence might well exist, and indeed mystics claim to attain consciousness of it in deep meditation, characterizing it as "the eternal present"). We do commonly consider some things as so widespread. 'Existence' is regarded as the substratum of all existents; 'the universe' refers to the sum total of all existents; and we think of 'space-time' as

defining the extension of all existents. But only ‘existence’ may be classed as an experience (a quality found in all existents); ‘the universe’ and ‘space-time’ must be admitted as abstractions.

However, the limits of particulars are perceivable without need of negation of what lies beyond them, simply due to the variable concentration of consciousness, i.e. the direction of focus of attention. That is, though ‘pointing’ to some positive phenomenon (e.g. so as to name it) requires some negation (we mean “this, but not that”), one can notice the limits of that phenomenon independently of negation.

b. Negative phenomena (and likewise abstracts, whether positive or negative), on the other hand, do depend for their existence on a Subject/Agent – a cognizing ‘person’ (or synonymously: a self or soul or spirit) with consciousness and volition looking out for some remembered or imagined positive phenomenon and failing to perceive it (or in the case of abstracts, comparing and contrasting particulars).

Thus, negative particular phenomena (and more generally, abstracts) have a special, more ‘relative’ kind of existence. They are not as independent of the Subject as positive particular phenomena. That does not mean they are, in a Kantian sense, ‘a priori’ or ‘transcendental’, or purely ‘subjective’ – but it does mean that they are ontological potentials that are only realized in the context of (rational) cognition.

Another kind of experience is required for such realization – the self-experience of the Subject, his intuitive knowledge of his cognitions and volitions. This kind of experience, being immediate, may be positive or negative without logical difficulty. The Subject reasons inductively as follows:

> I am searching for X;
> *I do not* find X;
> Therefore, X “*is not”* there.

The negative conclusion may be ‘true’ or ‘false’, just like a positive perception or conclusion. It is true to the degree that the premises are true – i.e. that the alleged search for X was diligent (intelligent, imaginative, well-organized, attentive and thorough), and that the alleged failure to find X is not dishonest (a lie designed to fool oneself or others).

Whence it is fair to assert that, unlike some positive terms, negative terms are never based *only* on perception; they *necessarily* involve a thought-process – the previous mental projection or at least intention of the positive term they negate.

This epistemological truth does reflect an ontological truth – the truth that the ‘absences’ of phenomena lack phenomenal aspects. A ‘no’ is not a sort of ‘yes’.

Note well the logical difference between ‘**not perceiving X**’ and ‘**perceiving not X**’. We do not have direct experience of the latter; but can only indirectly claim it by way of *inductive inference* (or extrapolation) from the former. In the case of a positive, such process of reasoning is not needed – one often can and does ‘perceive X’ directly.

Suppose we draw a square of opposition for the propositions (labeling them by analogy to standard positions) – “I perceive X” (A), “I do not perceive not X” (I), “I perceive not X” (E), “I do not perceive X” (O). Here, the A form is knowable by experience, whereas the I form is knowable perhaps only by deductive implication from it. On the negative side, however, the E form is not knowable by experience, but only by inductive generalization from the O form (which is based on experience).

3. Positive Experience Precedes Negation

Negation is a pillar of both deductive and inductive logic; and requires careful analysis. We have to realize that negative terms are fundamentally distinct from positive ones, if we are to begin fathoming the nature of logic. The following observation seems to me crucial for such an analysis:

> ***We can experience something positive without having first experienced (or thought about) its negation, but we cannot experience something negative without first thinking about (and therefore previously having somewhat experienced) the corresponding positive.***

a. Cognition at its simplest is perception. Our perceptions are always *of positive particulars*. The contents of our most basic cognitions are phenomenal sights, sounds, smells, tastes, and touch and other bodily sensations that seemingly arise through our sense organs interactions with matter – or mental equivalents of these phenomena that seemingly arise through memory of sensory experiences, or in imaginary re-combinations of such supposed memories.

A positive particular can be experienced directly and passively. We can just sit back, as it were, and receptively observe whatever happens to come in our field of vision or hearing, etc. This is what we do in meditation. We do not have to actively think of (remember or visualize or conceptualize) something else in order to have such a positive experience. Of course, such observation may well in practice be complicated by thoughts (preverbal or verbal) – but it is possible in some cases to have a pure experience. This must logically be admitted, if concepts are to be based on percepts.

b. In the case of *negative particulars*, the situation is radically different. A negative particular has *no* specific phenomenal content; but is *entirely* defined by the 'absence' of the phenomenal contents that constitute some positive particular. If I look into my material or mental surroundings, I will always see present phenomena. The absence of some phenomenon is only noticeable if we first think of that positive phenomenon; and wonder whether it is present.

