SPT MA

Logic In Context:

Some Considerations Concerning the Philosophy, Sociology and History of Logic

by Andrea Waddell

First Encounter with Logic: A Dialectic between Universality and Particularity

'*Wherever men debate, discuss, and argue, Logic is a court of appeal in the background; whenever a man debates a matter in his own mind, a silent Logic arbitrates. No man in his senses will willingly and persistently defy a clear verdict by Logic. Whoever sets out to break Logic, as has been said, Logic will break him. For many centuries the study of Logic was an essential preliminary in higher education, and left a deep and lasting mark on the language and outlook of cultured men. Logic is in the air we breathe. Many still study it with profit, and many who have not time to study it for themselves benefit from the logical labours of past generations*'.[1]

I will remark without hesitation that I regard the contents of this quote as arrant and polemical nonsense. It is, nonetheless, as a sociological document invaluable. For it encapsulates all of the essential features of the institution of logic. Luce paints logic as a kind of angry God watching over us. The capitalisation of 'Logic' also serves this deification. We are told that logic is silent and in the background – clearly we are being watched and judged for our logical sins. The gibberish assertion that 'Logic is in the air we breathe' specifically casts Logic as a ghostly presence - perhaps this is the guise of Holy Ghost - whether this is to be thought comforting or ominous is unclear.

The assertion that 'Whoever sets out to break Logic, as has been said, Logic will break him' is clearly saturated with the imagery of violence. It is structurally equivalent to the dictum 'Whoever lives by the sword, dies by the sword'. This, then, is logic in the role of Old Testament God. The words 'as has been said' also evoke a kind of esoteric wisdom of old which we are not permitted to question, certainly not without dreadful consequences at any rate (presumably a nasty death).

Luce also draws our attention to the role of 'Logic' in the institution of pedagogy. It has the role of socialisation. Yet this will obviously be an uncritical socialisation. We must on no account question the occultish wisdom of yore and, further, we are to be beholden to 'the logical labours of past generations'. (Presumably the 'Logician' casts logic in the role of the Son). The socialisation will also be unconscious, independent of our critical faculties. It leaves us with 'a deep and lasting mark', rather in the manner of a Jesuitical schooling. The principle role of 'Logic', then, is to make us peaceable and cultured.

I take it is unquestionably true that logic has deep-seated connections with the institution of dialectic and the domain of psychology (although formal logicians would presumably seek to question this too). However, we are given a picture of logic arbitrating over dialectic and psychology independently of the very substance of dialectical interchange or what is thought. Logic is thereby endowed with metaphors of power.

If we rejected Luce's deification of logic as such, it would follow that logic embodied social power: the capacity to wield authority, not only in the public forum of dialectic,

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[1] A. A. Luce, Teach Yourself Books: Logic (English Universities Press, 1975)

but within the hidden recesses of another person's mind. This would be a possible Durkheimian critique. Emile Durkheim identified logic (as well as God) with the moral authority of society, such that when we believe we are serving logic (or God) we are actually serving society.

Lastly, Luce identifies logic with the culture of *men*, i.e. it is a gendered institution.

Now, paradoxically, Luce's polemic does not identify him as a logician, but rather as the antithesis of one. For his remarks would most certainly be treated with distain by any serious 'logician'. Luce's sloppy remarks are instructive for what they unconsciously reveal about the institution of logic, notwithstanding that they are remarks which the discipline of logic itself would formally reject, or at least distance itself from them as far as possible.

I have deliberately infused my interpretation of Luce's comments with the maximum of evocative imagery, because traditionally books of logic embody, by their very nature, a self-enclosed world which defies such easy psycho-social analysis. And so it is to the dry, sober world of a more serious logician, Wilfred Hodges, into which we must now plunge, in order to know something of logic as it purports to know itself. Hodges is nonetheless writing for a lay audience[2], so he still provides significant social imagery if only so that he can reject it as unrelated to logic.

'*Logic is about consistency – but not about all types of consistency. For example, if a man supports Arsenal one day and Spurs the next, then he is fickle but not necessarily illogical. If the legal system makes divorce easy for the rich but hard and humiliating for the poor, then it is unjust but not illogical. If a woman slaps her children for telling lies, and then lies herself, she may be two-faced but she need not be illogical.*

The type of consistency which concerns logicians is not justice or sincerity; it is compatibility of beliefs'.[3]

Now, reading Hodge's elucidation of logic straight after Luce's, we might be disappointed. Logic appears to have a very limited domain of application after all. We are told logic merely concerns consistency of beliefs. Hodges then proceeds to rudely disabuse us of any pleasant thought that this consistency of beliefs might apply to the real world. The consistency in question only applies to the special world of logic. Later on we learn how this consistency of beliefs may nonetheless manifest itself:

'*Logic, then, is about beliefs and about when they are consistent with each other. But beliefs are hard to study directly: they are invisible, weightless and without perceptible odour. To ease our task, we shall think of beliefs as being expressed by* written sentences'[4] (my emphasis).

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[2] there are practice questions at the end of each chapter
[3] Wilfred Hodges, Logic (Penguin, 1991) P13
[4] P.17

Thus having consistent beliefs is apparently not enough to count as logical, one's consistency of beliefs has to be subjected to the prodding finger of the scientist. Because beliefs betray no perceptible odour to the observing logician (or are his senses just stunted?), they must be transfigured and made public in the form of written sentences. Thus logic does not apparently really concern beliefs after all.

Now that the logician has his playthings, it will be easy to see in what sense the square peg is to be thought inconsistent with the round whole. 'Smith supports Arsenal' can be deemed inconsistent with 'Smith does not support Arsenal' or, more broadly, with 'It is not the case that Smith supports Arsenal'. This potential incompatibility is obviously of no interest whatsoever to Smith[5], or perhaps to anyone at all.

Andrea Nye's most frequent charge against logic is what she calls Parmenidean autism. She interprets the central principle of the pre-socratic philosopher Parmenides to be 'whatever is, is; whatever is not, is not', or 'what is cannot be what is not; what is not cannot be what is'. She locates this principle to be at the heart of logic's inability to speak of the real world. Indeed, Parmenides actually understood himself to be fleeing the world of flux for the refuge of logic and truth. She understands the history of logic to be, furthermore, a reaction against this autism, which leads it, by turns, to create an ever more elaborate and artificial world, divorced from reality, in which logic can and does speak.

Whereas for Nye, the principle of non-contradiction entails a kind of autism, we should point out that for Aristotle the principle formed the condition of saying anything at all.[6] '*If, however, the holders of any view all speak both truth and falsity in exactly the same way, it will not be possible for anyone in these circumstances either to give utterance or say anything of content; for such a person is at the same time saying that such and such is the case and that it is not.*'[7] The issue, of course, must concern the right to make such and such an assertion in the first place. So long as our pronouncements concern the world of flux, we will be attempting to assert what is not of what is. Nye points out that the sophists co-opted Parmenides's strict principle as a license to, literally, *say anything at all.* [8]

Is it at least reasonable to declare that we should not seek to assert inconsistent sentences? It is indeed the case that logic seeks to bar us from certain uses of language - but is this just petty-mindedness? As Wittgenstein put it, (quoted in Mason) 'When we say that a thing cannot be green and yellow at the same time we are excluding something, but what?' The reply was that 'We have not excluded any case at all, but rather the use of

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[5] Assuming he even exists, that is; 'Smith does not support Arsenal' assumes Smith exists, whereas 'It is not the case that Smith supports Arsenal' shies away from even this assumption. In formal logic, the negation of P is always deemed to be 'It is not the case that P'.

[6] We should point out that Parmenides did not literally describe his principle as one of non-contradiction; this is merely Nye's interpretation of his words.

[7] Aristotle, The Metaphyics (Penguin, 1998), P.96, §4

[8] Nye, Words of Power (Routledge, 1990) P.24

an expression'.[9] Mason also quotes Wittgenstein as follows: 'We exclude such sentences as 'It is both green and yellow' because we do not want to use them… Of course we *could* give these sentences sense'. I suggest such a possibility should not be thought so fantastical. We might make reference to 'a black and white cat', which is to say, it is both black and white. Obviously this should be taken to mean that the cat in question is black in some respects and white in others (under his belly, for instance). Yet, lest it be thought this meant that to say a cat is both black and white is simply a sloppy short-hand for what it really means, we could play Wittgensteinian devil's advocate and ask whether it is rather the other way round, to the effect that it is more accurate to describe a cat as simply black and white rather than attempt the potentially futile exercise of delineating the respects in which it is, respectively, black and white.

When Aristotle first formally mooted the principle of non-contradiction in *The Metaphysics* in the fourth century BC he attempted several different formulations of it, presumably because he was not entirely happy with any one of them. The principle was not, by contrast, the axiomatic one it is taken to be by classical modern logicians[10]. This was also evident from the fact that he attempted to prove it metaphysically (an axiom, by contrast, is beyond proof). Aristotle was attempting to take on a motley group of Pythagoreans and Sophists. While the latter largely enjoyed sounding paradoxical merely for rhetorical effect, the Pythagoreans passionately believed that the constituents of the world were composed of contraries, for instance, the One and the Many, or the Hot and the Cold, a doctrine which on the face of it might seem to confute the principle of non-contradiction. Thus Aristotle found it incumbent upon himself to stipulate the precise manner in which the principle of non-contradiction should be taken. His fullest statement of the principle was, to wit: '*It is impossible for the same thing at the same time both to be-in and not to be-in the same thing at the same time*'.[11] (In modern symbolic logic, by contrast, the principle is simply couched as ~ (P & ~P). We should question what this is actually saying, however).

We sense that Aristotle is quite clear in his own mind about the reality of the principle, he is just straining for the right form of expression. And surely we can imagine a straightforward sense in which a cat cannot be both black and white…. in the same respect at the same time. Yet we may be flattering ourselves. Wittgenstein: '*It is queer that we should say what it is that is impossible, e.g., that the mantle piece cannot be yellow and green at the same time. In speaking of that which is impossible it seems as though we were conceiving the inconceivable*'[12].

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[9] Quoted in Mason, 'Before Logic' (SUNY 2000), P.23 - original quote from Wittgenstein, Philosophical Grammar.

[10] There are non-classical logicians, on the other hand, who disavow the principle. Brouwer's Intuitionist logic disregards the principle, for instance. Scholz stresses, however, that Brouwer never intended to declare the principle as *false*, merely to aver that 'it is not permissible to apply this principle in a bona fide mathematical proof.' Thus Scholz distinguishes Brouwer from Hegel, who explicitly rejected the principle in question, and 'whose logic asserts for every statement its being neither true nor false'. (Scholz, Concise History of Logic, Philosophical Library 1961) pp 36-37

[11] Aristotle, The Metaphysics (Penguin, 1998), P. 88 (Gamma 3).

[12] Mason, P.25, quoting Wittgenstein from the Yellow Book.

Thus if the possibility of inconsistent sentences is contestable from a logical point of view, then we must question the strictly logical value of consistency. However, returning to the real world, the notion of consistent beliefs obviously has a straight-forward meaning. Is maintaining consistency of beliefs even a virtue, in whatever sense we understand consistency? The critique of the supposed virtue of consistency finds support from philosophers of all hues.

Nietzsche identifies consistency with the fool-hardy psychology of conviction. For once a man has committed himself to a particular conviction, he is obliged to remain faithful to that conviction in thought and deed. First of all, Nietzsche identifies this mentality as arduously demanding. '*To carry out later, in coolness and sobriety, what a man promises or decided in passion: this demand is among the heaviest burdens oppressing mankind*'[13]. Nietzsche recognises that, for artists, all that matters is, indeed, to experience passion. Faithfulness to a passion manifests itself as a testament to the strength of the original passion and also serves to keep it alive and strong. Though if artists purely live to experience passion, I would suggest that that any momentary passion will suffice just as well, for presumably the heat of passion is a greater virtue that the coldness of logical consistency, although Nietzsche is not clear on his views on this point. His polemical thrust, however, is specifically to make a virtue out of inconsistency: '*Are we obliged to be faithful to our errors, even if we perceive that by this faithfulness we do damage to our higher self? No – there is no law, no obligation of that kind; we must become traitors, act unfaithfully, forsake our ideals again and again'*. Nietzsche goes on to identify conviction with the necessarily reprehensible *'belief that in some point of knowledge one possesses absolute truth*'.

Now let us listen to Pascal: '*Contradiction is a bad mark of truth: several things that are certain are contradicted; several false things pass without contradiction. Contradiction is not a mark of falsity, nor is non-contradiction a mark of truth*'. Ironically, in contrast to Nietzsche, Pascal's remedy to the deficiencies of human reason was to surrender ourselves to faith. And, as Mason notes, for Pascal, '*the most important facts about the world – that God became man, for example – contain irremovable paradoxes*'.[14]

Let us not set too much store by the theological context to Pascal's thought. In this particular respect, as Nietzsche noted, faithfulness to an irrational creed can simply serve as a higher form of obdurate psychological consistency. Nietzsche quotes the fanatical slogan, once attributed to Augustine, of 'credo quia absurdum est' (I believe because it is absurd).[15]

Pascal's basic critique of consistency is actually closely mirrored by a twentieth century analytic philosopher, F.P. Ramsey. While Ramsey accepted that the purpose of formal deductive logic is 'simply to ensure that our beliefs are not self-contradictory', it was also his belief that consistency may not always be 'advantageous': '*human logic or the logic of truth, which tells men how they should think, is not merely independent of but*

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[13] Nietzsche, Human All Too Human (Penguin 1984) , P.260 §629
[14] Mason, P.10
[15] Nietzsche, P.262, §630

sometimes actually incompatible with formal logic' (my emphasis). Thus, '*it may well be better to be sometimes right than never right*'.[16]

It is time to take stock. We have seen two wildly different characterisations of Logic. Luce casts the net as widely as possible. Logic inhabits the air we breathe, and even looks down upon as an angry god. Yet this universality draws us into absurdities. Hodges, by contrast, makes the subject of Logic as narrow as possible. Our first instinct may be that Hodges exercises praiseworthy restraint, which can only redound to Logic's credit. Yet we have seen how, on the contrary, Hodge's elucidation serves to estrange logic from the world.

