PLAY THE GAME OF A TRILLION WORLDS

1 Before the game, you and the other debater will choose the method you will use to make your formal arguments: you will choose the ***canonical method*** or one of the three Dialectician's methods, ***the card method***, the ***tile method*** or the ***boardgame method***.

IMPORTANT NOTE: Players inexperienced with formal logic should choose the canonical method.

2.
a. If you are the affirmative debater, you will start the debate. Go to 3.
b. If you are the negative debater, go to step 40.

3. The argument that you start with can be an argument from the book or an original argument.

4. Introduce the debate. For instance, if the debate is a truth debate-game and the topic is the UFO controversy, you might give a short *exposition*. For instance, you might say, "I would like to refer to the third case in the companion book. This is the 1966 Portage County Police Chase case, where officers chased a UFO from Ohio into Pensylvania....[etc.]" Go to 4.

5. Whether you are playing a truth debate-game, a goodness debate-game or a beauty debate-game, since you're introducing a topic, your argument must be a formal (truth-)argument. Go to 6.

MAKING A FORMAL ARGUMENT

6.
a. If, at step 1 you chose the ***canonical*** method of making a formal argument, go to step **7**.
b. if, at step 1 you chose the ***card or tile*** method of making a formal argument, go to step **11.**
c. if, at step 1 you chose the ***boardgame*** method of making a formal argument, go to step **25**

Making a Canonical Formal Argument

7. As a player using the ***canonical method***, you will have 12 *panels*. Each panel has writing on it:

The 12 panels

1. If p then q
2. p if and only if q
3. If p, and if q, then r

4. If q then r
5. If p then r
6. p or q
7. p
8. q
9. r
10. not-p
11. not-q
12. not-r

8. To *make a formal argument*, you will: put your argument into the form of a ***logical syllogism.***

IMPORTANT NOTE: *Players inexperienced with formal logic should use only **Modus Ponens** and **Modus Tolens** and should disregard Forms 3-6 below.*

In what follows, p is a proposition and q is another proposition:

9.

a. Form 1. *MODUS PONENS*

If you want to make an argument in *Modus Ponens* form:

Put the "**If p then q**" panel onto the game surface.
Under it, put the "**p**" panel onto the game surface.
Then, under that, put the "**q**" panel onto the game surface.

You have now set up this *Modus Ponens* form:

a. If **p** then **q**
b. **p** ________
c. **q**

On a piece of paper, write out definitions for p and q; for instance, write:

p = **Col. Garrett had had no need to know about the Roswell debris**

And write:

q = **Col. McCoy would not have mentioned such debris in the letter he sent in response to Garrett's inquiry**

Write "abc" on the left-hand page of your open *Thorn* notebook

You've now set up the whole argument. This is the argument that you've set up. Here we've plugged in the meanings of p and q, and translated the horizontal line as "Therefore.":

(a) **If Col. Garrett had had no need to know about the Roswell debris, then Col. McCoy**, even if he had known about the recovery of exotic debris near Roswell, **would not have mentioned such debris in the letter he sent in response to Garrett's inquiry**. **(b) There was, in fact, no need for Garrett to know about any crashed UFO to do his job**. (c) Therefore, it is distinctly possible that **McCoy** knew about the Roswell materials, yet **would** nevertheless **have sent the letter that implied that no such evidence existed.** [ab1]

Go to 10.

b. Form 2. *MODUS TOLLENS*

If you want to make an argument in *Modus Tollens* form*:*

Put the "**If p then q**" panel onto the game surface.
Under it, put the "**not q**" panel onto the game surface.
Then, under that, put the "**not-p**" panel onto the game surface.

You have now set up this *Modus Tollens* form:

a. If **p** then **q**
b. not **q**
c. not **p**

On a piece of paper, write out definitions for p and q; for instance, write:

p = **alien materials had been recovered in New Mexico in 1947**

And write:

q = **McCoy knew of such materials**

Write "abc" on the left-hand page of your open *Thorn* notebook

You've now set up the whole argument. This is the argument that you've set up. Here we've plugged in the meanings of p and q, and translated the horizontal line as "Therefore.":

(a) I**f alien materials had been recovered**, then **McCoy *would've* known about them**. But, (b) **McCoy did not know of** any **such materials**. Therefore, we can be sure that (c) **no alien materials had been recovered in New Mexico in 1947**. [ab2]

Go to 10.

Advanced players might use one of the following forms:

c. Form 3. BICONDITIONAL MODUS PONENS

If you want to make an argument in *Biconditional Modus Ponens* form:

On a piece of paper, write out definitions for p and q.

Put the "**p if and only if q**" panel onto the game surface.
Under it, put the "**p**" panel onto the game surface.
Then, under that, put the "**q**" panel onto the game surface.

You have now set up the formal argument in in *Biconditional Modus Ponens* form:

Go to 10.

d. Form 4. <u>CONJUNCTIVE MODUS PONENS</u>
If you want to make an argument in *Conjunctive Modus Ponens* form:

On a piece of paper, write out definitions for p, q and r.

Put the "**if p, and if q, then r**" panel onto the game surface.
Under it, put the "**p**" panel onto the game surface.
Then, under that, put the "**q**" panel onto the game surface.
Under that, put the "**r**" panel onto the game surface.

You have now set up the formal argument in *Conjunctive Modus Ponens* form:

Go to 10.

e. Form 5. <u>COMPLEX MODUS TOLLENS</u>
If you want to make an argument in *Complex Modus Tollens* form:

On a piece of paper, write out definitions for p, q and r.

Put the "**if p, and if q, then r**" panel onto the game surface.
Under it, put the "**q**" panel onto the game surface.
Under that, put the "**not**-r" panel onto the game surface.
Under that, put the "**p**" panel onto the game surface.

You have now set up the formal argument in in *Conjunctive Modus Tollens* form:

Go to 10.

f. Form 7. <u>DISJUNCTIVE SYLLOGISM</u>
If you want to make an argument in *Disjunctive Syllogism* form:

On a piece of paper, write out definitions for p and q.

Put the “**p or q**” panel onto the game surface.
Under it, put the “**not-p**” panel onto the game surface.
Under that, put the “**q**” panel onto the game surface.

You have now set up the formal argument in in *Disjunctive Syllogism* form:

Go yo 10.

g. Form 8. <u>HYPOTHETICAL SYLLOGISM</u>
If you want to make an argument in *Hypothetical Syllogism* form:

On a piece of paper, write out definitions for p, q and r.

Put the “**if p, and if q, then r**” panel onto the game surface.
Under it, put the “**If q then r**” panel onto the game surface.
Under that, put the “**If p then r**” panel onto the game surface.

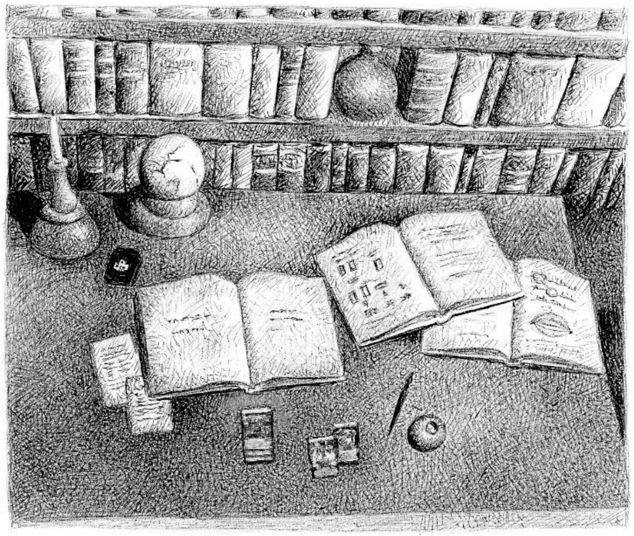
You have now set up the formal argument in in *Hypothetical Syllogism* form:

Go to 10.

10 . Now deliver the argument verbally. You have finished the formal presentation and should now open the floor to your opponent’s rebuttal. When you are again ready to make an argument, go to 40.

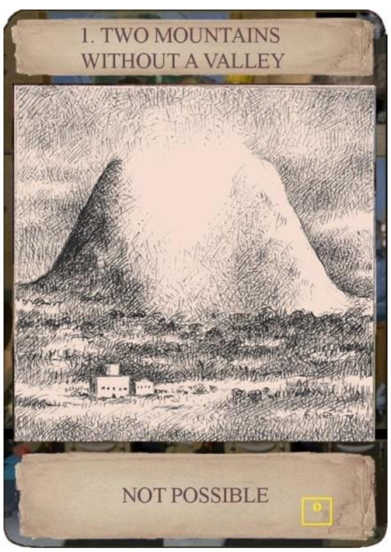
11. So you have chosen to use the ***card or tile*** method for your formal arguments. These two methods are essentially identical, with the tiles being used exactly as the cards are used.

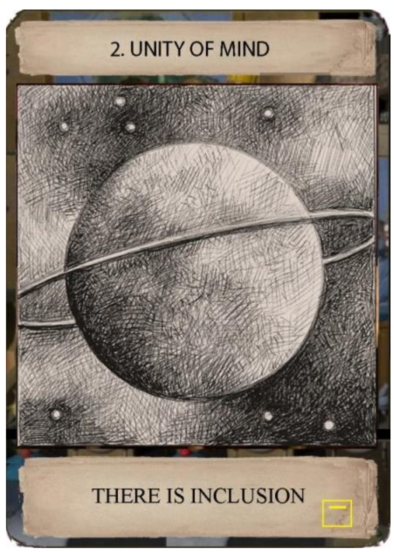
12. As a player using the ***card method***, this is what your set-up will look like: .



This illustration shows the desk of a wizard-warrior using the ***card*** game to prepare a *Game of a Trillion Worlds* formal argument: there's a deck of cards at upper left. The three books are notebooks that the player writes in—these are the notebooks of "Thorn" (þ), "Eth" (ð) and "Ash" (æ), corresponding to dialectics of Truth, Goodness and Beauty, and just under the open Thorn Notebook, there is the central stack of cards. The connector associated with the uppermost card in the stack is taken to connect the propositions on the left and right pages of the Thorn Notebook, thus creating a claim. (The tile version is similar.)