It is accurate to say that our finding it absent reflects an empirical truth or fact – but it is a fact that we simply would not notice the negative without having first thought of the positive. Negative knowledge is thus necessarily (by logical necessity) more indirect and active. It remains (at its best) perfectly grounded in experience – but such negative experience requires a rational process (whether verbal or otherwise).

To experience a negative, I must first imagine (remember or invent) a certain positive experience; then I must look out and see (or hear or whatever) whether or not this image matches my current experience; and only then (if it indeed happens not to) can I conclude to have "experienced" a negative.

Thinking about X may be considered as positioning oneself into a vantage point from which one can (in a manner of speaking) experience not-X. If one does not first place one's attention on X, one cannot possibly experience the negation of X. One may well experience all sorts of weird and wonderful things, but not specifically not-X.

From this reflection, we may say that whereas affirmatives can be experienced, negatives are inherently rational acts (involving imagination, experience and intention). A negative necessarily involves thought: the thought of the corresponding positive (the imaginative element), the testing

of its presence or absence (the experiential element) and the rational conclusion of "negation" (the intentional element).

c. The negation process may involve words, though it does not have to.

Suppose I have some momentary experience of sights, sounds, etc. and label this positive particular "X". The *content of consciousness* on which I base the term X is a specific set of positive phenomenal experiences, i.e. physical and/or mental percepts. Whenever I can speak of this X, I mentally *intend* an object of a certain color and shape that moves around in certain ways, emitting certain sounds, etc.

Quite different is the negation of such a simple term, "not X". The latter is not definable by any specific percepts – it *refers to no perceptible qualities*. It cannot be identified with the positive phenomena that happen to be present in the absence of those constituting X. Thus, strictly speaking, not-X is only definable by 'negation' of X.

Note well, it would not be accurate to say (except ex post facto) that not-X refers to all experiences other than X (such as Y, Z, A, B, etc.), because when I look for X here and now and fail to find it, I am only referring to present experience within my current range and not to all possible such experiences. We would not label a situation devoid of X as "not X" *without thinking of X*; instead, we would label that situation in a positive manner (as "Y", or "Z", or whatever).

Thus, we can name (or wordlessly think of) something concrete "X", *after* experiencing phenomena that constitute it; but in the case of "not-X", we necessarily conjure the name (or a wordless thought) of it *before* we experience it.

"Not-X" is thus already a concept rather than a percept, even in cases where "X" refers to a mere percept (and all the more so when "X" itself involves some abstraction – as it usually does). The concept "not X" is hypothetically constructed first and then confirmed by the attempted and failed re-experience of X.

In short, negation – even at the most perceptual level – involves an adductive process. It is never a mere experience. A negative term never intends the simple perception of some negative thing; but consists of a hypothesis with some perceptual confirmation. Negation is always conceptual as well as perceptual in status.

A theory cannot be refuted before it is formulated – similarly, X cannot be found absent unless we first think of X.

4. Negation is an Intention

Now, there is no specific phenomenal experience behind the word "not". Negation has no special color and shape, or sound or smell or taste or feel, whether real or illusory! What then is it? I suggest the following:

Negation as such refers to a 'mental act' – or more precisely put, it is an act of volition (or more precisely still, of velleity) by a Subject of consciousness. Specifically, *negation is an intention*. Note that our will to negate is itself *a positive act*, even though our intention by it is to negate something else.

Negation does express an experience – the 'failure' to find something one has searched for. Some cognitive result is willfully pursued (perception of some positive phenomenon); but remains wanting (this experience is qualitatively a suffering of sorts, but still a positive intention, note) –

whence we mentally (or more precisely, by intention) mark the thing as ‘absent’, i.e. we construct an idea of ‘negation’ of the thing sought.

Thus, negation is *not a phenomenon* (a physical or mental percept), *but something intuited* (an event of will within the cognizing Subject). ‘Intuition’ here, note well, means the self-knowledge of the Subject of consciousness and Agent of volition. This is experience of a *non-phenomenal* sort. Such self-experience is immediate: we have no distance to bridge in space or time.

When a Subject denies the presence of a material or mental phenomenon, having sought for it in experience and not found it – the ‘denial’ consists of a special act of intention. This intention is what we call ‘negation’ or ‘rejection of a hypothesis’. It occurs in the Subject, though it is about the Object.

This intention is not however an arbitrary act. If it were, it would be purely subjective. This act (at its best) remains sufficiently dependent on perception to be judged ‘objective’. The Subject must still look and see whether X is present; if that positive experience does not follow his empirical test, he concludes the absence of X.