To be sure, nothing we have said suggests that logic should be thought in any way inconsistent with itself. Logic is, on the contrary, a tribute to the ideal of systematicity. (Even so, no system of logic is ever entirely complete and systematic. This is the basis of challenges to classical systems of logic. Perhaps the battleground of logic is necessarily situated at the frontier along which logic most openly seeks to speak of the Real[17]). This systematicity endows logic with authority.

There is a significant duality in Luce's picture. Logic is both consubstantial with the air we breathe, and it is secretly arbitrating in the background. The trope of judgement is actually widespread in scholastic logic. In Kant, judgement forms one of the three mental faculties of mind, in Arnauld's Port-Royal Logic, it forms one of four faculties of mind. Yet in J.S. Mill, the metaphor of judgement comes to take centre-stage. It is used to describe Logic itself, i.e. with reference to that capitalised, reified form we have found in Luce. Mill writes that 'Logic is the common judge and arbiter of all particular investigations'. We are also told that 'It does not undertake to find evidence'. The latter qualification creates a sense of withdrawal, and reinforces the metaphor of judgement.

Thus we see how Logic can discharge authority over the world from which it has purported to withdraw. The authority Hodges devolves onto Logic feeds into Luce's God of Logic, who can then mete out its particular brand of tough justice over the world at large. The particularity of logic is an invitation to its universality. Does this mean that Luce's picture and Hodge's are merely two sides of the same coin? No, because Logic's role as judge necessitates an uncompromising sense of worldly withdrawal, in order to maintain its aura of authority. Luce profanes the sanctity of logic by disregarding this separation and allowing logic to intermingle freely with the very air we breathe. Thus, in a sense, logic must deny that legislating is what it is even doing, in order to maintain the empirical distance between legislator and legislated-over.

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[16] Mason, P.113

[17] For instance, Brouwer's intuitionist logic denies the classical Law of the Excluded Middle (P V ~P, a particular rendering of the Law of Non-Contradiction:). Brouwer argues that this law entails illegitimate existential commitments, particularly in the case of mathematics. If we disprove 'not all S are not P', we cannot conclude an S is P; there may be no such S at all. (Scholz, History of Logic, P.26) Here, of course, we see Logic going out of its way not to pronounce on the Real, so as to all the more legitimately speak of the World of Mathematics.

This self-denial enables us to explain a curious feature of Hodge's account. We are told that if 'the legal system makes divorce easy for the rich but hard and humiliating for the poor, then it is unjust but not illogical', thus suggesting that logic has nothing to do with justice; we have no criteria for what would count as 'illogical'. Yet logic's role as judge would presumably make the law-court an ideal home for it. Indeed, Mill tells us that logic particularly concerns the business of the magistrate, the military commander, the navigator, the agriculturist, and the physician, all of whom are directly involved in judging evidence. (Mill elucidates the proper order of protocol as 1. ascertaining the facts 2. weighing the evidence 3. applying rules of inference (either their own ones, or as prescribed by others) 4. acting accordingly. We should also note in passing that the aforementioned professions are all stereotypically male ones. There is no hint that logic would be of any use to mothers, for instance.)

Nye herself remarks on the privileged place of logic in the law-court amongst other contexts: '*Logic has provided scripts for particular settings, the law court, the programmed debate, theology, science. At the same time it presents itself as universal*'[18]. So far we have put the matter the other way around: logic presents itself as particular, or rather, a pure singularity, and denies it can be universal. So the state of denial embodied by the disjunction between logical theory and logical practice clearly goes right to the heart of logic. So, to pursue our particular example, what relevance can logic have to the law court if it is not, as Hodges rightly notes, to deliver justice? The answer can only be that terms of logical consistency are in no way influenced by those who feel most disenfranchised by the legal process, i.e. those who feel victim to its injustice. The terms of logical consistency are laid down by the judge (or in a wider sense, by the law). Logic must deny its true juridical function in order to maintain its aura of impartiality. Similarly, logic's concern with propositions enables the necessary distance between judiciary and the consequences of its judgement extending beyond the courtroom. The beliefs of those judged-upon are certainly only indirectly relevant. As Nye is right to suggest, logic becomes a performance. It is pure theatricality.

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[18] Nye, P.183

Pathways to the Sociology of Logic

The forgoing might be described as a tentative exercise in the sociology of logic. Nevertheless, the very term sociology of logic may still appear a misnomer or an oxymoron. We need a variety of pathways along which to probe the notion.

Pre-History of Logic

A good foundational approach is to consider the history and pre-history of logic. This will also enable us to attain a better philosophical perspective on what, by analogy, logic is and what it isn't. It also has the advantage of approaching logic from a 'land' free of theoretical prejudice, where logic is not the *lingua franca*, and we have the freedom to make our own investigation, *without prejudice*. Yet we will begin by consideration of the pre-history of logic, for consideration of the history of logic will require we wield another multi-pronged methodological fork entirely.

Dumitriu composed a multi-volume tome on the history of logic. His work on the so-called pre-history of logic is invaluable to our purposes, in allowing us to critique the supposed necessity of the modern idea of logic. The pre-history of logic refers to the time before such a notion existed. Dumitriu cites Guido Calogero's remark that '*It seems it is not possible to avoid the paradox that the history of logic begins when logic did not yet exist*'[19]. Obviously the time 'before logic' can be taken in a spectrum of senses, from the mere absence of the concept itself, or perhaps the formal discipline of logic, to a concrete absence of 'logical' thinking, in whatever sense that might be taken. In a sense, the pre-history of logic leaves the modern concept of logic untouched, perhaps accentuating its boundaries. In another sense, the very *possibility* of a pre-history of logic serves to critique logic's very claim to be universally binding (in a Kantian sense, logic purports to incorporate not only how we ought to think but how we do *already* think). Calogero puts it that 'logical problems develop from primitive mental behaviour', thereby reminding us that logic involves trans-historical problems and essentially contested truths.

Dumitriu contextualises us by describing the different schools of approach which study primitive mentality: the Evolutionist school, including Durkheim and Levy-Bruhl, the Historical School, and the Structuralist school, including Levi-Strauss. It is Levy-Bruhl's "pre-logism" which most interests Dumitriu. The latter explains that Levy-Bruhl begins from Durkeim's postulate that reason is a social product, but generalises it to explain how a plurality of mental structures could evolve. Presumably therefore Levy-Bruhl distances himself from Durkeim's nominal apriorism, according to which there is a universal structure of knowledge, modelled on the Aristotelian categories, which is nonetheless socially and empirically determined[20]. Levy-Bruhl's general understanding according to

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[19] Dumitriu, History of Logic, Volume 1 (Bucharest, 1977) P.3
[20] Durkheim, The Elementary Forms of Religious Life (OUP, 2001) P.15

which 'a particular type of society with its own institutions and moral morals will obviously develop a mentality of its own'[21] is hardly controversial – what is interesting is how fundamentally he understands the concept of mentality. 'We must thus from the beginning give up reducing mental operations to a single type, regardless of the societies under consideration, and always explaining all the collective representations through the same psychological and logical mechanism'.[22] Levy-Bruhl's perspective is opposed by Levi-Strauss's structuralist theory, which Dumitriu describes as 'panlogistic', according to which one and the same 'structure' (or 'homologous structures') should be thought to underlie the conditions of mental life of all people at all times. Dumitriu's final point of reference on the problem of mental structures is Engels, according to whom theoretical thinking is a wholly and disparately historical product. In particular: 'The theory of the laws of thought is not in the least an everlasting truth, established once for ever.'

Dumitriu elaborates somewhat on Levy's Bruhl's seminal work 'Mental Functions in Primitive Societies'. However, the significance of 'collective representations' could be straight out of Durkheim's 'Elementary Forms of Religious Life'. Both thinkers apparently operate within a division of collective representations and rites (Durkheim) / 'social deeds' (Levy-Bruhl). Both thinkers, in a way, privilege the significance of deeds over representations. For Durkheim this partly reflects his positivist methodology, according to which fundamental collective beliefs must be visibly constituted and reinforced through periodic collective rites - yet he nonetheless stresses that both rites and representations are each moulded by the other. Yet for Levy-Bruhl, institutions, faiths and practices are *primarily* social deeds. The representations implied by those deeds are just as much social deeds.

Levy-Bruhl's well-known contribution to the sociology of logic concerns his Law of Participation. Dumitriu explains it as follows: '*Things and phenomena are linked together not only collaterally, but also by their common participation in a common invisible element which is reflected in the collective representations*'[23]. Now, Dumitriu uses Levy-Bruhl's example of the Bororo Indians from Central Brazil to elucidate this law, yet I suspect both the interpretation and significance accorded it may be misguided. Dumitriu explains that the Bororo live in the same region as the Arara parrots. The Bororo claim to be Arara themselves, yet not as such as a unifying symbol of the totem of the tribe[24]. Dumitriu explains that the Indians 'claimed to be in fact, essentially, and actually parrots'. The Bororo therefore affect to contravene the principle of non-contradiction.

Now even were we to be told that the Indians also claimed to be 'physically, metaphysically, bio-chemically, and in point of truth, parrots', this could still be thought just so much froth. The fact is that the members of any totemic clan identify themselves as members of the totem-species. The identity can be expounded in many different ways but it will always be at root just that identity, no more, no less. Durkheim tells us that 'an

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[21] Dumitriu, ibid. P.4
[22] Dumitriu quoting Levy Bruhl, ibid. P.4
[23] P.6
[24] I am actually unclear as to whether the totemic explanation is supposed to be accepted at all.

identity of name implies an identity of nature. Having the same name is not merely an external sign of having the same nature, but logically assumes it'. That this most naturally refers to personality attributes, rather than biochemical nature, does not alter the strictly logical aspect of the identity itself. Durkheim cites an anecdote from Spencer, who was discussing the topic of totem-hood with a member of a Kangaroo clan. '[He] responded by showing us a photograph we had just taken of him: 'Look, this is exactly the same thing I am. Well! It's the same with the kangaroo'[25]. Given that this duality of man – both man and animal - already establishes a 'shocking logic', in Durkheim's words, it is questionable that any further qualifications to the force of this totemic identity can ever provide more than metaphorical dressing. And after all, there is a limit to what else we can actually conceive that totem-membership might be supposed to mean. We thus have an obverse to Wittgenstein's 'In speaking of that which is impossible it seems as though we were conceiving the inconceivable' (see above, footnote 11). Presumably, Wittgenstein never banked on the possibility that the effort to conceive the inconceivable might concern what we were mysteriously trying to rule in, rather than vigorously attempting to rule out. Wittgenstein was of course writing for a British rather than a French market, dull common-sense over a penchant for paradox and rhetorical fireworks.

Yet it is this very note of inconceivability which excites both Levy-Bruhl and Dumitriu. Levy-Bruhl teases us thus: 'In the collective representations of primitive mentality, the objects, beings, phenomena can be, in a way we cannot understand, themselves and something different at the same time'. Dumitriu traces the notion of participation back to its roots in Plato's philosophy, where he suggests, ironically enough, it was no more comprehensible. He cites the Parmenides dialogue. When asked: "What is participation?", Socrates answers "By Jove, I don't find it easy to define it in any way"[26] Dumitriu laconically notes, with respect to Levy-Bruhl's law, that 'by saying that this law works "in a way we cannot understand" we cannot claim to have a clear idea of its meaning.'[27] Obviously, we can either take this observation in a mystical or a derisory sense.

the idea of a sociology of logic

Levy-Bruhl's ideas have faced scepticism, essentially because the concept of pre-logical thinking can be so easily discarded as anti-logical. Levy-Bruhl himself sought to distance himself from the concept of pre-logism, with which he is associated, because it poses too stark a duality between "our" logic and primitive logic. Levy-Bruhl's name has also become intregally connected with the whole notion of a 'sociology of logic', which for some, such as Mason, sounds instinctively paradoxical[28]. Perhaps it should be regarded as

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[25] Durkheim, P.104

[26] In fact, the shadowy nature of participation is undoubtedly rooted in Plato's whole problematic ontology. As Aristotle explains so well in the Metaphysics, it is inconsistent to claim that a Form should be eternal and immutable, while the corresponding sensible object should be perishable. Yet it is just as absurd that a Form should itself too be perishable. Aristotle also presented the famous paradox of the Third Man. Because a sensible man is non-identical with the Form of Man, there must be a further, higher Form encapsulating what both have in common, and so on *ad infinitum*.

[27] Dumitriu, P.6

[28] Mason, Before Logic, P.4

axiomatic that in considering a 'sociology of logic', we should have to privilege its empirical anthropological data, so that we may not reject it a priori. For instance, Levy-Bruhl stresses that primitive man's thinking only partially rests on "pre-logic" elements and generally functions like civilised man's; in some faculties it should be thought to surpass it. It should not be deemed 'anti-logical'.

