DIAGRAMMES

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CHRISTIAN LAIR

Atlas des Figures

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DIAGRAMMES **VOLUMES 59 + 60, FASCICULE 2, 2008**

SUR CERTAINES SOUS-CATEGORIES NON PLEINES DES CATEGORIES DE MODELES

Fascicule 2 :

Atlas des Figures

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(lairchrist@aol.com)

A.M.S. Sub. Class. : 18 C 10, 18 C 30, 18 C 35

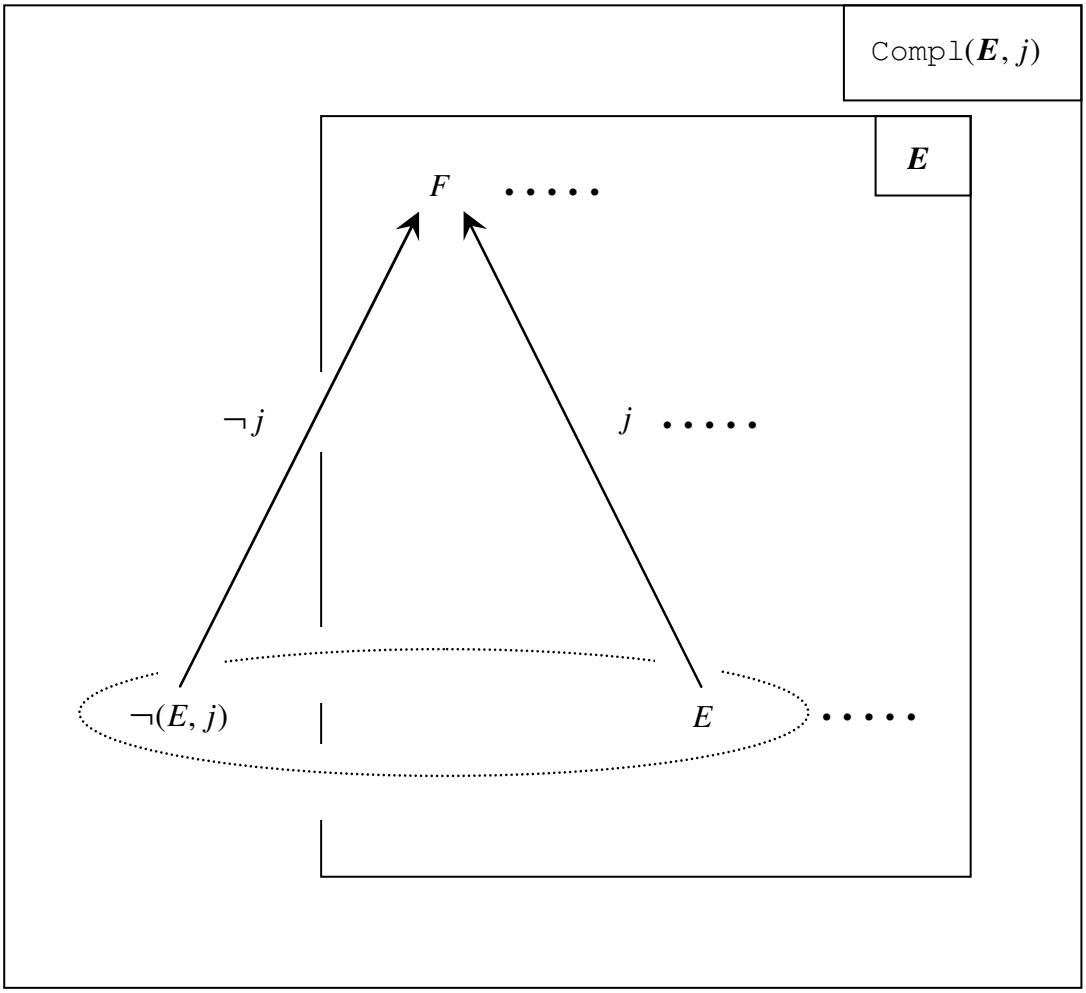


Figure 1

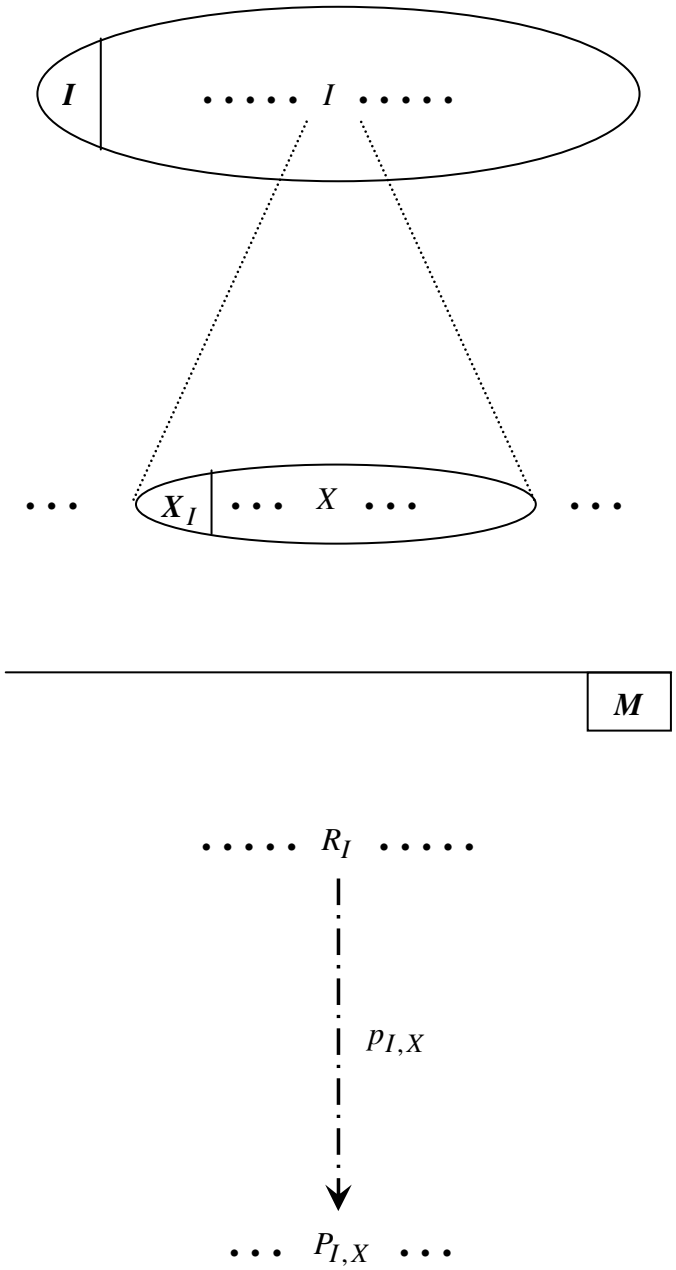
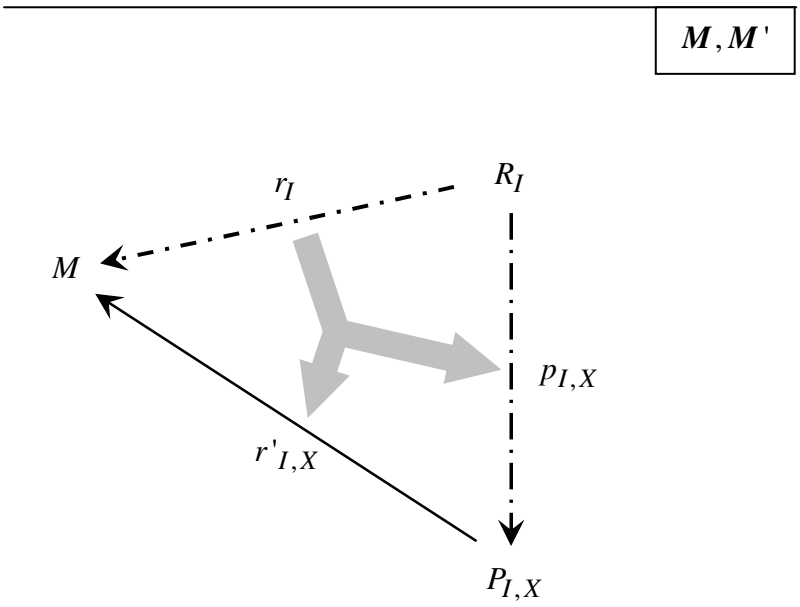


