TWO SQUARES OF OPPOSITION: THE CONCEPTUAL SQUARE UNDERWRITES THE ALETHIC SQUARE'S VALIDITY

ABSTRACT

I have made explicit an implicit conceptual logic that exists in the English language and others; its evaluation terms of propositions are coherent|incoherent. This contrasts with the usual alethic true|false evaluations for statement logic. I call conceptual logic a basement logic; it's more basic than statement logic. I demonstrate this by showing how the long-standard, ever-present Alethic Square of Opposition's AEIO statements' truth value and the validity of their immediate inferences rests on the Conceptual Square's (a) coherent propositions and (b) coherent emplacements of substantives and tropes into, respectively, AEIOs' subjects and predicates. ***ConceptFunctor*** *operations bear the leutic [Enjoined] modal that governs the coherence of de dicto and de jure grounded propositions. The* ***FactFunctor*** *operation bears the [Allowed] modal that govern coherent emplacement of the world's substantives and tropes into sentences' subjects and predicates and, subsequent to that, the truth value of their allied statements.*

My strategy is (1) to construct ***a Conceptual Square of Opposition*** *by rewriting the* ***Aletic Square's AEIO*** *statements as conceptual propositions. (2) If the propositions are coherent by virtue of coherent emplacements of substantives and tropes into their subjects and predicates that turns them into conceptualized substantives and tropes, then, by the* ***Coherence Account of Truth****, they entail the truth of the Alethic Squares' statements and the validity of its traditionally accepted inferences. (3) This is enough to prove conceptual logic is the basement ground for the traditional* ***Alethic Square****, and on which any alethic logic rests; and it supports the claims made in (2) above.*[1]

KEY WORDS: Coherence, [Emplace], [Functor], ConceptFunctor, FactFunctor, [Any], collective, distributive, and singular (uses of [Any]), grammatical and semantic subjects and predicates, Concepttual and Alethic Square (of opposition), leutic modalities, [Enjoin], [Allow].

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1 I use new quotation marks. Any expression between **slash**es, /sentence/ and /word/, indicate physical tokens, inscribed, spoken, signed, ... Any expression between **carets** ^...^ is a proposition or a concept, a token rewrite/interpretation of a sentence or word token. /Hot car/ may be re-written, interpreted , as ^popular car^, ^fast car^, ^overheated car^, ... Statements reside between **angle** brackets, <...>; they're propositional tokens carrying speakers' implicit or explicit truth value claims.

/Sentence/ → ^proposition^ → <statement> are distinct, an ordered development of tokens' logical evolution.

The traditional Alethic Square's corners are occupied by AEIO *categorical statements* and illustrate their truth value relations, whereas conceptual *propositions* occupy the Conceptual Square's corners and illustrate their **coherence value** relations. The four propositions on the Conceptual Square's AEIO corners use the [Sooth, **.**], [Emplacement], and [Counter, **~**] functors, and three different logical uses of the [Any] quantifier (pp. 3 - 4). The Conceptual Square underwrites the validity of the 'traditional' Alethic Square's relations, traditionally called "immediate inferences".

I trust I've outlined enough of conceptual logic, its logical constants—functors and modals--and new symbols a new logic needs. You can go to my website—sfsu arthur bierman—and get help there on a presentation of my conceptual logic. I recommend you start with "A Precis of Conceptual Logic 3.0".

This essay has a side benefit for philosophy teachers of introductory logic, a standard part of which is the Square of Opposition. With the validity of the Conceptual Square's inferences between its AEIO propositions', they can easily connect its basement logic to their mastery of their natural language. Of course, you'll have to teach them some conceptual logic, which is fine, because it's far more useful for philosophical discourse than alethic logic is. After all, Plato initiated and used what he had of it.

Speakers and writers *order* propositions' substantive and trope concepts coherently in conceptual space, logically elaborating Wilfrid Sellars' programmatic "space of reasons". Conceptual/lexical space has eight different **functor**/operations of subject/-predicate (SP) sentences', seven for their *copula* and one for negation.[2] Here are three examples of the seven functor/operations of Subject/Predicate sentences' copulas.

^*[Subsume]* ^Jack **is** a person^ versus ^**is** a pigeon^;

^*[/Sooth/Predication]* Jill **is** smart^ versus ^**is** dim^;

^*[Bond]* /Birds **are** beaked/^; no beak, not a bird.

I count the very important [Assign] & [Emplace] functors, listed in Fn. 2 below, as *one*, because we use both, although differently,[3] to do the same job of putting substantives and tropes, respectively, into sentences' subject and predicate tokens. [Any] replaces alethic logic's replaces [All]; this obliges us to classify subject and predicate tokens as **variables**. The letters in /a + b = c/ are variables into which we may coherently emplace *any* numeral just as we may coherently emplace *any* dog into the token /dog/, *any* dun trope into the token /dun/.

/Jill/ is the ***grammatical*** **subject** and /smart/ the ***grammatical*** **predicate** of the [Sooth/Predication] sentence, /Jill is smart/. If I **assign** or **emplace** Jill herself into the

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2 With the seven **copula functors/operations** and[Counter/Incompatible, **!**], negation, we form the logical structure of lexical/conceptual space:

[Subsume, /] [Bond, **:**] [Conger, **:+**] [Assign/Emplace **E**...**E @** /.../] **#**

[Link, *****] [Identify, **=**] [Counter/Incompatible, **!**] [Sooth, **.**] **#**

Functors are **advisories**; we use them to advise each other on which routes to travel in lexical/ conceptual space **if** we want to travel coherently with others on the same paths between concepts, and **if** we want to construct coherent propositions in tandem with fellow travelers in accord with the **Lexical Imperative**, which has the hypothetical form, "If..., Then". You may want to print out footnotes 1 and 2 to remind yourself of the new symbols. (I do not address the conceptual logic of relational propositions here.)

See **Appendix I** for remarks on the uses of /+/, the use of /trope/, and, briefly, of the functors, [...], as well as substituting the metaphor of travel in lexical space for the prevailing chemical, ingredient or part/whole composition metaphor for an account of the relation between plural concepts and singular propositions, pp. 19 -23.

The Emplacement Chart is **Appendix II**. It combines three-valued epistemological entitled evaluation entitlements (True, False, Unknown) with conceptual logic's two-valued ^coherent^ or ^incoherent^.

3 I explain the difference between our operations in "Assignments & Varieties of Emplacement" on my website. The basic tactic in assignment long past substantives is to assign them "as if" we were present at an actual emplacement. On [Emplace], see pp. 22 – 23.

grammatical subject /Jill/, ^**E**jill**E @** /Jill/^, that's a coherent emplacement, **S+** at this stage, she becomes the ***semantic* subject** of /Jill/. When I emplace her 165 IQ score into /smart/, ^**E**165**E @** /smart/^, that's a coherent emplacement, **P+;** her IQ level becomes the ***semantic* predicate** of said sentence, which yields the coherent proposition ^Jill+ is smart+^. On the other hand, ^Boris is smart^ has an incoherent emplacement, **P/~**smart, because his 80 IQ score is too low to be coherently emplaced in /smart/, although he's king of home runs for Fremont NE's Mud Hens team See pp. 16 – 17 for explanatory remarks on the [Emplacement/Assignment] functor. Also, see Fn. 7, p. 9, "Prospectus on my website: sfsu arthur bierman.

Sentences' similar token terms have one or more places in lexical/conceptual space. Their locations are governed by the eight functor advisories. There may be similar tokens in multiply locations in conceptual space, because each location has different coherent relations to tokens. These several locations enable us to differentiate identify and unique concepts. A ^tough^ steak and a ^tough^ guy are different concepts (multivocal). Conceptual structures are very fine-grained. Substantives and tropes have the same place in lexical conceptual space as a sentences' token terms into which sensory data have been coherently assigned/emplaced. Anything that has a unique place in lexical space is a **concept**, whether it's a language lexical token or its coherent emplacement/assignment.

In footnote 2 above, the functors with the /#/s to the right of their right brackets are **FactFunctors**; the other six are **ConceptFunctors**. They're explained and illustrated most fully in *The Logical Structure of Conceptual Coherence 3.0* and more briefly in "A Precis of Conceptual Logic" on my website. Google: sfsu arthur bierman. Both essays illustrate conceptual logic's valid inferences forms; "Precis" has less.