Indeed, an initial negation may on closer scrutiny be found erroneous, i.e. we sometimes think something is ‘not there’ and then after further research find it on the contrary ‘there’. Thus, this theory of negation should not be construed as a claim that our negating something makes it so. Negation is regulated by the principles of adduction – it is based on appearance that is credible so long as confirmed; but may later be belied.

We can ex post facto speak of an objective absence, but we cannot fully define ‘absence’ other than as ‘non-presence’, and the ‘non-’ herein is not a phenomenon but an intention. The ‘absence’ is indeed experienced, but it is *imperceptible* without the Subject posing the prior question ‘is X present?’

Absence, then, is not produced by the Subject, but is made perceptible by his vain search for presence. For, to repeat, not-X is not experienced as a specific content of consciousness – but as a continuing failure to experience the particular positive phenomena that define X for us.

Although we are directly only aware of apparent existents, we can inductively infer non-apparent existents from the experience that appearances come and go and may change. On this basis, we consider the categories ‘existence’ and ‘appearance’ as unequal, and the former as broader than the latter. Similarly, we inductively infer ‘objective absence’ from ‘having sought but not found’, even though we have no direct access to former but only indirect access by extrapolation from the latter. Such inference is valid, with a degree of probability proportional to our exercise of due diligence.

For these reasons, I consider the act of negation as an important key to understanding the nature and status of logic. Negation is so fundamental to reason, so crucial an epistemic fact, that it cannot be reduced to something else.

We can describe it *roughly* as an intention to ‘cross-off’ (under the influence of some reason or other) the proposed item from our mental list of existents. But this is bound to seem like a circular definition, or a repetition of same using synonyms. It is evident that *we cannot talk about negation without engaging in it*. Thus, we had better admit the act of negation as a primary concept for logical science.

Note in passing: the present theory of negation provides biology with an interesting distinction regarding rational animals.

Sentient beings without this faculty of negation can only respond to the present, whereas once this faculty appears in an organism (as it did in the human species) it can mentally go beyond the here and now. A merely sensory animal just reacts to current events, whereas a man can fear dangers and prepare for them.

Once the faculty of negation appears, the mind can start *abstracting, conceiving alternatives and hypothesizing*. Memory and imagination are required to project a proposed positive idea, but the intent to negate is also required to reject inadequate projections. Without such critical ability, our fantasies would quickly lead us into destructive situations.

5. Formal Consequences

Returning to logic – our insight here into the nature of negation can be construed to have *formal* consequences. The negative term is now seen to be a radically different kind of term, even though in common discourse it is made to behave like any other term.

We cannot point to something as 'negative' except insofar as it is the negation of something positive. This remark is essentially logical, not experiential. The term 'not' has no substance per se – it is a purely relative term. The positive must be experienced or thought of before the negative can at all be conceived, let alone be specifically sought for empirically. This is as true for intuitive as for material or mental objects; and as true for abstracts as for concretes.

One inference to draw from this realization of the distinction of negation is: "non-existence" is not some kind of "existence". Non-existent things cannot be classed under existence; they are not existent things. The term "non-existence" involves no content of consciousness whatsoever – it occurs in discourse only as the verbal repository of any and all denials of "existence". Existentialist philosophers have written volumes allegedly about "non-being", but as Parmenides reportedly stated:

"You cannot know not-being, nor even say it."

This could be formally expressed and solidified by saying that ***obversion*** (at least that of a negative – i.e. inferring "This is nonX" from "This is not X") is essentially an artificial process. If so, the negative predicate (nonX) is not always inferable from the negative copula (is not). In other words, the form "There is no X" does not imply "There is non-X"; or conversely, "X does not exist" does not imply "nonX exists".

We can grant heuristically that such eductive processes work in most cases (i.e. lead to no illogical result), but they may be declared invalid in certain extreme situations (as with the term "non-existence")! In such cases, "nonX" is 'just a word'; it has no conscionable meaning – we have no specific thing in mind as we utter it.

Logicians who have not yet grasped the important difference of negation are hard put to explain such formal distinctions. I know, because it is perhaps only in the last three years or so that this insight about negation has begun to dawn on me; and even now, I am still in the process of digesting it.

Note that a philosophical critic of this view of negation cannot consider himself an objective onlooker, who can hypothesize 'a situation where absence exists but has not or not yet been identified'. For that critic is himself a Subject like any other, who must explain the whence and wherefore of his knowledge like anyone else – including the negatives he appeals to. No special privileges are granted.

That is, if you wish to deny all the above, ask yourself and tell me how you consider you go about denying without having something to deny! Claiming to have knowledge of a negative without first thinking of the corresponding positive is comparable to laying personal claim to an absolute framework in space-time – it is an impossible exercise for us ordinary folk.