Figure 2

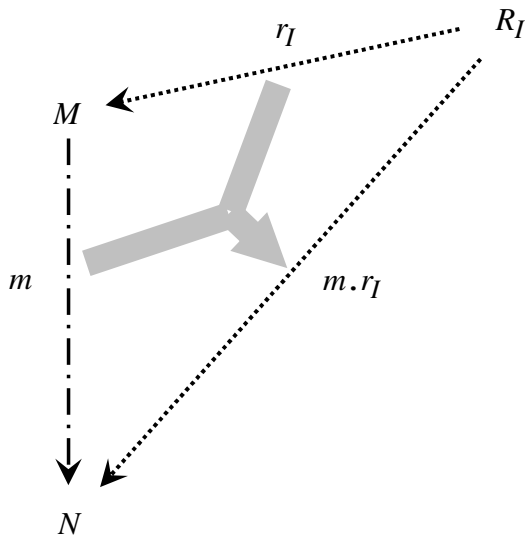


Résol. 1

$$\forall M \in \mathrm{Ob}(\boldsymbol{M}') = \mathrm{Ob}(\boldsymbol{M}) \quad \forall I \in \boldsymbol{I} \quad \forall r_I : R_I \to M \in \mathrm{Fl}(\boldsymbol{M})$$
$$\exists X \in \boldsymbol{X}_I \quad \exists r'_{I,X} : P_{I,X} \to M \in \mathrm{Fl}(\boldsymbol{M}')$$
$$r'_{I,X} \cdot p_{I,X} = r_I$$

Figure 3

$\boldsymbol{M}, \boldsymbol{M}'$



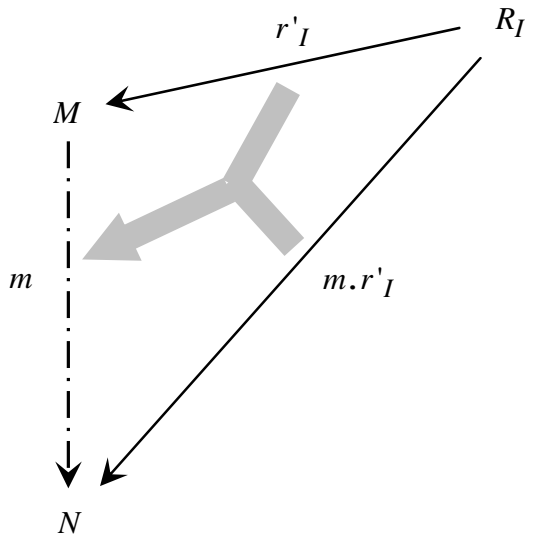
$\in \mathtt{Fl}(\boldsymbol{M})$
$\notin \mathtt{Fl}(\boldsymbol{M}')$

Résol. 2

$$\forall M \in \mathtt{Ob}(\boldsymbol{M}) \quad \forall N \in \mathtt{Ob}(\boldsymbol{M}) \quad \forall m : M \to N \in \mathtt{Fl}(\boldsymbol{M})$$
$$\forall I \in \boldsymbol{I} \quad \forall r_I : R_I \to M \in \mathtt{Fl}(\boldsymbol{M})$$
$$r_I : R_I \to M \notin \mathtt{Fl}(\boldsymbol{M}') \Rightarrow m.r_I \notin \mathtt{Fl}(\boldsymbol{M}')$$

Figure 4

$\boldsymbol{M}, \boldsymbol{M}'$



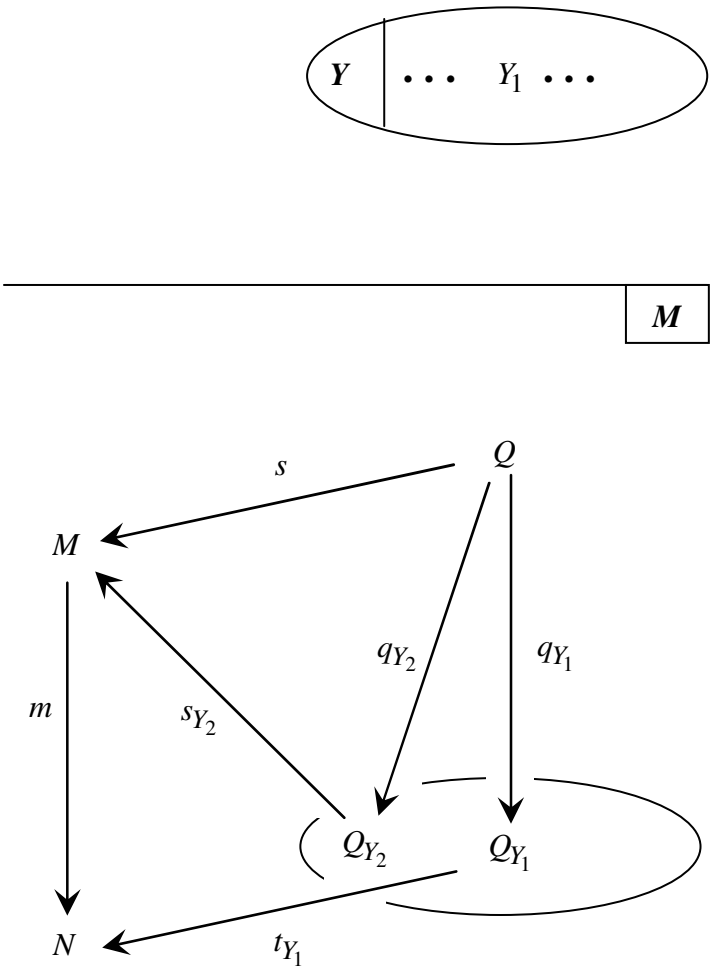
$\dashrightarrow \in \mathtt{Fl}(\boldsymbol{M})$

$\longrightarrow \in \mathtt{Fl}(\boldsymbol{M}')$

Résol. 3

$$\forall M \in \mathtt{Ob}(\boldsymbol{M}) \;\; \forall N \in \mathtt{Ob}(\boldsymbol{M}) \;\; \forall m : M \to N \in \mathtt{Fl}(\boldsymbol{M})$$
$$[\forall I \in \boldsymbol{I} \;\; \forall r'_I : R_I \to M \in \mathtt{Fl}(\boldsymbol{M}') \;\; m \,.\, r'_I : R_I \to N \in \mathtt{Fl}(\boldsymbol{M}')]$$
$$\Rightarrow$$
$$[m : M \to N \in \mathtt{Fl}(\boldsymbol{M}')]$$

