1. New Theory of Quantifiers

We propose an account of quantifiers in terms of ***junctions***, which are infinitary-operators.[1] All told (or perhaps, all *tolled*), we will propose six different junctions, as follows.

$\bigwedge$	conjunction	every
$\bigvee$	disjunction	some
Л	subjunction	any
⊠	exclusive-disjunction	exactly-one
Σ	sum	"a" (base)[2]
Π	product	"a" (promoted)

2. General Formation Rules for Junctions

First, for each junction Ж, we posit a new type-forming operator Ж, defined so that

if $\mathfrak{I}$ is a type, then so is Ж$\mathfrak{I}$.

We further propose the following formation rule.

If ν is a variable, ε is an expression of type $\mathfrak{I}$, and Φ is a formula, then

Ж$_\nu\{\varepsilon \mid \Phi\}$

is an expression of type Ж$\mathfrak{I}$, which we read as:

the Ж (over ν) of all ε such that Φ

where 'Ж' is replaced by the appropriate term (e.g., 'conjunction' or 'product').

If ε and Φ share exactly-one free variable, then this is understood to be the variable of abstraction, so we omit it, in which case we have (informal) expressions of the following form,

Ж$\{\varepsilon \mid \Phi\}$

which we read as:

the Ж of all ε such that Φ.

3. Interpretation of Quantifiers (so far)

$$[\![\text{every}]\!] = \lambda P_0 \bigwedge\{x \mid Px\}$$

$$[\![\text{some}]\!] = \lambda P_0 \bigvee\{x \mid Px\}$$

$$[\![\text{no}]\!] = \lambda P_0 \bigwedge\{\lambda Q{\sim}Qx \mid Px\}$$

[1] By an infinitary-operator, we mean an operator that acts on *a collection of arguments* of arbitrary size, even infinite, and even empty.

[2] The word 'a' is scare-quoted because it is often not pronounced. In English, singular common-noun-phrases *require* 'a', but plural-phrases and mass-phrases *prohibit* 'a'. By comparison, Spanish has plural forms of 'a' ['unas' and 'unos'].

4. Composition (so far)

Junction-Composition (Ж-Com)	
α	α is any expression (**or null**)
$Ж_\nu\{\beta \mid \Phi\}$	Ж admits α
$\{\alpha,\beta\} \vdash \gamma$	a sub-derivation of γ from $\{\alpha,\beta\}$
$Ж_\nu\{\gamma \mid \Phi\}$	

Here, α, β, γ are expressions (even junctions[3]), and Ж is any junction.

5. Admissibility-Restrictions (so far)

($\wedge_1$) $\wedge$ does not admit $\lambda P_1 \lambda x_1 {\sim} Px$ ('does-not').

($\wedge_2$) $\wedge$ does not admit any relative-pronoun-phrase.[4]

($\wedge_3$) $\wedge$ does not admit $\wedge\{\ \lambda Q {\sim} Qx \mid Px\ \}$ ('no P').

6. Simplification Principles (so far)

$\wedge_\nu\{\Psi \mid \Phi\}$ / $\forall\nu\{\Phi \rightarrow \Psi\}$ [$\wedge$-simplification]

$\vee_\nu\{\Psi \mid \Phi\}$ / $\exists\nu\{\Phi \& \Psi\}$ [$\vee$-simplification]