It should also be emphasized that the above narrative describes only the simplest kind of negation: negation of a perceptual item. But most of the time, in practice, we deal with far more complex situations. Even the mere act of 'pointing' at some concrete thing involves not only a positive act ("follow my finger to this"), but also the act of negation ("I do not however mean my finger to point at that").

Again, a lot of our conceptual arsenal is based on imaginary recombinations of empirical data. E.g. I have seen "pink" things and I have seen "elephants", and I wonder whether "pink elephants" perhaps exist. Such hypothetical entities are then tested empirically; and might be rejected (or confirmed). However, note, abstraction does not depend only on negation, but on quantitative judgments (comparing, and experiencing what is more or less than the other).

Abstraction starts with experiences. These are variously grouped through comparisons and contrasts. Negation here plays a crucial role, since to group two things together, we must find them not only similar to each other but also different from other things. This work involves much trial and error.

But at this level, not only denial but also affirmation is a rational act. For, 'similarity' means seemingly having some quality in common in some measure, although there are bound to be other qualities not in common or differences of measure of the common quality. The essence of affirmation here is thus 'measurement'.

But Nature doesn't measure anything. Every item in it just is, whatever it happens to be (at any given time and place). It is only a Subject with consciousness that measures: this against that, or this and that versus some norm.

This weighing work of the cognizing Subject is not, however, arbitrary (or ought not to be, if the Subject has the right attitudes). As in the above case of mere negation, the conclusion of it does proceed from certain existing findings. Yet, it is also true that this work only occurs in the framework of cognition.

6. Negation and the Laws of Thought

Logic cannot be properly understood without first understanding negation. This should be obvious from the fact that two of the laws of thought concern the relation between positive and negative terms. Similarly, the basic principle of adduction, that hypotheses we put forward should be empirically tested and rejected if they make wrong predictions – this principle depends on an elucidation of negation.

a. The so-called laws of thought are, in a sense, laws of the universe or ontological laws – in that the universe is what it is (identity), is not something other than what it is (non-contradiction) and is something specific (excluded middle).

They have phenomenological aspects: appearances appear (identity); some are in apparent contradiction to others (a contradiction situation); in some cases, it is not clear just what has appeared (an excluded middle situation).

They may also be presented as epistemological laws or laws of logic, in that they guide us in the pursuit of knowledge. However, they are aptly named laws of thought, because they really arise as propositions only in the context of cognitive acts.

To understand this, one has to consider the peculiar status of negation, as well as other (partly derivative) major processes used in human reasoning, including abstraction, conceiving alternative possibilities and making hypotheses.

b. The impact of this insight on the laws of thought should be obvious. The law of identity enjoins us primarily to take note of the *positive* particulars being perceived. But the laws of non-contradiction and of the excluded middle, note well, both involve *negation*. Indeed, that's what they are all about – their role is precisely *to regulate our use of negation* – to keep us in harmony with the more positive law of identity!

Their instructions concerning the subjective act of negation, at the most perceptual level, are as follows. The law of non-contradiction ***forbids negating in the perceptible presence of the thing negated***. The law of the excluded middle ***forbids accepting as final an uncertainty as to whether a thing thought of is currently present or absent***.

We are unable to cognize a negative (not-X) except by negation of the positive (X) we have in mind; it is therefore absurd to imagine a situation in which both X and not-X are true (law of non-contradiction). Similarly, if we carefully trace how our thoughts of X and not-X arise in our minds, it is absurd to think that there might be some third alternative between or beyond them (law of the excluded middle.)

Thus, these two laws are not arbitrary conventions or happenstances that might be different in other universes, as some logicians contend (because they have unfortunately remained stuck at the level of mere symbols, "X" and "non-X", failing to go deeper into the cognitive issues involved). Nor are they wholly subjective or wholly objective.

These laws of thought concern the interface of Subject and Object, of consciousness and existence – for any Subject graced with rational powers, i.e. cognitive faculties that go beyond the perceptual thanks in part to the possibility of negation.

They are for this reason applicable universally, whatever the content of the material and mental universe faced. They establish for us *the relations* between affirmation and denial, for any and every content of consciousness.

c. On this basis, we can better comprehend the ontological status of the laws of thought. They have no actual existence, since the concrete world has *no use for or need* of them; but exists self-sufficiently in positive particulars.

But the laws are a potential of the world, which is actualized when certain inhabitants of the world, who have the gifts of consciousness and freewill, resort to negation, abstraction and other cognitive-volitional activities, in order to summarize and understand the world.

In a world devoid of humans (or similar Subject/Agents), there are no negations and no 'universals'. Things just are (i.e. appear) – positively and particularly. Negation only appears in the world in relation to beings like us who can search for something positive and not find it. Likewise for 'universals' – they proceed from acts of comparison and contrast.