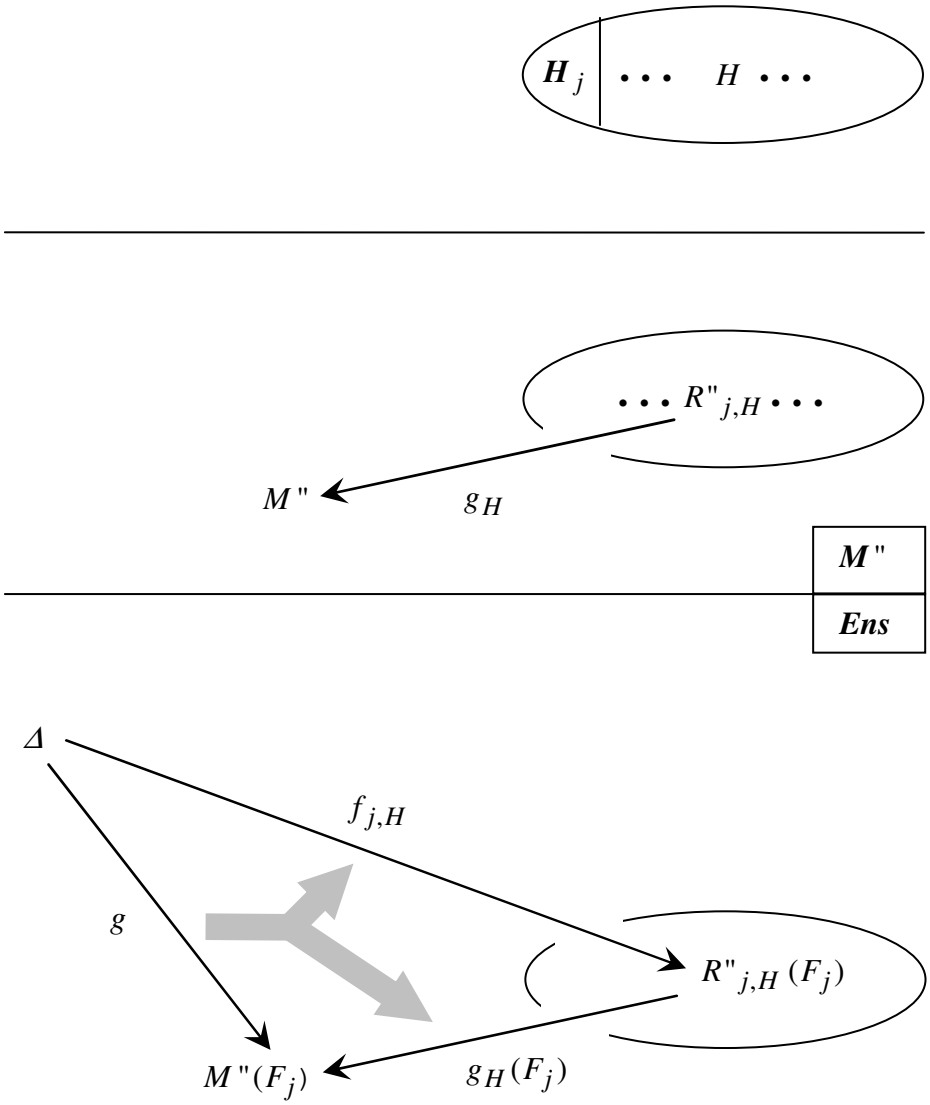
Figure 5



Equil. 1

$$\forall M \in \mathtt{Ob}(\boldsymbol{M}) \quad \forall N \in \mathtt{Ob}(\boldsymbol{M}) \quad \forall m : M \to N \in \mathtt{Fl}(\boldsymbol{M})$$
$$\forall q = (q_Y : Q \to Q_Y \in \mathtt{Fl}(\boldsymbol{M})) \in \boldsymbol{q} \quad \forall s : Q \to M \in \mathtt{Fl}(\boldsymbol{M})$$
$$(\ \exists Y_1 \in \boldsymbol{Y} \quad \exists t_{Y_1} : Q_{Y_1} \to N \in \mathtt{Fl}(\boldsymbol{M}) \quad m \bullet s = t_{Y_1} \bullet q_{Y_1}\ )$$
$$\Rightarrow$$
$$(\ \exists Y_2 \in \boldsymbol{Y} \quad \exists s_{Y_2} : Q_{Y_2} \to M \in \mathtt{Fl}(\boldsymbol{M}) \quad s = s_{Y_2} \bullet q_{Y_2}\ )$$

Figure 6



$$\forall M'' \in \mathtt{Ob}(\boldsymbol{M}'') \quad \forall g : \Delta \to M''(F_j) \in \mathtt{Fl}(\boldsymbol{Ens})$$
$$\exists H \in \boldsymbol{H}_j \quad \exists g_H : R''_{j,H} \to M'' \in \mathtt{Fl}(\boldsymbol{M}'')$$
$$g_H(F_j) \circ f_{j,H} = g$$