However, the best hope of for a sociology of logic must be to integrally combine itself with a metalogical critique of formal logic itself. For instance, Brouwer has combined his meta-logical critique of the Law of the Excluded Middle with a rudimentary investigation into the historical origins of this widespread belief. Possible conditions are suggested to include an attachment to monotheism.[29] Brouwer writes that "*The long belief in the universal validity of the principle of the excluded third in mathematics is considered by intuitionism as a phenomenon of the history of civilisation of the same kind as the old-time belief in the rationality of π or in the rotation of the firmament on an axis passing through the earth*".[30]

A particularly neat sociological-analytical synthesis concerns the choice to be had between property-based and mereological (ingredient based) metaphysics. Mason regards property-based metaphysics as fundamentally unsustainable, yet recognises that property-based descriptions have always been an integral part of our language, perhaps as a result of having been popularised by Aristotle. Woodger also makes a fascinating case as follows: "*The whole notion of 'having properties' seems to me to be suspect. It may be that the whole notion of a thing having properties is a vestige of an animistic extension of the notion of a person having property (in the sense of chattels) to things other than persons*".[31] Indeed, Aristotle's Categories, purporting to catalogue all the fundamental ways we talk about things, mingles both broadly internal and external characteristics. Aristotle notes the variety of senses of 'to have', such as a man having a height of three cubits, or, equally, a man being said to 'have' a coat or tunic.[32]

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[29] It it easy to see why this might be so. In the Old Testament, for instance, Yahweh declares to Moses 'there is no God but I'. Conversely, this poses the Israelites with the problem of determining whether neighbouring tribes are worshipping the single 'existent' God (Yahweh), or a 'non-existent' god, such as Bahl or Ashera (this dichotomy would feed into a notion of the Law of the Excluded Middle). Yahweh has also declared that worship of such false idols must be punishable with death. By a rationalist logic and subjectivist standpoint, of course, this is all very strange, for to believe in a monotheistic God is merely to believe in God. There is no means to individuate different deities, which is after all a contradiction by the very terms of monotheism. And belief in God necessarily presumes belief in an 'existent' God. We also do not readily presume access to the possibility of a Yahweh's God's eye view of the matter. It may actually be that whereas once upon a time the Law of the Excluded Middle fed the problematic of determining whether one believed in the 'true' God, nowadays it manifests itself in forcing a disjunction upon us to declare as either atheist or believer, on the rational that either God exists, or 'He' doesn't, as if there were a simple 'objective' fact of the matter.

[30] Quoted in Mason, ibid. P4

[31] Mason, P.78

[32] Aristotle, The Categories, §15 (from University of Sussex internet resources)
It is also interesting to note differences between languages. French employs the verb 'to have' an age, while in English we use the expression 'to be' an age. Even though both 'to be' and 'to have' imply properties, it is just as true that the verb 'to have' is more obviously suited to the notion of 'having a property' and uniquely evokes the specific sense of (material) ownership.

Our consideration of Levy-Bruhl has suggested the possibility of an opposition between primitive and modern logic, although for the reasons given it is not a satisfactory contrast. At times, Levy-Bruhl wants to shock by a radical distinction, stressing we cannot comprehend their logic, at other times he want to blur and meld and reconcile the two. This might seem like wanting to have his cake and eat it.

Yet we can make a more perspicacious contrast between modern and primitive logic by regarding the central *features* held to characterise modern logic, as opposed to the simple quality of being 'logical' or 'illogical', which might now seem to be setting the theorist up for a fall[33]. The two central features of modern logic which will be relevant to a contrast will be, firstly, the place it accords to propositions (already commented on) and secondly that accorded to abstract concepts.

Dumitriu explains that the primary predisposition of primitive man was to think in images, and not in abstract concepts. He suggests that the images serving primitive thought enjoyed a particular fluidity on account of a lack of regularised logical relations in thought. '*Our concepts might be said to be surrounded by a sort of logical potentiality which makes their relations and logical play possible, whereas the primary elements on which the primitive man rests, and which do not always correspond to our own general concepts of things, are surrounded by a highly versatile psychical atmosphere which can deform the corresponding image at any moment*'. The 'image' should be thought to occupy a limbic space between the abstract symbol and the physical object. The fantastical drawings and carvings of primitive peoples should be thought a testament to the richness of primitive thought, while their art's strange combinations of humans with bird heads and animals with human heads serve as a testament to its natural fluidity. Concepts lack the definite border line required by the modern proclivity for logical precision. They thereby admit of a '*continuous process of interosmosis, an invisible communication, which grants an ampler but vaguer sense to their relations with Nature*'[34].

Logicians have frequently lamented the inappropriateness of natural language for the purposes of logic[35] - yet primitive language represents a wholly different agenda altogether. By our own standards it is full of redundant forms, especially pronominal

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[33] Of course, illogical thinking is hardly a concept which is controversial. It should merely be assumed to eb controversial that it might constitute a logic, or can be understood other than as a mere privation of the logical.

[34] Dumitriu, P.7

[35] This is a school of thought originating with Leibniz, and latterly taken up by Bertrand Russell (who was famously troubled by the status of the utterance 'the King of France is bald'), which sought to replace our imprecise and misleading natural language with an ideal logical language. More recent writers such as Davidson have taken a more conciliatory approach, believing that 'a theory of meaning for a language is to be a theory such that whoever knows it is thereby enabled to speak the language' (Dummett, P.18) Thus, our natural language is already in order, we must merely seek to logically codify its grammatical complexities. Haak indicates some writers have been impressed by 'Chomsky's postulate of a deep grammatical structure underlying, but perhaps quite different from, its surface grammatical structure', and have correspondingly sought to identify the logical form of an argument with its deep grammatical structure, although Haak herself is skeptical of the possibility of a universal deep grammar between all languages. (Haak, Philosophy of Logics (C.U.P. 1978) P.26)

elements, merely to say the simplest things.[36] There is also often, for instance, a division of tense between near time and distant time. This conveys a concern with proximity to immediate concrete reality. There is a single-minded attention to detail (i.e. whether or not demanded by context), with a corresponding richness of vocabulary, yet there is also a dearth of catch-all generic notions. There is usually no one single universal number system - different number systems are applicable depending on what is being counted. Many of these considerations have led the Russian philosopher M. A. Dynnik to conclude there is a concrete mode of thinking wholly distinct from the purely abstract one.[37] Levy-Bruhl explains the concrete mode of thinking as founded on a 'pictorial' tendency which directly renders objects as if they were drawn or painted. Yet Dumitriu prefers a simpler, more epigrammatic formulation: reality is reflected in the primitive's spirit without the need for the processing of abstract concepts. He also finds in the visual mind-set a challenge to the principle of non-contradiction. For images *cannot* exclude one another the way propositions *can*.

Thus, I suggest, there is an analogy between the primitive mentality and considerations which led Wittgenstein to formulate his famous colour-exclusion problem, i.e. on what rationale is the simultaneous presence of two different colours said to be impossible? Similarly, in my discussion about Hodges, I noted that it is only when beliefs are rendered as sentences that it becomes possible to start declaring certain obvious combinations as inconsistent. Beliefs in themselves need not exclude each other – inconsistent beliefs can even be made into a virtue, as for Nietzsche.

Logic in Ancient China

In Ancient China we find the same pre-disposition for concrete thinking combined with a foray into formalising the discipline of logic, with curious results. Because the Chinese did seek to privilege the proposition as the building block of logic, we can come to understand a little how their logical texts managed to combine a lack of systematicity, a jumbled collection of truisms, and a proclivity for paradox. As a result, the discipline of formal logic never really took off in ancient China. Whereas in the Aristotelian tradition and later for J.S. Mill, logic is explicitly understood as an organon for the pursuit of truth[38], in ancient China, by contrast there prevailed the belief that the truth was

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[36] By contrast Quine has trumpeted a 'maxim of shallow analysis', which demands we encode natural language with the bare minimum of formal logical symbolism sufficient to maintain the validity of an argument. The very essence of formal logic, of course, depends on conciseness and abstraction.
In themselves, of course, what details count as redundant to a proposition depends entirely on what is trying to be said. It will obviously seem paradoxical to us that one might say 'the black cat is on the woollen rug', if the intention is merely to indicate that the cat is on the rug. Then again, it has been suggested that the inclusion of redundant details in describing a person, for instance, are often a vehicle to air our personal prejudices. Novelists, too, often include redundant descriptive details, irrelevant to the unfolding of the story, imagining they are reinforcing the sense of an objective reality in the reader's mind. Perhaps we ourselves are often so in thrall to objective reality, that we do not know how to make assertions without giving reference to minute detail.

[37] Dumitriu, P.8

[38] Aristotle's five "logical" works were later grouped together by Aristotelians of the first century BC as the Organon (meaning tool). We should stress, however, that Aristotle did not use term organon himself. In fact, he did not even understand his famed logical invention, the syllogism, as an epistemological tool, but

discovered long ago. There is also the contentious issue, debated by sinologists, of whether the ancient Chinese had a distinct concept of philosophy or whether it was blurred with religion (the three primary religions in China being Confucianism, Taoism and Buddhism).

The hey day of philosophy in Ancient China took place between the sixth and the third centuries BC, during what is known as the 'period of the 100 schools', although we have definite knowledge of only about six[39].

Mo Chia (the Mo School) is credited with developing dialectical method in China. Yet while the concepts it develops are obviously dialectical staples, there appears nothing very dialectical about the texts themselves. Its texts continually regale us with such isolated truisms as 'An explanation is an operation by which a thing is used to explain another', or aphorisms of insipid value such as ' "to praise" means to point out beauty, "to criticize" means to point out evil'. Yet we are assured by the Mohists that 'the expressions are not immovable, they are in continual movement'.[40] This is evidence, then, that the Mohists did not consider the proposition to be the vehicle of dialectic as such. We must conclude that dialectic occurred in a subtle worldly fashion, outside of the texts themselves.

Ming Chia (the School of Names) aimed to be sensitive to the pitfalls inherent in the logical power of names. Hui Shih-tzu's development of numerous paradoxes of time and space effectively demonstrates the School's belief in the essentially shifting, relative and paradoxical nature of reality, which eludes the simple referring matrix of language. Kung-Sun Lung developed the paradox of compound knowledge, which has sharp parallels with the broadly structurally equivalent paradox expounded by Antisthenes in Plato's Sophistes. Basically Kung-Sun Lung's ingenious argument is that a white horse is not a horse, because white is a colour not a horse, and the general concept of horse is independent of colour.[41] By contrast, Antisthenes argued that we cannot make such compound assertions as 'man is good'; all we can assert is 'man is man' and 'good is good'. Compound assertions invoke a combination of words which necessarily belie the single univocal object required by reality[42]. It was essential for Plato to counter this argument in the Sophistes in order to facilitate the possibility of propositions, which may be true or false, as the vehicle of knowledge.

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rather as a mirror of the causal mechanism immanent in nature). According to Kapp, that development came with the Stoics and their Modus Ponens. Though if we listen to Nye, the Stoics were just a bunch of professional sophists, whose development of the Diadoran Conditional enabled them to shun epistemology altogether.

I will also quote J.S. Mill, who at one point defines logic as "the science which treats of the operations of the human understanding in the pursuit of truth". Mill, System of Logic (London, Longmans, 1875) , P.4

[39] Dumitriu, P.16, citing the ancient authority of Ssu-ma Ch'ien

[40] Dumitriu, P.19…. Dumitriu takes the Mohists at their word.

[41] Dumitriu P.27. There is also a roughly similar Mohist argument according to which "to slay a thief is not to slay a man" (Dumitriu, P.30)

[42] Kapp, Greek Foundations of Traditional Logic, (AMS Press, New York, 1967) P.52

The work of modern sinologist Fung Yu-Lang suggests that Ming Chia, and first and foremost disciple Kung Sun-Lung, clearly hinted at the possibility of universals, while relegating them to the domain beyond experience. Apparently Kung Sun-Lung understood a division between *inside* forms and figures, which was designated *shih* (reality) - this also comprised *wu* (objects of experience) - and *beyond* forms and figures, which Fung Yu-Lang indicates we must interpret as universals. Correspondingly, and paradoxically, these universals cannot be *wu*. Universals are beyond experience yet, even so, a pre-requisite of it. (Remember how, in the same way, Luce's God of Logic stood beyond experience, while mingling in the shadows and subjecting all and sundry to His strict discipline).
Universals are also problematic in that they are beyond the scope of analysis; they constitute its empirical limit. There cannot be universals of universals[43]. This strangely foreshadows Quine's rejection of second-order predicate logic[44] over 2000 years later. Thus Ancient Chinese philosophy grapples with the building blocks of modern logic, though ultimately preferring to retain its firmly concrete and grounded character.

The thesis of the Rectification of names, common to both Ming Chia (courtesy of Yin Wen-Tzu) and also Ju Chia (Confucian school), perfectly exemplifies what we have said concerning the judgemental and legislative character of logic, and the intimate connection between the nature of logic and temporal authority proper. We will quote Confucius argument in full, as found in the Lun-yu:

"Tzu-lu says to Confucius: The master from Wei wishes to entrust you with government. What do you think is the first thing to do? The main thing is the rectification of names (cheng ming) *answers Confucius, and he adds: If the names are not rectified, the words cannot fit; if the words do not fit, the affairs [of state] will not be successful; if these affairs are not successful, neither rites nor music can flourish; if rites and music do not flourish, punishments cannot be just; if these are not just, people do not know how to act. Therefore, when the sage establishes designations, he should take care that the words are fitting, and when he uses them in speech, he should see that they result in proper action. The wise man should never use levity in using words."*[45]

According to Fung-Yu-Lang, such pre-occupations as the thesis of the rectification of names can be understood by reference to the social context in which it was espoused: '*People waited desperately for an end to political unrest and "the rectification of names" was one of the means whereby order could be established*'. We are also told that Li Seu and Han Frei-tzu, disciples of the rectification 'school', played an important part in the political and ideological reunification of China.

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[43] Dumitriu citing J. Needham, P.29
[44] i.e. A predicate is a logically fumigated version of the universal. 1st order predicate logic treats of the predication of individuals. 2nd order predicate logic seeks to treat of the predication of predicates. Similarly, we can regress to any higher order of predicate logic. 2nd order predicate logic (and above) must contend with Russell's paradox. Quine also rejects the whole ontological commitments of 2nd order predicate logic. To re-iterate Kung-Sun Lung, universals are not *wu.* and form no part of *shih.*
[45] Quoted in Dumitriu, P.29

Logic and Social Decay

The idea of logic as a bulwark against social disintegration, or a weapon with which to impose social order, is surprisingly common in the sociological history of logic, particularly in Nye and Nietzsche.