FactFunctors occur in sentences as

(1) the [*Sooth/Predication*] copula functor whose grammatical subjects and predicates have been turned into semantic subjects and predicates, world content, with the coherent use of

(2) the [*Assign/Emplace*] functor. /+/ indicates a coherent assignment/emplacement in a sentence's terms: /S+P+/ or /S+~P+/. /S~/ /P~/'s [~]s indicate incoherent assignments/emplacements. These /+/s and /~/s indicate the same results for sentences' with a [The] quantifier, whether the sentence's subject term is a definite description or a logically proper name. [The] definite quantifier is a one-count [*Identify*, =] functor: If two terms *have one and the same* coherent emplacement, as they do in ^[=] Samuel Clemens Mark Twain^, then the [Identify] proposition is coherent. [=] is a one-count functor for [The/That/This/ ...]; it covers, also, logical proper names, and definite descriptions. If <[=] /The person who wrote *Huckleberry Finn/* and /The person who wrote *Innocents Abroad*> have *one and the same coherent author emplacements* in /the person/s who wrote these books, then the [Identify] requirement is satisfied and the [=] statement is true.

How to Acquire Discursive Knowledge

In what follows, I describe how we acquire knowledge of the world. It differs greatly from the analytic school's orthodox description of how we do it. I shift our perspective to describe another way to verify and disverify statements, and to conceive knowledge acquisition differently. For example, the correspondence account of truth, on which most analytic philosophers rely, is incoherent. It's (fact – statement) dualism correspondence fails, because statements have a logic, negation at the minimum; facts have no negation nor any other logical functor. Therefore, they can't correspond'. So, don't use /correspond/ or /mirror/ in a description of how we come to know the world as Wittgenstein did in his *Tractatus*. Cf. (iii) below.

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By executing the **FactFunctor** acts of emplacements, we transform **grammatical /*sentences*/** into coherent [Sooth/ Predication] **semantic ^*propositions*^,** which, in turn, become coherent **<*statements*>** when we **judge** them True, False, or Unknown.

We acquire discursive cognition when we turn states-of-affairs into propositional facts. We do this by *coherently* emplacing/assigning substantives and tropes into sentences terms: (**S+ P+, S+~P+**). I describe this process in three steps.

(i) We get sensorial response data from the world because the world's electromagnetic energy is transformed into our bodies' electrochemical energy; we also

(ii) acquire data by way of intermediate instruments (hearing aids, electron microscopes, atomic colliders, ...) that augment our unaided sensorial response data. When we emplace/assign our data, our response to the world's substantives and tropes, into sentences' subjects and predicates, respectively, we create propositional semantic terms. We have emplaced the world's contents, its substantives and tropes, into discursive, conceptual logical space.

(iii) My (data – fact) *distinction* differs from the (fact – statement) *dualism* required by the correspondence account of truth value. (Data – fact) are separated in time; they exist in linear, different temporal stages of a process: First, there's data, then comes the transformation of emplaced data into fact, as described here, whereas, (Fact – statement) are dual components; they exist separately and simultaneously. Once dual, always a dualism.

Emplacing/assigning acts turn data into logically organized information. Without coherent emplacements/assignments into sentences' SP terms, thence, into conceptual space, there can be no discursive cognition:

<^Emplacements into Proposition Q^'s terms are coherent>, S+P+, entails <<Statement Q> is true>. Propositions may contain conceptual negation, [~]; statements may contain alethic negation, [-]. Data contains neither kind of negation: No conceptual negation, hence, no conceptual logic; no conceptual logic, no conceptual cognition; no

conceptual cognition, no discursive alethic statements; no such statements, no truth value; no truth value, no discursive knowledge.

Facts do not exist outside of a conceptual logic's space.

Replacing [All], [None], [Some] with Three Readings of [Any]

Now I show how the categorical statement quantifiers, [All], [None], and [Some] in the alethic Square of Opposition (and its missing [The]) may be rewritten with the aid of three different interpretations of the conceptual quantifier [**Any**]. Conceptual logic is the ground on which alethic logic rests, because conceptual logic's evaluations of propositions, *coherent and incoherent*, have logical priority over alethic statements' *true and false* evaluations. I prove this logical priority shortly.

Neither of these pairs of evaluations—coherent/incoherent vs true/false--are reducible one to the other. Nor is the standard **Alethic Square**, nor any of its current, many splendored enrichments (a thriving industry), equivalent to the **Conceptual Square**. That's because *both* a conceptual A-proposition,

^[Allowed] [Any] ^S^ is ^P^^: For example, ^[Allowed] [Any] ^crow^ is ^black^^, a rewrite of (A: <All crows are black>),

and a conceptual E-proposition,

^[Allowed] [Any] ^S^ is ^~P^^: For example, ^[Allowed] [Any] ^crow^ is ^~black^^, a rewrite of (E: <No crows are black>)

are *coherent*, but alethic A- and E-statements are *not both true*. Two coherences =|= one truth are no more reducible one to the other than 2 is reducible to 1.

Although ^black^ and ^~black^ are conceptually incompatible, in [Sooth, **.**]/[Predication] A and E propositions both are coherent, because [Sooth]/[Predication]'s functor bears the **leutic modality** [**Allowed to say**]. Both propositions must be coherent to [Allow] that either <[Any] crow is black> or <[Any] crow is ~black> may be true. The conceptual leutic modality, [Allowed to say], guarantees that the truth values of A and E categorical statements are contingent, which the traditional Alethic Square requires.

The Three Readings of [Any]

The following remarks about the quantifier [Any] will be useful for understanding why it has logical priority over the quantified statements in the Alethic Square. Conceptual logic's propositional quantifiers are [*Any*], [*A/An*], and [*The/Identify*]; they are, respectively, *Collective*, *Distributive*, and *Singular* readings of the [Any] quantifier.

COLLECTIVE: The collective use of [Any] (versus [*All*]) coherent emplacements into a subject, /Any *adult beaver* swims well/~well/, whose modality is [Allowed to say] guarantees the contingent truth value of A, <[All] adult beavers swim well>, and of E, < [No] adult beavers swim well>.

Using [Any] we don't have to specify how many there are in a class of adult beavers, nor need we specify if we include past and future ones.[3]

DISTRIBUTIVE: This [Any], [**A/An**], (*indefinite, one or another versus [Some[*) from among coherent emplacements into a subject: [Any|A/An] *gun* will do. The distributive use of [Any] underwrites the truth value of I and O [Some] statements.

Collective and distributive uses of [Any] allow us to dispense with "class", "set", "some member", and "all members" for categorical , AEIO, alethic statements.

SINGULAR/THE – [Identify, =] is a singular quantifier. Its coherent iff the count of coherent emplacements into two similar or dissimilar terms is one and the same. The proposition ^[Identify, =] Mark Twain and Samuel Clemens^ satisfies the one count; so, it's a coherent singular proposition. A one-count emplacement/assignment entails the coherence of ^Mark Twain wrote *Huck Finn*^ and ^Samuel Clemens wrote *Huck Finn*^, as well as the truth of their allied statements, <Mark Twain wrote ...>.

The [Any] quantifier as a collective rewrite of the alethic [All] is existence-neutral, because it's a quantifier for conceptual coherence relations, not for 'truths' about sets or classes' relations. Russell thought the Ss of <[All] S is P>/<[All] members of a class> make no existence demand, because there are empty classes without members. Strawson thought A-categoricals require existing members: If Tony has no children, his statement that <All my children are asleep> is incoherent/'meaningless', without truth value. I deal with their differences in "On Emplacing", the successor of Russell's "On Denoting" and Strawson's "On Referring". Suffice it to note that Russell was designing a logic for pure mathematical systems and Strawson was designing one for natural language inferences that summons the existence of substantives and tropes. They were after different game, hunters passing in the night.

Tom Burke points out that Russell wasn't tolerant to other kinds of logic than one suitable for underwriting the 'truths' of mathematics. "Dewey was developing a truly alternative conception of logic...Rather than basing a theory of semantics on structures consisting of fixed universes of individuals with properties and relations handled purely in terms of extension in this given universe, Dewey develops his logic in terms of a different array of basic ideas."[4] [Sooth], and [Emplace/Assign] and the three uses of [Any] are the conceptual tools we uses to make propositional facts.[5] They are the only concept-

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4 Tom Burke, *Dewey's New Logic: A Reply to Russell;* p. 177; Chicago, University of Chicago Press, (1994).

5 The collective use of [Any] in A and E propositions is restricted to the FactFunctor [Sooth] interpretation of their copulas. It's the only one that modally *allows* [Emplacements/Assignments] of tropes into A and E's predicates, /P/ or /~P/, which underwrite alethic evaluations of A and E statements. The five copula ConceptFunctors with their [*Enjoined*] modality--[Subsume, /], [Link, *****], [Conger, **:**], [Bond, **:**] (^[Bond, **:**] ^bird^ ^winged^^), and [Identify, =]--aren't eligible for use in A or E statements for modally *allowed* relations between substantive and trope concepts. You're *allowed* to say /Mary's tired/ and /Mary's *not* tired/; you're not allowed to say /Birds are *not* winged/, because you're *enjoined* to say ^Birds are winged^. No ConceptFunctors figure in the traditional Square of Opposition, because

tual functors and quantifiers that figure in rewriting the **Alethic Square's** categorical statements. In the **Conceptual Square**, the ^S^s and ^P^s are *concepts* of substantives and tropes that replace the extensional interpretation of categorical statements' *class* and *member*. Conceptual Square's *propositions* are rewrites of the Alethic Squares' *statements* as given in the chart below.