Figure 7

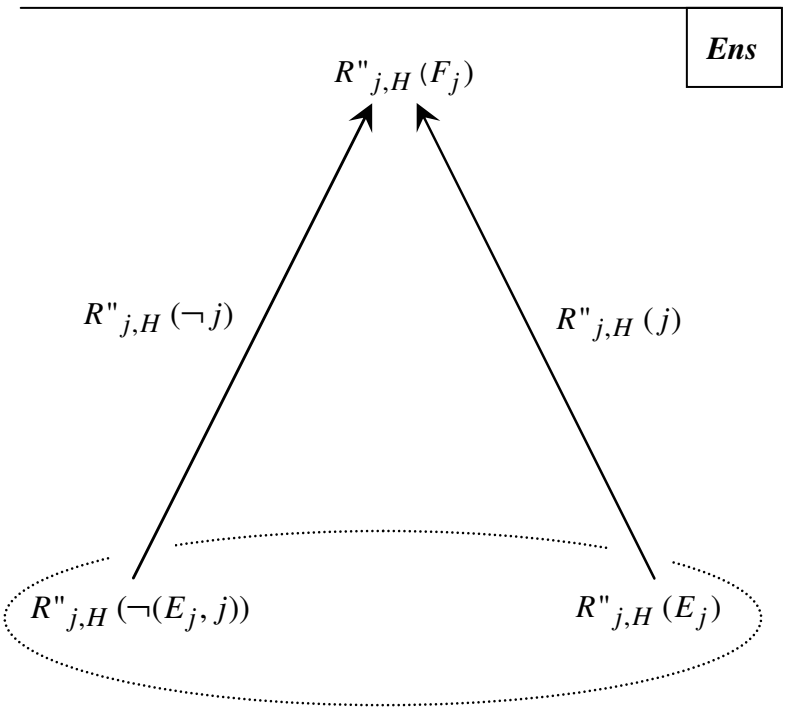


Figure 8

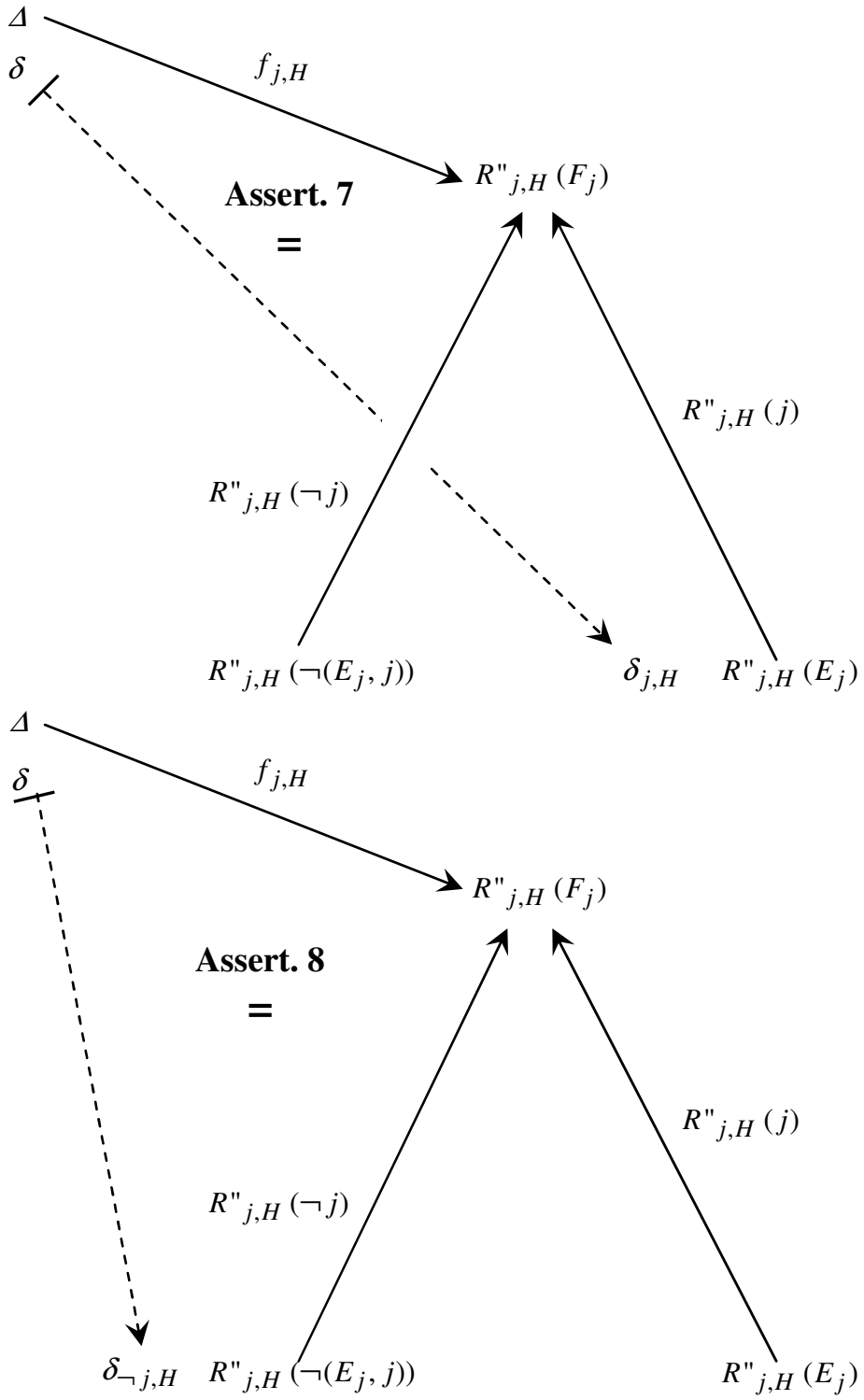
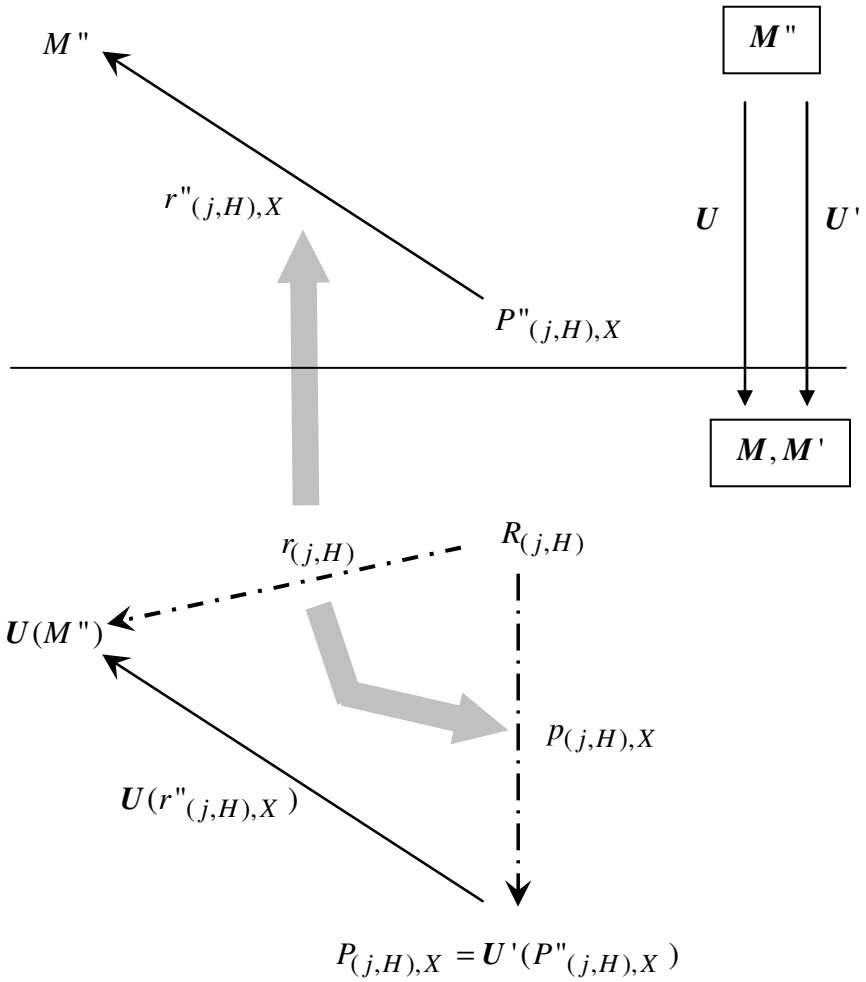

Δ
δ
$f_{j,H}$
$R"_{j,H}(F_j)$
Assert. 7
=
$R"_{j,H}(j)$
$R"_{j,H}(\neg j)$
$R"_{j,H}(\neg(E_j, j))$
$\delta_{j,H}$
$R"_{j,H}(E_j)$
Δ
δ
$f_{j,H}$
$R"_{j,H}(F_j)$
Assert. 8
=
$R"_{j,H}(j)$
$R"_{j,H}(\neg j)$
$\delta_{\neg j,H}$
$R"_{j,H}(\neg(E_j, j))$
$R"_{j,H}(E_j)$

Figure 9

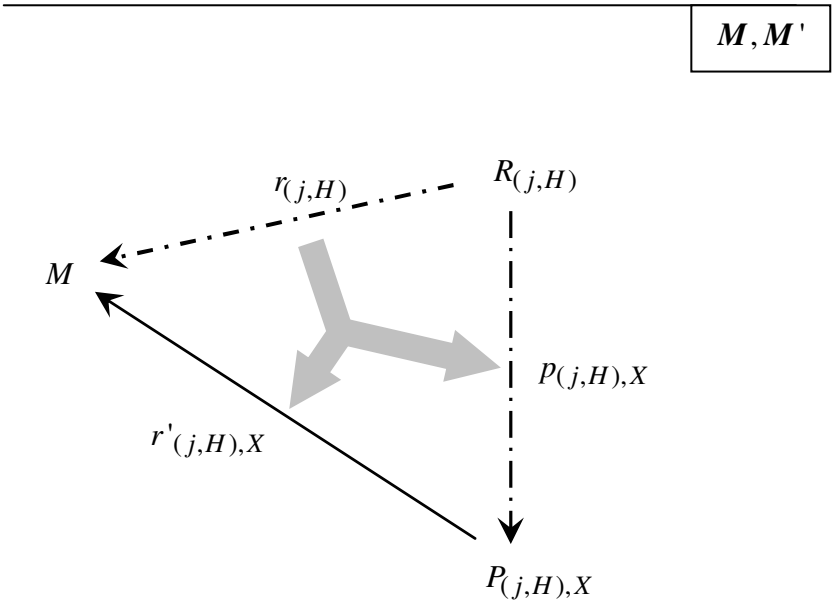


$\dashrightarrow \in \mathtt{Fl}(\boldsymbol{M})$

$\longrightarrow \in \mathtt{Fl}(\boldsymbol{M}'') \cup \mathtt{Fl}(\boldsymbol{M}')$

$$\forall M'' \in \mathtt{Ob}(\boldsymbol{M}'') \quad \forall (j,H) \in \boldsymbol{I} \quad \forall r_{(j,H)} : R_{(j,H)} \to \boldsymbol{U}(M'') \in \mathtt{Fl}(\boldsymbol{M})$$
$$\exists X \in \boldsymbol{X}_{(j,H)} \quad \exists r''_{(j,H),X} : P''_{(j,H),X} \to M'' \in \mathtt{Fl}(\boldsymbol{M}'')$$
$$\boldsymbol{U}(r''_{(j,H),X}) \cdot p_{(j,H),X} = r_{(j,H)}$$

Figure 10



$$\forall M \in \mathrm{Ob}(\boldsymbol{M}') = \mathrm{Ob}(\boldsymbol{M}) \quad \forall (j,H) \in \boldsymbol{I} \quad \forall r_{(j,H)} : R_{(j,H)} \to M \in \mathrm{Fl}(\boldsymbol{M})$$
$$\exists X \in \boldsymbol{X}_{(j,H)} \quad \exists r'_{(j,H),X} : P_{(j,H),X} \to M \in \mathrm{Fl}(\boldsymbol{M}')$$
$$r'_{(j,H),X} \cdot p_{(j,H),X} = r_{(j,H)}$$