Consciousness and volition are together what gives rise to concepts and alternative possibilities, to hypotheses requiring testing. It is only in their context that logical issues arise, such as existence or not, reality or illusion, as well as consistency and exhaustiveness.

It is important to keep in mind that the laws of thought are themselves complex abstractions implying negations – viz. the negative terms they discuss, as well as the negation of logical utility and value in contradictory or 'middle' thinking. Indeed all the 'laws' in our sciences are such complex abstractions involving negations.

d. The insight that negation is essentially a volitional act allied to cognition explains why the laws of thought are prescriptive as well as descriptive epistemological principles.

The laws of thought are prescriptive inasmuch as human thought is fallible and humans have volition; and can behave erratically or maliciously. If humans were infallible, there would be no need for us to study and voluntarily use such laws. There is an ethic to cognition, as to all actions of freewill, and the laws of thought are its top principles.

The laws of thought are descriptive, insofar as we commonly explicitly or implicitly use them in our thinking. But this does not mean we all always use them, or always do so correctly. They are not 'laws' in the sense of reports of universal behavior. Some people are unaware of them, increasing probabilities of erroneous thinking. Some people would prefer to do without them, and eventually suffer the existential consequences. Some people would like to abide by these prescriptions, but do not always succeed.

These prescriptions, as explicit principles to consciously seek to abide by, have a history. They were to our knowledge first formulated by a man called Aristotle in Ancient Greece. He considered them to best describe the cognitive behavior patterns that lead to successful cognition. He did not invent them; but realized their absolute importance to human thought.

Their justification is self-evident to anyone who goes through the inductive and deductive logical demonstrations certain logicians have developed in this regard. Ultimately it is based on a holistic consideration of knowledge development.

Our insights here about the relativity of negation and abstraction, and the realization of their role in the laws of thought serve to further clarify the necessity and universality of the latter.

7. Pure Experience

A logically prior issue that should perhaps be stressed in this context is the existence of pure experience, as distinct from experience somewhat tainted by acts of thought.

Some philosophers claim that all alleged 'experience' falls under the latter class; and deny the possibility of the former. But such skepticism is clearly inconsistent: if we recognize some *part* of some experience as pure of thought, this is sufficient to justify a claim to *some* pure experience. Thus, the proposition "There are some pure experiences" may be taken as an axiom of logic, phenomenology, epistemology and ontology. This proposition is self-evident, for to deny it is self-contradictory.

Note that this proposition is more specific than the more obvious "There are experiences". Denial of the latter is a denial of the evidence before one's eyes (and ears and nose and tongue and hands, etc. – and before one's "mind's eye", too): it directly contravenes the law of identity. Philosophers who engage in such denial have no leg to stand on, anyway - since they are then hard put to at all explain what meaning the concepts they use in their denial might possibly have. We have to all admit *some* experience – some appearance in common (however open to debate) – to have anything to discuss (or even to be acknowledged to be discussing).

Let us return now to the distinction between pure and tainted experiences. This concerns the involvement of thought processes of any kind – i.e. of ratiocinations, acts of reason. To claim that

there are pure experiences is not to deny that some (or many or most) experiences are indeed tainted by conceptual activity (abstraction, classification, reasoning, etc.)

We can readily admit that all of us very often have a hard time distinguishing pure experience from experience mixed with rational acts. The mechanisms of human reason are overbearing and come into play without asking for our permission, as is evident to anyone who tries to meditate on pure experience. It takes a lot of training to clearly distinguish the two in practice.

But surely, any biologist would admit that lower animals, at least, have the capacity to experience without the interference of thought, since they have no faculty of thought. The same has to be true to some extent for humans – not only in reflex actions, but also in the very fact that reasoning of any sort is only feasible in relation to pre-existing non-rational material. To process is to process something.

I have already argued that what scientists call 'experiment' cannot be regarded as the foundation of science; but must be understood as a mix of intellectual (and in some cases, even physical acts) and passive observation (if only observation of the results of experiment displayed by the detection and measuring instruments used). Thus, observation is cognitively more fundamental than experiment.

Here, my purpose is to emphasize that perceptual 'negation' is also necessarily a mix of pure experience and acts of the intellect. It is never pure, unlike the perception of positive particulars (which sometimes is pure, necessarily) – because it logically cannot be, since to deny anything one must first have something in mind to deny (or affirm).

Thus, negation can be regarded as one of the most primary acts of reason – it comes before abstraction, since the latter depends to some extent on making distinctions, which means on negation.

8. Consistency is Natural

It is important to here reiterate the principle that *consistency is natural*; whereas inconsistency is exceptional.