A <[All] S is P>	becomes	^[Any] ^S^ is ^P^^;
E <[No] S is P>	becomes	^[Any] ^S^ is ^~P^^;
I <[Some] S is P>	becomes	^[A/An] S^ is ^P^^
O <[Some] S is not P>	becomes	^[A/An] ^S^ is ^~P^^.

There's no place given for the definite [*The*] *quantifier or* [*Proper name*] *functors* in the traditional Alethic Square--/Socrates is mortal/--except by ill-stretching it into an [All] class of one and only one member.

By interpreting the /[All]/ quantifier rewrites as the *collective use* of [Any], and the [Some] quantifier rewrites as the *distributive use*, [A/An], of [Any], we get the result

^[A/An] ^S^ is ^P^^ contradicts E propositions.

^[A/An] ^S^ is ^~P^^ contradicts A propositions.

These proposed rewrites of the Alethic Square are synthesized on page 9, **The Alethic – Conceptual Chart**. It's important to note that AE propositions/statements are modally [*Allowed*], whereas the other six functors are modally [Enjoined] Conceptfunctors**:**

[Subsume, /], [Bond, **:**], [Conger, **:+**], [Identify, **=**]

[Link, *****], and [Counter [**~**]/Incompatible, [**!**]].

Enjoined functors are grounded either *de jure* or *de dicto* in contrast to allowed functors that are *de facto* grounded. Enjoined functors are **regulatory**; we use them to advise each other on all propositions' coherence except those with an allowed [Sooth] functor interpretation of their copula. Note, however, enjoined functors set limits on the truth conditions' for the above A and E **FactFunctor** statements.

Sentences with regulatory enjoined ConceptFunctors have mistakenly been called 'a priori statements'. They are neither a priori nor statements. Conceptual logic replaces 'a priori statements' with modally '[Enjoined to say] and [Enjoined not to say] = [~Allowed to say] propositions. The six ConceptFunctors and their enjoined leutic modalities regulate concepts' intra-structure relations in lexical/conceptual space. They obviate the

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they're [Enjoined] functors for relations between concepts in *propositions* only, which have no truth value. ^[Subsume] animal dog^ is not an A statement; it advises us about the relative place a concept has on a subsumption pathway: ^Animal^ is above ^dog^ is above ^terrier^, ^terrier^ is above your beloved ^Scottie^ while he's emplaced in the space where the variable /Scottie/ resides in /I love Scottie/.

need for possible worlds and their alethic modalities featured in S. Kripke's and David Lewis' work; they were hampered by not knowing there's a more basic conceptual logic on which alethic logic rests. Their heroically complicated alethic modality logics, however, aren't needed with the entry of a less tortured, more basic conceptual logic embedded in natural languages. And, yes, we have no necessary a posteriori bananas. No functor relations between concepts are set in abiding epoxy; they're always subject to change. There's no place given for the definite [*The*] *quantifier or* [*Proper name*] *functors* in the traditional Alethic Square--/Socrates is mortal/--except by ill-stretching it into an [All] class of one and only one member.

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^[A/An] ^S^ is ^P^^ contradicts E propositions.

^[A/An] ^S^ is ^~P^^ contradicts A propositions.

These proposed rewrites of the Alethic Square are synthesized on page 10, the **Alethic – Conceptual Chart**. It's important to note that AE propositions and statements are modally [*Allowed*], whereas the other six functors are modally [Enjoined] Concept-functors**:**

[Subsume, /], [Bond, **:**], [Conger, **:+**], [Identify, **=**]

[Link, *****], and [Counter [**~**]/Incompatible, [**!**]].

Enjoined functors are grounded either *de jure* or *de dicto* in contrast to allowed functors that are *de facto* grounded. Enjoined functors are **regulatory**; we use them to advise each other on all propositions' coherence except those with an allowed [Sooth] functor interpretation of their copula. Note, however, enjoined functors set limits on the truth conditions' for the above A and E **FactFunctor** statements.

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[Any] suffices for tracing ConceptFunctors' coherent routes between concepts in

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[6] Zeno Vendler has an excellent Chapter 3, "Each and Every, Any and All", on quantifiers in his *Linguistics in Philosophy*. Ithaca, NY; Cornell University Press, pp. 70 -96. I learnt much from it.

lexical space: <All dogs are animals> translates to ^[Enjoined] [Subsume] ^animal^ ^dog^^. We use ConceptFunctors to prepare a structured lexical space for coherent collective and distributive propositions. This sanctions the validity of the inference from an A proposition's coherence to an I's coherent-emplacements and for coherent FactFunctor's propositions and statements. So, if the collective ^[Any] dog hair^ is coherent, so is the distributive, ^[A/An] dog hair^. This sanctions the validity of the inference from an A proposition's coherence to an I's coherence as well as the conceptual inference from a coherent E to an O proposition's coherence. The relations of concepts in ConceptFunctor propositions' are logical; the existence of the world's substantives and tropes are relevant only to the empirical, de facto [Sooth] and [Emplace] functors.

ConceptFunctors enable us to clarify a millennial confusion in epistemology. Up to now, it's been standard for analytically inclined philosophers to distinguish between a priori and a posteriori statements and to provide different grounds for their truth values. In our epoch, the grounds, roughly, are linguistic for a priori and factual for a posteriori. However, sentences with ConceptFunctors are not a priori *statements* with truth values; /3 > 2/ isn't a statement. Instead, they're *propositions* that have modally enjoined coherence values; they're neither true or false nor, a fortiori, a priori true or false. Of course there are *true or false* statements *about* propositions' coherence value whether verified on de facto or de dicto grounds; <[Subsume] statutes are persons> is false. *Advisable/inadvisable* de jure grounds change the truth value of statements. Gene-based classification is more reliable for tracing evolutionary developments than morphology; hence, it's advisable to use genes for this purpose. As a consequence <Birds are dinosaurs> is now considered to be true rather than false.

It's important to distinguish ConceptFunctors' enjoined c*oherent propositions* from true *a priori statements*. Not distinguishing them has been an epistemological clinker from Hume to Kripke. But Hilary Putnam notes that for both Kant and Frege "Logic is not a description of what holds true in 'metaphysically possible worlds', to use Kripke's phrase. It is a doctrine of *the form of coherent thought*".[6] Well said, Professor Putnam, which sets the task of providing a *coherence* logic of concepts. I've done that. "Read all about it!" With the advent of conceptual logic, we can shuck alethic logic's grip. Before now, ^meaningful^ and ^meaningless^ have been but street terms for which I substitute ^coherent^ and ^incoherent^, respectively, for two reasons.

(1) Meanings don't exist; ^a sentence has meaning^ and ^has no meaning^ are as incoherent as ^mushrooms are dozing homophones^. If you ask me for the meaning of a word or sentence, I can't give you anything but other words, just as dictionary entries do in their merry rondo, on and on for the 'meanings' of the next definition. Our standard dictionaries are nominalistic. When you look up a word's meaning, all you see are printed

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6 *Words and Life*, Hilary Putnam, "Rethinking Mathematical Necessity", p. 247; Cambridge MA, Harvard University Press 1995.

words. We can rewrite their lexical definitions using conceptual logic's functors, which shouldn't surprise us, because they're embedded in our language. Here's an entry from *Webster's New World Dictionary, Second College Edition*, 1984, that I rewrite:

> **Thermocouple** *n*. a pair of dissimilar conductors joined in a series to form a closed circuit so as to produce a thermoelectric current when heated: used in temperature measurements: also called **thermoelectric couple**.

This may be rewritten as a [Conger, **:+**] functor, whose modality is [Enjoined]. The substantive ^thermocouple^ is conjunctively bonded, [**:**], to several tropes, [+], which is a Congery of tropes.

> ^[Conger, **:+**] dissimilar thermocouples [joined series closed circuit heated temperature-measured]^.

The advantage of the rewrite over the standard dictionary's entry is that the [Conger] functor logically, inferentially relates the concept of the substantive /thermocouple/ and its tropes to other tropes in conceptual space. That's why we may speak of a conceptual *system*. Valid conceptual inferences are, in effect, algorithms that may be used to determine propositions' coherence values. They may also be used as algorithms in 'machine' translation, lessening the enormous amount of collocational data on which present machine translations depend, which, however, provide only approximate coherent travel routes between lexical terms in conceptual space. We need a fine grained conceptual space lexical dictionary to get a more precise coherence value pay-off. It takes us closer to the hopes Leibniz had for his ideal language.