13. THE TOOLS FOR THE CARD GAME—THE 16 CONNECTOR CARDS

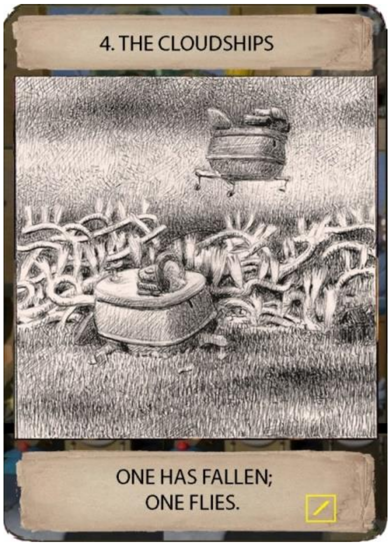




1. Two Mountains Without a Valley. ***This card stands for the (^{o}) connector ["null"]: (p ^{o}q) means "None of the following is the true one: (p ‾ q), (p ∖ q), (p ⁄ q), (p _ q)". The claim (p ^{o}q) is never true.***

2. Unity of Mind. ***This card stands for the (‾) connector ["high"]: (p ‾ q) means "p and q".***

3. The Trees. ***This card stands for the (∖) connector ["falling"]: (p ∖ q) means "p and not-q"***



4. The Cloudships. ***This card stands for the (⟋) connector ["rising"]: (p ⟋ q)*** means *"not-p and q".*

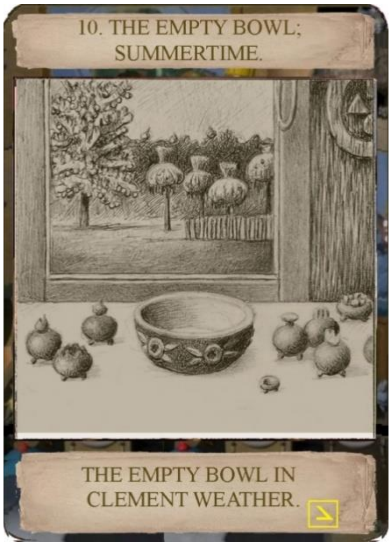
5. The Desert. This card stands for the **(_)** *connector ["low"]:* ***(p _ q)*** means *"not-p and not-q".*

6. The Boundary Post in the Rain Forest. ***This card stands for the (‾⟍) connector ["high-falling"]: (p ‾⟍ q)*** **means** ***"The true one is one of these: (p ‾ q), (p ⟍ q)". In ordinary language: "p".***

7. The Boundary Post in the Snow. ***This card stands for the (‾⟋) connector ["high-rising"]: (p ‾⟋ q)*** **means** ***"The true one is one of these: (p ‾ q), (p ⟋ q)". In ordinary language: "q".***

8. Abundance or Want. ***This card stands for the (=) connector ["high-low"]: (p = q)*** **means** ***"The true one is one of these: (p ‾ q), (p _ q)". In ordinary language: "p if and only if q".***

9. The Battle. ***This card stands for the (✕) connector ["falling-rising"]: (p ✕ q)*** **means** ***"The true one is one of these: (p ⟍ q), (p ⟋ q)". In ordinary language: "p or q (but not both)***

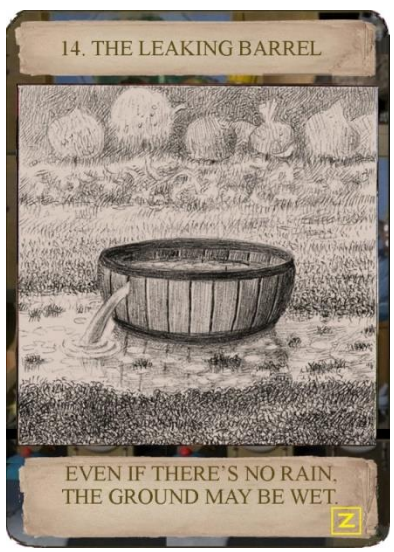


10. The Empty Bowl, Summertime. ***This card stands for the (⍀) connector ["falling-low"]: (p ⍀ q)*** **means *"The true one is one of these: (p ∖ q), (p _ q)". In ordinary language: "not-q".***

11. The Empty Bowl, Wintertime. ***This card stands for the (∠) connector ["rising-low"]: (p ∠ q)*** **means *"The true one is one of these: (p ∕ q), (p _ q)". In ordinary language: "not-p".***

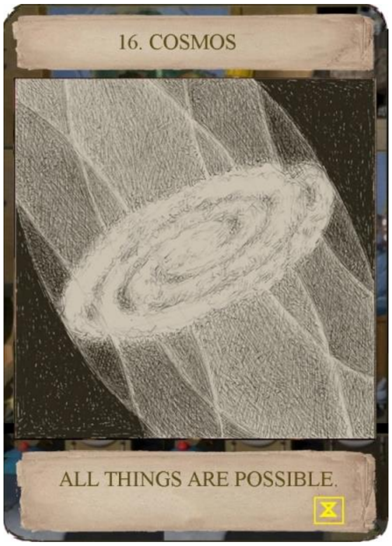
12. The Debate. ***This card stands for the (⊼) connector ["high-falling-rising"]: (p ⊼ q)*** **means *"The true one is one of these: (p ¯ q), (p ∖ q), (p ∕ q)". In ordinary language: "p or q (or both)".***

13. The Dry Place. ***This card stands for the (⋝) connector ["high-falling-low"]: (p ⋝ q)*** **means *"The true one is one of these: (p ¯ q), (p ∖ q), (p _ q)". In ordinary language: "If q then p", "p if q", "q only if p".***



14. The Leaking Barrel. ***This card stands for the (Ƶ) connector ["high-rising-low"]: (p Ƶ q)*** **means *"The true one is one of these: (p ¯ q), (p ∕ q), (p _ q)". In ordinary language: "If p then q", "q if p", "p only if q".***

15. The Battle on the Ledge. ***This card stands for the (⊻) connector ["falling-rising-low"]: (p ⊻ q)*** **means*"The true one is one of these: (p ∖ q), (p ∕ q), (p _ q)". In ordinary language: "p or q (or neither)".***



16. Cosmos. ***This card stands for the (⧗) connector [high-falling-rising-low"]: (p ⧗ q)*** **means** ***"The true one is one of these: (p ‾ q), (p ∖ q), (p ∕ q), (p _ q)". The claim (p ⧗ q) is always true.***

Conclusion card, with red Connector sign.

The reverse of the cards.

14. Each *connector card* or connector tile stands for a logical connector. At the bottom on the face of every connector card, or on the face of the tile, there is a *connector sign* that identifies the logical function of the card or tile. The connector signs are: (º), (‾), (∖), (∕), (_), (⌜∖), (⌝∕), (⊏), (✕), (⦣∖), (∠), (⊼✕). (⌈Σ), (Z), (⊻✕), and (⧗). There are two general kinds of connector cards and tiles:

a. There are 16 *premise cards* and 16 *premise* tiles. Each premise card or tile has a yellow connector sign.

b. There are 16 *conclusion cards* and 16 *conclusion* tiles. Each conclusion card or tile has a red connector sign.

15. To understand the special logical notation for the three Dialectician's methods of making formal arguments, see the appendix.

16. Suppose that you have decided to make a *Modus Ponens* argument.

17. Since you are engaged in a truth-argument (that is, where, at the moment, you aren't debating an ethical or aesthetic point, even if the debate is a Goodness or Beauty debate-game), you will be using your "Thorn" (*þ* for <u>th</u>eoretics) Notebook. You should open the notebook to a place where the left and right pages are empty and write out the p proposition on the left page and write out the q proposition on the right page (if there had been an r proposition, you would have written it out on the second page along with the q proposition).

So, on the left-hand page you've written, say,

> *The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon*

And on the right-hand page you've written:

> *It was an exotic craft that was visiting American airspace in 1966.*

18. So now you've written your p-statement and q-statement on the pages of your open Thorn notebook, and you are about to make your *Modus Ponens* argument. Now stack the cards bottom to top as you create the "central stack," right below the center of the Thorn Notebook (see the drawing above). Or if you are playing with tiles, place the tiles in a horizontal row, left to right, underneath the open Thorn Notebook. (Y = yellow = premise; R = red = conclusion).

19. Whenever you place a card on top of another card in the center stack, you should always take care not to cover the connector sign (the yellow or red symbol at the bottom of the card) of the card below.

20. Snce you're making a *Modus Ponens* argument, you place these cards/tiles in this order:

Z^{Y} ⟍^{Y} —^{R} ⁊^{R}

21. On the left-side page of the Thorn notebook, write, say, "abcd". Now you have constructied an argument whose form is *Modus Ponens*, and whose separate statements are given letter names a-d.

22. This is the argument that you have constructed:

(a) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon **Z** it was an exotic craft that was visiting American airspace in 1966.
(b) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon ⟍ it was an exotic craft that was visiting American airspace in 1966.
(c) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon — it was an exotic craft that was visiting American airspace in 1966. (ic)
(d) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon ⁊ it was an exotic craft that was visiting American airspace in 1966. (aa) [ab1]

Where
(a) means "If the appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon, then it was an exotic craft that was visiting American airspace in 1966."
(b) means "the appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon."
The horizontal line means "Therefore."
(c) means "The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon, and it was an exotic craft that was visiting American airspace in 1966," as proven by the *in-common* (ic) rule (write all and only the ⧗ lines that the premises have in common).
The horizontal line means "Therefore."
(d) means "It was an exotic craft that was visiting American airspace in 1966," as proven by the *add-anything* (aa) rule (add any ⧗ lines) .
[ab1] means: this line is the conclusion to premises a and b, and the form of the argument is Form 1, which is *Modus Ponens*—see step 17 above for the common Forms.