7. Examples

1. every man's mother is kind

<table>
<tr><td>every</td><td>man</td><td>'s</td><td>mother</td><td>[+1]</td><td>is</td><td>kind</td></tr>
<tr><td>$\lambda P_0 \wedge\{x \mid Px\}$</td><td>$\mathbf{M}_0$</td><td></td><td></td><td></td><td>$\lambda P_0\{P_1\}$</td><td>$\mathbf{K}_0$</td></tr>
<tr><td colspan="2">$\wedge\{x \mid \mathbf{M}x\}$</td><td>$\lambda x\{x_6\}$</td><td></td><td></td><td colspan="2"></td></tr>
<tr><td colspan="3">$\wedge\{x_6 \mid \mathbf{M}x\}$</td><td>$\lambda x_6\{\mathbf{m}(x)\}$</td><td></td><td colspan="2"></td></tr>
<tr><td colspan="4">$\wedge\{\mathbf{m}(x) \mid \mathbf{M}x\}$</td><td>$\lambda x\{x_1\}$</td><td colspan="2"></td></tr>
<tr><td colspan="5">$\wedge\{\mathbf{m}(x)_1 \mid \mathbf{M}x\}$</td><td colspan="2">$\mathbf{K}_1$</td></tr>
<tr><td colspan="7">$\wedge\{\ \mathbf{K}[\mathbf{m}(x)] \mid \mathbf{M}x\ \}$</td></tr>
<tr><td colspan="7">$\forall x\ \{\ \mathbf{M}x \rightarrow \mathbf{K}[\mathbf{m}(x)]\ \}$</td></tr>
</table>

[3] We accept the ambiguity between the use of 'junction' to refer to the operator, and to refer to the result of applying the operator; this is consonant with the same ambiguity in the word 'conjunction'.
[4] In other words, an NP headed by a relative pronoun, such as 'who' and 'whose mother'.

2. Jay respects every woman

<table>
<tr><td>Jay</td><td>[+1]</td><td>respects</td><td>every</td><td>woman</td><td>[+2]</td></tr>
<tr><td>J</td><td>$\lambda x\{x_1\}$</td><td rowspan="2"></td><td>$\lambda P_0 \wedge \{y \mid Py\}$</td><td>$\mathbf{W}_0$</td><td></td></tr>
<tr><td colspan="2" rowspan="3">J_1</td><td colspan="2">$\wedge\{y \mid \mathbf{W}y\}$</td><td>$\lambda x\{x_2\}$</td></tr>
<tr><td>$\lambda y_2 \lambda x_1 \mathbf{R}xy$</td><td colspan="3">$\wedge\{y_2 \mid \mathbf{W}y\}$</td></tr>
<tr><td colspan="4">$\wedge\{\lambda x_1 \mathbf{R}xy \mid \mathbf{W}y\}$</td></tr>
<tr><td colspan="6">$\wedge\{ \mathbf{R}Jy \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="6">$\forall y \{ \mathbf{W}y \rightarrow \mathbf{R}Jy \}$</td></tr>
</table>

3. Jay does not respect every woman

<table>
<tr><td>Jay</td><td>[+1]</td><td>does-not</td><td>respect</td><td>every</td><td>woman</td><td>[+2]</td></tr>
<tr><td>J</td><td>$\lambda x\{x_1\}$</td><td rowspan="4"></td><td rowspan="2"></td><td>$\lambda P_0 \wedge \{y \mid Py\}$</td><td>$\mathbf{W}_0$</td><td></td></tr>
<tr><td colspan="2" rowspan="5">J_1</td><td colspan="2">$\wedge\{y \mid \mathbf{W}y\}$</td><td>$\lambda x\{x_2\}$</td></tr>
<tr><td>$\lambda y_2 \lambda x_1 \mathbf{R}xy$</td><td colspan="3">$\wedge\{y_2 \mid \mathbf{W}y\}$</td></tr>
<tr><td colspan="4">$\wedge\{\lambda x_1 \mathbf{R}xy \mid \mathbf{W}y\}$</td></tr>
<tr><td>$\lambda P_1 \lambda x_1 {\sim} Px$</td><td colspan="4">$\lambda x_1 \forall y\{\mathbf{W}y \rightarrow \mathbf{R}xy\}$</td></tr>
<tr><td colspan="5">$\lambda x_1 {\sim}\forall y\{\mathbf{W}y \rightarrow \mathbf{R}xy\}$</td></tr>
<tr><td colspan="7">${\sim}\forall y \{ \mathbf{W}y \rightarrow \mathbf{R}Jy \}$</td></tr>
</table>