Figure 11

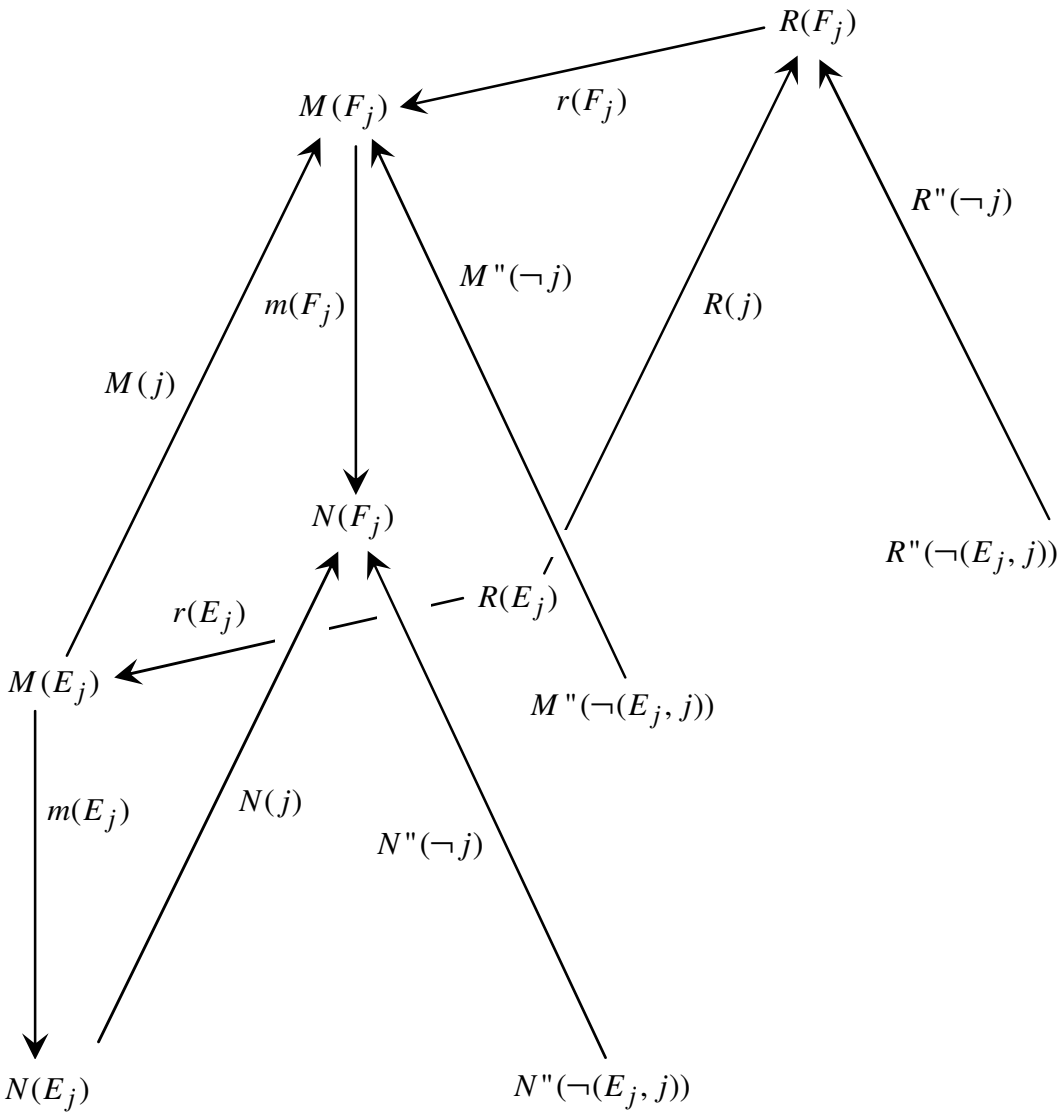

$R(F_j)$
$M(F_j)$
$r(F_j)$
$R"(\neg j)$
$M"(\neg j)$
$m(F_j)$
$R(j)$
$M(j)$
$N(F_j)$
$R"(\neg(E_j, j))$
$R(E_j)$
$r(E_j)$
$M(E_j)$
$M"(\neg(E_j, j))$
$m(E_j)$
$N(j)$
$N"(\neg j)$
$N(E_j)$
$N"(\neg(E_j, j))$

Figure 12

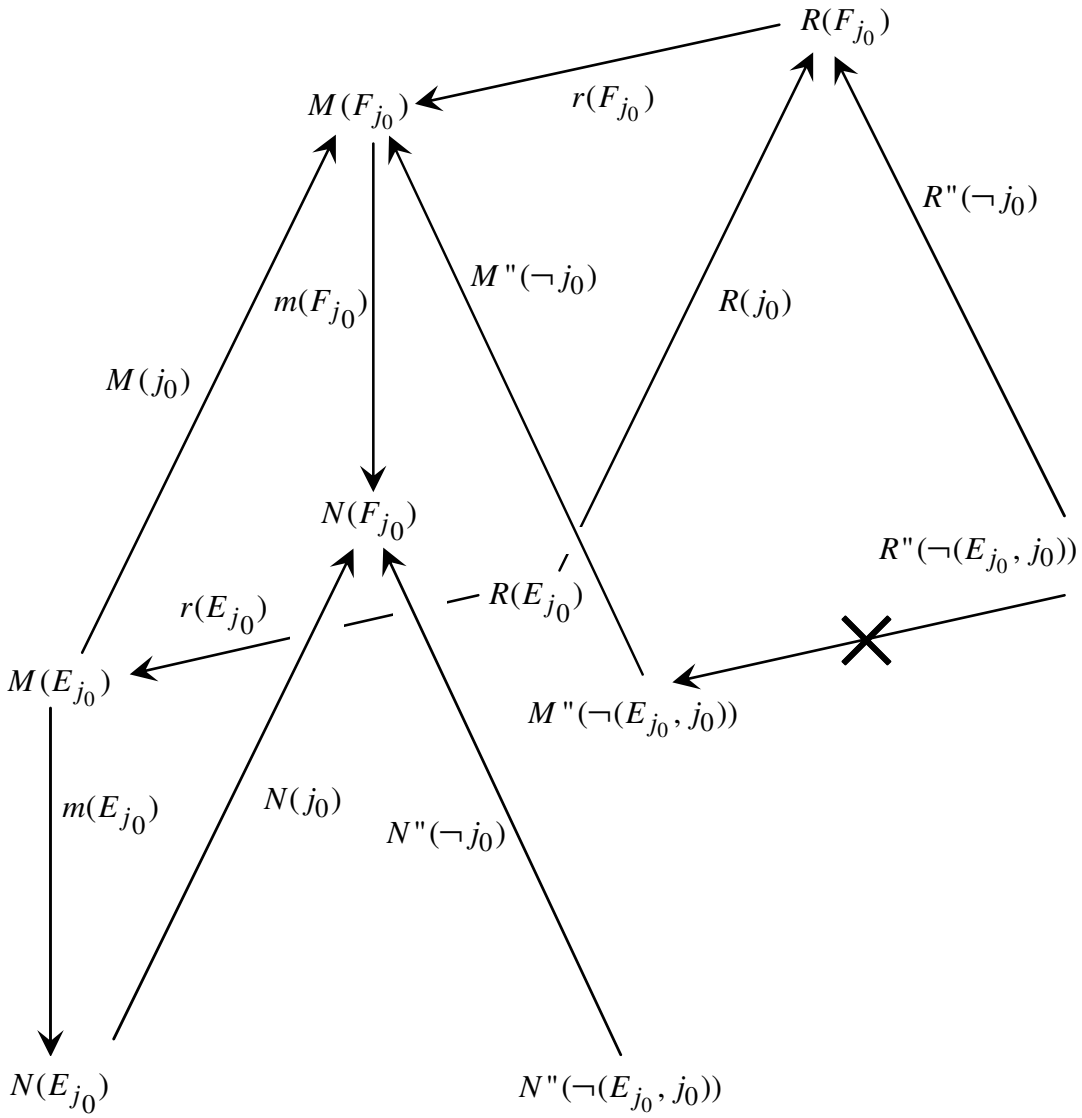

$R(F_{j_0})$
$M(F_{j_0})$
$r(F_{j_0})$
$R"(\neg j_0)$
$M"(\neg j_0)$
$m(F_{j_0})$
$R(j_0)$
$M(j_0)$
$N(F_{j_0})$
$R"(\neg(E_{j_0}, j_0))$
$R(E_{j_0})$
$r(E_{j_0})$
$M(E_{j_0})$
$M"(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$N(E_{j_0})$
$N"(\neg(E_{j_0}, j_0))$