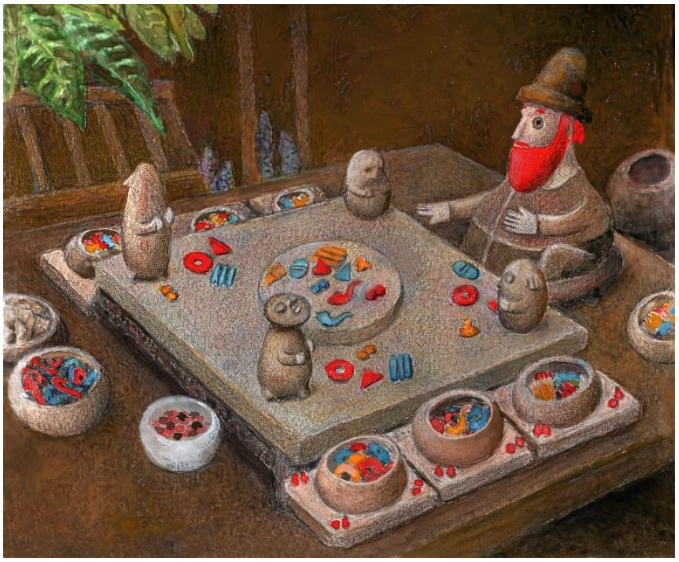
23. Now, on a separate piece of paper, you might write a ***supplement*** to argument line b; perhaps something like:

> *The object was as big as a house. It was silent except, possibly, for a humming sound. The object was oval-shaped, 18 to 24 feet in its vertical dimension, 35 to 45 feet in diameter, and had rounded underside and a top that was dimly visible as a silhouette. The object gave off a blue-white light that was so bright that it lit the ground as if it was "high noon." . It was so bright that "it'd make your eyes water" (Spaur). It was silent, except, perhaps, for a slight hum, and it had no flight surfaces or rotor blades- - so it could not have been an airplane of helicopter. It's movements were completely un-balloon like.*

24. You will now deliver your argument verbally. You have now finished the formal presentation and should now open the floor to your opponent's rebuttal. When you are again ready to make an argument, go to 40.

To Prepare a Board Game Formal Argument

25. The board game is set up like this:



The Game of a Trillion Worlds as a **board** game.

26. The board game is initially set-up with 7 cups, each setting on a square ceramic trivet. There are 7 kinds of pieces: Circle, Double, Triple, Chip, Pipe, Peg, Trilobe:

.

27. Each kind of piece includes pieces that are red for premises, yellow for conclusion-premises, and blue for conclusions. There are many small red and black spheres and many small red and black teardrop-shaped pieces.

THE BOARD GAME ALGORITHM

28. Then you construct your argument by first defining the shape-pieces that you will use. For instance: you might first fill one of the cups, on its trivet, with the *circles* (the disc pieces with the center hole).

29. To understand the special logical notation for the three Dialectician's methods of making formal arguments, see the appendix.

30. Suppose that you have decided to make a *Modus Ponens* argument.

31. Since you are engaged in a truth-argument (that is, where, at the moment, you aren't debating an ethical or aesthetic point, even if the debate is a Goodness or Beauty debate-game), you will be using your "Thorn" (*þ* for theoretics) Notebook. You should open the notebook to a place where the left and right pages are empty and write out the p proposition on the left page and write out the q proposition on the right page (if there had been an r proposition, you would have written it out on the second page along with the q proposition).

So, on the left-hand page you've written, say,

> *The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon*

And on the right-hand page you've written:

> *It was an exotic craft that was visiting American airspace in 1966.*

32. So now you've written your p-statement and you've written your q-statement on the pages of your open *Thorn* notebook, and you are about to make your *Modus Ponens* argument. Now you might define every circle piece as **Z**. To do this, place spheres and teardrops on the corners of the circles trivit in order to represent **Z**, whose symbol is composed of a high line, a rising line and a low line. In this case, to represent the high line, put two red teardrops (the red teardrop symbolizes high) on one corner of the trivet; to represent the rising line, put, on another corner of the trivet, a red sphere (which symbolizes low) and a red teardrop to represent high, the red sphere to the left of the red teardrop. In a third corner of the trivit, put two red spheres, to represent the low line.

33. Then fill another cup, on its trivet, with, say, the chips. To define every *chip* as **↖**, put two red teardrops on one corner of the chip trivet and a red teardrop and a red sphere, the red teardrop to the left of the red sphere, on another corner.

34. Then fill another cup, on its trivet, with, say, the doubles. Let's say that he wants to define every double as **‾**, and, just for fun, he wants to define the doubles by representing what they are *not*. He places a black teardrop and a black sphere on one corner to represent a "not-falling" line; he places a black sphere and a black teardrop on another corner to represent a "not-rising" line; and he places two black spheres on another corner to represent a "not-low" line. Therefore, now every double stands for not-**X**, that is, **‾**.

35. Then fill a fourth cup, on its trivet, with, say, the triples, and define every one of them as **7**: put two red teardrops on one corner and a red sphere and a red teardrope on another corner.

cups and trivits

36. Now he puts a red circle, a red chip, a yellow double, and a blue triple in front of his man-on-the-board. He has now set up his argument. The forms are defined as:

$\mathbf{Z}^{R}$ $\nwarrow^{R}$ $-^{Y}$ $\bar{\nearrow}^{B}$

Any time that a player places *premise* (red) pieces in front of his man-on-the-board, he is making a claim not only that he takes to be true, but that he expects his opponent to agree with. The sequence of premise to conclusion must follow the *rules of deductive logic* as set forth above in the deductive logic section.

37. Now Believer has constructied an argument whose form is *Modus Ponens*, and whose separate statements are given letter names (here, a-d, written on the left-hand page of the *Thorn* notebook). This is the argument that you have constructed:

(a) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon **Z** it was an exotic craft that was visiting American airspace in 1966.
(b) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon ↖ it was an exotic craft that was visiting American airspace in 1966.
(c) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon — it was an exotic craft that was visiting American airspace in 1966. (ic)
(d) The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon ↗̄ it was an exotic craft that was visiting American airspace in 1966. (aa) [ab1]

Where
(a) means "If the appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon, then it was an exotic craft that was visiting American airspace in 1966."
(b) means "the appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon."
The horizontal line means "Therefore."

(c) means "The appearance and performance of the object that was chased by the officers was unmatched by any earth-made aircraft, or any natural phenomenon, and it was an exotic craft that was visiting American airspace in 1966," as proven by the *in-common* (ic) rule (write all and only the lines that the premises have in common).
The horizontal line means "Therefore."
(d) means "It was an exotic craft that was visiting American airspace in 1966," as proven by the *add-anything* (aa) rule (add any lines) .
[ab1] means: this line is the conclusion to premises a and b, and the form of the argument is Form 1, which is *Modus Ponens*—see step 17 above for the common Forms.

38. Now, on a separate piece of paper, you might write a ***supplement*** to argument line b; perhaps something like:

> *The object was as big as a house. It was silent except, possibly, for a humming sound. The object was oval-shaped, 18 to 24 feet in its vertical dimension, 35 to 45 feet in diameter, and had rounded underside and a top that was dimly visible as a silhouette. The object gave off a blue-white light that was so bright that it lit the ground as if it was "high noon." . It was so bright that "it'd make your eyes water" (Spaur). It was silent, except, perhaps, for a slight hum, and it had no flight surfaces or rotor blades-- so it could not have been an airplane of helicopter. It's movements were completely un-balloon like.*

39. You will now deliver your argument verbally. You have now finished the formal presentation and should now open the floor to your opponent's rebuttal. When you are again ready to make an argument, go to **40.**

40. Wait for your next turn, then go to 41.

41. (1) You can argue against the validity of your opponent's argument, that is, the logic of it, or (2) you can attack the soundness of it:

> (a) If the argument you are arguing against is not formal, first point to the claim in question and state either that you believe it to be false or unproven.
> (b) If the argument that you are arguing against is formal, first state the letter-name of the premise or conclusion that you are finding fault with, and state either that you believe it to be false or unproven.

Or (3) you can introduce a new argument.

Go to 42.

42.
a. If you want to make a non-formal truth argument, make it. Then go to 40.
b. If you want to make a formal truth argument (You can make a formal argument any time. If you want to introduce a new argument, you should make a formal argument), go to 6.
c. If you want to make a goodness argument, go to 43.
d. If you want to make a beauty argument, go to 52.

GOODNESS

43. The second value of the Truth Engine is Goodness; the second Organizing Method is a system to be used within the division of Goodness. It is a system, to be used in Truth Engine debates about practical and moral choice, of representing connections between action/non-action and results expressed in terms of human happiness. This notation is composed of signs that have been used, with the same meaning, over immeasurable spans of time on uncountable worlds, but never before on earth (though the system resembles the "decision tree" notation),

44. The debater making a Goodness-argument should be familiar with the content of the following lessons:

A Very Short Course in Goodness.

44. All terrestrial creatures that can think have evolved to possess the desire to represent the perceptual sameness and difference patterns correctly—thus they embrace the value of *Truth*; these creatures are also motivated to *seek out* certain patterns of sameness and difference. The pattern that it seeks is the organism's *practical goodness*. Whereas less evolved creatures exhibit sympathies, more advanced creatures have *consciences*, and seek *moral goodness*. A conscience has a structure and acts as a somehow separate voice that issues one or more *directives*.

The desires of the creature manifest as the value of PRACTICAL GOODNESS.

The specific desires of the *conscience* manifest as the value of MORAL GOODNESS.

To fully understand the making of moral decisions, we first have to ask, *What is the content of our conscience?* Different people have answered that question differently:

Some people say that our conscience contains this single directive: "Maximize the probable happiness of all people." Those who say this are the *utilitarians*. But if a great amount of benefit goes to one person and a tiny amount to another, is this better than a tiny bit smaller total, divided equally between the two persons?

Other people say that our conscience contains this single directive: "Maximize the equality of the distribution of probable happiness among all people." These are the *egalitarians*. But is a tiny total benefit going equally to two people better than a great amount going to the two, there being a tiny inequality of the distribution?

Some, the *libertarians*, say that our conscience contains this one directive: "Do not harm innocent people." But is not *helping* someone in distress a moral good?