4. every man respects every woman

<table>
<tr><td>every man_1</td><td>respects</td><td>every woman_1</td></tr>
<tr><td rowspan="2">$\wedge\{x_1 \mid \mathbf{M}x\}$</td><td>$\lambda y_2 \lambda x_1 \mathbf{R}xy$</td><td>$\wedge\{y_2 \mid \mathbf{W}y\}$</td></tr>
<tr><td colspan="2">$\wedge\{ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="3">$\wedge\{ \wedge\{ \mathbf{R}xy \mid \mathbf{W}y \} \mid \mathbf{M}x \}$</td></tr>
<tr><td colspan="3">$\forall x \{ \mathbf{M}x \rightarrow \forall y \{\mathbf{W}y \rightarrow \mathbf{R}xy\} \}$</td></tr>
</table>

<table>
<tr><td>every man_1</td><td>respects</td><td>every woman_2</td></tr>
<tr><td rowspan="2">$\wedge\{x_1 \mid \mathbf{M}x\}$</td><td>$\lambda y_2 \lambda x_1 \mathbf{R}xy$</td><td>$\wedge\{y_2 \mid \mathbf{W}y\}$</td></tr>
<tr><td colspan="2">$\wedge\{ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="3">$\wedge\{ \wedge\{ \mathbf{R}xy \mid \mathbf{M}x \} \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="3">$\forall y \{ \mathbf{W}y \rightarrow \forall x \{\mathbf{M}x \rightarrow \mathbf{R}xy\} \}$</td></tr>
</table>

5. Jay does not respect some woman

<table>
<tr><td>Jay</td><td>[+1]</td><td>does-not</td><td>respect</td><td>some</td><td>woman</td><td>[+2]</td></tr>
<tr><td>J</td><td>$\lambda x\{x_1\}$</td><td rowspan="3"></td><td rowspan="2"></td><td>$\lambda P_0 \vee \{y \mid Py\}$</td><td>$\mathbf{W}_0$</td><td></td></tr>
<tr><td colspan="2" rowspan="4">J_1</td><td colspan="2">$\vee\{y \mid \mathbf{W}y\}$</td><td>$\lambda x\{x_2\}$</td></tr>
<tr><td>$\lambda y_2 \lambda x_1 \mathbf{R}xy$</td><td colspan="3">$\vee\{y_2 \mid \mathbf{W}y\}$</td></tr>
<tr><td>$\lambda P_1 \lambda x_1\{{\sim} Px\}$</td><td colspan="4">$\vee\{ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="5">$\vee\{ \lambda x_1 {\sim}\mathbf{R}xy \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="7">$\vee\{ {\sim}\mathbf{R}Jy \mid \mathbf{W}y \}$</td></tr>
<tr><td colspan="7">$\exists y \{ \mathbf{W}y \ \& \ {\sim}\mathbf{R}xy \}$</td></tr>
</table>

6. Jay does not respect some woman [alternative reading?]

Jay	[+1]	does-not	respect	some	woman	[+2]
J	$\lambda x\{x_1\}$			$\lambda P_0 \vee\{y \mid Py\}$	$\mathbf{W}_0$	
				$\vee\{y \mid \mathbf{W}y\}$		$\lambda x\{x_2\}$
			$\lambda y_2 \lambda x_1 \mathbf{R}xy$	$\vee\{y_2 \mid \mathbf{W}y\}$		
			$\vee\{\ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y\ \}$			
		$\lambda P_1 \lambda x_1\{\sim Px\}$	$\lambda x_1\ \exists y\ \{\ \mathbf{W}y\ \&\ Rxy\ \}$			
J_1		$\lambda x_1\ \sim\exists y\ \{\ \mathbf{W}y\ \&\ Rxy\ \}$				
$\sim\exists y\ \{\ \mathbf{W}y\ \&\ RJy\ \}$						

7. every man respects some woman

'every man' has wide scope

every man $_1$	respects	some woman $_2$
	$\lambda y_2 \lambda x_1 \mathbf{R}xy$	$\vee\{\ y_2 \mid \mathbf{W}y\ \}$
$\wedge\{\ x_1 \mid \mathbf{M}x\ \}$	$\vee\{\ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y\ \}$	
$\wedge\{\ \vee\{\ \mathbf{R}xy \mid \mathbf{W}y\ \} \mid \mathbf{M}x\ \}$		
$\forall x\ \{\ \mathbf{M}x \rightarrow \exists y\{\mathbf{W}y\ \&\ \mathbf{R}xy\}\ \}$		