Figure 13

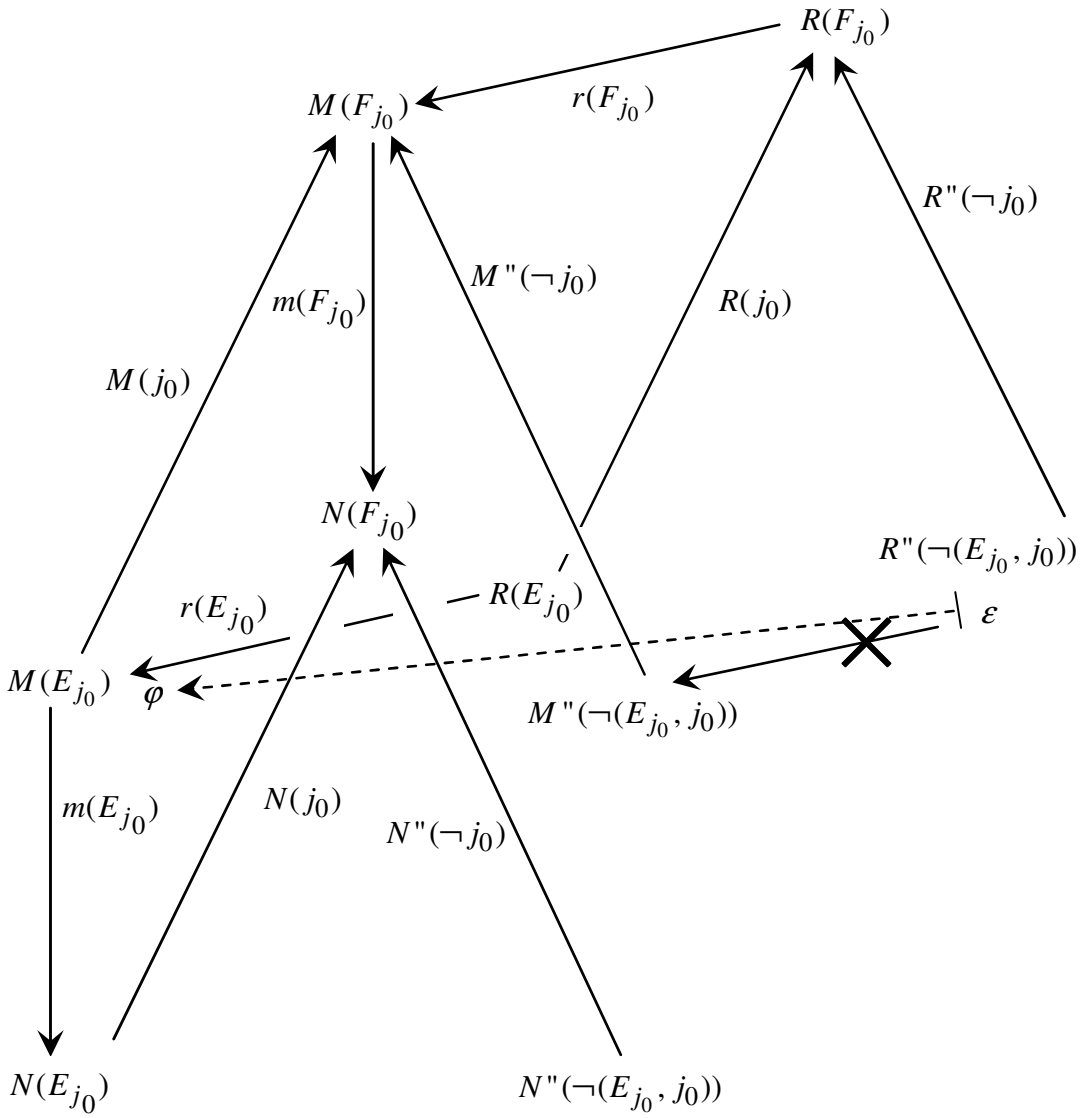

$R(F_{j_0})$
$M(F_{j_0})$
$r(F_{j_0})$
$R"(\neg j_0)$
$M"(\neg j_0)$
$m(F_{j_0})$
$R(j_0)$
$M(j_0)$
$N(F_{j_0})$
$R"(\neg(E_{j_0}, j_0))$
$r(E_{j_0})$
$R(E_{j_0})$
ε
$M(E_{j_0})$
φ
$M"(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$N(E_{j_0})$
$N"(\neg(E_{j_0}, j_0))$

Figure 14

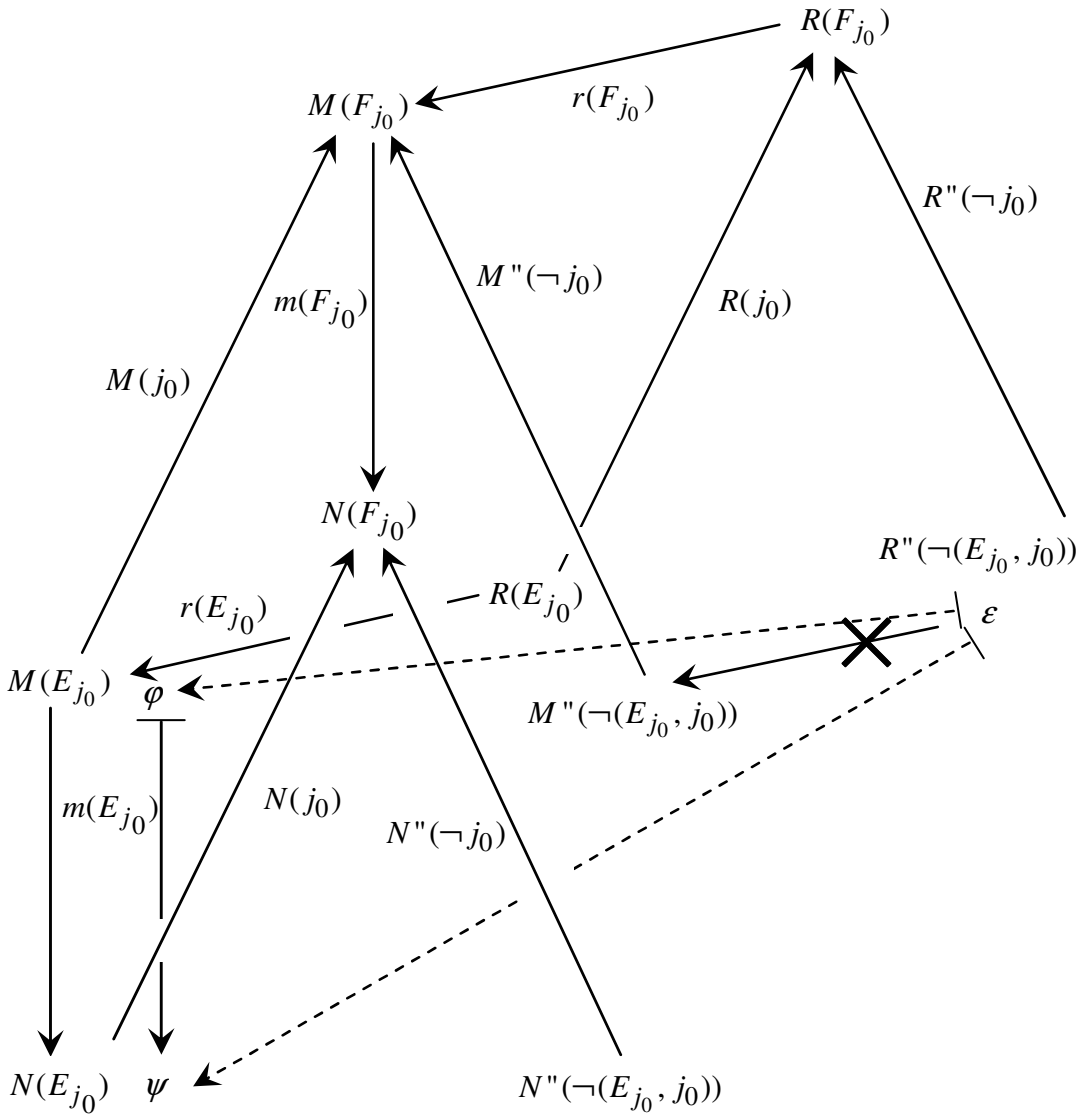

$R(F_{j_0})$
$M(F_{j_0})$
$r(F_{j_0})$
$R"(\neg j_0)$
$M"(\neg j_0)$
$m(F_{j_0})$
$R(j_0)$
$M(j_0)$
$N(F_{j_0})$
$R"(\neg(E_{j_0}, j_0))$
$r(E_{j_0})$
$R(E_{j_0})$
ε
$M(E_{j_0})$
φ
$M"(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$N(E_{j_0})$
ψ
$N"(\neg(E_{j_0}, j_0))$

