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EQUATIONAL POSTULATES FOR THE SHEFFER STROKE

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1. *Notation for equational reasoning.*[1] There are two fundamental rules of equational reasoning: (i) Euclid, i.e. $\alpha = \beta, \alpha = \gamma \rightarrow \beta = \gamma$; (ii) elaboration, i.e. $\alpha = b \rightarrow f\alpha = f\beta$ (and indeed $\alpha = \beta, \gamma = \delta \rightarrow g\alpha\gamma = g\beta\delta$), also given by Euclid in particular cases.

I number all formulae and deal only with constant terminal functors.

(i) I give as: if m and n are sets of equations, εmn is the set of equations $Q = R$ such that, for some P, $P = Q$ is in m and $P = R$ is in n.

(ii) I show by the insertion of '' in the non-argument places of f and the insertion of (the number of) $\alpha = \beta$ in the argument places.

2. *Illustration and explanation.*[2] For example, suppose the equations (or more accurately, substitution classes of equations) numbered 1 and 2 are

1. $RRppRqp = p$
2. $RpRqRpr = RRRrqqp$

Then (a) the equation

$RpRRqqRpq = RRRqRqqRqqp$ is in 2, (since it is 2 q/Rqq, r/q),

and (b) the equation

$RpRRqqRpq = Rpq$ is in $R'1$,

since if we have $RRqqRpq = q$ (i.e. 1 p/q, q/p) for our $\alpha = \beta$, we could have $RpRRqqRpq$ for our $f\alpha$ (with f of the form R') and Rpq for our $f\beta$, and so the given equation for our $f\alpha = f\beta$. Further, given (a) and (b) we can infer that (c)

3. $RRRqRqqRqqp = Rpq$ is in $\varepsilon 2R'1$,

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1. This notation is also used, in a sketchy way, in [1], Section 3.

2. This section is added by A. N. Prior.

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