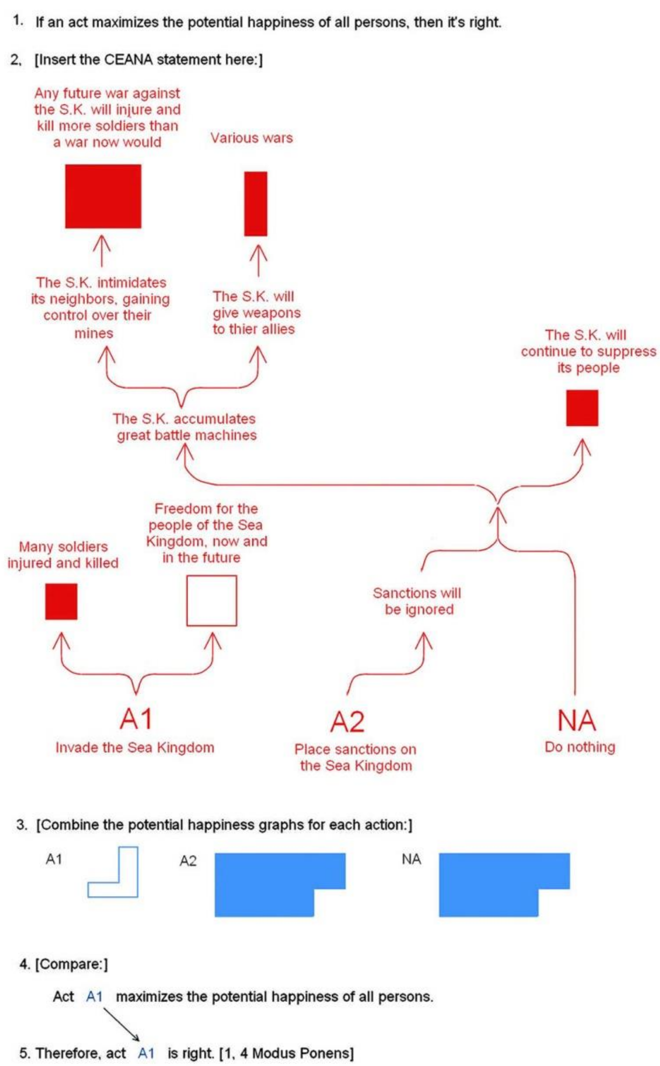
The *deontologists* claim that our conscience contains at least one "nonconsequentialist" directive; that is, one directive, such as "do not lie," that does not have to do with the results of the action. But is not a lie that benefits many innocent people, when not telling the lie would cause great suffering, a moral good?

The *utilitarian-egalitarian* believes—truly, it might well be said—that our conscience contains these directives: "Maximize everyone's probable happiness, and maximize the equality of its distribution."

The CEANA statement can be used by the utilitarian, the utilitarian-egalitarian and the deontologist.

Or it might be better to say: "*Do your best* to maximize everyone's probable happiness, and to maximize the equality of its distribution"—this puts the focus on character [virtue ethics] rather than accomplishment. And "fulfilment" might be a better word than "happiness."

When a sentient being thinks in order to determine what to do, it generates a CEANA (Cause, Effect, Action, Non-Action) statement/belief, which maps causes and effects in terms of probable happiness, of self and others. When the issue is about moral choice, to represent the CEANA belief we use a notation that has no doubt been used, with the same meaning, over immeasurable spans of time on uncountable worlds, but never before on earth, though something similar is now used on earth; it is called a "decision tree." Here is an example of a CEANA statement (part 2 on the "utilitarian calculus sheet" [UCS] illustrated)—the people of a fictional republic are deciding whether to invade a dangerous totalitarian land called the Sea Kingdom. This is the UCS sheet:



45. The dialectician uses the Goodness algorithm, in conjunction with the Truth algorithm, to develop and communicate an argument about *what to do* with respect to some controversial sociopolitical matter. The Goodness algorithm charts the results, in terms of expected happiness, of several possible choices we might make as a response to some state of affairs. It serves as a complete articulation of a utilitarian deliberation and can constitute a part of the utilitarian-egalitarian's and the deontologist's deliberations.

46. The dialectician writes out in the *Eth* Notebook, on a left-hand page (next to a blank right-hand page) a version of the utilitarian directive: "1. If an act maximizes the probable happiness of all persons, then it's right." This begins the creation of his UCS, an example of which is provided above.

47. On his UCS, the dialectician writes "2." and constructs his CEANA statement. The CEANA statement can be called a diagram (though, strictly speaking it is a statement). Across the bottom of the diagram, a set of choices is given. Arrows show the results in terms of the probable happiness that the act is expected to bring about. This expected happiness is impressionistically symbolized by a drawn rectangle. The rectangle's horizontal dimension represents the probability of the described result, and the vertical dimension represents the amount of resultant happiness (when the rectangle is clear) or unhappiness (when it's solid).

48. The dialectician combines the results of each action: the amount of probable happiness, or unhappiness, expected to result from each choice is symbolized by the shape's *area*.

49. Suppose that it is action A1 that, according to the dialecticians reasoning and as represented in step 66, maximizes probable happiness. The dialectican writes, "Act A1 maximizes the potential happiness of all persons."

50. The dialectician writes, "Therefore, act A1 is right. [1,4 *Modus Ponens*]"

(Recall the *Modus Ponens* form: p **Z** q and p ↖ q. Therefore p ‾ q. Therefore p ↗ q.)

51. Since the claimed causal relationships, indicated by the arrows in the CEANA diagram will, as a rule, have to be argued for, the CEANA diagram will link to the Truth algorithm (the *Thorn* notebook and the logic cards). The arrows will be numbered, and on the right-hand page the numbers will be cross-referenced to the relevant pages in the *Thorn* notebook.

Go to 40.

BEAUTY

52. The <u>third Organizing Method</u> of the Truth Engine is the idea for a system for use within the division of <u>Beauty</u>:

It is a system for determining the nature of an object's aesthetic properties; the system incorporates the "line and dot" statement, to be used in truth engine debates about beauty. I showed you this system when I spoke about Beauty.

This is a notation that has been used, with the same meaning, over immeasurable spans of time on uncountable worlds.

The *line and dot* statement notation is the way we symbolize the content of consciousness—consciousness is iconic (like a picture in the brain); for example s, and d, constitute the elements of I, S, M, D, and O.

53. To understand aesthetic issues, see I and II below.

54. Go to 40.

I. General

The *Form-Seeking* faculty that has evolved to cause a creature to enjoy the experience of sameness-difference parity even when that faculty is not revealing the general among the specifics. When the faculty is working this way, call it the *Aesthetic* faculty.

Insights can be communicated about the aesthetic experience (and about the conscious experience of sameness and difference relations in general) by giving a careful account of the work of the artist, the painter.

As can every act, the act of putting brush to canvas can be evaluated from the standpoint of ethics: regardless of what the artist intended in creating his painting, is the work productive of happiness in the world? It seems true that artistic activity of all kinds should be evaluated this way, but of course a proponent of art for art's sake (depending on how that phrase is interpreted) might disagree, and, often, art's consequences are simply not taken cognizance of.

The big question which many ask is "What is art?" But "art" carries many different meanings, and a search for a definition or essence leads people away from the question which was really, in the past, being asked. Actually, the search for the essence of art, for analysis of its concept, for definition of the word "art," has been used as a means to answer the unconsciously conceived question of how it is that esteemed works make us happy. For, how can we explain the passion that has gone into attempts to answer the question, "What is art?", unless we suppose of those who asked the question that they, after having witnessed the power of particular masterpieces to bring happiness in the world, were moved to uncover art's essence in order to understand the observed process better, so that they, as critics and philosophers, might play a role in enhancing future production of the same effect? But answering the question of how these particular works make us happy does not in fact require that one take up the question of essence at all.

Thus, the question which was really being asked is: "How is it that long-esteemed paintings, sculptures, musical compositions, novels, etc. make us happy?"

Lacking the right answer once this question has been raised is a condition which corrupts artistic activity and tends to produce a state in which there is less good art than there would otherwise be. The world, at present anyway, is less happy than it would have been if the question had never been asked.

Once possessing the right answer to the question, however, will serve to make the world a happier place than it would have been.

In order to articulate clearly the answer to this question, let us, somewhat arbitrarily, narrow the focus to consider a more specific question: "How is it that long-esteemed *paintings* are productive of happiness?" In fact, the right answer to this question has primarily to do with the spectator's direct awareness in these paintings of something like parity between internal relations of sameness and difference, or between relations of similarity and dissimilarity.

Only dialecticians who are participating in a philosophical Beauty dialectic or game tournament, or debates about consciousness, need study this difficult section in detail. It should at least be skimmed through by one participating in a critical Beauty dialectic, so that he or she will have insight into the complexity of the topic.

II. A Course in Beauty; s-d Analysis

Now, what relations can be identified as those that hold among the formal elements of a painted surface?

Let us call sameness and difference "r-relations."

And we can construct the following list of five primary kinds of "R-relation" [pronounced "capital R" relation]:

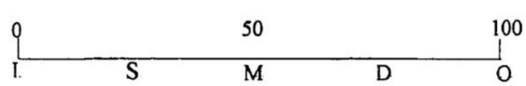
Ixy (x is identical to y)
Sxy (x is similar to y)
Mxy (x is moderational to y)
Dxy (x is dissimilar to y)
Oxy (x is oppositional to y)

Thus, for instance, two different points in a visual presentation may have *identical* hues (e.g. one may be a pure orange and the other may be brown such that the red/yellow mixture is the same); or they may have *similar* hues (e.g. the hue element in one may be red, the other orange); or they may have *moderational* hues (the hue element in one may be red and the other yellow-orange); or they may have *dissimilar* hues (one may be red and the other yellow-green); or they may have *oppositional* hues (one may be red and the other green).

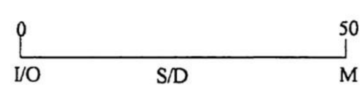
The use of these terms can be extended to cover situations involving the existence of multiple *sameness* (write it like this: SAM_{xy}) and *difference* (write it like this: DIF_{xy}) relations within any part of the visual presentation:

I — The number of DIF relations = 0.
S —The number of SAM relations > the number of DIF relations.
M— The number of SAM relations = the number of DIF relations.
D — The number of SAM relations < the number of DIF relations.
O — The number of SAM relations = 0.