Let us cite Nietzsche's employment of the trope:

'The same kind of degeneration was everywhere preparing itself: the old Athens was coming to an end. – And Socrates understood that all the world had need of him – his expedient, his cure, his personal art of self-preservation... Everywhere the instincts were in anarchy; everywhere people were but five steps from excess: the monstrum in animo was the universal danger. 'The instincts want to play the tyrant; we must devise a counter-tyrant who is stronger' [Nietzsche is referring to the Socratic art of dialectic]
.....
The fanaticism with which the whole of Greek thought throws itself at rationality betrays a state of emergency: one was in peril, one had only one choice: either to perish or – be absurdly rational.'[46]

I should say however that Nye over-uses the trope to the point of vapidity. For if the history of logic unfolds parallel to Universal History, then this mind-set demands some backdrop of social disintegration must be found to account for every single historical instantiation of Logic. This is not to dispute Nye's project, yet it must be asked, if we are to gain some perspective, which period of history *cannot* be *potentially* understood as one of some sort of social unrest, with a little hermeneutic application? (And in Anthony Giddens' philosophy, social discord is merely the visible, manifest form of social contradiction, a *universal latent social discord*)

Let us nevertheless quote Nye's useful historical overview of her hermeneutic project:

Different men, different lives, different logics: Parmenides, searching for an eternal what is in a Greece only just emerged from the dark ages that followed the destruction of Mediterranean culture by migrating Greeks: Plato, insisting on absolute Goodness in the midst of the disintegration of the traditional order of the city-state as foreigners, speculators, and money-lenders crowded into Athens; Aristotle, promoting a science based on necessary truth as he watches the collapse of Athenian hegemony in the Aegean; Zeno the Stoic, constructing a grammar of the cosmos as he and others try to come to terms with life in the new Hellenistic empire of Alexander the Great. Could they have all been thinking the same thing? The same things as Abelard and Ockham thought, centuries later when God, the divine Logos, was thought to have spoken and all relations between God and man were being renegotiated; or as Frege thought, the logicians' logician, working out the elegant details of his new logical notation in Bismarck's Germany, surrounded by economic crisis and infected by the ethnic and racial hatreds that would eventually support Fascism?

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[46] Nietzsche, Twilight of the Idols (Penguin, 1990) , P.43

While Nye is ever successful in demonstrating the estrangement of particular systems of logic from empirical reality, the recurrent problem with her analysis is that she can do no more than crudely juxtapose her presentation of each formal system of logic next to its grand historical context, thereby leaving the nature of the connection opaque and merely urging the reader, perhaps, to draw their own connections. Her approach generates more questions than it answers. A critique of the very idea of a grand historical narrative would be far more in order.

The logic of Concrete Reality

We have seen that the logical mechanism of Chinese thought is based in concrete reality. We should recognise that 'concrete reality' is not a merely specious and unsustainable metaphor, devoid of conceptual content, as might be brushed aside by modern hard-working logicians. Rather, as if fitting, the logical mechanism of Chinese thought is interwoven with the very fabric of the social concrete reality, in particular, with the social institution of its language.

Dumitriu explains that the Chinese language is saturated with affective elements. These are especially facilitated by the ideograms of the written language, images which stimulate the imagination, though spoken language possesses just the same connotative power. He suggests that the ~~idioms~~ ideograms are meant to induce in the hearer a psychological state making him receptive to a particular truth.

We can interpret this state of affairs as symptomatic of the whole deferential and pedagogical structure of Chinese society, which venerates the *tzu* (master)[47]. For the Ancient Chinese, the truth was discovered long ago, we must merely make ourselves receptive to it. It is similarly a rejection of the Cartesian ego-centred epistemological project, methodical and punctilious, with which we are familiar in the west. Paradoxically, however, my claim will be that the whole institution of logic is only made possible by the structures of pedagogy.

There are many different words for an old man in China; these are necessarily sensitive to the multifarious particular modes by which an 'old man' may be socially embedded in society (for example, can he walk with or without a stick? is he exempt from military service?), so diffuse as to have little pertinent in common. Dumitriu tells us that a word "does not represent an abstraction [as in Indo-European languages], but a complex of visual images, whence its evocative and descriptive power"[48]. Furthermore, it is not a simple sign but a vocal emblem, which serves to depict a natural emblem. There is an interplay between the vocal emblem and the natural emblem which facilitates a poetic mentality. Mastery of the emblematic complex is a path to 'capturing' the thing. We should note, by contrast, that the metaphor of capture is a particularly strong one in Nye's

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[47] The ancient authority of Chi'ien Lung catalogues 14 classes of *tzu* which structure ancient Chinese society, Dumitriu, P.14.
[48] Dumitriu, P.31

analysis of Greek dialectic; yet in Greek dialectic it is the questioner seeking to capture his passive adversary in his net.[49] By contrast, Chinese society possessed a cohesive and deferential fabric (borne of Confucianism). Language (and specifically paradox) was thereby a tool with which to excite the imagination of the other, rather than entangle him.

We should note, however, that there is one hermeneutic path by which the nature of Chinese language directly *leads into* the pre-occupations of Western logic. This was identified by Leibniz. There is a simple perspective according to which every sign corresponds to an idea. The conceptual fuzziness of the idea (by Western lights) and the problematic issue of 'mastering' that emblem need not impinge on the simple univocal and bilateral correspondence between 'a sign' and 'an idea'. This consideration led Leibniz to exploit it as a basis for a universal logical language, which would straightaway present ideas, not just words.

Notwithstanding that Leibniz's vision of a perfect logical language draws on the Chinese language (a vision which, we must stress, never goes beyond a vision[50]), he nonetheless jettisons its worldly and concrete character. It is as it were that Leibniz merely sought the background psychological *reassurance* of an incontrovertible ideogrammatic reference, unencumbered by the problematic semantic baggage of natural language, so that he could pursue with all the greater vigour an attenuated *pure logic*, all the more estranged from worldly reality as a consequence. Scholz tells us that Leibniz sought to make logic independent of *thinking*, so to endow it with a pure mathematical content. The rules of syllogising would then become merely the rules of calculating[51]. Thus Leibniz sought to abandon the joy in the particular so characteristic of ancient Chinese philosophy, as encapsulated in the way a Chinese philosopher-poet might seek to capture the hidden logic, beyond mere onomatopoeia, expressing the play of two crickets. Leibniz rather desired that *abdication of thought* which would allow him to substitute that mimetic pretence of a 'surface play' of mathematical symbols, borne of an amnesia to their semantic origins. Compare Frege's similar sentiments:

"*Logical importance is by no means the same as psychological importance. When we consider the intellectual work as it actually proceeds, we find that a thought is by no means always present to our consciousness clearly in all its parts. When we use the word "integral"* [i.e. the mathematical operator], *for example, are we always conscious of everything that belongs to the sense of this word? Only in very rare cases, I think.*"[52]

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[49] Nye, pp 25-29

[50] this is a state of affairs which pains Scholz earnestly (an early 20th C historian of logic much in thrall to Leibniz): "We should emphasise at this point earnestly so that nobody will fail to hear it: We are still far distant from a realization of the magnificent idea which is responsible for Leibniz's conception of symbolic logic" Scholz, Concise History of Logic P.68

[51] I suggest that Dosteyesky could be thought to be parodying such a view in his 'Notes from Underground' (Zapiski iz Podpolya, 1864 / N.F.U. Penguin, 1972). The narrator muses that, within time, the actions required of us which accord with our best interests will be calculable from logarithm tables, so that human freedom will become no longer necessary. The narrator nevertheless determines to revel in the idea of human freedom, and act against his best interests, 'just because he can', irrespective of the pit of depravity into which these actions will lead him. Dostoyesky's 'Notes from Underground' has been interpreted as the founding text of Russian nihilism, and by extension, the ideology of modern terrorism.

[52] Dummett quoting Frege, Origins of Analytical Philosophy (Harvard, 1993) P.103.

Thus when Leibniz gives the second of his *charcateristica universalis* (the set of which forming his logical manifesto) as, in Scholz's words:

" *[that] the symbols must be so devised that whenever a thing thought is present, which may be divided into its components, the "image" of these components must again be components of the picture of what is thought in the available symbols.*"[53]

we see that Leibniz is really attempting to cover his back. The reality is rather going to be as Frege understands it: very little is really "thought" in the symbols whatsoever. (What possible meaning could we give to the 'thing thought' being present in the case of an integral sign in any case, if we are not to take refuge from the real world in some platonic realm?) Yet it may be said of Michael Dummett's whole project in the philosophy of language, moreover, that he attempts to privilege the impersonal conventions and mechanics of 'meaning' over the deeply human and contingent element of 'understanding'. A typical thought in Dummett's philosophy has it that understanding presupposes meaning, but meaning does not presuppose understanding, a sentiment which nevertheless Mason seeks to challenge[54].

East meets West: the geography of logic

The conclusion we are driving towards is that the Orient presents a fundamentally different mentality to the Occident. This contrast serves to localise and undermine the pretensions to absoluteness of Western logic. Dumitriu gives us a neat summary of these respective geo-cerebral differences, courtesy of the work of Liou Kia-hway. The European spirit is *analytical*. The Chinese spirit is *synthetic*. (We can use Kant's *Logic* to elucidate this distinction. The analysis of a concept involves a purely methodical dissection of the *actual concept* itself. The synthesis of an object draws on its experiential attributes to present a *possible total concept*[55]). Thus analysis maintains a special logical hygiene suited to the unique business of logic. If we reverse the process, so as to delve into the caverns of the Western psyche itself, it is easy to see how Liou Kia-hway maintains that the Western spirit strives to *build up an abstract whole without parts*. (Parts would obviously contaminate the logical integrity of the abstract whole). By contrast, the Chinese synthetic spirit strives *to build up a concrete whole with parts*.

Kia-hway poses a further distinction between Western philosophy of essence and the Chinese philosophy of existence.[56] The former entails a search for those invariable and permanent characteristics which constitute the essence of things. The latter, on the contrary, concerns itself with the existence of individuals which are undefinable, with countless and infinite variable differences. Now, such a critique of Western philosophy is

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[53] Scholz, P.55

[54] E.g. "There are no grounds to insist that any conditions are sufficient or necessary for understanding" Mason, P.42 – so understanding does not presuppose meaning, and must be considered as a human phenomenon *sui generis*

[55] Kant, Logic, (London, Longman, Green and Co 1885) P.49

[56] Dumitriu P.32

nothing new; it directly recalls the work of Sartre and Heidegger, both of whom sought to reverse the traditional order of precedence in the Western tradition by privileging existence over essence. What is interesting is to see how a different mentality comes naturally to the Chinese without the need for a bludgeoning critique.

Lastly, courtesy of the work of Fung-Yu Lang, we have a distinction of fundamental active epistemological thrust. We are to understand that western philosophy ever seeks to advance in knowledge from the security of the known into the rousing spectre of the *terra incognita* of the unknown. It continually seeks the expansion of knowledge. Yet Chinese philosophy begs to differ - it proceeds in exactly the opposite direction. (Dumitriu makes the rhetorical appeal, of which – as we know - Levy-Bruhl was so fond, that such a logic will seem incomprehensible to Western minds). The guiding principle, however, is that, for the ancient Chinese, there prevailed the belief that the truth had been discovered long ago. The difficulty is to access it in its purity. Thus Chinese philosophy seeks only a *shrinking* of knowledge, "coming ultimately to an almost ineffable idea – like the Tao"[57]. In keeping with this mentality, the Chinese philosopher spoke little, preferring to utter aphorisms. Two quotes from Lao-Tzu in the Tao-te Ching encapsulate the Chinese thinking. "Study is progressive growth, Tao [the path, the truth] is progressive diminution". "He who knows is silent, he who speaks does not know".

At this point, however, we should express a hidden contradiction in the characterisation of the Western epistemological spirit, papered over by Dumitriu. It is also the place to characterise Dumitriu's methodology. It is to be expected of a history of logic that it must be sensitive to the likely shifting understanding of its subject-matter. (The broad transformation over 2500 years concerns logic's gradual detachment from the jurisdiction of philosophy and correlative subsumption under mathematics[58]). In this way, however, such a history can avoid preoccupations with particular *words* and the correlative assumption of definite meanings attaching to particular words. In the pre-history of logic, of course, logic has no characterisation at all. We must rather concern ourselves with the hidden modalities of a particular subject-matter.

As Dumitriu puts it:

We think the reader will realise from our work, that logic is not one particular science, but the very mirror of thought in its effort to consider itself its own object, thus looking for its own expansion and modalities. But these modalities of thought cannot be exhausted by a single act. The process of self-determination of thinking is an endlessly [sic] process, each of its moments representing a valid form of thinking, explicit in its own history[59].

It will therefore be incumbent on a history of logic to treat a particular constellation of terms, having to do with thought, language, knowledge, dialectic etc, as bearing equally on logic, perhaps in relations of metonymy, individuated only by circumstance rather

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[57] Dumitriu, P.37
[58] ibid. x
[59] ibid. xii

than distinct cognitive meaning. Yet the flip-side is that, gazing idly and approvingly (and relativistically) from afar, we will become blind to the possibility of hidden centripetal forces acting within the constellation serving to tear it apart. The fault line will occur between the sociology of logic and its internal metalogical critique.