Also, in case of disagreements about concepts, conceptual logic's valid inference forms are available as tools to help us resolve them.

Historical dictionaries' definitions do, however, contain important information; they trace alterations in words' locations in lexical space, and, so, erase concepts and/or construct new ones. We can't alter concepts and maintain their identity, unlike substantives. This information reminds us that conceptual systems aren't set in cement; logical studies answer to empirical data; there are no a priori propositions. I replace them with propositions that have enjoined functors, which are at the abiding mercy of changes.

(2) ^Coherence^ is an evaluative term for conceptual/lexical logic; ^meaning^ is-not an evaluative term for any logic. Mister and Missus Meaning have been chained to the walls in the Cave of Flickering Shadows for almost two-and-a-half millennia of logic and rhetoric, at least on the western side of the Cave. "Free the Meaning Duo!"

The Conceptual Square is the Basement Logic of The Alethic Square

The (A – C) Alethic – Conceptual Chart

Extensional Categorical Statements	Conceptual Version	Assign/Emplacement Coherence	Truth Value
A: <All S is P>	^[Any] S is P^	S+ P+	True
E: <No S is P>	^[Any] S is ~P^	S+ ~P+	True
I: <Some S is P>	^[A/An] S is P^	S+ P+	True
O: <Some S is ~P>	^[A/An] S is ~P^	S+ ~P+	True
S: <Only one S is P>	^[=] S^1 & S^2 is P	S^1+ = S^2+ P+	True

This **A – C Chart** shows that a conceptual version of the Square of Opposition is the basement logic, the underpinnings, for the alethic version. I elaborate on how statements can be false. This is conceptual negation's [~] virtue. With it we can recover Plato's satisfying answer to Parmenides' claim that we can't make false statements, a solution that eluded Russell who resorted to "negative facts". Plato's reply to Parmenides' claim is in *The Sophist*, (258d5-e2). Briefly: Plato's "other" and "different" in translations is a conceptually negated concept; the "other" of ^hot^ is ^~hot^ and vice versa. But Plato errs when he rejects "different" as *not* "contrary". It and "other" must be contrary/~P in order to have logical bite. The fault may lie with the translator, F. M. Cornford, not Plato. Jowett translates "other" as "contrasted", which is closer to [~]. Regardless of this uncertainty, *we show a statement is false if another statement with the same singular subject but a contrary or contradictory predicate concept, [~P], is true.* Thus, we may deduce the falsity of <S is ~P> from the truth of <S is P>, and the falsity of <S is P> from the truth of <S is ~P>):

<Mary is awake>. Assume this is true.

^Awake^ and ^~awake/asleep^ are *incompatible*, [**!**], [Other/Contrasted].

<Mary is ~awake/asleep> is false

This is a conceptual inference, because the second premise is a proposition, not a statement. We don't need Russell's 'negative facts', Mrs. Calabash, nor their cousins, nor even their in-laws. Just a little [~] functor will do. I abbreviate this argument as **[P[!]~P]** after its second premise, which reads as: *^P^ and ^~P^ are [Incompatible, !]*. I invoke it occasionally in my reasoning about the Conceptual Square's relations that follow.

Prelude to How and Why the Conceptual Square Underwrites the Validity of the Alethic Square

The **A - C Chart** and the inference [P[!]~P], give us enough conceptual logic to show that the relations between the *propositions* at the corners of a Conceptual Square underwrite the truth relations between the traditional Alethic Square's AEIO *statements*.

To understand the reasoning that follows, keep four issues in mind.

(1) The propositions in Conceptual Squares have coherence but no truth value. Both contrary and contradictory propositions are coherent although not both of their allied statements are true. This is why the truth value of statements in Alethic Squares are contingent upon what the world offers us for coherent assignments/emplacements into sentences' subject and predicate terms.

Also, if both ^The milk is cold^ and the ^The milk is ~cold^ weren't coherent we couldn't use either to deny the other's truth. We can't deny the truth value of ^The blubber is typing^ and ^The blubber is ~typing^, because both are incoherent. There's a sly fallacy lurking here: ^The blubber is ~typing^ is often thought to be a *false statement*, hence, fallaciously con-fused with an *incoherent proposition*. Frege was one of the all-time champion offenders against this distinction.

(2) Reject an extensional interpretation of sentences subject terms as designating classes or sets; neither are existing substantives, nor need they exist. [Any] is the Friend of Nominalism, since the three uses [Any] and [~] give us all we need to support the validity of the Alethic Square's inferences. Outside of pure mathematical and logical formulae with their vacant variables, the **Omnitude quantifier** reigns.[5] This quantifier requires we verify the truth of [All] or [No] statements by verifying separately each individual statement included under either A or E's universal quantifier. We can't verify the truth value of <[All] pigs cloven-hooved]> nor of <[No] horses are cloven-hooved> unless we inspect each pig and each horse and each of their hooves' tropes for all the time there have been or will be pigs and horses. It's important to note a major cleft in the philosophy of logic for mathematics and for ordinary language put very well by Tom Burke. See p. 5. This cleft marks the major difference of Russell's "On Denoting" from Strawson's "On Referring". But we can't look at the class of **all** pigs--past, present, and future--to verify whether or not all are fitted with cloven-hooved tropes, as JS Mill contended.[7]

Don't despair. The [Any] functor is flexible. It allows that any individual pig coherently emplaced in /pig/ that carries cloven hoof tropes into the sentence's /cloven-hoofed/ predicate will be S+P+; this makes the distributive <[A/An] pig clove-hooved> true, because S+P+ satisfies the coherence account of truth value. If the pig has a different trope, ~cloved-hooved, ~P+, the collective <[Any] pig cloven-hooved> is false.

Suppose the only anomalous trope of a pig is non-cloven hooves; otherwise, it has all 'essential' tropes of a pig. To avoid the vintage problems of which and why an entity has a list of ^essential tropes^, I supplant it with a **de jure selected** ^congery^ of ^pig^'s modally [**Enjoined**] tropes. Nature has no 'joints' but what our concepts ordain. For my developed view on this issue, see my website's "Stipulating and Conceiving 'Natural' Kind Concepts".

---

[7] Mill, J. S., *A System of Logic*, Eighth Edition, Book II, Chapter III, Section 2.

(3) Russell and Strawson disagreed about the status of sentences that don't have existing emplacements for subjects, S-, such as children. They didn't formally deal with S? in a three-valued epistemological system that includes *not known* if there are or aren't such existing subjects (angel) or tropes (holy).

For now, peace to Russell and Strawson, it's sufficient to say that the logical relations of propositions on the Conceptual Square, don't always depend on the existence of coherent emplacements in their terms. After all, there are coherent fictional propositions. ^Dragons inflame humans^ and ^Leprechauns hide pots of gold^ are coherent even if neither subject exists, **if** we grant them an **As-If** license to exist, a suspension of a coher- condition: **If** dragons and leprechauns did exist, we could emplace them coherently. Keep the coherence of As-If propositions separate from the coherence of propositions with FactFunctors and Tolstoy would thank you for granting that much of the time he needed no **As-If** existence.

(4) Each proposition on the Conceptual Square is coherent; if they weren't, none of their allied statements could have truth value, which the Alethic Square needs. So, coherent emplacements into the sentences' terms on the Conceptual Square underwrite the the truth value of statements by coherently assigning or emplacing world items into subject and predicate variables, under cover of the *Coherence Account of truth value*: The /+/s in S+P+ and S+~P+ indicate coherent assignment/emplacements have been made in an SP sentence's terms and are the only emplacement configuration that delivers ^true^ statements. The P+ emplacement is incompatible, [**!**], with ~P+'s, [P[!]~P.

Deriving the Traditional Alethic Square from the Coherence of the Conceptual Square: Details

In the Conceptual Square, A and E propositions rely on the Collective interpretation of [Any], while I and O's rely on the Distributive. A and O, E and I are contradictories, but A and E are contraries, although both E and O have ^~P^ predicates. This appears to be anomalous. It's not, because E and O's negations, ^~P^, have different logical effects. The [~] in E makes E and A *contraries*, unless ~P's range, {...}, has only two tropes. The [~] in O makes it and A *contradictories*; and the [~] in E makes it and I *contradictories*.

(**E**) E's [Any] is Collective and its ^~P^ may contain *more than one* incompatible contrary trope concept in P's range, as, for example, ^[Subsume] colored {pink green yellow ...}^, any of which falsifies A statements, <[All] apples are red>. Having more than one trope in ^colored^'s range, ^{...}^, makes E a ***contrary*** of A.