Look at this scale, call it the *R-scale* (having 100 *R-degrees)* affords us a more precise way of naming R-relations:



Another useful scale, which I will call the *M-scale* (a scale of 50 *M-degrees*), is this:



So we can call the relations of sameness and difference "r-relations" and the relations of identity, similarity, moderation, dissimilarity, and opposition "R-relations." Clearly, r- and R-relations hold between R-relations themselves. Here is an example of an R-relation (which we may call a *second-order* R-relation) of R-relations: Imagine two pairs of shapes, the first pair consisting of a pure red shape and a pure yellow one, and the second pair consisting of a pure orange shape and a light, 25% intense, pink one. The R-relation of intensity (I_i) holding between the shapes of the first pair has an R-degree of 0_1^R(zero) and an M-degree of 0_1^M (zero). The R-relation (D_i) holding between the shapes of the seond pair has an R-degree of 75_i^R and an M-degree of 25_i^M“.

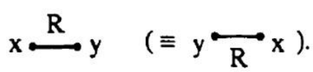
Therefore, the second-order R-relation which holds between the I_i relation and the D_i relation has an R-degree both of (i.e. with respect to the R-scale values of the first-order R-relations) and of $M^{R(M)}$ (with respect to their M-scale values).

I will show you here a handy notation for relations, a notation that has no doubt been used, with the same meaning, over immeasurable spans of time on uncountable worlds. Suppose that I have three colors c_1, c_2, c_3 such that

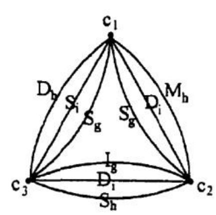
S. $M_h c_1 c_2$ & $D_i c_1 c_2$ & $S_g c_1 c_2$ & $D_h c_1 c_3$ & $S_i c_1 c_3$ & $S_g c_1 c_3$ & $S_h c_2 c_3$ & $D_i c_2 c_3$ & $I_g c_2 c_3$.

where R_h = R in hue, R_i = R in intensity, and R_g = R in gray-value.

Perspicuity can be achieved if we adopt the following notational scheme:
Symmetrical relation R_{xy} becomes



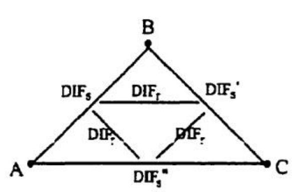
And we have (S’)



which is essentially the same statement as S. Call any “line-and-dot” statement like this a *Special Beauty Statement*. “special,” because *statements having this form are special; they constitute the basis of all deductive reason about aesthetics.*

Here is a sketch for a survey of SAM, DIF, I, S, M, D, and O relations in the perception of a painted surface:

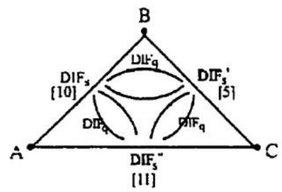
Consider three points, A, B, and C on the surface. We can say that (SI)



where two secondary kinds of difference are indicated: the points are different, DIF_g, from one another in spatial separation, and these relations themselves are numerically different, DIF_r, from one another. (Note that for every secondary kind of DIF relation, there is a corresponding secondary kind of SAM relation.)

The location differences have quantity: for example, suppose that DIF, has a quantity of 10 units (A is ten units from B), and that DIF_g' has a quantity of 5 units, and DIF_g" has a quantity of 11 units.

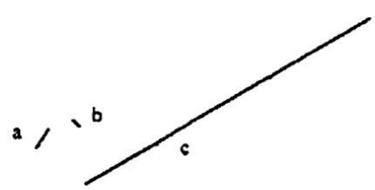
Thus we can now identify a third secondary kind, q (relation of spatial quantity), of sameness/difference relation: we can say that (S2)



Were we to look at the actual separations on a surface (where the separations are defined either as colored lines or separations between points whose color contrasts with the background) we would become aware that spatial-quantity difference relations such as these are also R-type relations (S, M, D, O relations. A spatial-quantity *sameness* relation is also an I relation).

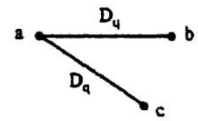
But a problem immediately presents itself: what conditions must be satisfied in order for us to apply the terms "similar," "moderational," "dissimilar," and "oppositional" to a relation holding between any two color-defined spatial separations, between any two straight lines for example? Precisely stated, this question amounts to this: when we compare two straight lines, what dimension are we dealing with when we wish to refer to them as being identical in length, similar in length, moderational in length, etc.? Assuming that the dimension we are dealing with is one whose minimum separation is zero (or the shortest perceptible unit), there are several possibilities for its maximum separation: its maximum separation may be (1) the longer of the two separations, (2) the longest of all existing color-defined separations on the surface, or (3) the longest perceptible separation.

In order to answer this important question, we can consider the following *picture*:



If (1), above, describes the dimension we are dealing with, then the following *Statement* will be true:

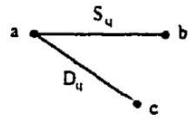
S_1



(i.e., statement S_1 states, "Line a is dissimilar in length to line b, and line a is dissimilar in length to line c.")

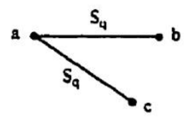
If (2) describes the dimension, then this will be true:

S2



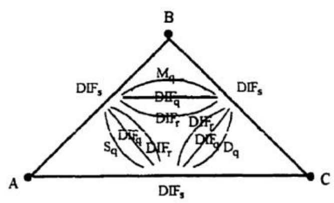
If (3) describes the dimension, then this will be true:

S3



Inspection shows that statement S_1 is true, and so, when we compare two lines, the dimension we are dealing with is one whose minimum separation is zero and whose maximum separation is the separation whose quantity is that of the longer of the two lines.

So, we can add this secondary kind of R-relation to our catalog. In our 10 x 5 x 11 example, it is true that (S3)



(M_q, because 5 is half-way between 0 and 10; D_q because 5 is between 0 and 11 divided by 2; S_q because 10 is greater than 11 divided by 2).

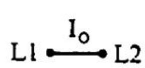
We can note in passing that for all R_x, there is a corresponding r_x, where "r" stands for a SAM or DEF relation, but the reverse is not true.

Different DIF,-triplets such as the one described by S3 define different angles ABC, each angle having a quantity from 0° to 180°. If the angle ABC is 0°, then A and C are positioned in the same direction from B, or (L_{dB})AC. If ABC = 180°, then A and C are positioned in opposite directions from B, or (O_{dB})AC. Thus the relation (R_{dB})AC is different for each angle ABC (from 0° to 180°), every angle is to be associated with an identity, or a similarity, etc., and angles can be compared in these terms. Presumably (but perhaps not), if ABC = 90°, then (M_{dB})AC.

Orientation, R_o, is different from direction (R_{dX}):

If line LI is parallel to line L2, then LI and L2 have the same (identical) orientation, i.e.,

(S4)



If LI is perpendicular to L2, then (S5)

If LI is rotated 45° from L2, then (S6)

$$L1 \overset{M_o}{\bullet\!\!-\!\!-\!\!\bullet} L2$$

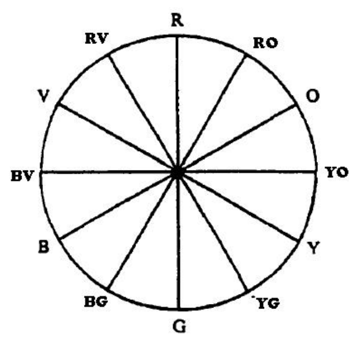
And degrees of S and D exist regularly distributed in association with angles between 0°and 180°. (In general, for more precise analysis, a scale from 0 (zero) to, say, 100 could be used: 0 (zero) = I, 50 = M, 100 = O (opposition), so that S6 would read

$$L1 \overset{50_o}{\bullet\!\!-\!\!-\!\!\bullet} L2$$

etc.

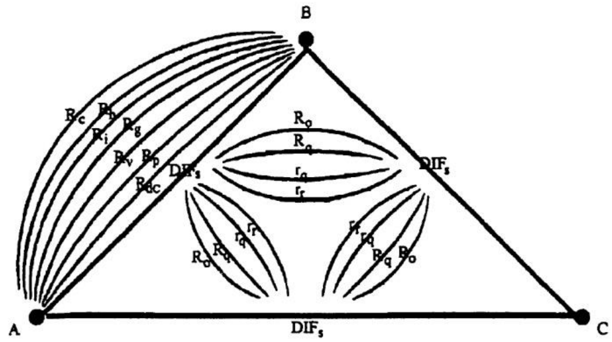
Of course, A, B, and C may be of identical, similar, moderational, etc., *color,* i.e.color is a secondary kind of visual-field R-relation. But color as a property has component properties, perhaps three of them, but perhaps four or five, and those properries are themselves tied to secondary kinds of R-relation. Those kinds which should be considered are:

1. hue (R_h) -- A hue circle can be used to illustrate how any two hues are related in terms of I, S, M, D, and O, sc long as it is kept in mind that no distance greater than vi the circumference is meaningful.



2. intensity (R_i) - this term refers to the amount of pure hue in the color. Opposites are: (a) gray (including white and black) and (b) pure hue.
3. gray-value (R_g) -- this term refers to the character of the gray component of a color. Opposites are (a) black and (b)white.
4. value (R_v) - this term refers to the amount of light perceived. Opposites are: (a) black and (b) the amount of light associated with pure white.
5. purity (R_p) - Opposites are (a) black and (b) pure hue, pure hue+white, or pure white.

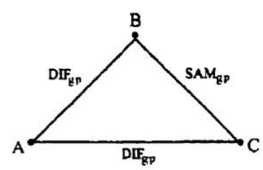
Thus, we can in general say that, given three points, A, B, and C, on a painted surface,



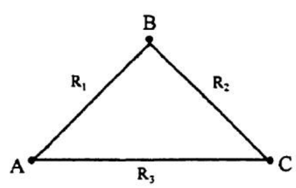
and in contemplating this *statement form,* which is about just three points on a surface, we begin more fully to appreciate the complexity of any analysis in these terms, and to understand why the secret of beauty has remained difficult to discover, and more fully to appreciate the power of our faculty for unconscious discrimination.