The centrepetal force to which I allude is the tendency to epistemological stasis within the pure logic of the Western tradition. I have already alluded to the equivocal characterisation of Logic as an Organon in the Aristotelian tradition (see N34). And it is nothing but a trusty organon we require to advance sure-footedly from known to unknown, in Kia-hway's formulation. For Kant, logic cannot serve as an Organon to science as this would pre-suppose knowledge of its objects, and logic must abstract from all content of cognition[60] and conceive objects qua those of the understanding alone. Logic serves *not the enlargement* but the criticism and correction of knowledge. [61] More scathingly, J. S. Mill judges the syllogism to be guilty of the *petitio principii*, the conclusion to a syllogism telling us nothing we did not already know in the premises. The Earlier Wittgenstein understood logic as merely dealing in tautologies. The *Tractatus Logico-Philosophicus* excluded the possibility of any epistemological mechanism from its structure in any case (although the Vienna Circle misinterpreted the work as providing a basis for their own misguided project of fundamental epistemology – that of logical positivism). A proposition merely reaches out to touch the world; no effort of reaching is required. And on the basis that that the only propositions which are denied the possibility of picturing the world are those which are nonsensical, all propositions are, in a sense, true, and so are equally little informative.

Thus Western epistemology and Western logic pull in different directions. The fact that logic can nevertheless be seen to underpin the epistemological thrust, the clear implication of Dumitriu, clearly suggests some contradiction at the heart of logic. It is not enough to suggest that logic and epistemology must be demarcated, for knowledge does not arise *ex nihilo* like a rabbit from the hat. Epistemology constitutes, by definition, the logic of knowledge. There are two possibilities. Firstly, logic is in denial of its socially inflammatory power, which seeks to extend its jurisdiction wider and deeper over the 'knowable' world. Instead logic seeks to affect the sublimity of perfect stillness from its Olympian throne, in order to lay its seal of approval to each supposedly perfect shard of 'knowledge' comprising the anarchy of the infinite Western epistemological project. Or we may simply conclude that pure logic has never really existed. Both possibilities come to the same thing.

the history of logic

We can broadly employ Lakatos' schema for understanding the history of science, mindful of Bloor's critique, in providing a framework for understanding the history of logic. Lakatos suggested a distinction between internal history and external history[62]. The

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[60] Kant, Critique of Pure Reason, Critique of Pure Reason (Hackett 1996) P.110
[61] Kant, Logic, P.5
[62] Bloor, Knowledge and Social Imagery, (Chicago University Press 1991) pp 9-10

former attempts a 'rational reconstruction' of the history of science, linking each scientific theory with the next by means of an ongoing critique. It does so purely on the terms of the theories themselves. It is thereby somewhat an abstraction and idealisation. It also necessitates the adoption of a chosen methodology, to serve as a guiding thread. This is a presupposition from which we were gloriously free in our consideration of the 'pre-history' of logic.

"External history", by contrast, serves to mop up the external sociological factors contributing to scientific innovation. It will only play an arbitrary and bit-part in historical proceedings. It also lacks the dignity of internal history. Bloor is critical of this side-lining of sociology into the gutter. The whole tenor of his project in the "strong programme" in the sociology of knowledge is to demonstrate how all knowledge without exception is socially conditioned, including scientific and logical knowledge.

There is a crucial difference between the history of logic and the history of science, however. Logic is a widely understood concept in social usage. Thus its history comprises all the varied employments of the concept in different contexts, beyond the mere history of the canon. The history of science, by contrast, is normally understood to refer merely to the history of the canon, certainly by Lakatos. Nevertheless, Bloor laments the fact that the history of the applications of science has never been written.

The 'internal' history of logic itself is an odd and discontinuous affair. '*The orthodox, one-sentence caricature-history of logic is not too incorrect: the subject did indeed come into existence with Aristotle; its philosophical background was explored and charted by Leibniz; and it was transfigured into its modern form by Frege before its great explosion in the twentieth century*'[63].

It thereby claims the right to shun historical sensitivity, 'internal' or 'external'. The very concept of a history of logic thereby has a quaint and antique feel about it, an interesting curio but of no possible use. It is nonetheless true that countless histories of logic have been written since Petrus Ramus penned his 'Scholae in Liberales Artes' in 1569, the first ever history of logic[64], before Leibniz was even born. So the modern caricature should be seen as just that; it is a symptom of the modern ideology claiming logic to be ahistorical.

Corollary to the thesis that logic has no real history is the idea that logic emerged essentially fully-formed. This thesis was held by Kant. '*Since Aristotle's time Logic has not gained much in extent, as indeed nature forbids that it should. But it may gain in respect of accuracy, definiteness and distinctness. There are but few sciences which can come into a permanent state, which admits of no further alteration. To these belong Logic and Metaphysics. Aristotle has omitted no essential point of the understanding, we have only become more accurate, methodical and orderly*'.[65] It was Aristotle's belief too, memorable for its lack of humility, that his logical enterprise was historically unprecedented. From the epilogue to the Topics: "*That our programme, then, has been*

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[63] Mason, P.5
[64] Dumitriu, xiii
[65] Kant, Logic, P.10

adequately completed is clear. But we must not omit to notice what has happened in regard to this enquiry. For in the case of all discoveries the results of previous labours that have been handed down from others have been advanced bit by bit by those who have taken them on, whereas the original discoveries generally make an advance that is small at first though much more useful than the development which later springs out of them. ..... [blah blah] ..... Of this enquiry, on the other hand, it was not the case that part of the work had been thoroughly done before, while part had not. Nothing existed at all."[66] For Kapp, however, the epiphany *ex nihilo* of Aristotle's concept of the perfect syllogism is precisely what makes it suspect, and generates the intractable problem of the correct relation of the syllogism to experience: '*In general, so much transformation has to be done if one is determined to find the Aristotelian perfect syllogism in pre-Aristotelian philosophic literature and what is known of mathematics of the time, that it becomes improbable that the notion of his syllogism was simply taken from experience. ..... Aristotle does not even hint at concrete models from which his abstract patterns of correct syllogisms had been derived; otherwise, indeed there would be no problem and the history of logic would be easy to write*'. This is a surely a reproach to the one-sentence-caricature-of-the-history-of-logic if ever there was.

Because logic claims the status of absolute and necessary truth, there is a perception that a logic text-book will be of far more use than a history of logic. Text-book authors of logic have always faced the curious paradox that if logic merely espouses basic and uncontroversial truths concerning how people think, then there should be no particular need to teach it. E.g. From the Port-Royal Logic: "*That part of which we have now to treat, and which comprehends the rules of reasoning, is regarded as the most important in logic, and is almost the only one which has been treated with any care. But it may be doubted whether it is really as useful as it has been supposed to be. The greater part of the errors of men..... arises much more from their reasoning on false principles, than from their reasoning wrongly from their principles. It rarely happens that men allow themselves to be deceived by reasonings which are false only because the consequences are ill deduced; and those who are not capable of discovering such errors by the light of reason alone, would not commonly understand rules which are given for this purpose, much less the application of them*'[67].

Likewise, Mill addresses 'the question, so often agitated, respecting the utility of logic'. His affirmative answer, however, is weak, plainly guilty of petitio principii (but, ironically of course, Mill believes even a rigorous logical syllogism to be guilty of the same): '*If a science of logic exists, it must be useful. If there be rules to which every mind consciously or unconsciously conforms in every instance in which it infers rightly, there seems little necessity for discussing whether a person is more likely observe these rules, when he knows the rules, than when he is unaccustomed with them..... Mankind judged of evidence, and often correctly, before logic was a science, or they never could have made it one..... But the bulk of mankind require either to understand the theory of what they are doing, or to have rules laid down for them by those who have understood*

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[66] quoted in Kapp, P.5, Greek Foundations of Traditional Logic.
[67] Quoted in Kapp, P.80.

the theory'. (There are plainly echoes here of Luce's 'logical labours of past generations', quoted at the outset of my essay).

There is another possibility, which is that textbooks of logic present controversial truths as if they were necessary truths; these are thereby proselytised and reproduced. Geach believes Aristotle presented a flawed theory of the syllogism, which has been generally swallowed uncritically by logic authors ever since. Geach maintains that attempts to patch up the theory have sullied those limited insights which were to be found in Aristotle's theory in the first place.

There is a special reason why histories of logic have always been so popular. Traditionally, histories of logic are presented as 'heroic narratives of victory, breakthrough, defeat, reverse, that show logic moving steadily, if fitfully, toward perfection'[68]. A case in point concerns Scholz's treatment:

'*I am sending this little volume into the world in the hope that I might thereby kindle in the reader a confidence, which he might not have had before, in the new logic* [i.e. symbolic logic] *upon which I have based my history, hoping of course that he may overcome all obstacles with which we have to reckon. Furthermore, I possess faith that the history of logic, with the new light which can be thrown on it today, will become a beautiful and fascinating chapter in the history of Western civilisation, so that at long last it may be studied with pleasure and sympathy. This accomplished, there will follow the labours of scholars as a matter of course which will close the gaps in the history of logic which we still, regretfully, have to admit today*'[69].

My reader will note the curious echo of Kant in that closing remark. Those pesky gaps seem as stubborn as ever.

Scholz's translator gives us a concise analysis of the prejudices inherent in Scholz's polemical approach:

'*His immense regard for Aristotle is only matched by that for Leibniz, the founder of symbolic logic, and by his contempt for all who are even mildly critical of formal logic. When he comes to men like Hegel, whom he considers a calamity, his criticism becomes charmingly skittish*'[70]

Scholz is most upset that Hegel rejects outright the principle of the excluded middle, believing such an innovation to be frivolous and marking the death of serious logic. '*Hegel's "Wisschenshaft der Logik' is linked with Aristotelian logic only by the caricature he has drawn of it in the second volume of this work. Even this caricature seems extraneous and its very presence belongs to the greatest riddles of this work which abounds in enigmas. The rest of the work is so vastly different from anything which could be brought into relation with Aristolelian logic that it remains inaccessible to an*

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[68] Nye, P.3
[69] Scholz, preface, Concise History of Logic (1931, Philosophical Library, New York)
[70] Leidecker in Scholz, Translator's introduction.

Aristolelian. How could an Aristotelian be expected to think himself into a" logic" which begins with the cancellation of the two fundamental propositions of the principle of contradiction and the excluded middle!'[71]

Scholz explains his impression of the intellectual consequences of Hegel's philosophy thus: '*Because of the wide popularity of Hegel's philosophy his concept of logic even today hampers any serious work of logic in the Aristotelian sense; that is, logic which is subject to rigorous checks'.*[72] Scholz nonetheless feels secure in the ascendancy of the new symbolic logic.

There is an irony in Scholz's paean to symbolic logic. He is proud that symbolic logic is the first "logic" to disambiguate the 'different' meanings of the copula, i.e. the word 'is'.

Which logic, prior to symbolic logic, has shown that the "is" in "7 is a prime number" is totally different logically from the "is" in the "the raven is black", and just as completely different from the "is" in "Goethe is the poet-author of Faust*"? Not any of them!*

Yet Geach, on the other hand treats such a revision – i.e. attempting to splinter the straight-forward meaning of the copula into so many different logical nuances – as symptomatic of the decadence of modern logic:

For the newer books tell us that 'is' means different things in 'Socrates is a philosopher' and 'Every logician is a philosopher'; that the first 'is' is a copula of class-membership and the second a copula of class-inclusion. Of course this ambiguity is a mere illusion; the predicable expression 'is a philosopher means exactly the same in both propositions, just as 'errs sometimes' means exactly the same in 'Socrates errs sometimes' and in 'Every logician errs sometimes'; and here there is no copula to pin the ambiguity on.[73]

Geach traces this modern confusion right back to Aristotle's misguided 'two term theory' (of which more later). The 'later' Aristotle did not need any theory of the copula because a proposition merely consisted of the crude gluing together of a subject and predicate (for it was essential that they could be equally crudely glued together the other way around). Successive corruptions of logic have attempted to smooth over the fissures in the logical join. This is the spirit of Geach's whole counter-history of logic.

It is particularly interesting to see how scathing is Scholz of Lotze's joyfully simplistic analysis of the copula. '*Who would think it possible were it not true beyond the shadow*

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[71] Scholz, P19
[72] Scholz, P13
[73] Geach A History of the corruptions of Logic (Leeds University Press 1968) pp13-14
We should not be surprised that Scholz is proud to say that symbolic logic is the first logic to furnish the symbolic support for a clear-cut interpretation of statements of the form: "*All S are P," "Some S are P," and "S is P" and hence, has made all theories of judgement antiquated which try to achieve a reduction of the statements of one of these three forms* [to a common form]". (Scholz P.64) I.e. Scholz is referring to the very issues of class membership and class inclusion dismissively discussed by Geach.

of a doubt that even a logician and thinker the calibre of Lotze interpreted the copula in "S is P" fundamentally as an expression of the relation of identity between S and P'.[74]

One wants to believe that Scholz's horror must verge on the parodic, because Lotze's analysis appears so basically uncontroversial. Lotze's elaboration is interesting however: "*Stated briefly, the principle of identity asserts: All categorical judgements of the form 'S is P' are false and inadmissible*"[75], the simple reason being that, as Scholz puts it, the principle of identity asserts: S is S, and not P. This is distinctly Parmenidean.

Lotze's analysis of the categorical judgement gives us a neat obverse to the analysis by Durkheim and Levy-Bruhl of 'explanation' in general. We have an interesting parallel here between the antithetical realms of formal logic and empirical nature. Durkheim argued that to explain any phenomenon is precisely to identify it with what it is not. Yet, in distinction to Lotze's formal logic, this should be thought natural and justified. We need not merely consider the 'shocking logic' of totemic identity. For Durkheim, man's primal instinct has always been to make connections between things. Durkheim has Levy-Bruhl in mind when he writes: '*It is said that the participations postulated by mythologies violate the principle of contradiction and are therefore antithetical to scientific explanations.*'

Yet for Durkheim, '*The explanations of contemporary science are more certain of being objective because they are more systematic and based on more strictly controlled observations, but they are not inherently different from those that satisfy primitive thought. Today as in the past, to explain is to show how a thing participates in another or several things.*'[76]

Thus we must balance Scholz's idea of the history of logic 'as a beautiful chapter of Western civilisation', against the suspicion that the realm of logic is actually fairly alienated from civilisation. Nye diagnoses the history of logic as a linear progress of its formalisation and alienation. Thomas Nagel has diagnosed what he sees as "*a kind of decadence of analytical philosophy, a falling away from its origins in Frege's insistence on the fundamental importance of logic*"[77]. Insofar as logic it has a social referent, this may be restricted to the academic realm.