(O) O's [Any] is Distributive, [A/An] or [The]; its ^~P^ has but one of two incompatible concepts in P's range, ^{alive dead^], to falsify either <All prisoners are dead/~alive> or < All prisoners alive/~dead>. Because these ranges have but one incompatible trope makes ***contradictories*** of A and O and of E and I.

(a) As to the alethic contraries <All apples are red> and <No apples are red> the truth of either falsifies the other. Conceptual logic undergirds this alethic claim. The ^~red^ in E proposition's ^[Any] apple ~red^ tells us its coherent if we can coherently emplace in ^~red^ contrary tropes, such as ^{yellow green pink ...}^. In general, concepts subsumed by ^P^ are its **^range^**, *providing* there are no intermediary concepts between between ^P^ and its range. Again, a range may have 2 concepts, ^{alive dead}, or 2plus concepts, ^[Subsume] colored {red blue green ...}^.

I use [**Counter**] as the name of the [~] functor, [Counter, ~], to cover both kinds of ranges. If [P] and [~P]'s range has 2 concepts, ^{alive dead}, they're **contradictory**; if they have more than two concepts in their range, ^{red blue green ...}^ they're **contraries**, which is why A and E's relation is called /contrary/.

Here are two (incomplete) subsumption pathways.

Trope	Bodily states
\	\
Colored	Animation
\	\
{red blue yellow ...}	{alive dead}

Each concept in a range is incompatible with any other. We may say of E that we may coherently emplace in /~red/ of /[Any] apple is ~red/ any color trope in ^colored^'s range other than red, such as ^green^, ^yellow^, ^pink^ ... . Any of them falsify <All apples are red>. Thus, the falsity of A isn't just because there aren't any red-troped apples, ^red-^, but also because other coherently emplaced trope concepts are incompatible with ^red^. It takes a "village" of conceptual concepts to understand the Alethic Square.

(b) As to contradictories, a coherent O is an exception that contradicts and falsifies A <All apples are red>. That's because O, ^[A/An] apple ~red^, coherently carries a trope, green or yellow, ... into /~red/, which is incompatible with A's ^red^.

A coherent I is an exception that contradicts and falsifies the alethic E, <No apples are red>. If an I, ^[A/An] apple red^, coherently carries a red trope into I's /red/ that's incompatible with E's ^~red^, ^[Any] apple ~red^. Only one Distributive exception is needed to falsify mighty, terrifying universal statements.

To summarize: The following conceptual logic conditions undergird the alethic contradictories I - E, O - A. Both contradictories have (i) the one and the same semantic subject, (ii) with incompatible predicates, and (iii) A and E have Collective [Any]s, and I and O are Distributive, either [The] or [A/An]. It's the combination (ii) and (iii) that make O the contradictory of A and I the contradictory of E.

Summary Charts of Logical Relations
between AEIO Conceptual and Alethic Relations

What follows are summary charts of the above discourse about contraries and contradictories plus charts for Sub-contraries and Sub-entailments. They show the conceptual coherent emplacement grounds that validate the alethic relations on the Alethic Square.

A – E Contrariety

A: ^[Any] S is P^ and E: ^[Any] S is ~P^ are contrary propositions. Both are coherent.

(i) A: [Any] S+P+ True --} E: [Any] S+~P+ False
(ii) E: [Any] S+~P+ True --} A: [Any] S+P+ False
(iii) I: ([A/An] S+P+ True [**&**] O: [A/An] S+~P+) True --}
(A: [Any] S+P+ [**&**] E: [Any] S+~P+) False

(i) and (ii) Not both of their allied statements are true. (iii) Both E and A contraries are false if both are contradicted by true Distributive [A/An]s. See the **[P[!]~P]**, inference, page 7 - 8, <Mary awake/asleep>.

O – A and **I – E Contradictories**

O: [A/An] S+~P+ True {--} A: [Any] S+P+ False
I: [A/An] S+P+ True {--} E: [Any] S+~P+ False

Both A and O and E and I are coherent. Both Collective A and E propositions' allied statements are false in case both of their contradictories, O and I, are true and vice versa, [**{...}**]. The **[P[!]~P]** inference, (Mary awake/asleep), pp. 7 - 8, holds for both contradictories.

I and **O Sub-contrarieties**

I: ^[A/An] S is P^ and O: ^[A/An] S is ~P^ are sub-contraries. Both I and O are coherent.

(i) (A: [Any] S+P+ False [**&**] E: [Any] S+~P False --}
(O: [A/An] S+~P+ True [**&**] **I:** [A/An] S+P+ True
(ii) A: [Any] S+P+ True --} O: [A/An] S+~P+ False
False True
(iii) E: [Any] S+~P+ True --} I: [A/An] S+P+ False
False True
(iv) (^A True **&** E True^) False (proved above) --}
not both of their contradictories, I and O, are False.

Their allied statements' alethic truth values are entailed by the conceptually grounded contradictory conceptual relations that were demonstrated above.

The rewrites of (i) - (iv) above are: (i) If A and E are false, each of their O and I sub-contraries are true. (ii) If A is true, it's contradictory O is false and vice versa. (iii) If E is true, its contradictory I is false and vice versa. (iv) Since not both E and A contraries may be true, not both of their contradictories, I or O, may be false.

A --} I and **E --} O Sub-entailments**

A: ^[Any] S+P+^ True --} I: ^[A/An] S+ P+^ True and
E: ^[Any] S+~P+^ True --} O: ^[A/An] S+~P+^ True.

Sub-entailments on the Conceptual Square are relations between propositions' in contrast to relations between statements on the Alethic Square. Strawson's existence requirements for the coherence value of AE propositions on the Conceptual Square are irrelevant. Existence matters only when we're emplacing world substantives and tropes into sentences' terms to determine if we have coherent S+P+ or S+~P+ emplacements/assignments for the truth value of statements on the Alethic Square. If the FactFunctor coherence requirements are satisfied, so, a fortiori is the existence requirement for truth value. The Russell – Strawson tussle is over.

A: S+P+ True --} I: S+P+ True
E: S+~P+ True --} O: S+~P True

* * * *

The reasoning above proves that the fulfillment of requirements for the Conceptual Square underwrites all the traditional relations between the Alethic Square's statements. The controversy between the traditional and the moderns' about how many relations hold between the four corners of the Alethic Square is over in favor of the traditional view. Truth value always requires S+P+ or S+~P+ coherent assignments/emplacements of the world's substantives and tropes that exist now or once existed. However, their existence isn't required for coherence per (3), p. 11.

Given that the Conceptual Square underwrites all the traditional relations between the Alethic Square's statements, I entertain the thought that Medieval logicians following Aristotle, might first have given a conceptual reading of their square for AEIO relations and then an alethic reading as I have here. If only Professore Guido Calogero, the great Italian authority on Aristotle's logic, were still alive to advise us.

Coherent Emplacing: World → Language

I explain ^coherent emplacements into lexical tokens^.

The orthodox direction of [Referring/Applying] Language → World is the way most past and present philosophers and scientists connect Language and World. With [Assign/Emplace] functors, I reverse that direction to World → Language. After all it's

the world's contents, its substantives and tropes, their coherent [Allowed] S+P/~P emplacements, not their names, we need to honor in order to verify and falsify statements. Hence, the direction of World → Language, [Assign/Emplace], prevails over the Language → World direction of 'referring' by naming.

This is an extension of Kant's Copernican Revolution, this time in opposition to the direction favored by orthodox analytic philosophers? I think so, as I argued in my "The Advent of Conceptual Logic: Extending Kant's Conceptual Revolution" (My website.) I am not alone in choosing the opposite direction.

> I believe that in spite of all its snowfields Mont Blanc is a component part of what is actually asserted in the proposition "Mont Blanc is more than 4000 metres high."
>
> --Bertrand Russell (Letter to Gottlob Frege)

> Russell's analysis of the proposition expressed by "John is tall" provides us with two components: the property expressed by the predicate is tall, and the individual John. That's right, John himself right there, trapped in a proposition.
>
> --David Kaplan, "Dthat"

Coherent assignments/emplacements of world entities into sentence terms' are the 'contents' of sentences and yield a coherence account of statements' truth value that displaces the incoherent correspondence account of 'fact'-'sentence' truth.

My logic's subject matter is ^concepts^ and their coherence in propositions. Substances and tropes are, respectively, occupants of subject and predicate terms, which, when coherently assigned/emplaced in them, become concepts, because they're given a place in conceptual space's logical structure. [Sooth], 'predicative', statements' truth derives from (i) coherent emplacements/assignments in their grammatical token terms and (ii) in a coherent relational order: If ^[Subsume] ^animal^ ^buffalo^^ is coherent, ^[Subsume] ^buffalo^ ^animal^^ is incoherent, because the [Subsume] ConceptFunctor is conceptually asymmetric. ^^Animal^ subsumes ^buffalo^^ is modally enjoined coherent; you're modally enjoined not to reverse their order on pain of incoherence.

