



You Will Done Been Taught Propositional Reckoning!

by Freda Hystrix

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(written on the page in pencil: "Turns out this isn't
from your Earth, 08d1348f30e9, but a different one,
b9f50d44c02b. their version of English is very
different...")

Introduction

Now y'all sit down and listen to Miz Hystrix tell you about Propositional Reckoning methods for controlling changes to sub-realities.

Now, Technomages be altering sub-realities on the daily. But they also be consuming more and more of Funge Space, especially regions that overlap. This of course, is a problem. Not so much of how much it is we be doing or be consuming, but just as a practicality of doing the work we be doing. Recently, a standard "premise" system been accepted by the community for limiting changes within a sub-reality.

As with all sub-reality alteration technomagic the question of if this could be applied for our reality, and thus limit alterations to *it* is a big question.

Wouldn't surprise me! But that don't matter none. You gonna be needing to understand in what type of a way these premises gonna be limiting you. You gonna need it because you is as clever as B'rer Rabbit, though you do get yourself in just as much trouble. So sit down for a spell and let Miz Hystrix learn you some, and maybe get a few laughs outta you now and then too. Though, this gonna be a bit of a short one, this ain't that big a deal. But you gonna know that, because you will done been taught Propositional Reckoning!

Signed,

Miz Hystrix

(written on the page in pencil: "Oh my god... Miz Hystrix is the best. She's such a good teacher and she's also cute based on the photo on the back. She'd might like a skunktaur friend. :3")

Propositions: Ain't Talking About Marrying Here, Folks

So let's start with *Propositions*.

The state of a reality (we just gonna use it cause sub-reality too long) be tied to a set of *Propositions* (we using the fancy slanted letters cause you *know* that just gonna be a particular technical term). They use anything adhering to the IGT Bul Standard, which is a fancy way of saying they is either Trul or Ful, the Bul settings. And those just a stand in for normal Boolean values, true and false, but then them ReckCo! cats wouldn't be feeling so damn fine pleased at they clever wordplay.

Sorry, Miz Hystrix get a little worked up about it.

But yeah, these Propositions are either Trul or Ful. Based on whether it is Trul or Ful, the state of something in that reality *is* true or false, with all the history cascades and further cascading changes due to Gribnax's Lemma that would require. So if you were to tie, say, the color of the sky to this Proposition, it'd change based on it if the Bul is flipped from Trul to Ful (or the other way around, of course.)

The number of Propositions available depend on the particular Propositional Reckoning device in question, but usually there be four of them. And since Miz Hystrix likes making things into games, let's just say these four are called after the card suits:

- Clubs (♣)
- Diamonds (♦)
- Hearts (♥)
- Spades (♠)

Though, these suits don't got no particular ordering like in Spades, Bridge, or Terminus Coleslaw, so don't worry none about that. They equal. One be wishing we all a bit more like these suits.

Connectives: They the Glue

So these Propositions are then hooked together to form the *Premises* (we being technical, again) which don't exactly limit the ways a reality can be altered, but does place limits on how Buls can be set. That is, you ain't gonna be able to change even one Bul if that would cause the final *reckoning* of the premise to not end up true. Or Trul, from the perspective of the Bul.

These Premises use a set of operators called *Connectives*. These connectives represent the basic binary logic operators like y'all might know from math. They just represent that operating on a Bul. But let me go through the three...

Meet the Propositional Reckoning Connectives

Not: Nah, Never mind

The “not” operator represented by a star (★). Y’all know, negation. So let’s look at a simple Premise like “♠★”. (We just jumping in, hold on!). This is a spade followed by a star. The spade represents the Spades Proposition that you been knowing since the last chapter. Well, the star means “not”. That is, the Premise only holds if the Spades Proposition is *not* Trul (cause presumably it’s Ful). If it don’t hold, the change don’t go.

Or: This or That

The “or” operator represented by a one dot circle (⊙). So now we might some other time be working under this Premise, “♥♦⊙”. So you got a heart, a diamond, and then one dot in a circle. It’s on the right, but that don’t matter none. Now, the suits represent they Propositions, that is, the Hearts and Diamonds Propositions. The *single* dot in the circle means “or”. You can think of that meaning at least *one* of the Propositions, Hearts or Diamonds, must be Trul if the Premise is to hold. Well, you right! If they were both Ful, *then* the Premise don’t hold, and the change don’t go. Now, it don’t make a difference if both Trul, the Premise gonna still hold just like if only one of them were Ful.

And: Y’all as Sweet as Both Sugar AND Spice

The “and” operator represented by a two dot circle (⊕). And then we get to “and”. All right, turn them peepers to this one “♣♥⊕”. It’s a club, followed by a heart, followed by *two* dots in a circle. So of course the suits represent they Propositions, but that circle new. Well, it means “and”, which means that *both* of the Buls representing those Propositions must be set to Trul for the premise to hold. If one of them Buls don’t be Trul, the Premise don’t hold, and if it don’t hold... (y’all know) it don’t go.

Non-Atomic Premises and How to Whittle Them Down

Of course, you can just go on ahead and hook up many Propositions and Connectives into much longer, complicated Premises, and that's what you see be used most of the time. As long as the huge old train of these Propositions and Connectives can be eventually worked down to a single Bul setting, Trul or Ful, that is. If you can't, then it's not a valid Premise. But let's look through one such valid Premise, " $\clubsuit\blacklozenge\odot\spadesuit\star\odot\heartsuit\star\odot$ ", and see if we can't show a way to whittle it down...