It is easy to appreciate that histories of logic have traditionally been written as elitist back-scratching exercises. They invariably culminate in plaudits for the author's academic contemporaries[78]. We must nevertheless contend with the possibility that the

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[74] Scholz P.129 (N204)
[75] quoted in Scholz P.129
[76] Durkheim, P.181
[77] Mason, pp110-111
[78] Even Geach, in his counter-history of logic, appears to feel obligated to end his monograph on a note of optimism: '*But in spite of all enemies modern logic grows and flourishes; we have reaped such a harvest of discoveries that in the words of the hymn we may 'boast More blessings than our father lost'. And thanks to Russell and Frege, most of the logical insights that were lost by Aristotle's Fall have been recovered; but not, to my mind, quite all of them'*. Geach, P.21

substance of elementary modern logic textbooks is not free from controversy. Let us turn to examination of Geach's counter-history of logic.

counter-history of logic and the controversial significance of the syllogism

'*I may summarise what I am going to say in one sentence: Aristotle, like Adam, began right, but soon wandered into a wrong path, with disastrous consequences for his posterity*'[79]. That the whole of Geach's account is similarly infused with the theological imagery of good versus evil demonstrates how much he believes to be at stake[80]; fundamentally, the symbolic status of logic endows it with the power to indoctrinate, for better or for worse. Geach's complaint centres on what he calls Aristotle's adoption of the two-term theory. In his earlier grammatical work, *De Interpretatione*, Aristotle sharply distinguished the heterogenous elements which serve to constitute propositions: following Plato before him, these are names and predicables, *onoma* and *rhema*. With the development of his theory of the syllogism though in *Prior Analytics*, however, he comes to treat predicates as an attachment of one term (*horos*) to another term. Geach explains: '*Whereas the rhema was regarded as essentially predicative, 'always a sign of what is said of something else', it is impossible on the new doctrine for any term to be essentially predicative; on the contrary, any term that occurs in a proposition predicatively may be made into the subject term of another predication*'.[81] This is the two-term theory or thesis of interchangeability. The nature of the syllogism, to be sure, is to combine propositions where the subject term of one proposition is the predicate of another. Geach's contention is that it is '*logically impossible for a term to shift between subject and predicate position without a change of sense as well as a change of role'*.

Geach suggests that Aristotle is sensitive to these difficulties. In particular, he notes that Aristotle avoids schemata like 'A is B'; his standard expression is rather 'B applies (hyparchei) to (some) A'[82]. In this way, he avoids the difficulty of whether 'this timber is white' can be turned around into 'white is this timber', which presumably it cannot. Even so, Aristotle demonstrates that it can be possible for 'A applies to B' to make sense, while 'B applies to A' cannot. For example, in Aristotle's example, if B=contraries, and A=there being a single science of them, the statement 'There is a single science of contraries' can be rendered 'It is true to say of contraries that there is a single science of them'. However, we cannot say 'It is true to say of there being a single science of them that it is contraries' without straining the bounds of grammar to the point of gibberish.

We might see a parallel with Nietzsche's cack-handed and misconceived attempt at the end of 'The Birth of Tragedy' to amend his whole historical thesis so as to pay tribute to his friend Richard Wagner. For after meticulously theorising the historical rise and fall of the spirit of Greek tragedy, Nietzsche claims that in the present day the self-same spirit has been suddenly single-handedly revived by Wagner; this was a tribute by which Nietzsche was to later become embarrassed, after ending his friendship with Wagner.

[79] Geach, P.1, History of the Corruptions of Logic

[80] For example, P.13 '*Between such logic* [referring to the 'two-class theory'] *and genuine logic there can only be war; what fellowship has light with darkness?*'

[81] ibid. pp4-5

[82] Geach, P.6

Aristotle's difficulties here reinforce Kapp's point that Aristotle's model of the syllogism cannot have been drawn from experience. In recoiling from the problematic forms of natural language into abstraction, Aristotle does not draw closer to experience (as Leibniz and Russell would later hope) but rather farther away, testing the limits of our interpretative ability.

The excessively oblique nature of the 'syllogistic process' itself is noted by both Scholz and Geach. Scholz disputes the transparency of Aristotle's definition. '*For inferring in Aristotle's sense is* not [Scholz's emphasis] *a "discourse in which certain assertions are made and something different from what has been asserted occurs necessarily on the basis of what has been asserted"* [Aristotle's definition of syllogism], *but it is an activity, an operation or process which presupposes a certain disposition of elements and is composed of certain subsidiary activities*'[83]. Scholz is also adamant that the syllogism is not a judgement, i.e. in the psychological sense (contra "the great Bolzano"), and remarks on the appropriateness of 'the colorless expression "logos"' which Aristotle chose to characterise the syllogism.[84]

Notably, scholastic philosophers believed they had found the syllogistic principle in the slogan '*dictum de omni et nullo*' (what is true of a class is true of everything included in the class)[85]. The justification lay in the fact that the 'dictum de omni' seemed to encapsulate the logic of the so-called 'first figure of the syllogism', which may be rendered: 'All B are C, All A are B, Therefore all A are C'. Since Kant, the 'dictum de omni' became the '*nota notae est etiam nota rei ipsius*' (a mark of a mark is a mark of the thing itself).[86] The first figure of the syllogism is then rendered: 'C has the attribute B, A has the attribute C, Therefore A has the attribute B'.[87]

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[83] Scholz, P.31
[84] Scholz P.32
[85] Mill, P.190, Scholz P.33
[86] Kant, Logic, P.81
[87] Kant, P.83

primer on the structure of the figures and moods of the syllogism

the syllogism is traditionally divided into three or four figures, depending on the writer. Each figure is determined by the position of the middle term in the major and minor premises. The middle term is the term common to both premises, major and minor. The major premise is the premise containing both the middle term and the other term appearing in the conclusion, and is traditionally presented first. The minor premise is the other one. The major term is the term, other than the middle term, also occurring in the major premise

Thus: position of the middle term

figure	major premise	minor premise
1	subject	object
2	object	object
3	subject	subject
4	object	subject

There is a historical controversy over whether the fourth figure constitutes a distinct mode of reasoning. Even so, it neatly completes the above table.

Each figure is further divided into moods according to quantity and quality of the premises. The quantity of the premise may be universal ('all A', or just 'A') or particular ('some'). The quality of the premise may be affirmative or negative (e.g. all A are B, as opposed to not all A are B). Traditionally, every mood of every figure has a particular name.

Mill has mixed feelings about the status of the 'dictum de omni'. On the one hand, as a generalisation of the first figure of the syllogism, it expresses the logical primacy of the first figure over the others, which can be 'reduced' to the first figure. Science, moreover, will always concern affirmative and negative universals, and thus will principally deal with the first two moods of the first figure. To be sure, Mill is very concerned to show that logic should serve as a handmaiden to empirical science. On the other hand, Mill dislikes the metaphysical baggage of the 'dictum de omni'. It suits a belief in universals, that *substantia secunda*.[88] If we disregard this baggage, the 'dictum de omni' may be seen to be nothing more than a circuitous explanation of the word 'class'. Mill is similarly concerned that even though belief in universals has waned, logic has become just such a juggling of words. Yet names cannot think for us. We should concern ourselves far more with the facts of nature than with the sterile facts of classification.[89]

Now, Scholz's disavowal of a syllogistic principle redounds on the model of the different figures and moods of the syllogism. Scholz claims that '*the Aristotelian syllogistic presupposes much more than a single principle, to wit, presupposes apart from "Barbara" and "Celerant" all the operational rules requisite for the reduction of the*

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[88] Mill, P.199
[89] Mill P.203

rest of the 12 Aristotelian modi to this rootstock"[90]. If this is the case, then it would appear that Aristotle discovered no great invention in the syllogism after all.

Geach helps to bring this irony home. According to Geach, '*Aristotle's going over to the two-term theory was a disaster, comparable only to the Fall of Adam. What kept Aristotle from seeing he had gone wrong was the spectacular success of his theory of syllogism*'.[91] Geach identifies the spirit of the misguided interchangeability thesis as underlying the so-called 'rules of reduction' which allow the different moods of the different figures of the syllogism to be formally reduced to the first figure. These rules of reduction legitimise the reversal of subject and object in a premise, with the caveat that the necessary 'corrections' are made to the quantity and quality of the proposition (corrections which must appear arbitrary, as Scholz notes, in that as they are in no way necessitated by any universal syllogistic principle itself). Geach surmises that it is nothing other than a hidden ambivalence towards Aristotle's interchangeability thesis which has underlain the historical ambivalence, even repugnance, towards the so-called fourth figure of the syllogism. Logicians have swallowed the thesis, yet as this unconscious ambivalence shows, it has been without entirely good faith. Aristotle himself recognised the validity of such arguments, yet excluded them from his systematic account of syllogistic forms. Geach tells us that '*the grounds for this invidious distinction have been various, and all very bad'*. Kant himself wrote a mini-treatise on 'The Mistaken Subtlety of the Fourth Figure of the Syllogism', as an appendix to his Logic. Kant nonetheless upheld the distinctiveness of the other three figures.

Geach's point is that what marks out the fourth figure of the syllogism like a sore thumb is merely an over-use of the principle of interchangeability between subject and object (while respecting the necessary 'corrections'). Yet it is the very same principle of interchangeability which underlies all the rules of reduction which have facilitated the traditional picture of at least three distinct syllogistic figures. '*A logical gear change.... the shift of a term from subject to predicate position, or the other way round, occurs three times in any fourth figure argument, but only once in any other Aristotelian syllogism*'.[92]

Notably, Scholz contradicts his earlier insights and correlative rejection of a syllogistic principle when he comes to describe the magical powers of the new symbolic logic: '*It was further brought out earlier that Aristotelian logic is not able to describe syllogising. What we are doing when we syllogise we have come to know with precision only through symbolic logic*'. Such an assertion can only be true if what we are doing when we syllogise is merely symbolic logic itself. We are doing nothing over and above.

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[90] Scholz, P.33
[91] Geach, P.5
[92] Geach P.9

learning logic

Geach invariably explains the successes of logical corruptions in logic text-books as deriving from the uncritical culture of artificial and stilted norms which inform pedagogy as a whole. There is irony when Geach hints at how "school-boys" ironically re-deploy the very normative principles they have learnt in the phenomenon of logical sophistry.

For example, Geach elucidates Aristotle's earlier belief in of the heterogeneity of nouns (*onoma*) and verbs/predicables (*rhema*). Aristotle tells us that rhema have tense and onoma do not. Geach makes the qualification that arithmetic and geometric predicables do not have tense (for example, "a square has four sides" is not intended to designate a *present* quality of a square). Yet Geach is adamant that if a school-boy is asked for the date of Augustus' birth, it will be "mere cheek" for him to reply "Please, Sir, he wasn't called Augustus then". Geach proceeds to elaborate that '*once the name "Augustus" has come into use, it relates to Augustus throughout his career, and still serves to name him though he is long dead*'[93], yet does not register that this is nonetheless an arbitrary social convention rather than a necessary truth.

Geach tells us that a further Aristotelian distinction between names and predicables is this: we can negate a proposition by negating the predicative part but not the subject part. Thus presented, however, we might query what actually counts as the "accepted academic definition" of negating a proposition. Geach's strategy is to demonstrate how the 'logical howler' which is to think that we can negate a proposition by negating the subject term leads into this bogus syllogism:

I am no horse man
No horseman could clear that fence;
Ergo: I could clear that fence

Now this 'bogus syllogism' is clearly funny, and would presumably be popular with "school-boys". The irony is that the proposition "No horse-man could clear that fence" is actually perfectly grammatical as meaning 'Any horseman could not clear that fence' yet Geach has legislated against this usage presumably because of its potential for "school-boy" subversion.

A similar "schoolboys' fallacy" serves as a foil for Geach's discussion of another 'convention': that "if there are no dragons, 'All dragons are blue' and 'No dragons are blue' are both true." Geach describes how analysing the convention (in itself harmless to his mind) according to the corrupt 'two class' theory, essentially through interpreting 'no dragons' to denote as a specific class of dragons, nonetheless opens the way to a "schoolboys' fallacy".

Geach's label of "schoolboys' fallacy" might be thought to make out "schoolboys" to sound stupid and oblivious to the very fallacy. Yet perhaps the 'fallacy' could actually be

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[93] Geach, P.2

being deployed so as to poke fun at such conventions. After all, it would seem daft to state 'All dragons are blue' if there were no blue dragons. Presumably because wearing his professor's hat, Geach does not perceive this potential subversive aspect to sophistry. Thus we should primarily understand sophistry not according to the protocols of logic but according to its ulterior social agenda.

As Kapp notes, Aristotle's chapter on the "Sophistic Elenchi" (logical fallacies) at the end of the Topics has always been a dry staple of logic text-books. Kapp suggests that even though Aristotle "*mentions the value of this part of his syllogistic for serious philosophic thinking*", i.e. as presented in text-books, "*the immediate subject of his enquiry is.... a highly artificial and, as we should say, unnatural one, namely, deliberately, even professionally, coined false reasoning*"[94]. In fact, we need not take the Sophists' word-play too seriously, because it is highly unlikely the Greeks did so themselves.