But there are many more relations to catalog before this sort of analysis can be complete. Some examples should suffice:

1. The grouping of objects: In our 10x5x11 example above (S3), B and C have the same property in that they both belong to the same *group,* i.e., (S8)

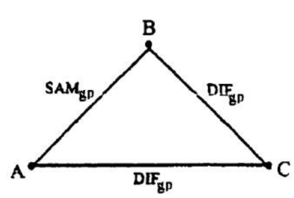


In general, any time there are three objects A, B, and C, such that (S9)

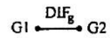


and R_1 is closer to I (identity) than is eitherR_2 or R_3, there exists a naturally-defined group consisting of A and B, which is different from a group consisting of C; that is

(S10)



and we can say that (S11)



and in complex cases, there will be groups contained within groups, and spatially-defined groups interlaced with color-defined groups, etc. in intricate patterns. And groups which are more well-defined and groups which are less well-defined may be defined by groups of R-relations.

In a representational painting, two separate shapes which represent parts of an object will tend to be seen to be grouped together, and two shapes which would, if there were no representation, be seen as being of the same group, may be viewed as belonging to different groups if the objects which the shapes represent are separate.

It is clear that difference relations can hold between groups. I believe that it is also clear that R-relations hold between groups; but to attempt to answer the important question of exactly how the relations which hold between the individual components of two groups might determine the R-relation(s) holding between the groups themselves is a project which is beyond the scope of the present work.

2. combinative relations:

There seems to be good reason for supposing that when R_x and R_y both hold between two objects there appears a third relation R_{x+y} which is in some sense a combination of, or at least grounded upon, the first two.

For instance, in the figure described by S7, we can add R_{o+q} relations, and in a similar figure involving colored lines in place of mere point-to-point separations, we could no doubt add R_{o+q+c} relations to the list.

3. But how is the color relation, R_c , to be derived from its component relations, R_h , R_i, R_g, R_v, and R_p? For example, is R_c an average of its components? Many authors have invented color solids which, on the model of the hue circle, can be construed as attempts to represent the relation between component distances and color distances. A full discussion of these is beyond the scope of what we will talk about tonight.

4. Two complex shapes can be compared in R-relational terms (R_{ah}). It Is beyond the scope of tonight's discussion to show how R_{ah} is grounded upon the already-mentioned (and other) relations.

5. What is balance?

If we place a single point P within a frame, the distances from P to the frame are significant:

With P at the center: there are many S_q relations existing between pairs of the P-to-frame distances. There is thus a new S_{bal} relation (perhaps conceived of as existing between P and the surface itself).

With P near a corner: there are many D_q relations of high degree of dissimilarity.

There is thus a $D_{bal.}$

There exist placements of P which present a variety of S_q and D_q relations between the P-to-frame distances, such that a relation approaching a M_{bal} relation exists.

Since larger shapes have contours composed of more discriminable points than small shapes, over-long shape-to-frame distances for the larger shape, since they are more numerous, are more significant than similarly over-long shape-to-frame distances for the smaller shape.

We have identified a good number of the secondary kinds of r and R relations which exist in the field of a picture. In general, the relevant R-relations exist among single points, naturally-defined groups[68] (whether these *are* shapes or are *composed* of shapes), R-relations themselves, and among the parts of a shape's contour.

A full catalog of secondary kinds of R-relation will contain many more kinds. In ways which should be apparent, the application of the moderation-richness principles (I will soon present statements S1 and S2) to the complete set of relevant relations can greatly facilitate the production of great paintings.

In the case of representational painting, we are dealing with, in addition to relations of the 2-D surface, relations in represented 3-D space, but no new kinds of relations come into play in transferring attention from the formal relations of the surface to the formal relations of the represented space.

What is the true conception of Unity In Variety (UIV). and how is it connected to the production of human Happiness?

I now turn from the descriptive approach to the evaluative approach. In describing this Unity-In-Variety conception, in order to avoid misunderstandings which derive from the use of equivocal terms, what I will say will not involve definitions of such terms. Terms such as "beauty" and "art" are equivocal in the sense that their meaning varies from person to person, and from decade to decade. I need not use, nor try to define, these terms in order to present the fact that the [visual] perception of moderation-richness is fulfilling to human beings and that the Lascaux paintings, Rembrandt portraits, Kandinsky abstracts, etc, are moderation-rich, and that this is primarily what accounts for the high esteem in which they are held. I need only use concepts freshly articulated (though not necessarily new) utilizing a set of unequivocal basic terms.

So, in a fresh articulation of concepts, I will present the following stipulative definitions (that is, the new terms are introduced, mainly, for the sake of brevity):

color-identity = identity of color
color-similarity = similarity of color
x is color-identical to y = x is identical in color to y
hue-identity = identity of hue
etc.

and if I use a term of the form

norm-x

the reader will be justified in inferring that I myself have a liking for x, and that I expect the reader to like x as well.

moderation-rich = having much moderation and having highly equal distribution of the moderation throughout the field ("moderation-rich" is a strictly descriptive, non-normative term).

moderation-poor = having little moderation and/or having unequal distribution of moderation throughout the field (a non-normative term),
similarity-rich = having many similarity relations,
similarity-poor = having few similarity relations,
dissimilarity-rich = having many dissimilarity relations,
dissimilarity-poor = having few dissimilarity relations.
moderation-$rich_D$ - moderation-rich qua contrasted with dissimilarity-rich,
moderation-$rich_S$= moderation-rich qua contrasted with similarity-rich,
moderation-object = an object whose visual presentation is moderation-rich,
moderation-artifact = a man-made moderation-object
intentional-moderation-artifact = a moderation-artifact made intentionally to be such and in the way that it actually is such.

The univocal intelligibility of these basic terms, and my enumeration (below) of examples of what I take to be norm-intentional-moderation-artifacts should be enough to show what extension my concepts have. Here is a list of some suggested identifications; the terms to the right are commonly used:

norm-moderation-rich = beautiful
moderation-$richness_D$ = unity, uniformity
moderation-$richness_S$ = variety
norm-moderation-object = beautiful object, aesthetic object
norm-intentional-moderation-artifact = art object
norm-color-moderation = (color) harmony
norm-location-moderation = (aesthetic) balance, equilibrium
similarity-rich = simple
dissimilarity-rich = complex

But these suggested identifications are included only to facilitate understanding - they are peripheral to my main exposition, and the correctness of them does not, strictly speaking, bear upon the truth of what I say.

Here is a primary principle of Beauty; it is an evaluative statement:

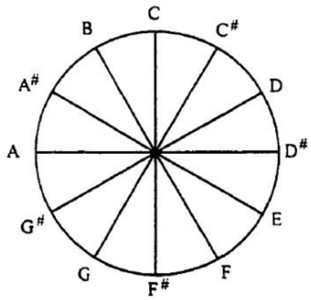
S1 *The awareness of moderation-richness is, as a rule, a fundamental good. (informal paraphrase: awareness of moderation-richness makes us happy*).

Here is a second statement:

S2 *Many objects, including the Lascaux paintings, Rembrandt portraits, and Kandinsky abstracts, are moderation-rich (both in 2D and represented 3D), and this is, at least primarily, what accounts for the high esteem in which they are held.*

if unity in variety is a good in the visual arts, then it is a good in music as well. In fact, evidence can be found in music to support the (general) UIV thesis:

Each note is separated by twelve half-steps (= an octave) from a note having the same letter-name. These two notes are the same (they are both c's for instance, and possess a certain sameness of quality) and different (they are different c's, for instance, and possess a certain difference of quality). The fact of their sameness implies the existence of a hue-circle-like oppositional dimension of twelve notes:



Thus, for instance, D is oppositional to G$^{\#}$ is similar to D$^{\#}$ and to E, is dissimilar to F$^{\#}$ and to G, and is moderational to F and to B. In general, if we play a series of single notes, creating a melody on a piano, the most satisfying resolution occurs when the 1st note of the scale follows the 5th note –

e.g. when C follows G. It may be seen as evidence for the Unity In Variety theses that G with its two moderation-notes

A$^{\#}$ (midway between G and C$^{\#}$, up)
G
E (midway between G and C$^{\#}$ down)

are precisely those notes which, with C itseif, make up the set of the first seven harmonics of C:

A$^{\#}$ (approximately) - seventh harmonic.
G - third and sixth harmonics.
E - fifth harmonic.
C - first (= the fundamental tone), second and fourth harmonics.

Thus, playing C after G repeats the G while supplying G's moderation-notes, creating a satisfying cadence.

It is interesting that the only two-note progression within a scale whose second note supplies no M-notes at all to the first note is the 4-1 progression — and when we arrive at the fourth note, generally in the middle of a phrase, we are indeed left hanging, having to work our way back to 1 via the 5.

53. The claim in the Beauty Debate-game (Critical Dialectic—not Philosophical or Practical) will consist of an s/d analysis, on the pages of the *Ash* notebook (integrated into the arguments of Truth and Goodness) of elements of a work of art, done with the goal of showing these elements to possess or lack moderation. A work's expressive merit is addressed in the Truth-argument and in the Goodness-argument.

These are the Truth Engine cards of rank; the hierarchy follows the order in which their insignia appear in the exposition of the Panoply:

:

<u>The House of the Philosopher</u>

This is the symbol of the Mind of Heaven, which contains the Form of the Panoply, the Form of the generation of all great collective beings, colossi of colossi, such as Ouranos (the Cosmic Seeder), Maia (the midwife) and Gaia.

<u>This icon is the insignia of the rank of Initiate</u>.

THE PLACES OF <u>TRUTH</u> WITHIN THE MIND OF HEAVEN: THE THEORETICS LIBRARY IN THE HOUSE OF THE PHILOSOPHER, AND THE MUSEUM FOR MAN.

In the iconography of the Truth Engine, the *Theoretics Library* and the Museum for Man represent the parts of the Mind of Heaven that encompass all truth and matters of *pure* truth (ethical and aesthetic issues are not treated in this section). These are images of the Theoretics Library and the Museum for Man:

<u>The Glass Doors in the Study</u>

The large door or window in the Theoretics Library, the Philosopher's Study, looking out at the natural world, at the sea, signifies how the source of the work (the revelation of truth) of the dialectician is the Mind of Heaven, which is at the heart of nature and encompasses the entire World. The image also reminds us how every day for the dialectician is like a day in midsummer, when nature, in the form of clement weather, cooperates with our human plans.