'some woman' has wide scope

every man $_1$	respects	some woman $_2$
	$\lambda y_2 \lambda x_1 \mathbf{R}xy$	$\vee\{\ y_2 \mid \mathbf{W}y\ \}$
$\wedge\{\ x_1 \mid \mathbf{M}x\ \}$	$\vee\{\ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y\ \}$	
$\vee\{\ \wedge\{\ \mathbf{R}xy \mid \mathbf{M}x\ \} \mid \mathbf{W}y\ \}$		
$\exists y\{\ \mathbf{W}y\ \&\ \forall x\ \{\mathbf{M}x \rightarrow \mathbf{R}xy\}\ \}$		

8. no man is virtuous

no	man	[+1]	is	virtuous
$\lambda P_0 \wedge\{\lambda Q{\sim}Qx \mid Px\}$	$\mathbf{M}_0$		$\lambda P_0\{P_1\}$	$\mathbf{V}_0$
$\wedge\{\ \lambda Q{\sim}Qx \mid \mathbf{M}x\ \}$		$\lambda x\{x_1\}$		
$\wedge\{\ \lambda Q_1{\sim}Qx \mid \mathbf{M}x\ \}$			$\mathbf{V}_1$	
$\wedge\{\ {\sim}\mathbf{V}x \mid \mathbf{M}x\ \}$				
$\forall x\ \{\ \mathbf{M}x \rightarrow {\sim}\mathbf{V}x\ \}$ ${\sim}\exists x\ \{\ \mathbf{M}x\ \&\ \mathbf{V}x\ \}$				

9. no man respects every woman

no	man	[+1]	respects	every	woman	[+2]
$\lambda P_0 \wedge\{\lambda Q{\sim}Qx \mid Px\}$	$\mathbf{M}_0$			$\lambda P_0 \wedge\{y \mid Py\}$	$\mathbf{W}_0$	
$\wedge\{\ \lambda Q{\sim}Qx \mid \mathbf{M}x\ \}$		$\lambda x\{x_1\}$		$\wedge\{\ y \mid \mathbf{W}y\ \}$		$\lambda x\{x_2\}$
			$\lambda y_2 \lambda x_1 \mathbf{R}xy$	$\wedge\{\ y_2 \mid \mathbf{W}y\ \}$		
			$\wedge\{\ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y\ \}$			
$\wedge\{\ \lambda Q_1{\sim}Qx \mid \mathbf{M}x\ \}$			$\lambda x_1\ \forall y\{\mathbf{W}y \rightarrow \mathbf{R}xy\}$			
$\wedge\{\ {\sim}\forall y\{\mathbf{W}y \rightarrow \mathbf{R}xy\} \mid \mathbf{M}x\ \}$						
$\forall x\ \{\ \mathbf{M}x \rightarrow {\sim}\forall y\{\mathbf{W}y \rightarrow \mathbf{R}xy\}\ \}$						

8. 'Any' [Sub-Junction]

In the earlier examples,

Jay does not respect **every** woman
no man respects **every** woman

'every' cannot gain scope over 'does not' or 'no'. If we want to express these ideas in English, we must instead use the following sentences.

Jay does not respect **any** woman
no man respects **any** woman

The natural hypothesis is that 'any' is how we pronounce 'every' when we want it to slip outside another operator. Unfortunately, this hypothesis is defeated by the following example.

no man respects **any** woman who does not respect **him**

The problem is that 'no man' has to out-scope 'any woman…him' in order to *bind* 'him', so 'any woman…him' cannot simply be moved past 'no man' by quantifier-movement. We will deal with this problem in detail after we reconsider pronoun-binding.

We next observe that the word 'any' is quite eccentric grammatically, in a way similar to 'ever' and 'either'; in particular, they are all *assertorically-deficient*. For example, if I ask

☺ does **any**one have a question?
☺ have you **ever** been to Paris?
☺ do you know **either** of these people?

you are not grammatically-permitted to answer:

☹ yes, **any**one has a question
☹ yes, I have **ever** been to Paris
☹ yes, I know **either** of these people

Also, one can say the following.