To make his point, Kapp sets the stage for an example from Plato's Euthydemus: 'Two brothers, Euthydemus and Dionysodorus, have the misfortune to talk to a none-too-impressed interlocutor, a very self-confident and clever young man, Ctessipus'. The dialogue runs thus:

'If you will answer my questions, said Dionysodorus, ... You say that you have a dog. Yes, a villain of a one, said Ctessipus. – And has he puppies? – Yes, and they are very like himself. - And the dog is the father of them? – Yes, he said, I certainly saw him and the mother of the puppies come together. – And he is not yours? To be sure he is. –Then he is a father, and he is yours; ergo, he is your father, and the puppies are your brothers. Let me ask you one little question, said Dionysodorus, quickly interposing, in order that Ctessipus might not get in his word: You beat this dog? – Ctessipus said, laughing, Indeed I do; and I only wish that I could beat you instead of him. Then you beat your father, he said. – I should have far more reason to beat yours, said Ctessipus; what could he have been thinking of when he begat such wise sons?'[95]

Just as with Geach's example, the logical sophism obviously cannot be intended literally. In Plato's dialogue, all parties are fully aware of the laughability of the argument. They are more interested in the subversive aspect of the encounter than analysing the logic of the argument. We should point out, however, that Kapp asserts that training in such rhetoric was actually 'sold for a short time as a genuine education in the art of thinking and arguing'. Yet with the advent of the Academy and Lyceum, 'as competition with serious education the old sophistries had lost all danger'. They became merely 'interesting subjects for dialectical exercises'[96]. With Geach's experience, the didactic and the subversive aspects of the logical fallacy come together.

When there is no potential for subversion, because our logical sense has been well and truly stunted, pedagogical practice directly informs Geach's history of the corruptions of

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[94] Kapp, pp62-63
[95] P.63
[96] P.64

logic. And on the basis that Geach regarded his contemporary logic as still more or less corrupt, it would seem reasonable to merely conclude that pedagogy under-girds all logical practice in a non-trivial sense.

Aristotle's two-term theory was succeeded by what Geach calls Mill's 'two-name theory'. We need not go into the details of the theory. Geach regards it as equally flawed for failing to do justice to the natural prepositional form from an entirely different angle. What is significant for our purposes is to note that Geach regards its one-time success to have been facilitated by the culture of pedagogical training in arbitrary drill. The two-name theory requires that we dress up a proposition such as 'Brutus stabbed Caesar' as something like 'Brutus, stabber of Caesar'. Geach writes dismissively that '*for the most part the art of 'putting into logical form' has been simply a drill without clear rational, like school grammar*'. Thus we do not expect logical propositions to sound natural, and as a result we lose a critical and instinctual sense of whether they are right or wrong.

In similar vein, Geach attributes the flaw of the successor-theory to the 'two-name theory', this time the 'two-class theory', to the undesirable effects of pedagogical training. Geach identifies what he calls the segmentation fallacy, according to which logical propositions can be sliced up and equivalences mistakenly postulated between the segments. Geach has a scape-goat. '*We are prone to the segmentation fallacy because, in the first elementary foreign language lessons we have, we do learn to pair off bits of the foreign sentences with bits of an English sentence and vice versa*'[97].

Geach's comments on the significance of logical examples are also interesting. He describes a historical shift in the style of these choices to match the corrupt models they are supposed to serve. Indeed, it is undoubtedly true that the phenomenon of logical examples serve as a 'way in' to the obscure and enclosed world of logic. Logical examples thus serve as gate keepers, enforcing a particular mode of interpretation which facilitates comprehension of the abstract model 'lying beyond'. Geach describes the historical shift from rendering universal propositions in the form 'Every so-and-so is…' to 'All so-and-so is…', matching the paradigmatic shift from the 'two name theory' to the 'two class theory'. Both forms have essentially the same meaning yet entail wholly different metaphysical interpretations.

Another example of the significance of the logical exemplar concerns Kant's analytic/synthetic distinction. So as to elucidate the meaning of an analytic proposition, in which the predicate is somehow 'contained' within the subject, Kant gives the example of 'gold is a yellow metal'. In the twentieth century, however, the standard example became 'all bachelors are unmarried', which suited the trend of defining analytic propositions in terms of the mere definition of the subject-term rather than metaphysical containment. Correlatively, science now understands the concept of gold in terms of its atomic number rather than everyday properties such as its colour, and so a philosophical conflict arises between the everyday and the scientific understanding of what gold is - between adjudging what is somehow necessary to the concept and what is somehow incidental. Consequently the whole idea of a predicate being 'contained' within a subject becomes

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[97] Geach, P.15

confused. Quine subsequently argued that the whole analytic-synthetic distinction, understood in linguistic terms, is fallacious in any case. Obviously the confusion arises in the first place because the distinction is wholly artificial and scholastic - it was invented by Kant - and we need examples to understand its meaning.

A very straight-forward illustration of the significance of logic examples comes from testimony. It is, to be sure, a fictional but highly amusing and perspicacious testimony, with which Andrea Nye opens her book, '*Words of Power: A Feminist Reading of the History of Logic*'. I will quote from it.

"*She opens to the first page of Quine's Methods of Logic. Even this first week of class there are exercises to be handed in:*

> ***Which of the four cases: Jones ill, Smith away; Jones not ill, Smith away; ones ill, Smith not away; make the statement: 'Jones is not ill or Smith is not away,' come out as true when 'or' is construed exclusively?***

'Jones away,' 'Smith not ill': the phrases jangle in her mind. Nonsense syllables. Was Jones often ill? Not ill today for once? And why? And Smith so often gone. Where?

....

It would help, she tells herself, is she did not read the words, but sees them as marks.

....

Her head aches, she is doing it again. Reading. It is so hard to stop. She has come to philosophy from literature, from Dostoyevsky, George Eliot, Nietzsche, from puzzling with Ivan over the parable of the Grand Inquisitor, from doubting with Dorothea the adequacy of Casuabon's approach to knowledge, from thrilling and fearing the mad teachings of Zarathustra. Now she is to be a philosopher. And logic is required. But logic, she is learning, is not a feminine subject"[98]

Clearly the study of logic rests on highly artificial and coded examples which can serve as a barrier to entering the world of logic. These examples embody logic's inability to speak of real life. Nye makes the commonly made observation that the discipline of logic is a self-enclosed, intimidating and male world, one which correspondingly repels many women.

Corollary to the indirect means by which pedagogical training prepares the way for corrupt logic text-books, is the far more direct means by which the flaws of bad logic text books are reproduced in new generations of text-books. Obviously the very nature of a textbook is to train future logicians. Presumably the collective sense logical sense soon becomes too blunted for the flaws to become noticed.

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[98] Nye, P.1

Here is an impassioned passage wherein Geach discusses the process:

'*Logic in this last stage of decriptude is called 'the traditional logic' [i.e. the two-class theory] : and it is mendaciously claimed that these doctrines have held the field continuously since the time of Aristotle. In some Colleges of Unreason this sort of logic is called 'logic'* tout court, *and either is the only logic taught or at least is a piece of examination material that must be mastered before any other logic is studied. Some bad old text books are still studied in their fiftieth or sixtieth thousand. It is as though flat-earth geography were still a compulsory subject.*

Between such logic and genuine logic there can only be war; what fellowship has light with darkness? A training in the two-class logic inculcates bad habits of thought that a training in modern logic cannot always eradicate. Those who get such a training grow up and write logic books in which the old stuff is presented as a legitimate though minor part of logical theory; and so the sorry business goes on'

pedagogy and epistemology

Now, our remarks on pedagogy so far might be thought to concern merely the profileration of bad logic – Geach's monograph is entitled The History of the Corruptions of Logic. One might reasonably hypothesise that we will never have the pleasure of a fool-proof formal system of logic. Yet we must re-direct our attention towards logic as a naturalised process (for we already have to use logic) and pedagogy as a system of the transmission of "knowledge". Pedagogy both assumes the *a priori* possibility of knowledge and the possibility of the learner legitimating that knowledge, at least to her own satisfaction. Thus pedagogy and epistemology are two sides of the same coin. They both require a logic of learning. The very idea of knowledge is inexorably open to logical critique, yet we also desire logical legitimation in the process of acquiring of new knowledge, whether this is purely by our own lights, or the learning of 'pre-packaged' pedagogical knowledge (to be sure, we cannot truly disambiguate one from the other). Logic serves both as an epistemological critique, in Kant's formulation, and as an epistemological catalyst, or organon in the pursuit of truth, in Mill's formulation. In this way abstract logic is co-opted into natural processes. It must remain to be seen whether logic is compromised in the process.

Plato is remarkable for denying the possibility of a logic of learning. This applies equally to the egotistical and pedagogical senses. In the Meno, Socrates is attempting to determine the nature of virtue in dialogue with Meno. Socrates professes ignorance. Meno is able to propose particular virtues but Socrates will only settle for an understanding of virtue in general, which proves elusive. "Socrates is challenged by Meno with what has become known as the sophistic paradox, or paradox of knowledge".[99]

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[99] Wikipedia, http://en.wikipedia.org/wiki/anamnesis.
I will quote extensively from Wikipedia here as it is so succinct.

'*Meno: And how are you going to search for [the nature of virtue] when you don't know at all what it is, Socrates? Which of all the things you don't know will you set up as target for your search? And even if you actually come across it, how will you know that it* is *that thing which you don't know?*'

"In other words, if you don't know what the knowledge looks like, you won't recognise it when you see it, and if you do know what it looks like, then you don't need to look for it" i.e. you know it already. "Either way, there's no point in trying to gain knowledge".

"*Plato's response is to develop his theory of* anamnesis. *He suggests that the soul is immortal, being repeatedly incarnated; knowledge is actually in the soul from eternity, but each time the soul is incarnated its knowledge is forgotten in the shock of birth. What we think of as learning, then is actually the bringing back of what we've forgotten..... And thus Socrates (and Plato) sees himself, not as teacher, but as midwife, aiding with the birth of knowledge that was already there in the student*."

This is all very well when we are indubitably learning/"remembering", as occurs in Socrates spectacular demonstration of spurring the slave-boy to mathematical insight; Plato merely provides us with a different interpretation of the process.

Yet the corollary is that we cannot make ourselves learn. Unknown knowledge will always be elusive. As the Wikipedia puts it: 'Since no-one really learns anything, there are no teachers or students, so virtue cannot be taught'. Socrates concludes the Meno with the bizarre utterance that 'virtue comes to the virtuous by the gift of the god."

the significance of induction

It is traditionally recognised that whereas the essence of formal logic is to be found in *deduction*, the process of empirical epistemology is to be found in *induction*. Hume famously formulated the problem of induction, according to which induction is not technically logically justified, that is, by the protocols of deduction. By 'Hume's Fork', all supposed knowledge which did not constitute either matters of fact or relations of ideas was to be consigned to the flames.

The roots of the concept of induction go back to Plato. The Greek epagein means to lead or bring a person to something. In the *Statesman*, Plato uses the concept in his discussion of teaching children to read. He talks of *bringing* them *to* that which they do not as yet know, by a process of comparison with what they do know. With Aristotle, however, *epagoge* (induction) becomes a technical term, and comes to mean 'leading a person on to a universal truth by confronting him with single instances in which he is already able to see it'. In Aristotle's example, 'if the skilled pilot is the most efficient, and likewise the skilled charioteer, in general the skilled man is the best at his particular task'. Aristotle also makes an interesting distinction as follows: induction is better against the crowd, for it is closer to sense-perception and the many have it in common; syllogism, on the other hand, is most effective against professional debaters.

Induction takes place between two people and facilitates the teaching of 'indemonstrable' truths. It is applicable when propositions cannot be scientifically deduced.

Kapp explains that Aristotle is normally clear that induction is only analogous to sense-perception – the former involves the acquisition of universal truths from particular cases, the latter involves attainment of universal concepts from single sense-perceptions. Aristotle avers, as a psychological fact, that the soul is so constituted to be capable of this process. This suggests that Aristotle does not intend sense-perception to be considered as a special logical procedure.

However, in some places, Kapp indicates, Aristotle is guilty of muddying the waters by talking of two senses of induction. It appears that it is this peripheral other *empirical* sense of induction which has been historically taken up as constituting induction proper, and has laid the foundation for the whole deduction/induction antithesis and the modern Humean problem of *proof by induction*.

Aristotle's *pedagogic* induction is a natural '*way of making another person see a universal truth immediately by the eyes of his own soul*' Proof by induction, on the other hand, is merely '*a way of verifying a universal assertion by going through the particulars concerned and showing there is actually no exception*'[100]. Of course, this leaves the door open for a Hume to argue that we can never exhaust all the particulars, and so there is no inductive knowledge. Such considerations did not bother Aristotle, however, who felt assured of the existence of universal truths and the possibility of some people knowing them; thus the thought that we can never validate all the particulars concerned does not invalidate the universal truth. More pertinently, Aristotle also applied 'proof by induction' to cases where all of the particulars could be known, as in simple cases of grammatical classification. Kapp is prompted to remark that '*the only interesting thing here is the pretentious name for a more than simple logical procedure; I think it is fairly certain that the name [induction] was not invented for this type of induction, but borrowed from the other kind, which was certainly important enough to be designated by a technical term*'[101].

Moreover, it is to be thought uncontroversial that some people will possess knowledge (of universals) which others lack. It is for a teacher to guide an individual from the particulars to the universal. The process may not be formalisable[102], yet faith that the teacher does actually possess this knowledge will guide this process.

As given, I suggest, Aristotelian induction presents a challenge to the punctilious ego-centric project of Cartesian epistemology. Kapp stresses the ineluctably social context to

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[100] P.78. Kapp makes clear that Proof by Induction is a very minor argumentative principle in Aristotle however.

[101] P.84

[102] … except insofar as the exchange will often be dialectical in format and involve the teacher questioning and the pupil answering. We must bear in mind however Aristotle's advice that induction is better against crowds and syllogism against debaters. The two concepts get mangled together however in the concept of syllogism by induction, which is another name for proof by induction.

