METATHEOREMS FROM REPLACEMENT

JANG GE

August 30, 2015

1 The axiom

I think the Axiom of replacement is quite unfriendly to a beginninger, for requirement of a better viewpoint of the term $H(x, y)$. Let us recall that the axiom takes the form

WHENEVER $H(x, y)$ IS DECIDED WITH THE PROPERTY THAT IF $H(x, y_u)$ AND $H(x, y_v)$ THEN $y_u = y_v$, THAT IS, WHENEVER WE'VE ALREADY PREPARED THE SENTENCE, AND A IS ANY SET, THEN THIS IS A TAUTOLOGY:

There is a set B such that for any set x, $y \in B$ if and only if $H(x, y)$ for some $x \in A$.

2 Conceptional function

According to our experience in mathematics, when such a predicate $H(x, y)$ is proved to accompany the fact $y_u = y_v$ whenever $H(x, y_u)$ and $H(x, y_v)$, we may define the SOME-NOTION of x to be y, denoted by $y = \Gamma(x)$. For example, $H(x, y)$ taken as $t \in y \Leftrightarrow t \subset x$, we show the accompanied fact. Then we say such a y is the power-set of x, denoted by $\wp(x)$. Note that the SOME-NOTION is the power-set, while the notation Γ of the notation replaced by $\wp$.

$\Gamma(x)$, directly called the gamma of x, is something that we might call a "conceptional function", because we do not restricted its domain and codomain. For example, intersection and union, which are two variabled, and the single variable $\wp(x)$. However, the risk is the undefined or meaningless or paradoxical condition. For example, denote $\Gamma(s)$ =the set of all that contain s (as a subset) such that $t \notin t$. Everybody knows the modified Russell paradox leads to a contradiction just rightafter its definition.

To summary, what I call a "conceptional function" will help in set theory. Especially, it "hiddenly" occurs in a proof of algebraic closure of a field $\mathbb{F}$ while most people keep unaware. Let's resume, and show its two reducing METATHEOREM:

3 The Metatheorems

METATHEOREM 1: REPLACEMENT $\Rightarrow$ SCHEMA.

So the mission is to properly decide $H(x, y)$. Let's see below.

What we want: $\forall y, y \in B \Leftrightarrow y \in A \;\&\; \varphi(y)$;
What we have: $\forall y, y \in B \Leftrightarrow (\exists x)x \in A \;\&\; y = \Gamma(x)$

Comparing the terms , we may be inspired that $H(x, y)$ contain the condition $\varphi(y)$. To connect to $x \in A$, that is, to support the condition $y = \Gamma(x)$ for an x. A best way is to identify $x = y$, and then make some adjustment. Now we set $H(x, y) \Leftrightarrow x = y \;\&\; \varphi(x)$, this lead to a proof.

Note: You may give yourself an one-sentence explanation of the notion $\Gamma(x)$, for example, y is the identical φ-ed element of x or any other name.

METATHEOREM 2: REPLACEMENT+POWERSET $\Rightarrow$ PAIRING.

This is my idea.

What we want: $\forall x, x \in Q \Leftrightarrow x \in u \;\; or \;\; x = v$;
What we have: $\forall y, y \in B \Leftrightarrow (\exists x)x \in A \;\&\; y = \Gamma(x)$

Here $\Gamma(x)$ is an image of what I called a "conceptional function". So $\Gamma(x)$ is meant to be u, or to be v. Our mission is to decide conditions of each value, that is, we're going to construct its domain, and the mapping, and express it in a formula.

This is an answer: $H(x, y) \Leftrightarrow (x = \varnothing \;\;\&\;\; y = u) \;\; or \;\; (x = \{\varnothing\} \;\;\&\;\; y = v)$. You might complete the proof, and it will be easy.