☺ **every** student is sitting

but not the following.

☹ **any** student is sitting

On the other hand, one can say **either** of the following.

☺ **every** student caught cheating will be expelled
☺ **any** student caught cheating will be expelled

In the last case, the difference seems to be that the latter, but not the former, carries *modal* (*subjunctive*) *force*. This explains why the following is good or bad, respectively, according to whether it is subjunctive or indicative in character.

any pet of mine is neutered[5]

[5] Actually, we only neuter our *mammalian* pets; the others remain intact!

By way of accounting for the behavior of ‘any’, we propose the following as our overall hypothesis.

> ‘any A is B’ is not independently-assertive;
> rather, it is **sub-assertional**.

In order to formalize this hypothesis, we propose yet another junction, Л,[6] called *sub-junction*, with its own special properties, which are summarized as follows.

(1) if $\mathfrak{I}$ is a type, then so is Л$\mathfrak{I}$
(2) ЛS ≠ S
(3) Л *never* simplifies [sub-assertional]
(4) Л admits all expressions, some of which promote Л to ∧ (Л-promotion)

1. Examples

1. Jay does not respect any woman

<table>
<tr><td>Jay</td><td>[+1]</td><td>does-not</td><td>respect</td><td>any</td><td>woman</td><td>[+2]</td><td></td></tr>
<tr><td>J</td><td>$\lambda x\{x_1\}$</td><td></td><td></td><td>λP_0Л$\{y \mid Py\}$</td><td>$\mathbf{W}_0$</td><td></td><td></td></tr>
<tr><td></td><td></td><td></td><td></td><td colspan="2">Л$\{ y \mid \mathbf{W}y \}$</td><td>$\lambda x\{x_2\}$</td><td></td></tr>
<tr><td></td><td></td><td></td><td>$\lambda y_2\lambda x_1\mathbf{R}xy$</td><td colspan="3">Л$\{ y_2 \mid \mathbf{W}y \}$</td><td></td></tr>
<tr><td></td><td></td><td>$\lambda P_1\lambda x_1\{\sim Px\}$</td><td colspan="4">Л$\{ \lambda x_1\mathbf{R}xy \mid \mathbf{W}y \}$</td><td></td></tr>
<tr><td colspan="2">J_1</td><td colspan="5">$\wedge\{ \lambda x_1{\sim}\mathbf{R}xy \mid \mathbf{W}y \}$</td><td>①</td></tr>
<tr><td colspan="7">$\wedge\{ {\sim}\mathbf{R}Jy \mid \mathbf{W}y \}$</td><td></td></tr>
<tr><td colspan="7">$\forall y \{ \mathbf{W}y \rightarrow {\sim}\mathbf{R}xy \}$</td><td></td></tr>
</table>

Note, in particular, that (unlike ∧) Л admits ⟦does not⟧, which moreover promotes it to ∧, which enables us to treat the resulting phrase as genuinely assertive.

2. no man respects any woman

<table>
<tr><td>no</td><td>man</td><td>[+1]</td><td>respects</td><td>any</td><td>woman</td><td>[+2]</td><td></td></tr>
<tr><td>$\lambda P_0\wedge\{\lambda Q{\sim}Qx \mid Px\}$</td><td>$\mathbf{M}_0$</td><td></td><td></td><td>λP_0Л$\{y \mid Py\}$</td><td>$\mathbf{W}_0$</td><td></td><td></td></tr>
<tr><td colspan="2">$\wedge\{ \lambda Q{\sim}Qx \mid \mathbf{M}x \}$</td><td>$\lambda x\{x_1\}$</td><td></td><td colspan="2">Л$\{ y \mid \mathbf{W}y \}$</td><td>$\lambda x\{x_2\}$</td><td></td></tr>
<tr><td colspan="3"></td><td>$\lambda y_2\lambda x_1\mathbf{R}xy$</td><td colspan="3">Л$\{ y_2 \mid \mathbf{W}y \}$</td><td></td></tr>
<tr><td colspan="3">$\wedge\{ \lambda Q_1{\sim}Qx \mid \mathbf{M}x \}$</td><td colspan="4">Л$\{ \lambda x_1\mathbf{R}xy \mid \mathbf{W}y \}$</td><td></td></tr>
<tr><td colspan="7">$\wedge\{ \lambda Q_1{\sim}Qx \times$ Л$\{ \lambda x_1\mathbf{R}xy \mid \mathbf{W}y \} \mid \mathbf{M}x \}$</td><td>①</td></tr>
<tr><td colspan="7">$\wedge\{ \wedge\{ {\sim}\mathbf{R}xy \mid \mathbf{W}y \} \mid \mathbf{M}x \}$</td><td>②</td></tr>
<tr><td colspan="7">$\forall x \{ \mathbf{M}x \rightarrow \forall y\{\mathbf{W}y \rightarrow {\sim}\mathbf{R}xy\} \}$</td><td>③</td></tr>
</table>