Aristotelian induction: "*We have to distinguish between the external performance, which is entirely dependent on the questioner's purpose and his dialectical skill, and what is happening in the soul of the respondent, happening as a psychological fact but not as an act of solitary thinking*".[103]

I suggest there is also the aspect of the occult about Aristotelian induction; there is the idea of secret esoteric knowledge which we cannot attain purely by our own rationality. We must make submission to a guru. Indeed, the tradition of the Oracle was particularly strong in Ancient Greek society and myth. It was the Delphic Oracle which proclaimed to Socrates the wisest man in Greece. Famous mottos of Delphi, which Socrates learned there, include *Gnothi Seauton*: "know thyself", and *Meden Agan*: "nothing in excess". Croesus of Lydia also consulted Delphi before attacking Persia, and according to Herodotus received the answer "if you do, you will destroy a great empire." [104]

With this idea of esoteric knowledge at the heart of Aristotelian logic we directly recall the Ancient Chinese philosophy. For the Ancient Chinese the truth had been discovered long ago. The difficulty was to access it in its sublime purity. In fact, the Ancient Chinese had their own version of Aristotelian induction, as explained by Liou Kia-hway. "*Penetrating induction is a reasoning by analogy which takes place under tension, a reasoning which is aimed at intensely evoking to the mind the law of generation of particular cases, but which neglects the passage from one particular case to another which underlies Stuart Mill's Induction*".[105]

conclusion – the pedagogical heart of logic

We might suggest that the whole of Logic constitutes a secret esoteric knowledge, whence its power. Just as, in the present day, it radiates the aura of exclusivity, it also brings to mind the ivory towers of the ancient universities. Yet somewhere along the line, between the wisdom of the Delphic Oracle and the present day, Aristotle's bequest to civilisation has been defaced. Logic has become the enforced religion of secular society. Yet our zeal springs forth from our epistemological purdah from the nature of the sacred object – we live under the veil of ignorance. It was born as an artificial invention (symbolised in the syllogism) yet from the first tinged through and through with pedagogical structures. The syllogistic weapon was also perfectly suited to use in the new Socratic culture of dialectical exchanges. Of course, nothing but a wholly abstract and ethereal structure, dressed up as something of real importance, could necessitate a more urgent need of learning. The Emperor Doth Wear No Clothes. Logic embodies the

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[103] pp83-84

[104] Source: http://www.answers.com/topic/delphi

[105] quoted in Dumitriu, P.35
In fact, there is an irony in Mill's philosophy of induction. For he believes that it is possible to reason from particular to particular without the intervention of a universal middle term, e.g. from the mortality of persons X, Y, Z etc to the mortality of Socrates, instead of reasoning Socrates is mortal, All men are mortal, therefore Socrates is mortal. He is loathe to suggest that the middle term is redundant to the syllogism, because, as he is well aware, this would create an invalid syllogism (e.g. Socrates is a man, therefore Socrates is mortal). Mill sets logic on such a pedestal that he is afraid to impugn to sacredness.

inventor's dream: a dispensable idea which became indispensable. This occurred on a world-historical scale.

Nietzsche understood Socratic dialectic as embodying the revenge and *ressentiment* of the rabble. Yet perhaps the longed-for redemptive value of Dialectic died with the death of Socrates. He was tried by the hand of his own dialectical institution, as recounted by Plato in the *Apology*. Thus Aristotle was left to contrive the syllogism as a purely artificial contraption. It arrived, as it were, still-born, lacking all socially redemptive possibilities from its very incipience.

In its pure abstraction its theoretical foundations were inevitably misconceived to boot, as Geach has demonstrated. Logicians ever since have grappled with the caesurae between logic and empirical reality. Though they invariably prefer the security of the logical realm, only empirical reality will provide the only benchmark by which we can ever judge the correctness of logic. Similarly, logicians have always sought the congruence between the psychological laws of thought (or mere thought) and the *correct* laws of thought (as Kant believed was possible), yet the very idea of 'correct' laws necessitates an impossible standard of legitimation outside of thought itself. Such considerations will not concern the subjects of logic as a pedagogical imposition, of course. Nye reflects on the normative force of logic:

Logic has provided scripts for particular settings, the law court, programmed debate, theology and science. At the same time it presents itself as universal. All men, even women, should think logically; any communication that is not purely expressive and that aims at the truth should be logically ordered. This is the way to be critical, and this is the way to guard against falsity and deception. This is the way men, and now women, should be taught to think.[106]

....

Forget what is said. Don't think. *Logic will teach you to be critical, to learn not to accept an argument as true without demanding an argument, it will teach you to defend your position with force. We must learn to think logically, learn to demand support for claims, catch incorrect inferences, search for inconsistency.*[107] *[Nye's emphasis]*

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[106] Nye, P.184. Nye continues: 'But retention of a list of carefully chosen facts, even when supplemented by the logical rules of combination, is no guarantee of any effective response to the call of patriotism, or to the defense of the traditional family, or the policing of black criminals'. I believe that such a proposition is known in the logical trade as a NON-SEQUITUR! Throughout her book, Nye fails to make any meaningful functional connection between logic and either world-history or mainstream sociology. Nye believes Fregean symbolic logic to be responsible for rape and domestic violence against women, which is nonsense. Its not even wrong.. I believe that Nye's problem occurs when she reifies logic so as avoid all engagement of logic on its own terms, and in this way she can throw 'Logic' into the social arena as some sort of independent social agent. As I have indicated, any sociology of logic must be integrally entwined with a meta-logical critique. In Nye's work she skips between the two analyses all too casually and the shoddy quality of the joinery is all too apparent. Yet when Nye engages and critiques logic on its own terms, yet remaining the critical outsider, she is unfailingly perspicacious

[107] Nye, P.181

Nye is obviously attempting to be ironic. Yet her irony dances above and below the parapet, such that we may inadvertently lose sight of it completely. It is hard not to recognise the compelling force of logic, as rendered by Nye. At the same time we cannot but recognise the suffocating force of logic as a social institution.

Chekhov's story *Ward 6* should be seen as a parable which exemplifies the regrettable consequences of being logical. It centres around two characters, Ivan Dmitrich Gromov, who is incarcerated in a psychiatric unit (Ward 6), the most hellishly awful place imaginable, and Dr Andrey Yemifitch Ragin, the psychiatric doctor who comes to visit Gromov from time to time.

We might say Gromov has been incarcerated for being *too logical*. One morning while walking he comes across two convicts in chains. He cannot get out of his mind the idea that he too might be put into fetters. He has a sense of 'there, but for the grace of God, go I'. After all, he might commit a crime by accident, or become a victim of a miscarriage of justice. These thoughts end up driving him insane, and he is incarcerated; his prophecy fulfils itself. Seeing where his logical thoughts have brought him, however, his thoughts quickly degenerates into illogic, until he is coaxed back into the possibilities of logical discussion again by Dr Ragin. The exchanges between Gromov and Ragin exactly mirror the thoughts Gromov had about the two convicts. Gromov is obsessed by asking why he is in the position he is in and Gromov in the position he is in (or, previously, as it was, the convicts) and not the other way around. Thus the highly logical dialectical exchanges take place within the social context of an irreversibly assymetrical power relation. This backdrop adds infinite pathos to the dialectical exchanges. Ragin is also, in his own way, *too logical*. Gromov tries to argue his way out of incarceration, but to his every thought Ragin has a rejoinder, with which he appears to tease Gromov. Yet in a way the dialectical exchanges merely symbolise a pale shadow of the concrete reality of the situation, to which they have no functional relation. There was never any possibility of Gromov arguing his way out of Ward 6, because it is a permanent dumping ground for society's malcontents.

The following passage exemplifies the decadence of logic… (my italics)

"The doctor has come!" he [Gromov] shouted, and broke into a laugh. "At last! Gentlemen, I congratulate you. The doctor is honouring us with a visit! Cursed reptile!" he shrieked, and stamped in a frenzy such as had never been seen in the ward before. "Kill the reptile! No, killing's too good. Drown him in the midden-pit!"

Andrey Yefimitch, hearing this, looked into the ward from the entry and asked gently: "What for?"

"What for?" shouted Ivan Dmitritch, going up to him with a menacing air and convulsively wrapping himself in his dressing-gown. "What for? Thief!" he said with a look of repulsion, moving his lips as though he would spit at him. "Quack! hangman!"

"Calm yourself," said Andrey Yefimitch, smiling guiltily. "I assure you I have never stolen anything; and as to the rest, most likely you greatly exaggerate. I see you are angry with me. Calm yourself, I beg, if you can, and tell me coolly what are you angry for?"

"What are you keeping me here for?"

"Because you are ill."

"Yes, I am ill. But you know dozens, hundreds of madmen are walking about in freedom because your ignorance is incapable of distinguishing them from the sane. Why am I and these poor wretches to be shut up here like scapegoats for all the rest? You, your assistant, the superintendent, and all your hospital

rabble, are immeasurably inferior to every one of us morally; why then are we shut up and you not? Where's the logic of it?"

"*Morality and logic don't come in, it all depends on chance*. If anyone is shut up he has to stay, and if anyone is not shut up he can walk about, that's all. *There is neither morality nor logic in my being a doctor and your being a mental patient, there is nothing but idle chance*."

"That twaddle I don't understand. . ." Ivan Dmitritch brought out in a hollow voice, and he sat down on his bed.

Moiseika, whom Nikita did not venture to search in the presence of the doctor, laid out on his bed pieces of bread, bits of paper, and little bones, and, still shivering with cold, began rapidly in a singsong voice saying something in Yiddish. He most likely imagined that he had opened a shop.

"Let me out," said Ivan Dmitritch, and his voice quivered.

"I cannot."

"But why, why?"

"Because it is not in my power. Think, what use will it be to you if I do let you out? Go. The townspeople or the police will detain you or bring you back."

"Yes, yes, that's true," said Ivan Dmitritch, and he rubbed his forehead. "It's awful! But what am I to do, what?"[108]

Kapp makes an interesting discussion concerning how modern logic has sought to exclude the structures of pedagogy and communication from its province, to the extent of denying they ever formed a part of it. He notes how Mill makes much ado over defining the realm of logic beyond mere syllogising (to include naming, classification etc) yet makes a curious exclusion, based on a mistaken understanding of the historical beginnings of logic. I will quote directly from Mill:

'For to this ultimate end [the pursuit of truth], naming classification, definition, and all other operations over which logic has ever claimed jurisdiction, are essentially subsidiary. They may all be regarded as contrivances for enabling a person to know the truths which are needful to him, and to know them at the precise moment at which they are needful. Other purposes, indeed, are also served by these operations; for instance, that of imparting our knowledge to others. *But, viewed with regard to this purpose, they have never been considered as within the province of the logician. The sole object of Logic is the guidance of one's own thoughts*: the communication of those thoughts to others falls under the consideration of Rhetoric, in the large sense in which that art was conceived by the ancients; or of the still more extensive art of Education. *Logic takes cognisance of our intellectual operations, only as they conduce to our own knowledge, and to our command over that knowledge for our own uses. If there were but one rational being in the universe, that being might be a perfect logician; and the science and art of logic would be the same for that one person as for the whole human race.'*[109] (my emphasis)

Kapp is quite clear that rhetoric was never conceived in that large sense by any of the main ancient authorities of logic, just as logical operations, when they serve the purpose of imparting our knowledge to others, have always been considered as within the domain of the logician. *'On the contrary, it is a fact that even in Aristotle's developed logic of the scientific syllogism and of the complementary induction both these main "operations of the human understanding" are almost exclusively considered as ways of teaching and learning'.*

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[108] source: http://www.eastoftheweb.com/short-stories/UBooks/WardNumb.shtml

[109] Mill, pp 2-3

Kapp quotes from the beginning of the Posterior Analytics to prove his point:

'All instruction given or received by way of argument proceeds from pre-existent knowledge. This becomes evident upon a survey of all the species of such instruction. The mathematical sciences and all other speculative disciplines are acquired in this way, and so are the two forms of dialectical reasoning, syllogistic and inductive; for each of these latter makes use of old knowledge to impart new [or do their teaching], the syllogism assuming an audience that accepts its premises, induction exhibiting the universal as implicit in the clearly known particular. Again, the persuasion exerted by rhetorical arguments is in principle the same, since they use either example, a kind of induction, or enthymeme, a kind of syllogism.'[110]

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Let the foregoing be a lesson that logic should not be allowed to blind us to its social context simply by cowing us with its symbolic standing. Logic is too widespread and prevalent a concept for it to be allowed to get away with this breath-taking delusion.

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[110] Kapp, P.86

Bibliography

Aristotle, The Metaphysics (Penguin, 1998)
The Categories (www.sussex.ac.uk web resources)

Ernest Kapp, Greek Foundations of Traditional Logic, (AMC Press 1967)

John Stuart Mill, System of Logic, Ratiocinative and Inductive, Volume 1 (Longmans, London 1875)

Kant, Introduction to Logic (London, Longman, Green and Co 1885)
Critique of Pure Reason (Hackett 1996)

Nietzsche, Human all too Human (Penguin, 2004)
Twilight of the Idols (Penguin, 1990)

Durkheim, The Elementary Forms of Religious Life (O.U.P. 2001)

Heinrich Scholz Concise History of Logic, (Philosophical Library 1961)

Anton Dumitriu, History of Logic, Volume 1 (Abacus Press 1977)

Bloor, Knowledge and Social Imagery (Chicago University Press 1991)

Geach, History of the Corruptions of Logic (Leeds University Press 1968)

Haak, Philosophy of Logics (C.U.P. 1978)

Nye, Words of Power (Routledge, 1990)

Dummett, Origins of Analytical Philosophy (Harvard, 1993)

Mason, Before Logic, (SUNY 2000)

Hodges, Logic: An Introduction to Elementary Logic (Penguin, 1991)

Luce, Teach Yourself Logic (English Universities Press, 1958)

Dostoyevsky, Notes from Underground/The Double (Penguin, 1972)

www.wikipedia.com
information on Meno and Anamnesis

www.eastoftheweb.com
Chekhov, Ward 6

www.answers.com/topic/delphi
information on Delphic Oracle