This icon is the insignia of the rank of Novice 2nd Class.

<u>The Desk of the Philosopher</u>
the Will, and the Intellect, and the Sensibility of the Mind of Heaven as that (as Blueprint and Engine) which instantiates and galvanizes all allocyclonic hearts and minds, creating balance from imbalance.

This icon is the insignia of the rank of Novice 1st Class.

<u>The Archaeopteryx Cabinet and the Maps of World History, in the Theoretics Library</u>
The "Cabinet and Maps" Icon symbolizes the instantiation in time of the eternal Form—which resides in the eternal Mind of Heaven—of the Panoply, of the allocyclic (galaxial and stellar systemic) Evolution of Mind by means of the circle of conflict and memory.

This icon is the insignia of the rank of Student.

<u>The Piano, in the Theoretics Library</u>
The "Art in the Theoretics Library" icon symbolozes the Form of balance in Truth: seeking the general in the specific. Understanding its role in art is the penultimate step in the division of history into prenatal and postnatal—such understanding constitutes the condition of the Gaian Mind where Gaia's heart becomes fully developed.

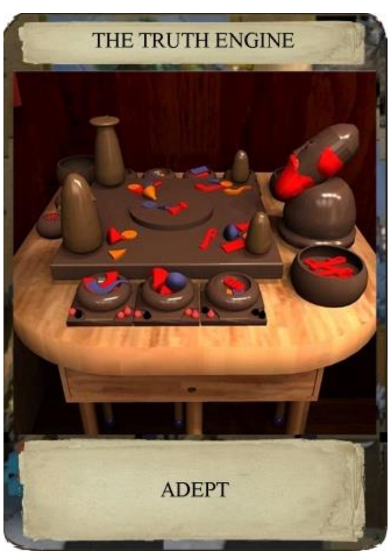
This icon is the insignia of the rank of Specialist 3rd Class.

<u>The Sculpture Table, in the Theoretics Library</u>
This is another example of the "Art in the Theoretics Library" icon.

This icon is the insignia of the rank of Specialist 2nd Class.

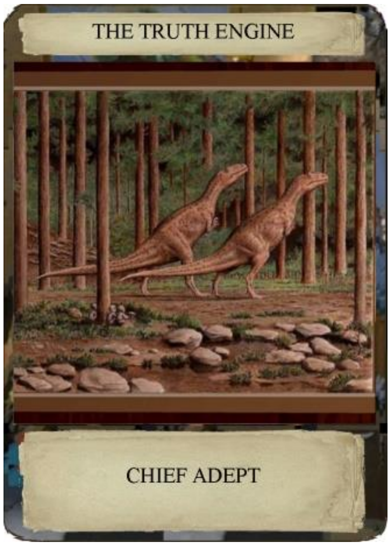
<u>The Bookcase, in the Theoretics Library</u>
This signifies the Form of the Record of Thought, of the Memory of Thought, and the Form of Consolidation of Mind, of the Dissemination of Truth, of Mind becoming confident in its knowledge.

This icon is the insignia of the rank of Specialist 1st Class.



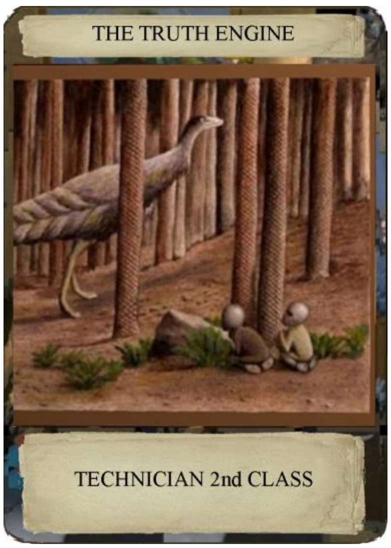
<u>The Game of Truth. In the Theoretics Library</u>
This symbolizes the Form of Reason, of Logic, of thinking, where the truth of one P-and-Q type compound statement implies the truth of another.

This icon is the insignia of the rank of Adept.



Two allosaurs are observed by alien visitors
Images depicting prehistoric animals on the wall in the Theoretics Library represent how Heaven's creation of the Panoply plays out in time, the Form of the evolutionary Dialectic as the Engine of Creation, as individual minds become ever more able to possess knowledge. The aliens represent how the Midwife watches, waiting for the time to help the Dialecticians who will someday evolve.

This icon is the insignia of the rank of Chief Adept.



A painting of an elaphrosaurus and observers, in the Theoretics Library
This is another example of the "Watching Aliens" icon.

This icon is the insignia of the rank of Technician 2nd Class.

A painting of stegosaurus and observers, in the Theoretics Library
This is a third example of the "Watching Aliens" icon.

This icon is the insignia of the rank of Technician 1st Class.

The Museum for Man, containing preserved specimens of all of earth's life forms, collected over the ages of the earth by the ancient races not of this Earth.
The Museum, in whatever form it appears, represents the entire Panoply as it exists as an eternal Form within the Mind of Heaven.

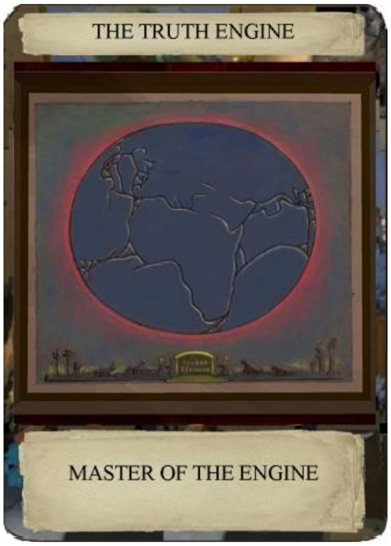
This icon is the insignia of the rank of Lieutenant Master.

The Tyrannosaur in the Museum for Man
Here is a second example of the Museum icon, portraying a specimen in the Museum

This icon is the insignia of the rank of Associate Master.

A Pteranodon in the Museum for Man
Here is a fifth example of the Museum icon, a painting portraying a specimen in the Museum.

This icon is the insignia of the rank of Deputy Master.



The Pangaia of Truth
This, the image of a painting in the Theoretics Library is the symbol for the unity of the earth that is to be brought about when Gaia is born, when the goal of evolution on earth has been reached.

This icon is the insignia of the rank of Master of the Engine.

The Room of Dangers in the basement of the House of the Philosopher
This mythical building, in whatever form it is depicted (but which is always to be portrayed as being in the House's basement), is the principle symbol of the Primal Dispositions. The Apollonian and the Dionysian predispositions are irrational, but present themselves as rational intuitions—they are responsible for great error. They constitute a lack of balance and are impediments to Truth Engine work. They must be overcome.

This icon is the insignia of the rank of Lieutenant Dialectician.

Mapping the Dispositions: an astrology wheel in the Astrology Room Adjoining the Thoretics Library on the House's second floor
Astrological equipment represents the conscientous and intellectual working-through of our sd biases, the process that the Cosmic Law, as given in the Form of the Panoply, demands that the dialectician pursue.

This icon is the insignia of the rank of Associate Dialectician.

<u>The desk in Astrology Room</u>
This is another example of the Astrological Equipment icon.

This icon is the insignia of the rank of Deputy Dialectician.

The little symbol-cart figurines, on the table in the Room of Honors, which adjoins the Theoretics Library
Honors must be bestowed upon the dialectician who overcomes his or her predispositions.

This icon is the insignia of the rank of Dialectician of the Engine.

<u>The House of Birth in the far north</u>
The tiny, cozy, safe and isolated House of the Dialectician's birth and childhood, reminiscent of the womb, represents the origin of the biases, which set the stage for life's drama. The dialecticians must struggle against their biases, but we are born into a world that supplies us with what our work demands of us.

This icon is the insignia of the rank of Chief Logician.

APPENDIX: Course in Reason

Module I. **INDUCTIVE REASON**

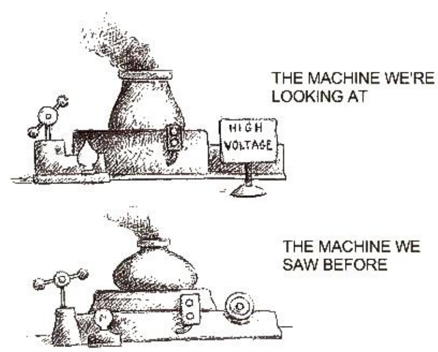
14. *Inductive reasoning* works like this:

> Inductive reasoning has to do with my awareness of the existence of one thing, A, causing me to presume the existence of another thing, B.
> The strength of my presumption of B, given A, is directly proportional to the number of times in the past that I've been aware of A being associated with B and inversely proportional to the number of times I've been aware of A ***not*** being associated with B.

When my awareness of A causes me to presume B, I am making an "inductive inference," belief in the presence of B, from the premise, awareness of the presence of A.

An example of inductive inference (ii):

I have seen machines very much like the one I'm looking at right now, and in every case, there was a wheel on the right, a part of the machine that I'm looking at now that is obscured by a sign. There's a wheel behind the sign. [ii]



Module II. **DEDUCTIVE REASON**

15. The fundamental fact of deductive reasoning:

> If we know that
>
> ONE AND ONLY ONE OF THESE IS [an adjective]: [a list of items]
>
> then we are entitled to believe certain other things.

For instance, assigning different adjectives and different lists:

if we believe that

- "O*ne and only one of these is edible: holly berry, cloudberry, ivy berry, mistletoe berry*".

  OR
- "O*ne and only one of these is odd: 12, 8, 23."*

  OR
- "One and only one of these *is meaningful*: ϟ ∇ ⏻ ◇."

then we are entitled to believe certain other things.

What are these "other things"?

THE 3 LAWS OF PURE DEDUCTION

Taking the third example above to illustrate the three obviously true *laws of deduction*:

Assuming that **one and only one of these is meaningful: ϟ ∇ ⏻ ◇:**

THE COMPLEMENTS LAW (comp)

1. The meaningful one is one of these: ∇ ◇.
2. Therefore, the meaningful one is not one of these: ϟ ⏻. [2 comp]

THE IN-COMMON LAW (ic)

1. The meaningful one is one of these: ϟ ⏻ ◇.
2. The meaningful one is one of these: ϟ ∇
3. Therefore, the meaningful one is ϟ. [1,2 ic—List all the items that 1 and 2 have in

and *THE ADD-ANYTHING LAW* (aa)

1. The meaningful one is this: ⏻.
2. Therefore, the meaningful one is one of thers: ∇ ⏻ ◇ [1 aa—add anything]

Definitions:

- suppose that "p" stands for

"There is a penny in my hand,"

● And suppose that “q” stands for

"There is a quarter in my hand.”