Figure 15

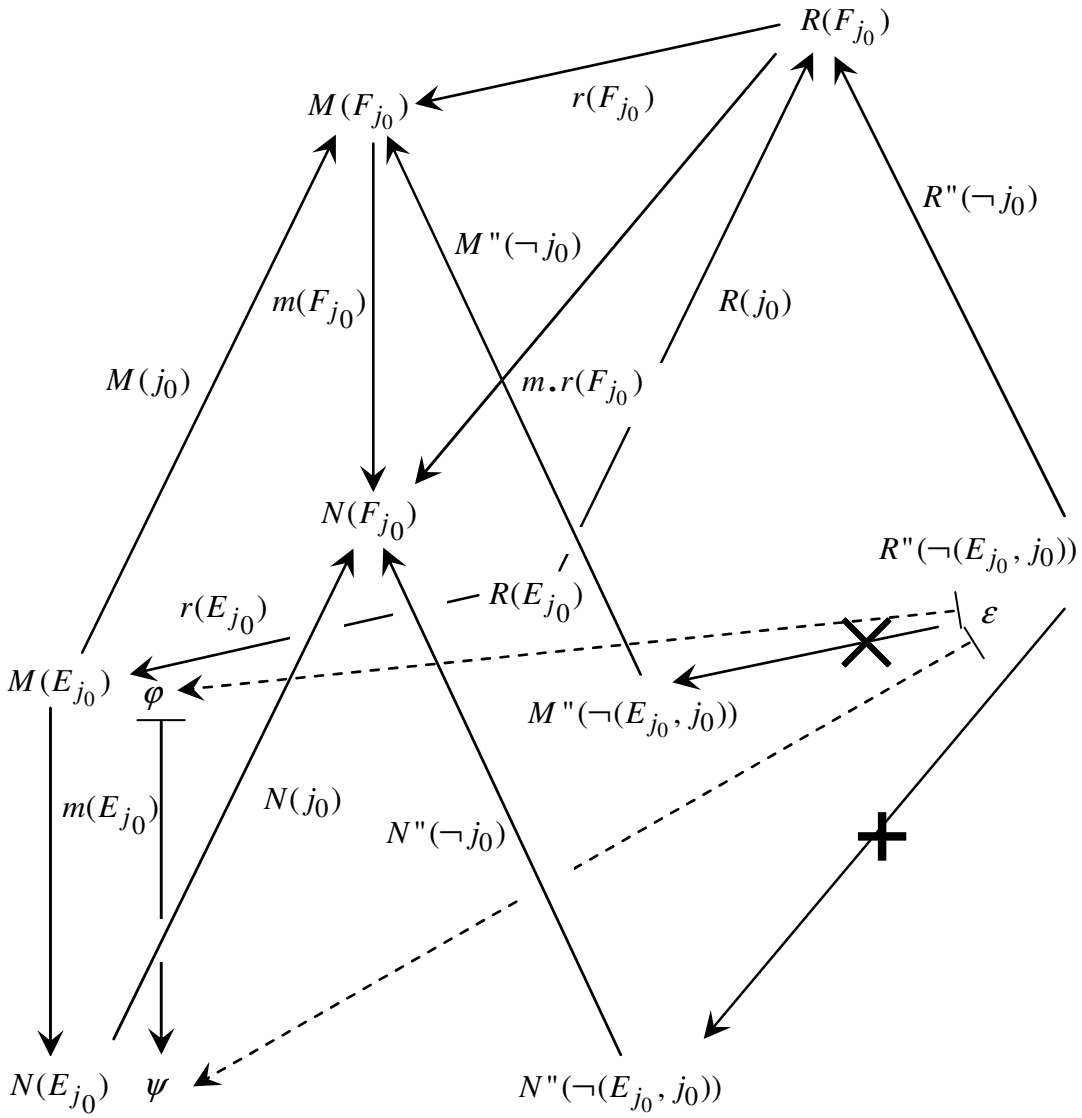

$R(F_{j_0})$
$M(F_{j_0})$
$r(F_{j_0})$
$R"(\neg j_0)$
$M"(\neg j_0)$
$m(F_{j_0})$
$R(j_0)$
$M(j_0)$
$m.r(F_{j_0})$
$N(F_{j_0})$
$R"(\neg(E_{j_0}, j_0))$
$r(E_{j_0})$
$R(E_{j_0})$
ε
$M(E_{j_0})$
φ
$M"(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$N(E_{j_0})$
ψ
$N"(\neg(E_{j_0}, j_0))$