Distinguish **pure** from **alloyed** logical schemas and their valid inference forms. ^Alloyed^ logic fuses pure systems' propositional coherence with coherent emplacements/assignments into pure schemas' variable substantive and trope terms. For example, we construct an alloyed proposition when we emplace such concepts as ^character^ and ^honest^ into a pure schema's substantive and trope variables. Alloyed propositions' conceptual variables, ^character^ and ^honest^, have the same grammatical positions that pure substantive/trope variables, ^C1^ and ^C2^, have in a pure schema:

(*Pure*) ^[Subsume, /] C1 C2^ - (*Alloyed*) ^[Subsume, /] ^character^ ^honest^^.[7]

Pure conceptual and most alethic logics are two-valued; epistemic *judgments* are three-valued entitlements. See the Emplacement Chart of a three valued epistemic logic for truth value within the boundaries of a two valued conceptual logic in the "Appendix

II" on the last page. "Is **true**" and "is **false**", respectively, abbreviate "**entitled to** claim is true' and "**entitled to** claim is false"; if we're not entitled to claim either, our entitlement "is **unknown**". For a full account of the Emplacement Chart, consult "On Emplacing", Section I, pp. 43ff, which includes occasions when /S/ or /P/ has no known emplacements, S- or P-, the main point of contention twixt Strawson and Russell. The Chart is a kin of but differs from Wittgenstein's truth tables; my table includes three-valued entitled judgments of truth values.

On p. 11, I explained with the **Alethic – Conceptual Chart** how we can use [Any], its collective and distributive interpretations, aided by conceptual negation, [~], to underwrite valid relations of categorical statements' in the Alethic Square. So, underwriting alethic logic with conceptual logic's negation, [~], and conceptual quantifiers, [Any], [A/An], and [The], isn't a trifle. Finally, we know that and how propositions' coherence relations in the Conceptual Square underwrite the truth value relations of AEIO statements in the Alethic Square, with their [All] and [Some] extensional quantifiers and its alethic negation, [-].

Tropes aren't free floaters; they're lashed to substantive rafts. I use /**carry**/ to indicate this. I symbolize substantive, /s/, and trope, /t/ emplacements into a sooth sentence's lexical form, ^[Sooth, **.**] S P^, as:

^^[Emplace] s @ /S/^ & ^[Emplace] (s)t @ /P/^^.

A substantive, s, emplaced in token /S/ (first conjunct), carries a trope, t (second conjunct) that is to be emplaced in token, /P/, of ^[Sooth, **.**] S P^. The carrying is indicated by the parenthesized /(s)/ in /(s)t/ in the second conjunct. Each trope emplacement, **E**t**E**, clings to its substantive raft. For example, if the emplacements into the terms of /Jack's *shirt sleeve* is *frayed*/ are coherent, <Jack's shirt sleeve+ is frayed+> is coherent, and its allied statement, <Jack's shirt sleeve is frayed>, is true.

Frege used the metaphor of "unsaturated functions" for predicate variables awaiting objects to carry a trope that will 'satisfy' a predicate function. With conceptual logic's [Emplace/Assign] functor, we literally advance beyond his metaphor.[8]

Here's how it goes. /Copper colored/ awaits an object that carries a copper-colored trope. An American penny emplaced in /coin/ of /This coin is copper-colored/ carries a copper color into /copper-colored/; it's a coherent emplacement in both /coin/ and /copper-colored/, S+P+, which makes the proposition ^the coin is copper-colored^ coherent and the statement <The coin is copper-colored> true. Thus, are predicates literally 'saturated' with tropes' presences, some of which are coherent and some are incoherent. If you've got a Lincoln penny, emplace it, first, in the token term /penny/ and

8 The terms /character/ and /honest/ in alloyed sentences are variables. [Any] versus [All] invites this classification. [Any] offers an open invitation to assign/emplace any number of non-identical substantives and tropes into similar or different tokens. When individual substantives and tropes are emplaced into sentences variable terms, they warrant our entitlements to judge that a statement is true, false, or unknown. Down there in the trenches is where World and Word are fused, where their dualism vanishes as emplacements turn into Word token/concepts in our cognitive processes.

them into /copper-colored/ of your scribed token sentence /The coin is copper-colored/. Voila! You've just made a fact that verified the statement < The coin is copper-colored> is true. That wasn't so hard, was it? Good riddance of the 'saturated' metaphor. Trying to construct a logic for natural languages by borrowing pure mathematic's and alethic logic's scanty tools isn't a good idea, but, like Frege, I do favor regimentation of chaos.

Further, facts are made without 'pictures' and 'representation'. A photo, a representation of your face, or its reflection in a mirror is not your face; they can never be coherent emplacements in /my face/, but only in /picture/ or /reflection/ of my face. Sentences don't 'mirror' facts, as Wittgenstein alleges in his *Tractatus*. There are no facts outside of coherent propositions. Also, remember not to conflate Absolute Idealists' *consistency* theory of truth with the *coherence* account I'm proposing.

Nor can we rely on a 'correspondence' between a 'fact'/state-of-affairs, and a sentence as an account of truth value of statements; states-of-affairs have no logic, sentences do. That's why we need emplacing and assigning. States-of-affairs *oppose* other states, workers and employers *oppose* each other which differs from *negation* of propositions and statements; Kant knew that; Marx often forgot they're not identical.

The conceptual relations on the Conceptual Square, p.7, reveal *the logical substratum* that entails statements' relations on the Alethic Square. This basement logic specifies the emplacement procedures we should follow to determine the truth value judgment we're entitled to give alethic AEIOs and their valid relations on the Alethic Square. Distinguish conceptual negation, [~], of concepts and propositions from statements' negations, [-]. By using the three interpretations of [Any] and concept negation, [~], instead of relying solely on statement negations, [-], and the nebulous "non-", as in "non-cat", I show that both Russell's and Strawson's disagreement about the Alethic Square of Opposition are ill taken. Their limited negation functor, [-], sucks them into a pointless standoff.

Further, alethic negation, [-], of substantive concepts is too wide. ^[-] cat^ includes any **substantive** that's not a cat, including pistons and batteries. Frege did not allow ^incoherent^/'meaningless' in his logic; thus, he had to rely solely on ^false^ to judge incoherent statements, which gives [-] unlimited scope. Consequently, his logic is not a logic of concepts; he's through and through alethic. This contrasts with conceptual negation, [~], that applies to only those creatures subsumed in a limited range. ^Vertebrate^ subsumes the range ^{dog cat fish bird …}^; it excludes ^piston^ and ^battery^; thus, for me ^~dog^ indicates any vertebrate concept other than ^dog^. To put this in another way: You may coherently emplace in a /sentence/'s /~dog/ any of the concepts in ^vertebrate^'s range other than dogs. ^[Any] ^lion^ is a ^~dog^, and so forth, through the whole range of vertebrate animal concepts. But, please, Gottlob, [~dog] does not include ^piston^ nor ^battery^.

Conceptually negated **tropes**, too, are confined to subsumed ranges. ^Felidae^ is the concept of the ^family^ of ^cat^; one of its trope ranges is ^{feral wild domesticated …}^. The E statement <[Any] felid ~feral> is contrary to and falsifies A, <[Any] felid

feral>. This is because ^~feral^ is incompatible with ^domesticated^ and ^wild^ in their common trope range, ^{...}^. Recall [P[!]~P], <Mary is asleep>, Plato's anti-parmenidean argument to explain why there are false statements.

Conceptual negation, [~], replaces the favored extensional [**non**-P] of mathematically oriented logicians, as in E's <No dogs are **non-**animals>, rewritten as <[Any] dog is an animal>. Mathematically oriented logicians, such as Boole, resort to [non-] to hold onto the exclusive alethic interpretation of [not], [-]. Both he and Frege exclude ^incoherent^ propositions. Conceptually negated concepts avoid the superficial statement negation of the moderns' extensional interpretation of AEIO's statements in the Alethic Square. What's good about interpreting the Square conceptually is that the validity of the conceptual inferences between its coherent ^propositions^ explains why immediate inferences (no syllogistic third term) between pairs of statements on the traditional Alethic Square's categorical AEIO <statements> are valid.

Thus, the conceptual interpretation maintains the traditional view of the Square rather than the modernist russellean view with its material interpretation of ^implication^.