Some modern logicians have come up with the notion of "proving consistency" – but this notion is misconceived. Consistency is the natural state of affairs in knowledge; it requires no (deductive) proof and we are incapable of providing such proof, since it would be 'placing the cart before the horse'. The only possible 'proof' of consistency is that no inconsistency has been encountered. Consistency is an inductive given, which is very rarely overturned. All our knowledge may be and must be assumed consistent, unless and until there is reason to believe otherwise.

In short: harmony generally reigns unnoticed, while conflicts erupt occasionally to our surprise. One might well wonder now if this principle is itself consistent with the principle herein defended that negatives are never per se objects of cognition, but only exist by denial of the corresponding positives. Our principle that consistency is taken for granted seems to imply that we on occasion have logical insights of *in*consistency, something negative!

To resolve this issue, we must again emphasize the distinction between pure experience and the *interpretations* of experience that we, wordlessly (by mere intention) or explicitly, habitually infuse into our experiences. Generally, almost as soon as we experience something, we immediately start interpreting it, dynamically relating it to the rest of our knowledge thus far. Every experience almost unavoidably generates in us strings of associations, explanations, etc.

The contradictions we sometimes come across in our knowledge do not concern our pure experiences (which are necessarily harmonious, since they in fact exist side by side – we might add, quite 'happily'). *Our contradictions are necessarily contradictions between an interpretation and a pure experience, or between two interpretations*. Contradictions do not, strictly speaking, reveal difficulties in the raw data of knowledge, but merely in the hypotheses that we conceived concerning such data.

Contradictions are thus to be blamed on reason, not on experience. This does not mean that reason is necessarily faulty, but only that it is fallible. Contradictions ought not be viewed as tragic proofs of our ignorance and stupidity – but as helpful indicators that we have misinterpreted something somewhere, and that this needs reinterpretation. These indicators are precisely one of the main tools used by the faculty of reason to control the quality of beliefs. The resolution of a contradiction is just new interpretation.

How we know that two theories, or a theory and some raw data, are 'in contradiction' with each other is a moot question. We dismiss this query rather facilely by referring to "logical insight". Such insight is partly 'experiential', since it is based on scrutiny of the evidence and doctrines at hand. But it is clearly not entirely empirical and involves abstract factors. 'Contradiction' is, after all, an abstraction. I believe the answer to this question is largely given in the psychological analysis of negation.

There is an introspective sense that *conflicting intentions* are involved. Thus, the 'logical insight' that there is inconsistency is not essentially insight into a negative (a non-consistency), but into a positive (the intuitive experience of conflict of intentions). Although the word inconsistency involves a negative prefix, it brings to mind something empirically positive – a felt tension between two theses or a thesis and some data.

For this reason, to say that 'consistency is assumable, until if ever inconsistency be found' is consistent with our claim that 'negations are not purely empirical'. (Notice incidentally that we did not here "prove" consistency, but merely *recovered* it by clarifying the theses involved.)

The above analysis also further clarifies how the law of non-contradiction is expressed in practice. It does not sort out experiences as such; but concerns more abstract items of knowledge. To understand it fully, we must be aware of the underlying intentions. A similar analysis may be proposed to explain the law of the excluded middle.

In the latter case, we would insist that (by the law of identity) 'things are something, what they are, whatever that happen to be'. Things cannot be said to be *neither* this *nor* the negation of this, because such characterizations are negative (and, respectively, doubly negative) – and therefore cannot constitute or be claimed as positive experience. Such situations refer to uncertainties *in the knower*, which he is called upon to eventually fill-in. They cannot be proclaimed final knowledge (as some modern sophists have tried to do); but must be considered temporary postures in the pursuit of knowledge.

9. Status of the Logic of Causation

It should be pointed out that the theory of negation here defended has an impact on our theory of causation. If causation relates to the conjunctions *and non*-conjunctions of presences *and absences* of two or more items – then our knowledge of causes (i.e. causatives) is subsidiary to judgments of negation. It follows that ***the logic of causation is not "purely empirical",*** but

necessarily involves acts of reason (namely the acts of negation needed to declare something absent or two or more things not conjoined).

Incidentally, we can also argue that causative judgments are not purely empirical with reference to the fact that it always concerns *kinds* of things rather than individual phenomena. Truly individual phenomena are by definition unrepeated and so cannot strictly be said to be present more than once, let alone said to be absent. Causation has to do with *abstractions* – it is conceptual, it concerns classes of things. In this regard, too, causation depends on rational acts.

These features of causation do not make it something non-existent, unreal or invalid, however. The skeptic who tries to make such a claim is also engaged in negation and abstraction – and is therefore implicitly suggesting his own claim to be non-existent, unreal or invalid! One cannot use rational means to deny reason. It is obviously absurd to attempt such intellectual convolutions, yet many have tried and keep trying.