[6] Cyrillic letter ‘el’, which is short for ‘любой’ [‘liuboi’], which is Russian for (approximately) ‘any one’.

This derivation treats 'no man' as having wide scope. This is accomplished on line ① by the $\wedge$-expression absorbing the Л-expression in the absolutely minimal way, yielding the shaded material. Then ② is obtained from ① by applying junction-combination to the shaded material, noting that ⟦does not⟧ promotes Л to $\wedge$. Finally, ③ is obtained from ② by two applications of $\wedge$-simplification.

The following is an alternative derivation, which grants 'any woman' wide-scope.

no	man	[+1]	respects	any	woman	[+2]	
$\lambda P_0\wedge\{\lambda Q{\sim}Qx \mid Px\}$	$\mathbf{M}_0$			$\lambda P_0\text{Л}\{y \mid Py\}$	$\mathbf{W}_0$		
$\wedge\{\lambda Q{\sim}Qx \mid \mathbf{M}x\}$		$\lambda x\{x_1\}$		$\text{Л}\{y \mid \mathbf{W}y\}$		$\lambda x\{x_2\}$	
			$\lambda y_2\lambda x_1\mathbf{R}xy$	$\text{Л}\{y_2 \mid \mathbf{W}y\}$			
$\wedge\{\lambda Q_1{\sim}Qx \mid \mathbf{M}x\}$			$\text{Л}\{\lambda x_1\mathbf{R}xy \mid \mathbf{W}y\}$				
$\wedge\{\wedge\{\lambda Q_1{\sim}Qx \mid \mathbf{M}x\} \times \lambda x_1\mathbf{R}xy \mid \mathbf{W}y\}$							①
$\wedge\{\wedge\{{\sim}\mathbf{R}xy \mid \mathbf{M}x\} \mid \mathbf{W}y\}$							②
$\forall y\{\mathbf{W}y \to \forall x\{\mathbf{M}x \to {\sim}\mathbf{R}xy\}\}$							③

In this derivation, by way of constructing ①, the Л-expression absorbs the $\wedge$-expression, which promotes Л to $\wedge$. Notice that the two readings are logically equivalent.

So far, we have noted in passing two examples of Л-promotion, which we now officially acknowledge.

> (Л_1) ⟦does-not⟧ promotes Л to $\wedge$.

> (Л_2) ⟦no P⟧ promotes Л to $\wedge$.

To these, we now add the following,

> (Л_3) ⟦if⟧ promotes Л to $\wedge$.

which is illustrated in the following example.

3. if Jay respects any woman, Jay respects Kay

	if	Jay_1	respects	any	woman	[+2]	Jay respects Kay
				$\lambda P_0\,\text{Л}\{y \mid Py\}$	$\mathbf{W}_0$		
				$\text{Л}\{y \mid \mathbf{W}y\}$		$\lambda x\{x_2\}$	
			$\lambda y_2\lambda x_1\mathbf{R}xy$	$\text{Л}\{y_2 \mid \mathbf{W}y\}$			
		J_1	$\text{Л}\{\lambda x_1\mathbf{R}xy \mid \mathbf{W}y\}$				
	$\lambda P\lambda Q\{P\to Q\}$	$\text{Л}\{\mathbf{R}\text{J}y \mid \mathbf{W}y\}$					
①	$\wedge\{\lambda Q\{\mathbf{R}\text{J}y\to Q\} \mid \mathbf{W}y\}$						$\mathbf{R}\text{JK}$
	$\wedge\{\mathbf{R}\text{J}y \to \mathbf{R}\text{JK} \mid \mathbf{W}y\}$						
	$\forall x\{\mathbf{W}x \to \{\mathbf{R}\text{J}x \to \mathbf{R}\text{JK}\}\}$						