Contradictory relations between A and O and between E and I forms, the contrary relations between A and E forms, the sub-contrary relations between I and O forms, and the Sub-entailments between A and I and E and O forms, *provided* they satisfy the emplacement conditions specified in the Emplacement Chart, Appendix II, p. 26. To see the background on these inferential relations, it may help if you look at "On Emplacing", pp. 77 - 81, buttressed by the Emplacement Chart; see especially Thelma's long speech on p. 80 where she explains the Omnitude Determiner's demands it makes on the verification of Alethic Square's A and E statements' truth value. Google: sfsu arthur bierman.

An agent-oriented approach to alethic relations between categorical statements ushers in the reminder that agents often aren't entitled to judge a statement true or false. Epistemological modesty waltzes a three-step: "Entitled to say is true", "entitled to say is false", and not entitled to say either, so, "Entitled to say is UNKNOWN".

Since Strawson clung to two-valued alethic entitlements, he had to hold that false statements aren't statements if they haven't satisfied the presupposition that sentences' subjects have referents <All my children are asleep>, according to him, isn't a statement if the speaker has no children. Lines 5 – 8, in the three-valued Emplacement Chart, correct his oversimplified, but well motivated, attempt to torpedo the Boolean mode of presenting immediate inferences between categorical statements. Those lines in that Chart introduce a condition in which the non-existence of a subject's intended emplacement entitles us to judge that <S- is P> is false>. There is 'subject' as well as 'predicate' falsity. This will offend 'saturated' Fregeans, but they can regroup once they recognize that Frege's zealous anti-psychologism in matters logical and mathematical, a zeal I share, is quite distinct from an agent-oriented approach to logic.

Frege and Goedel might be the last persons to acknowledge that anemic Platonic truth is not and never can be robust nominalistic coherence. They relied on Platonic ontology to provide the abstract truth-making objects we can use to verify logical 'truths'.

These transcendental objects are ‘known’ via the usual suspect, 'intuition', instead of acknowledging the epistemological, often tentative, hard work agents do to sustain or abandon intuitions’ speculative guesses. Philosophers’ search for a way to replace intuition has a long history. It’s time to give it up. I’m proposing a simple, clean option: Acknowledge that pure mathematical and logical propositions with vacant variables don’t have truth value, only coherence value. And that’s enough entitlement for you to say <I know ^/3/ [>] /2/^ is coherent>. After which you can truly say <Three apples is more than two apples>. Embrace invasive emplacements to rise from the world’s manifold to coherent propositions, from thence to true statements. To reach truth requires a process.

SUMMARY: I’ve shown that truth logic's immediate inferences’ validity in the Alethic Square rests on coherent emplacements from our experienced manifold into sentences’ subject and predicate terms. After these coherent emplacements, sentences turn into coherent propositions with substantives and tropes. Given the Coherence Account of statements’ truth value and conceptual rewrites of alethic quantifiers with [Any]’s collective, distributive, and singular interpretations, we can understand why the traditional account of the Alethic Square is correct.

I list and explain conceptual logic’s logical constants in Appendix I below and in “A Precis” on my website: http://philosophy.sfsu.edu/philosophy/page/arthur-bierman. A short way into the site is to Google: sfsu arthur bierman.

APPENDIX I

The following terminology and their uses are introduced to show how this conceptual logic was structured.

+

The /+/ symbol is used with [*Functor*]s, ^*concept*^s, and the number of */term*/s in *relational* sentences.

/+/ **Used with** [**Functor**]s

[Subsume, /] [Bond, **:**] [Conger, **:+**] [Counter/Incompatible, **!**]
[Link, *****] [Identify, =] [Assign/Emplace] **E**...**E** **@** /.../ [Sooth, **.**]#

Functors are logical constants, enclosed in square brackets. The first seven in this list are **ConceptFunctors**. Their subject/predicate propositions take the [**Enjoined to say**] modality: ^[Bond, **:**] ^rectangle^ ^90^{o} corners^^, and ^[Subsume, /] ^212 degrees^ ^hot^^ in your kitchen. The last functor, [Sooth] is a **FactFunctor**; its proposition takes the [**Allowed to say**] modality: ^[Sooth] ^rectangle^ ^tiny ^^, ^[Subsume, /] ^212 degrees^ ^~hot^^, in an iron foundary. With [Assign/Emplace] we incorporate the world’s items into sentences’ substantive/subject and trope/ predicate places in lexical/

conceptual space. They're "empirical" functors; we make facts with them in [Sooth] sentences.

Some of these functors have uses related to earlier alethic concepts. 'Essential' properties, hints at [Bond]; I say 'hint' at [Bond] because [Bond] is a logical constant, ^essential property^ is not.

[**Bond, :]** It connects substantives to 'essential' tropes; [Bond, **.**] ^square^ ^four cor-ners^. It contrasts with 'accidental' tropes; ^square^ may be coherently soothed with ^tiny^ or ^huge?~tiny^; it's coherent with both. Bonding relations are subject to change; ^thunder^ is no longer bonded to ^god's anger^ for most of us.

[Subsume, /] This functor is the mainstay in expert systems and biological classification: ^[Subsume, /] ^amimal^ ^pig^^. Also, ^[Subsume, /] ^weapon^ ^gun^^.

[**Conger, :+**] is explained below. It's a conjunction of 'essential' bonded tropes.

[**Counter/Incompatible, !**] Conceptual negation, [**~**], is a countering functor of concepts and propositions. ^Red^ and ^**~**red^ counter each other; they're incompatible, [**!**], concepts. ^The monkey is red^ and ^The monkey is **~**red^ are incompatible, [!], propositions. ^[**~**] ^[Bond, **:**] ^square^ ^five-sided^^ is a countering proposition of one with a ^four-sided^ trope.

[**Link, ***] ^[Link, *****] ^fruit ^ ^{^red^ ^pink^ ^white^ ^green^, ...}^^. The concepts within the {...} brackets are a **range** of color concepts that may be soothed coherently with ^fruit^. There's an important limit on this, however. Because ^ruby^ is *bonded* to ^red^, its incoherent to *sooth* ^green^ of the substantive ^ruby^: ^[Sooth, **.**] ^ruby^ ^green^^ is incoherent.

[**Sooth, .**]: [Predicate]s hints at [Sooth]. I chose this functor word, because it once took the same place in conceptual space as ^true^ has now. Shakespeare's characters claimed <In sooth, sire, I saw it with my own eyes>. Sooth statements are entitled to be true, false, or unknown. See the Emplacement Chart in Appendix II, p. 27.

[**Identify, =**] This is a count functor. We count the number of coherent emplacements into two or more similar or dissimilar tokens. Frege's /Morning Star/ and /Evening Star/ are two dissimilar tokens that have one and the same coherent emplacement. That's a one count. Not everyone knew this, so, they were surprised, as Frege noted. Although it was an empirical discovery, once discovered, ^[Identify, **=**] ^Evening Star^ ^Morning Star^^ takes the [Enjoin] modality; you're [Enjoined to say] this is one and the same star with two names.

^[**Assign/Emplace**] **E...E @ /.../**]^. There's an essay on my website (sfsu arthur bierman.), "Assignments & Varieties of Emplacement", that elaborates on these two ways of putting world items into subject and predicate tokens. These functors supplant /refer/, a logical nullity. ^[Emplace] **E**thumbnail**E @** /thumbnail/^ is enjoined coherent. You're enjoined not to emplace your **E**nose**E** into /thumbnail/'s place. Because your thumbnail was coherently put into /thumbnail/, S+, they share the identical unique place in lexical space. Coherent emplacement of your physical thumbnail has turned it into a

concept, just as the physical token /thumbnail/ became a concept when it was given a place in conceptual/lexical space, which is required by a structuralist account of concepts.

[Conger, **:+**] /+/ in the congery functor indicates that the number of tropes to which a substantive concept is bonded is greater than one. [Conger]'s range, ^[A1 [**&**] A2 [**&**] ... An]^, is a conjunction. ^Square^'s congery is bonded to three trope concepts.

^[Conger, **:+**] ^square^ ^[^ plane figure^ ^4 sides^ ^4 right angles]^^ is a conceptual logic rewrite of /square/'s entry in *Webster's NewWorld Dictionary*. Ordinary dictionary definitions may be rewritten, as above, with conceptual logic's terminology. The advantage of the rewrite over a definition is that it's systematically located in a conceptual structure with inferential logarithms that blossom in this garden of functors. Alphabetically ordered dictionaries don't supply them, which is why Leibniz and Wilkins strove for regimentation by concepts in an ideal, for Leibniz, nominalistic language.

/+/ Used with**Trope 'Predicate' ^concepts**^

Trope concepts are in sentences' predicate positions. According to my emplacement of tropes into sentences' predicate terms, the /+/ in ^P+^ indicates you've coherently emplaced a trope in the token /black/, as in ^**E**black**E** @ /black/^. I use [Emplace] instead of the usual refer relation between the World and Language.