The polemics of Nagarjuna and David Hume are examples of such sophism. As I have shown in previous writings, they try to deny causation without even defining it properly (and likewise for other rational constructs). This is a case of the fallacy I have identified more generally in the present reflections – namely, *the attempt to deny something before one even has something to deny*. What are they disputing if indeed there is nothing to discuss?

As we have seen, awareness of the distinctiveness of negative terms can have consequences on logical practice. Generally speaking, a negative term (i.e. one contradicting a positive term) is more naturally a predicate rather than a subject of (categorical) propositions. Similarly, the negation of a proposition is more naturally a consequent than an antecedent.

Using a negative term as a propositional subject is sometimes a bit artificial, especially if the proposition is general. When we so use a negative term, we tacitly understand that a set of alternative contrary positive terms underlie it. That is to say, given "All non-A are B", we should (and often do) look for disjuncts (say C, D, E, etc.) capable of replacing non-A.

In the case of a causative proposition, the positive side of the relation may be more effective than the negative side, even when the latter is the stronger. That is, when the causative seems on the surface to be a negation, we should (and often do) look deeper for some positive term(s) as the causative.

This recommendation can only, however, be considered heuristic. Formal rules remain generally valid.

10. Zero, One and More

Another consequence of the theory of negation has to do with the foundations of **mathematics**. What is the number 'zero' (0)? It refers to the 'absence' of units of some class in some domain. And of course, we can here reiterate that there is no possibility of concretely identifying such absence, without having first sought out the presence of the units concerned. Therefore, here too we can say that there is a sort of relativity to a Subject/Agent (who has to seek out and not find a certain kind of unit).

But of course, not only zero is 'relative' in this sense. We could say that the only purely empirical number is the unit, one (1). It is the only number of things that can be perceived directly, without processing information. As we said earlier, there are only positive particulars. We may here add: each of them is 'only a unit', never 'one of many'.

Such units may be mentally (verbally or even just intentionally) grouped together, by means of some defining rule (which may just be a circle drawn in the dust around physical units, or a more abstract common and exclusive characteristic). We thus form natural numbers larger than one (such as 2, 3, etc.) *by abstraction*. It follows that any number larger than one (as in the case of zero) can be actualized *only if there is someone there to do the counting*.

Thus, zero and the natural numbers larger than one are less directly empirical than the unit; they are conceptual constructs. It still remains true that '2+2 = 4' or false that '2+2 = 5' – but we do not get to know such truth or falsehood just by 'looking' out at the world: a rational process (partly inductive, partly deductive) is required of us. If no one with the needed cognitive powers was alive, only units would actually exist – other numbers would not appear.

And if this dependence on someone counting is true of whole numbers, it is all the more true of fractions, decimals and even more abstract numerical constructs (e.g. imaginary numbers). As for 'infinity', it is obviously the most abstract of numerical constructs – considering, too, the negativity it involves by definition.

But we can go one step further in this analysis; and reexamine our above notion of a purely empirical unit! Implicit in this notion is that what appears before us (in the various sensory media, and their mental equivalents) is a multiplicity of distinct units. This already implies plurality – the existence of many bits and pieces in a given moment of appearance (different shapes, colors, sounds, etc.), and/or the existence of many moments of appearance (across 'time', as suggested by 'memory').

But multiplicity/plurality does not appear before us through mere observation. It is we (those who are conscious of appearances) who 'sort out' the totality of appearance into distinct bits and pieces (e.g. physical or mental, or sights and sounds, or blue and white), or into present phenomena and memories of phenomena. We do this by means of intentions and mental projections (acts of will, sometimes involving imagination), in an effort to summarize and 'make sense of' the world we face.

Thus, to speak of 'positive particulars' as pure percepts (or in some cases, as objects of intuition) is not quite accurate as phenomenology. The starting data of all knowledge is a *single* undifferentiated mass of all our experience. This is split up and ordered in successive stages.

Consider my field of experience at a given moment – say, for simplicity, I look up and see a solitary bird floating in the blue sky, i.e. two visual objects (ignoring auditory and other phenomenal features), call them x and y.

Initially (I postulate), they are one experience. Almost immediately, however, they are distinguished from each other (I postulate this true even for a static moment[1], but it is all the more easy to do as time passes and the bird flies through different parts of the sky, and other birds and clouds come into the picture).

This basic distinction is based on the fact that the bird has a shape and color that visually 'stand out' from the surrounding blue of the sky, i.e. by virtue of contrast. This may called '**imagined**

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[1] Of course, the observer of the static moment *takes time* to make a distinction between items within it. But there is no inconsistency in our statement, since we are not claiming our world as a whole to be static but merely mentally considering a static moment within it.

separation', and involves a mental projection (or at least, an intention) of imaginary boundaries between the things considered.