1. “p‾q” means: “p and q”—“There is a penny in my hand and there is a quarter in my hand.”

2, “p⟍q” means: “p and not-q”— “There is a penny in my hand and there isn’t a quarter in my hand.”

3. “p⟋q” means: “not-p and q”—“There’s not a penny in my hand and there’s a quarter in my hand.”

4. “p _ q” means: “not-p and not-q”—“There’s not a penny in my hand and there’s not a quarter in my hand,”

There are no coins in my hand.

One and only one of the four possibilities above must be true; that is,

One and only one of these is true: p‾q p⟍q p⟋q p _ q

which has the same form as:

One and only one of these is meaningful: ϟ ▽ ⏻ ◇

16. So the 3 laws of **deduction** apply; these then become the 3 laws of **deductive logic**:

Module III. DEDUCTIVE LOGIC

THE COMPLEMENTS LAW (comp)

1. The true one is one of these: p╲q   p▁q
2. Therefore, the true one is not one of these: p‾q   p╱q.   [2 comp]

THE IN-COMMON LAW (ic)

1. The true one is one of these: p‾q   p╱q   p▁q.
2. The true one is one of these: p‾q   p╲q
3. Therefore, the true one is p‾q. [1,2 ic—List all and only the items that 1 and 2 have in common.

and *THE ADD-ANYTHING LAW* (aa)

1. The true one is this: p╱q.
2. Therefore, the true one is one of thers: p╲q   p╱q   p▁q [1 aa—add anything]

Note that the sentence,

One and only one of these is true: p‾q   p╲q   p╱q   p▁q

can be written

p ⧗ q

And the sentence

The true one is one of these: p╲q   p▁q

can be written

p ⍀ q

And the sentence

The true one is one of these: p‾q   p╱q   p▁q.

can be written

p Z q

Etc.

So, using the above definitions (p = There is a penny in my hand and q = There is a quarter in my hand), if I write: p Z q* and p ⌅ q**, you can conclude by ic that p‾q, which just means that there's a penny and a quarter in my hand.
* The true one is one of these: p‾q   p╱q   p▁q.
** The true one is one of these: p‾q p╲q.

So,

where “p” stands for a proposition, and “q” stands for another proposition, the following are the “*16 signs*,” which have been used with the same meanings on worlds too numerous to count, over eons too vast to comprehend:

p ° q means “None of these is true: ‘p and q’, ‘p and not-q’, ‘not-p and q’, ‘not-p and not-q.’” (Any statement of this form cannot be true.)

p‾q means: “p and q”—for instance, “The rain came down ‾ the wind blew” means “The rain came down and the wind blew.”

p ⟍ q means: “p and not-q”—for instance, “The rain came down ⟍ the wind blew” means “The rain came down and the wind did not blow.” (In this case, instead of “and,” one might use the word “but.”)

p ⟋ q means: “not-p and q”—for instance, “The rain came down ⟋ the wind blew” means “The rain didn’t come down and the wind blew.” (In this case, instead of “and,” one might use the word “but.”)

p _ q means: “not-p and not-q”—for instance, “The rain came down _ the wind blew” means “The rain didn’t come down and the wind didn’t blow.”

p ⟍̅ q means: “The true one is one of these: ‘p‾q,’ ‘p ⟍ q,’” which just means “p.” For instance, “The rain came down ⟍̅ the wind blew” means “The true one is one of these: ‘The rain came down and the wind blew,’ ‘The rain came down and the wind didn’t blow.’” This tells us that the rain fell.

p ⟋̅ q means: “The true one is one of these: ‘p‾q’, ‘p ⟋ q’,” which just means “q”

p = q means: “The true one is one of these: ‘p‾q’, ‘p _ q’,” which just means “p if and only if q.”

p ✕ q means: “The true one is one of these: ‘p ⟍ q,’ ‘p ⟋ q,’” which just means “p or q (not both)”.

p ⟍̲ q means “The true one is one of these: ‘p ⟍ q,’ ‘p _ q,’” which just means “not-q”.

p ∠ q means “The true one is one of these: ‘p ⟋ q’, ‘p _ q’,” which just means “not-p”.

p X̅ q means “The true one is one of these: ‘p‾q’, ‘p ⟍ q’, ‘p ⟋ q’,” which just means “p or q (or both).”

p Σ q means “The true one is one of these: ‘p‾q’, ‘p ⟍ q’, ‘p _ q’,” which is logically the same as “If q then p,” and “p if q” and “q only if p.”

p Z q means “The true one is one of these: ‘p‾q’, ‘p ⟋ q’, ‘p _ q’,” which is logically the same as “If p then q” and “q if p” and “p only if q”.

p X̲ q means “The true one is one of these: ‘p ⟍ q’, ‘p ⟋ q’, ‘p _ q’,” which just means “p or q (or neither)”.

p ⧗ q means “One and only one of these is true: ‘p‾q’, ‘p ╲ q’, ‘p ╱ q’, ‘p _ q’.”

p⧗q is a kind of only-1 statement whose predicate is “is true,” and that has a special list of four 2-proposition andline statements. Call any statement of the form p ⧗ q a “P|Q” (“P-pipe-Q”) statement. So, an example of a p ⧗ q Statement is:

“The rain came down ⧗ the wind blew.” That is,

“One and only one of these is true: ‘The rain came down *and the wind blew,’ ‘The rain* came down *and the wind did not blow,’ ‘The rain did not come down and the wind blew,’ ‘The rain did not come down and the wind did not blow.’”*

(3) Example of a p ⧗ q statement: *“One and only one of these is true: ‘The rain* came down *and the wind blew,’ ‘The rain* came down *and the wind did not blow,’ ‘The rain did not come down and the wind blew,’ ‘The rain did not come down and the wind did not blow.’”* (Or: *The rain came down ⧗ the wind blew.”*)

If p stands for a proposition, these are the two fundamental *Laws of Deductive Logic:*

The Law of the Excluded Middle: For all p, at least one of the following is true: p, not-p.[1]
The Law of Contradiction: For all p, no more than one of the following is true: p, not-p.

These two laws are combined in the following statement, which is true a priori and *which makes every p ⧗ q statement about the real world always true*:

“One and only one of these is true: p, not-p.”

More examples of logical deduction (p ⧗ q is implicit in each example):

1. His light’s on ⚌ He’s at home. His light’s on if and only if he’s home.
2. Therefore, not-(His light’s on ╳ He’s at home). [2 comp] It’s not the case that either his light’s on and he’s not home, or his light’s off and he’s at home.

where the lines of the “╳” constitute the complement of the lines of the “⚌“. Or you can make this deduction, using ic and aa:

1. His light’s on Z He’s at home. That is, “If his light’s on, then he’s home.”
2. His light’s on ‾╲ He’s at home. That is, “His light’s on”
3 His light’s on ‾ He’s at home. [1,2 ic] All the lines that 1 and 2 have in common
4. His light’s on 7 He’s at home. [3. aa] That is, “He’s at home;” sdd any line(s) to 3

So, from “If his light’s on, then he’s home” and “His light’s on,” you have, by a process known as *Modus Ponens*, concluded that the proposition “He’s home” is true.

Proving some familiar deductions-- p ⧗ q is implicit

Modus Ponens:

If p then q	p Ƶ q	1. p Ƶ q
<u>p</u>	<u>p ¯\ q</u>	2. <u>p ¯\ q</u>
q	p ⁊ q	3. <u>p ¯ q</u> 1,2 in-common (i.c.)
		4. p ⁊ q 3 add-anything (a.a.)

Modus Tollens:

If p then q	p Ƶ q	1. p Ƶ q
<u>not q</u>	<u>q+</u>	2. <u>p _ q</u>
not p	p+	3. <u>p _ q</u> 1,2 in-common (i.c.)
		4. p ∠ q 3 add-anything (a.a.)

Disjunctive Syllogism:

p or q	p X̄ q	1. p X̄ q
<u>not p</u>	<u>p+</u>	2. <u>p ∠ q</u>
q	q	3. <u>p ⟋ q</u> 1,2 in-common (i.c.)
		4. p ⁊ q 3 add-anything (a.a.)

<u>Hypothetical Syllogism</u> (HS) is proved using a system of three variables. The player needn't learn this system.

If p then q	p Ƶ q	1. pqr ¯¯ ¯\ /¯ /\ _/ __ *
<u>If q then r</u>	<u>q Ƶ r</u>	2. <u>pqr ¯¯ /¯ \/ _/ _ __</u>
If p then r	p Ƶ r	3. <u>pqr ¯¯ /¯ _/ __</u> 1,2 in-common (i.c.)
		4. pqr ¯¯ \/ /¯ _/ /\ __ 3 add-anything (a.a.)

*The true one is one of these: p & q & r p & q & not-r not-p & q & r not-p & q & not-r not-p & not-q & r not-p & not-q & not-r.

<u>Categorical Syllogisms</u> (CS)

<u>AAA-1</u>
All B are C
All A are B
All A are C

<u>AII-1</u>
All B are C
Some A are B
Some A are C

<u>EAE-1</u>
No B are C
All A are B
No A are C

EAE-2
No C are B
All A are B
No A are C

EIO-2
No C are B
Some A are B
Some A are not C

IAI-3
Some B are C
All B are A
Some A are C

OAO-3
Some B are not C
All B are A
Some A are not C

AEE-4
All C are B
No B are A
No A are C

EIO-4
No C are B
Some B are A
Some A are not C

EIO-1
No B are C
Some A are B
Some A are not C

AEE-2
All C are B
No A are B
No A are C

AOO-2
All C are B
Some A are not B
Some A are not C

AII-3
All B are C
Some B are A
Some A are C

EIO-3
No B are C
Some B are A
Some A are not C

IAI-4
Some C are B
All B are A
Some A are C

,