Starting from the front three, we got a club (\clubsuit), a diamond (\blacklozenge), and the two dot circle (\odot). This enough to reduce down, assuming we know what the values of the Propositions are. Let's just make Clubs Trul and Diamonds Ful ($TF\odot$). Since the two dots mean that *both* would have to be Trul, then we can replace this *with* Trul (T). Assuming that be the case, of course. Which we *is*.

Taking the next two, a spade (\spadesuit) and a star (\star), we also get something that we can replace. So just picking Spades to be Trul ($T\star$), the star means we invert it to Ful (F). This leads us right into the next one, the one dot circle (\odot). So the first part was Trul, and we just set Spades to Ful ($TF\odot$). Luckily, the *one* dot means only *one* of the parts got to be Trul to reduce this down to Trul (T).

Then we go on to a heart (\heartsuit) and a star (\star), so we invert Hearts to be Ful (from our assumed assumption it was Trul to begin with, of course, don't fret none about it.), and move on to another one dot circle (\odot). So from the part before, we had Trul, and we just now have a Ful from inverting Hearts ($TF\odot$). Since only one needs to be Trul, we can reduce this last Connective to Trul (T). Which make the whole Premise Trul so it therefore holds.

What We Just Done

So wait, what actually is this we doing? Well, this whittling can be thought of as *resolving* the Premise given a certain assumption of the settings of the Propositions. Basically, *flip* the stars, *count* the dots! Just repeat those two little actions and you can work it out.

Now, a friendly mage like yourself may ask “but we were assuming the values, what happens if we just assume different?” Well, take a gander at this configuration of settings for the Propositions with the same Premise (“♣♦⊕♠★⊙♥★⊙”):

- Clubs (♣): Ful
- Diamonds (♦): Trul
- Hearts (♥): Trul
- Spades (♠): Trul

So starting from the left, we go find the first connective, which is a two dot circle (⊕). We *count* the dots. There are two dots, so the two Propositions, Clubs and Diamonds would both have to be Trul for this part of the Premise to be Trul. Since Clubs is Ful, then *this* is Ful, and we put this as something to remember.

Now we go to the second connective. It’s a star (★), so we take the Spades Proposition right next to it, and *flip* that from Trul to Ful. We can then move to the third connective which is a one dot circle (⊙). Since the first connective was Ful, and the second was Ful, we don’t have enough set to Trul to match up with the dots we *counted* in the circle. So that’s Ful too.

The fourth connective is another star (★), *flipping* the Hearts Proposition from Trul to Ful. This leads us to the fifth connective, a one dot circle (⊙). But after *counting* up the connectives we resolved to Trul, we don’t have even the single one we’d need. So the whole Premise *resolves* to Ful.

Well, So What if It Ain't

In a case like this, when the whole Premise resolves to Ful based on the configuration of the Buls, then we say the Premise don't *hold*. In the first configuration, where it did resolve to Trul, it *do* hold. If it don't hold it, the change don't go.

Y'all been hearing Miz Hystrix say that now for a few chapters so y'all cunning critters probably done figured out what I mean. If using Funge Space to alter the reality, a program ran that set the Propositions to that second configuration, then it gonna be rejected because the Premise don't *hold*.

This mean that given the Premises, while all four Propositions can all be Trul and Ful independently of each other, they can only be so in a certain way. If Hearts and Spades are both Trul, and Clubs and Diamonds are both false, then the alteration will not be applied. Like that old song by Claudia Anansi, you can't always get what you want. (And of course, if you try sometimes...)

A little exercise for y'all: go through all the sixteen possible configurations of the four Propositions with the premise we been using (“♣♦⊙♠★⊙♥★⊙”). Which ones hold and thus are valid alterations that can be made to the Propositions?

Answers

This chart outlines the configurations, with “T” representing Trul, and “F” representing F. The first four are the Clubs (♣), Diamonds (♦), Hearts (♥), Spades (♠) Proposition settings, and then the fifth on the other side is the final resolution of our premise (“♣♦♠♥★♠♥★♠”).

Clubs Diamonds Hearts Spades *Resolution*

F	F	F	F	<i>T</i>
F	F	F	T	<i>T</i>
F	F	T	F	<i>T</i>
F	F	T	T	<i>F</i>
F	T	F	F	<i>T</i>
F	T	F	T	<i>T</i>
F	T	T	F	<i>T</i>
F	T	T	T	<i>F</i>
T	F	F	F	<i>T</i>
T	F	F	T	<i>T</i>
T	F	T	F	<i>T</i>
T	F	T	T	<i>F</i>
T	T	F	F	<i>T</i>
T	T	F	T	<i>T</i>
T	T	T	F	<i>T</i>
T	T	T	T	<i>T</i>

So every configuration that isn't FFFT, FTTT, or TFFT is valid because the premise holds. Those three are invalid and the Premise does not hold, so they couldn't be altered to be that configuration.

Afterword

Now, that right there is about all y'all need to know. Now of course, you gonna be working with multiple premises using the same propositions, so these charts might get a bit hairy. But y'all cunning enough to *flip* the stars (★) and *count* the dots (⊙ & ☉). Everything else is just card counting. But you ain't never catch Miz Hystrix teaching you nothing like that, at least not in an uptown joint like *my books* is. Y'all be good critters now!