It need not (I again postulate) involve negations. That is, I make a distinction because x is x and y is y, not because x is not-y and y is not-x. The latter negations can only logically occur *as an afterthought*, once the former contrasts give me separate units I can negate.

The acknowledgment of 'many' things within the totality of experience (a sort of epistemological initial 'big bang') is already a stage of ratiocination. Negation is yet another of those stages, occurring perhaps just a little after that. Numbers are yet a later stage, dependent on negation (since to explicitly distinguish things from each other we need negation).

By the way, the arising of multiplicity does not only concern external objects; we must also take into consideration the Cartesian *cogito ergo sum*. This refers to the development of successive pluralities relating to the psyche, notably:

- Cognized and cognizing, and also cognition; thus, Subject – consciousness – Object.
- Self and other; or further, soul/spirit, mind, body and the rest of the world (the latter also spiritual, mental and material/physical).[2]

Everything beyond the totality of experience depends on *judgment*, the cognitive activity we characterize as rational. Such judgment exists in varying amounts in humans. It also seems to exist to a lesser degree in higher animals (since they search for food or look out for predators, for instances), and even perhaps a little in the lowest forms of sentient life (though the latter seem to function almost entirely by reflex).[3]

11. Psychology of Negation

With regard to **psychology**, the following may be added. Knowing when and how to negate is an art – on which depends the pertinence and accuracy of our judgments. The faculty of negation can be abused or underused.

Psychologists will agree that excessive negation, as excess in any intellectual endeavor, can be considered a mental sickness. People with excessive negativity have a negation faculty that has gone haywire, causing them and others much suffering. But lack of critical sense – excessive credulity and enthusiasm – can also mislead and cause harm.

Sober judgment relies on poise and restraint either way – i.e. it is appropriately balanced.

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[2] The distinction between internal and external objects varies with context, of course. 'Internal' may refer to spiritual intuitions (own cognitions, own volitions, own appraisals, and self), mental phenomena (memories, mental projections, emotions), or bodily phenomena (sensations and visceral sentiments). 'External' then means, respectively, phenomena in one's own mind-body and beyond, or only those in one's body and beyond it, or again only the world outside one's body.

[3] A good argument in favor of this thesis, that mental separation and negation are distinct stages of distinction, is the possibility it gives us (i.e. biology) of supposing that lower animals are aware of multiplicity but unable to negate (because the latter requires a more pronounced level of imagination).

12. Negation in Meditation

I have found in the course of **meditation** that effective awareness that all pure perception relates to positive particular phenomena, and that negation is always partly an act of reason, has a powerful concentrating effect due to eliminating at its root much underlying thought (which uselessly diverts our attention from 'the here and now' of positive particulars). If negations are not pure experiences, they can and ought to be treated as (expendable) thoughts by the meditator.

If negations involve thought, the same is all the more true of abstractions (which are all derivatives of negation), including explanations, calculations and other rational judgments. However, in the latter cases, meditators are usually well aware that thinking is involved and try their best to avoid it. Whereas, in the case of negations, one is more easily fooled into believing that they are mere experiences and tend to tolerate them and get absorbed in them.

In this context, parenthetically, I am tempted to ask the question: if the Buddhist enlightenment experience is – as some seem to suggest – a contemplation of "emptiness", is it a pure experience (as they claim) or an inference from experience? For the concept of emptiness (absence of content) here refers to denial of ultimate essences (which are described as "self-nature" or "self-existence") behind the particular appearances of experience; but if such denial involves negation, and negation here strictly means 'essence has not been found' rather than 'non-essence has been found', the latter conclusion is only an extrapolation from the former.

One way to avoid negation, and indeed other forms of judgment, in meditation is simply to abstain from asking questions and seeking answers (confirmations, refutations, or details of any sort). This promotes a more passive and receptive frame of mind, which generates inner calm and silence.[4]

It may be objected that such an attitude is not conducive to philosophical – and more broadly, knowledge – development! But in fact, although one cannot progress far in meditation if one considers it as merely a means to philosophical or other ends, the practice of meditation does improve one's philosophical insight and understanding, and knowledge generally. (And indeed, the converse is also true – philosophy can help improve one's meditation.)

Ruminations can be freely read online at The Logician.net and in various other locations.
It can be purchased, in print and e-book editions, in Amazon.com, Lulu.com and many other online booksellers.

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[4] Note that this might only concern *zazen* and similar methods of meditation. In certain other meditations, the mind is deliberately kept active and searching; for instance (according to D.T. Suzuki), masters of meditation on a *koan* recommend cultivation of a "spirit of inquiry".