4. if Jay respects every woman, Jay respects Kay

if	Jay$_1$	respects	every	woman	[+2]	Jay respects Kay	
			$\lambda P_0 \wedge\{y \mid Py\}$	$\mathbf{W}_0$			
			$\wedge\{ y \mid \mathbf{W}y \}$		$\lambda x\{x_2\}$		
		$\lambda y_2 \lambda x_1 \mathbf{R}xy$	$\wedge\{ y_2 \mid \mathbf{W}y \}$				
	J_1	$\wedge\{ \lambda x_1 \mathbf{R}xy \mid \mathbf{W}y \}$					
$\lambda P \lambda Q\{P \rightarrow Q\}$	$\wedge\{ \mathbf{R}\mathrm{J}y \mid \mathbf{W}y \}$ $\forall y\{\mathbf{W}y \rightarrow \mathbf{R}\mathrm{J}y\}$						①
$\lambda Q \{ \forall y\{\mathbf{W}y \rightarrow \mathbf{R}\mathrm{J}y\} \rightarrow Q \}$						$\mathbf{R}\mathrm{JK}$	
$\forall y\{\mathbf{W}y \rightarrow \mathbf{R}\mathrm{J}y\} \rightarrow \mathbf{R}\mathrm{JK}$							

Note: item ① involves a type-logical transformation, which is required since we have the following further admissibility restriction.

($\wedge_4$)	$\wedge$ does not admit $\lambda P \lambda Q\{P \rightarrow Q\}$ ('if').

5. no man recommends any woman to any man

no man$_1$	recommends	any woman$_2$	to any man
	$\lambda y_2 \lambda z_3 \lambda x_1 \mathbf{R}xyz$	Л$\{y_2 \mid \mathbf{W}y\}$	
	Л$\{ \lambda z_3 \lambda x_1 \mathbf{R}xyz \mid \mathbf{W}y \}$		Л$\{z_3 \mid \mathbf{M}z\}$
$\wedge\{ \lambda P_1 \sim Px \mid \mathbf{M}x \}$	Л{ Л$\{ \lambda x_1 \mathbf{R}xyz \mid \mathbf{M}z \} \mid \mathbf{W}y \}$		
$\wedge\{ \lambda P_1 \sim Px \times$ Л{ Л$\{ \lambda x_1 \mathbf{R}xyz \mid \mathbf{M}z \} \mid \mathbf{W}y \} \mid \mathbf{M}x \}$			
$\wedge\{ \wedge\{ \lambda P_1 \sim Px \times$ Л$\{ \lambda x_1 \mathbf{R}xyz \mid \mathbf{M}z \} \mid \mathbf{W}y \} \mid \mathbf{M}x \}$			
$\wedge\{ \wedge\{ \wedge\{ \lambda P_1 \sim Px \times \lambda x_1 \mathbf{R}xyz \mid \mathbf{M}z \} \mid \mathbf{W}y \} \mid \mathbf{M}x \}$			
$\wedge\{ \wedge\{ \wedge\{ \sim \mathbf{R}xyz \mid \mathbf{M}z \} \mid \mathbf{W}y \} \mid \mathbf{M}\,x \}$			
$\forall x\{ \mathbf{M}x \rightarrow \forall y\{ \mathbf{W}y \rightarrow \forall z\{\mathbf{M}z \rightarrow \sim \mathbf{R}xyz\} \} \}$			

9. Appendix – The Cyrillic Letter 'Л' Sometimes Looks Like '$\wedge$'