/+/ **Used with Relational /terms/**

/Jill kissed Jack/ has 1+1, 2, substantive terms, as /Jill beat Jack at tennis/, has 1+2, 3, substantive terms. /Cream's viscosity is thicker than milk's viscosity/ has two trope viscosity terms. They're viscosities can be measured by the % of their fat content.

Copulas: [**To Be**], [**To Have**] **and ...**

Copulas have subjects and predicates. The English language is a copulaiec mess. We have these two major copulas; their grammar is so irregular that only a historical account of accidents could explain it; they have no justification except, perhaps, euphony. (i) Sometimes no copula is used: Birds fly, Turtles crawl, Rabbits run. (ii) Other times [To be] is the copula: Pins are cheap, Turtles are slow, Bulls are mean. (iii) Yet, [To have] is often the copula: Birds have wings, Targets have round-shapes, Gin has 90%-alcohol instead of Gin is 90 proof. (iv) Then there are minor competitors for the copula: Jill *can* speak English, Summers *get* hot, Young swans *turn* white in maturity. (v) As if that weren't enough, we nominalize predicates happily: The color red is hot, pleasure is a blessing, stubborness is a vice. (vi) So why not **predicalize** nouns into adjectives? Instead of /Pigs have hooves/ (part-whole) why not allow /Pigs are hooved/, /Gears are toothed/, and /Knives are bladed/?

How can we clean up this copulaiec mess, regiment it sufficiently to extract a logic from it? For conceptual logic, I (a) shift from [Copula] to [Functor]s, and (b) limit coherent predication by introducing ^trope^ ranges, ^{...}^. This limits philosophers,

such as Frege, from indiscriminately lumping false sentences with incoherent propositions, which I explain immediately below.

(a) Replace ^Copula^ with [Functors]

Copula chaos is eliminated by substituting the seven **via attive** functors/operations listed in Fn. 2, p. 2 for the copula; this excepts countering negation, [~]. Note that the functors listed there are advisories for **doing** something; ^[Bond] ^bird^ ^breast-bone^^; ^[Subsume] ^writing-device^ ^pencil^^; ^[Emplace] **E**baseball**E** [**@**] /baseball/^. The eight functor advisories are eight ways we relate Concepts and World-Language entities to each other. The **via passive** is the reportage mode: <Jill emplaced a baseball in the /baseball/ token>.

More on this later where I critique the analytic, part-whole composition metaphor accepted by most current philosophers who try to explain how a plurality of concepts become unified propositions. The best of them rely on analogies with chemical 'valences'. My metaphor is that we travel from one concept to another in lexical/conceptual space on coherent propositional routes. This metaphor is suited for conceiving our brains' conceptual electrochemical travels on our brains' neural traceries from synapse to synapse.

(b) Enrich ^trope^'s Subsumed Concept Ranges

Copulaiec chaos is eliminated also by enriching ^trope^ ranges. The mess illustrated above is in part due to different kinds of substantives: Events, processes, objects, happenings, parts/whole (mereology), and agents' deliberate acts have diverse kinds of tropes to emplace coherently in predicates. I subsume all under ^trope^'s diverging, incompatible subsumption pathways, a different pathway for each of the diverse substances listed in the previous sentence. This is a wider reach than Donald Williams ^trope^.

Unless we ruthlessly expunge a chaotic grammar, it will frustrate any efforts to construct a systematic logic of concepts. All logics are structures tailored to some purpose and are grammatically simpler than our natural languages' structures in order to fulfill its conceived purpose. Logics don't just pop up like weeds; they're planted, nurtured, and trimmed mental produce.

Substantives and tropes are emplacements, respectively, into the subjects and predicates of SP sentences. Relational sentences are different. They feature cognitive ordering relations between substantives and between tropes. Relational terms--[Taller], [Loves], [East of], [=]—are neither substantives nor tropes. They have only [Functor] existence; they are advisory functors for **ordering** concepts. If we propose ^[Bigger than] ^Midgets^ ^giants^^, we've ordered these substantives incoherently; by reversing their order, we obtain a coherent proposition. ^[Brighter than] ^yellow^ ^brown^^ is a coherent order; reversing the trope concepts' order gives us an incoherent proposition.

Distinguishing ^substantive^ from ^trope^ distinguishes ^subject^ from ^predicate^. Subjects may coherently take only substantive emplacements, and predicates take only trope emplacements. So, distinguishing substantives from tropes takes priority over distinguishing subjects from predicates. Here's how we do this.

A ^substantive^ and its ^trope^ are in ^the same place^ at ^one time^; a rose and its red satisfy this requirement. But we may coherently distinguish between an instance of a trope at a *single* place and an instance of it at *any* place; a red trope in Omaha and a red trope in Chicago are coherently emplaceable in /red/. An **any-place trope** is a **property.** However, this individuation of an any-place property is incoherent for ^pig^. A pig is a substantive because it's a **one-place** entity: A pig coherently emplaced in /pig/ in Omaha isn't identical to a coherently emplaced pig in /pig/ at the same time in Chicago. A substantive^ is a ^*one-place*^ entity; a trope is a *one-* and an *any-place* entity. A rose's red trope is one-placed; the property red is any-placed on other roses, and noses. This account of the substantive-trope distinction differs slightly from what I've written in other essays. Take the present account as canonical.

How to turn plural concepts into unitary propositions

The analytic school of philosophy 'analyzes' a concept by breaking it down into its parts or ingredients. The hoary example is ^bachelor^. It has two meaning-parts, viz. ^unmarried^ and ^male^. Forget the recent changes in the 'meaning' parts of bachelor. My target is the 'composition' metaphor for how two or more words' *several* meanings 'meld' into a proposition's *single* meaning. It's a Haggis theory of melding concepts. According to it, the proposition ^Harry is a bachelor^, means ^Harry is an unmarried male^. Once we've analyzed ^bachelor^ into its two parts, how do we meld their several meanings into a single, unified meaning of the proposition in which they're embedded?

This question has bedeviled the best analytic minds. It's no wonder. First, there are no 'meanings'; second, even if there were, there could be no 'chemical' or 'ingredient' melding, because concepts are neither molecular entities nor vegetables under heat. It's an incoherent metaphor, because a concept is a lexical term uniquely located in lexical space; it's a child of structure, not a physical entity as molecules and chemicals are.

I offer an alternative metaphor: We travel between concepts on eight functorial routes, Subsume, Bond, Link, Sooth, Emplace, ..., in lexical space wherein token/concepts have unique places. We travel from one concept in that space to another. For example, we travel on a subsumption pathway from ^liquid^ to ^water^: ^[Subsume, /] ^liquid^ ^water^^. This metaphor unifies multi concepts into a single proposition like a trip from San Francisco to Reno. That trip is counted as *one* between *two* cities. We may count a trip as *one* between two concepts, ^liquid^ and ^water^, in the same way. The Many in One itch is salved.

APPENDIX II

EMPLACEMENT CHART

	S	P	V	
1	+	+	T	S+ P+/S+ ~P+
2	+	-	F	S+ P-
3	+	~	F	S+ P~
4	+	?	U	S+ P?
5	-	+	F	S- P+
6	-	-	F	S- P-
7	-	~	F	S- P~
8	-	?	F	S- P?
9	~	+	U	S~ P+
10	~	-	F	S~ P-
11	~	~	U	S~ P~
12	~	?	U	S~ P?
13	?	+	U	S? P+
14	?	-	F	S? P-
15	?	~	U	S? P~
16	?	?	U	S? P?

Arguments that support the entries in this Chart have been justified, line by line, in *The Logical Structure of Conceptual Coherence 3.0*. Google: sfsu arthur bierman. The cover title for all conceptual logic essays is *To Know: The Dawn of Coherence, the Twilight of Analysis.*

Symbolic Abbreviations in the Emplacement Chart

S = Subject; P = Predicate;
V = Value; T = True; F = False; U = Unknown;
S+P+ or S+~P+ = coherent emplacements for [Sooth] propositions only;
S~ or P~ = incoherent emplacements;
S- or P- = no existing emplacements;
? = unknown if there is or isn't an existing coherent emplacement.

The earliest version of conceptual logic, 1.0, appeared in *LOGIC: A Dialogue* (1965); there is a conceptual logic interpretation of Kant's Categorical Imperative in *Life*

and Morals (1980); the second version of the logic, 2.0, appeared in *The Critical Thinking Handbook* (1996), co-authored with Robin Assali. *3.0* is on my website. It hasn't been published elsewhere. Google: sfsu arthur bierman.

For a brief historical setting for the emergence of conceptual logic, see pp. 1 – 9, *The Logical Structure of Conceptual Coherence 3.0*, on my website.

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