Figure 16

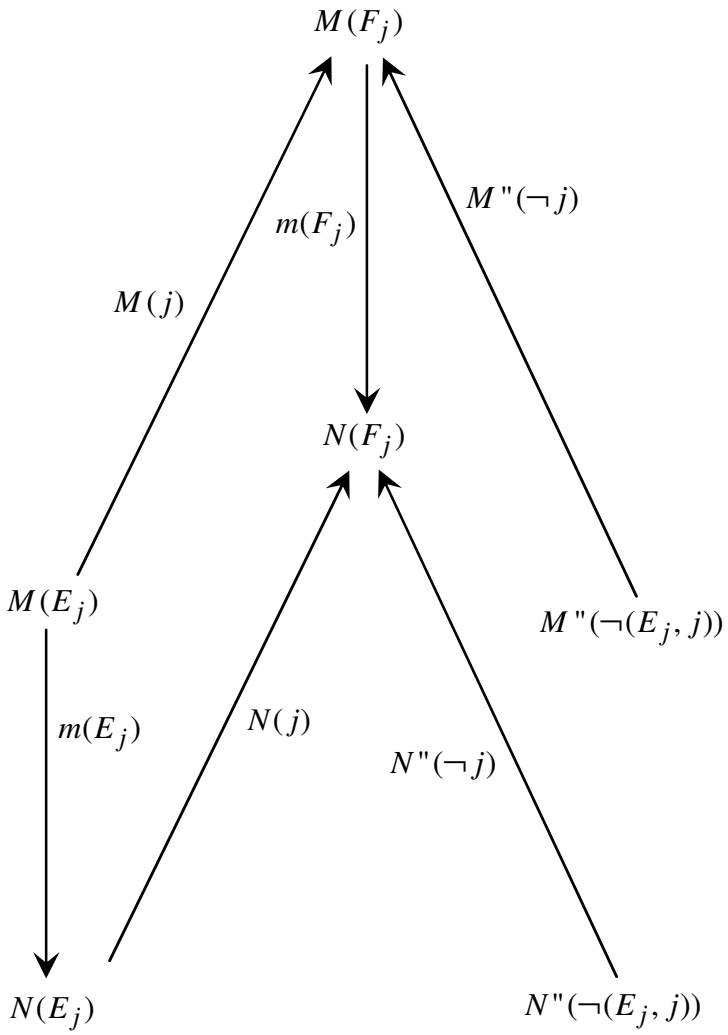


Figure 17

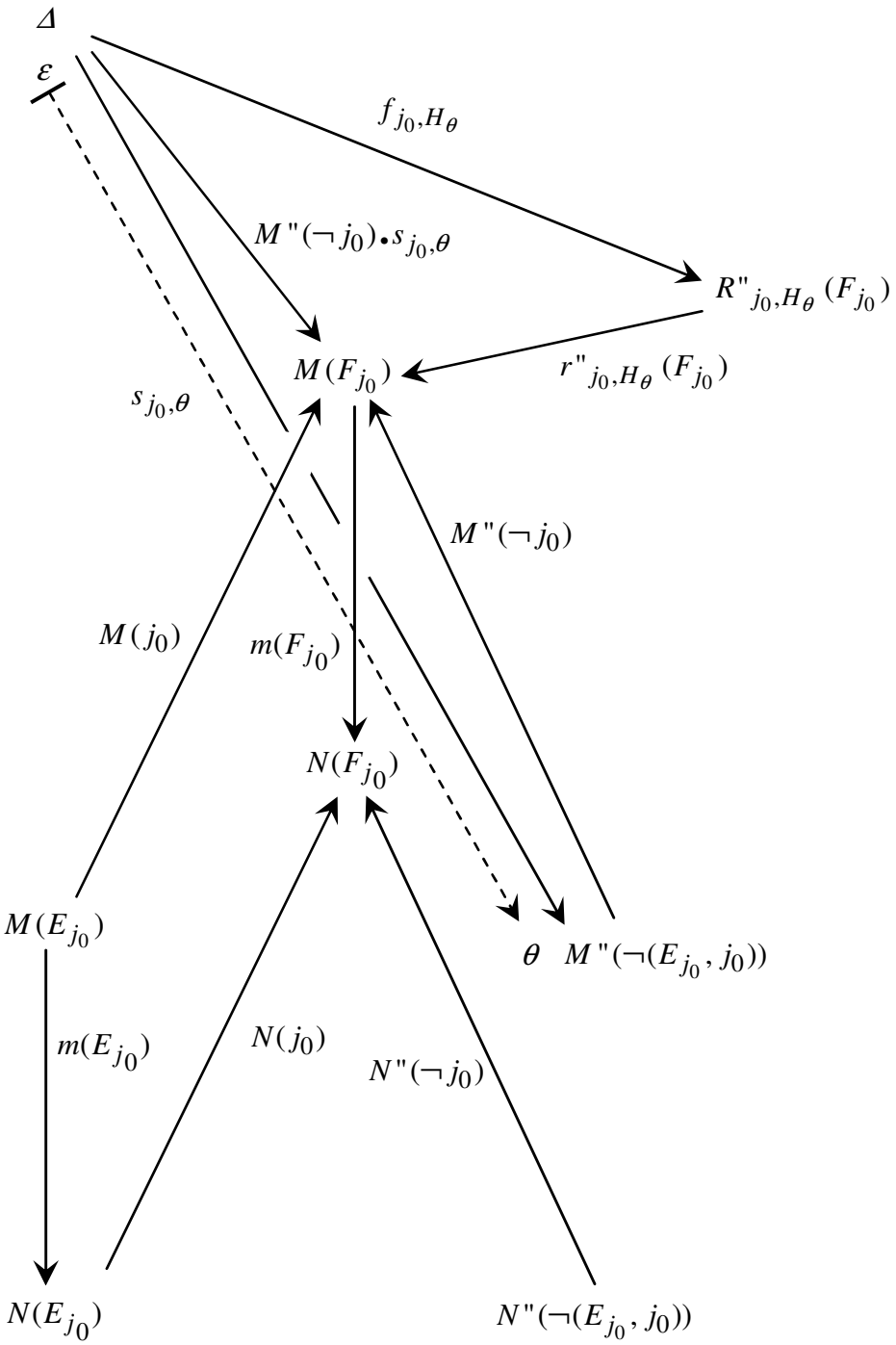

Δ
ε
f_{j_0,H_θ}
$M"(\neg j_0)\bullet s_{j_0,\theta}$
$R"_{j_0,H_\theta}(F_{j_0})$
$M(F_{j_0})$
$r"_{j_0,H_\theta}(F_{j_0})$
$s_{j_0,\theta}$
$M"(\neg j_0)$
$M(j_0)$
$m(F_{j_0})$
$N(F_{j_0})$
$M(E_{j_0})$
θ
$M"(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$N(E_{j_0})$
$N"(\neg(E_{j_0}, j_0))$

Figure 18

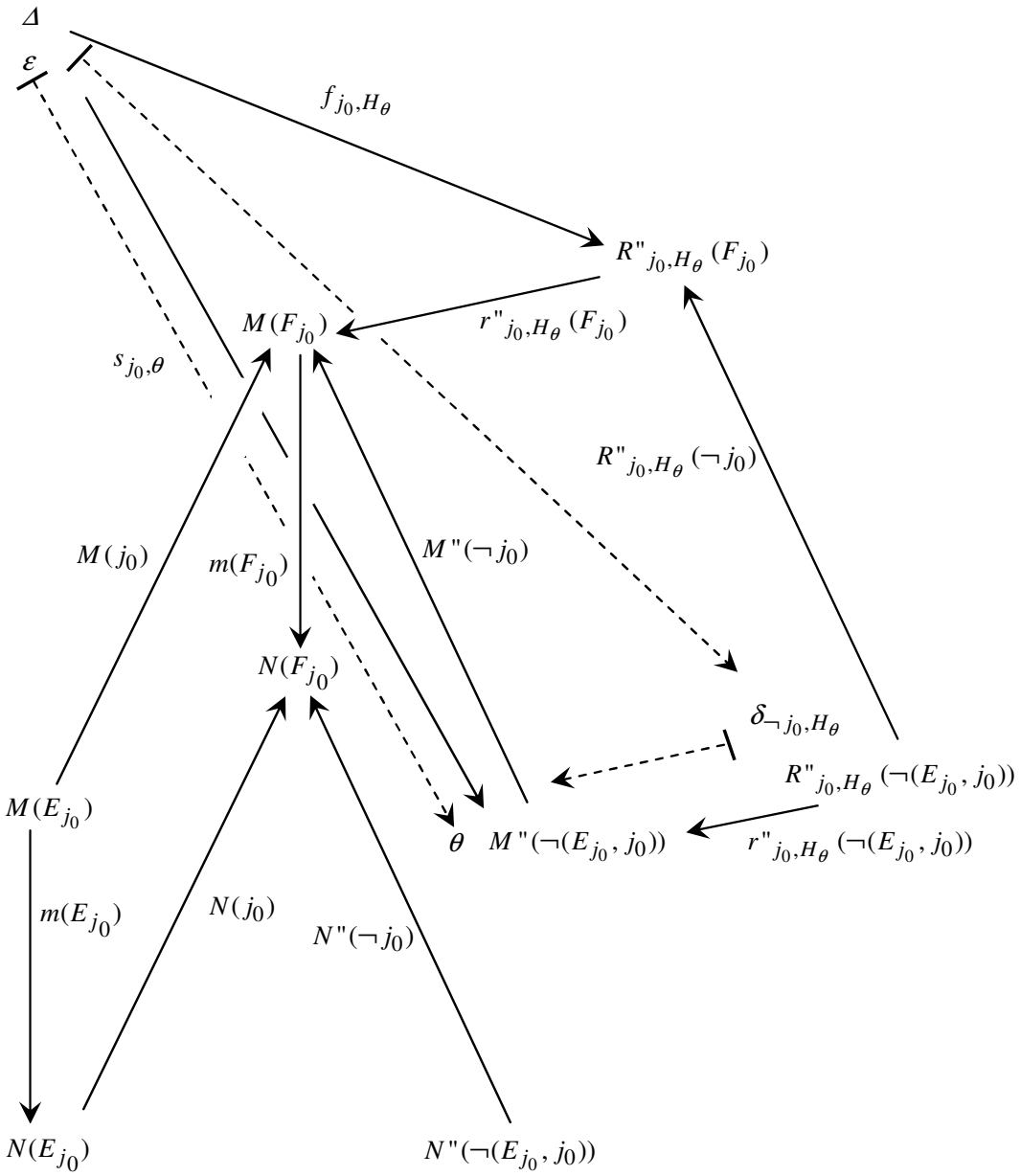

Δ
ε
f_{j_0,H_θ}
$R"_{j_0,H_\theta}(F_{j_0})$
$M(F_{j_0})$
$r"_{j_0,H_\theta}(F_{j_0})$
$s_{j_0,\theta}$
$R"_{j_0,H_\theta}(\neg j_0)$
$M(j_0)$
$m(F_{j_0})$
$M"(\neg j_0)$
$N(F_{j_0})$
$\delta_{\neg j_0,H_\theta}$
$R"_{j_0,H_\theta}(\neg(E_{j_0}, j_0))$
$M(E_{j_0})$
θ
$M"(\neg(E_{j_0}, j_0))$
$r"_{j_0,H_\theta}(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$N(E_{j_0})$
$N"(\neg(E_{j_0}, j_0))$

Figure 19

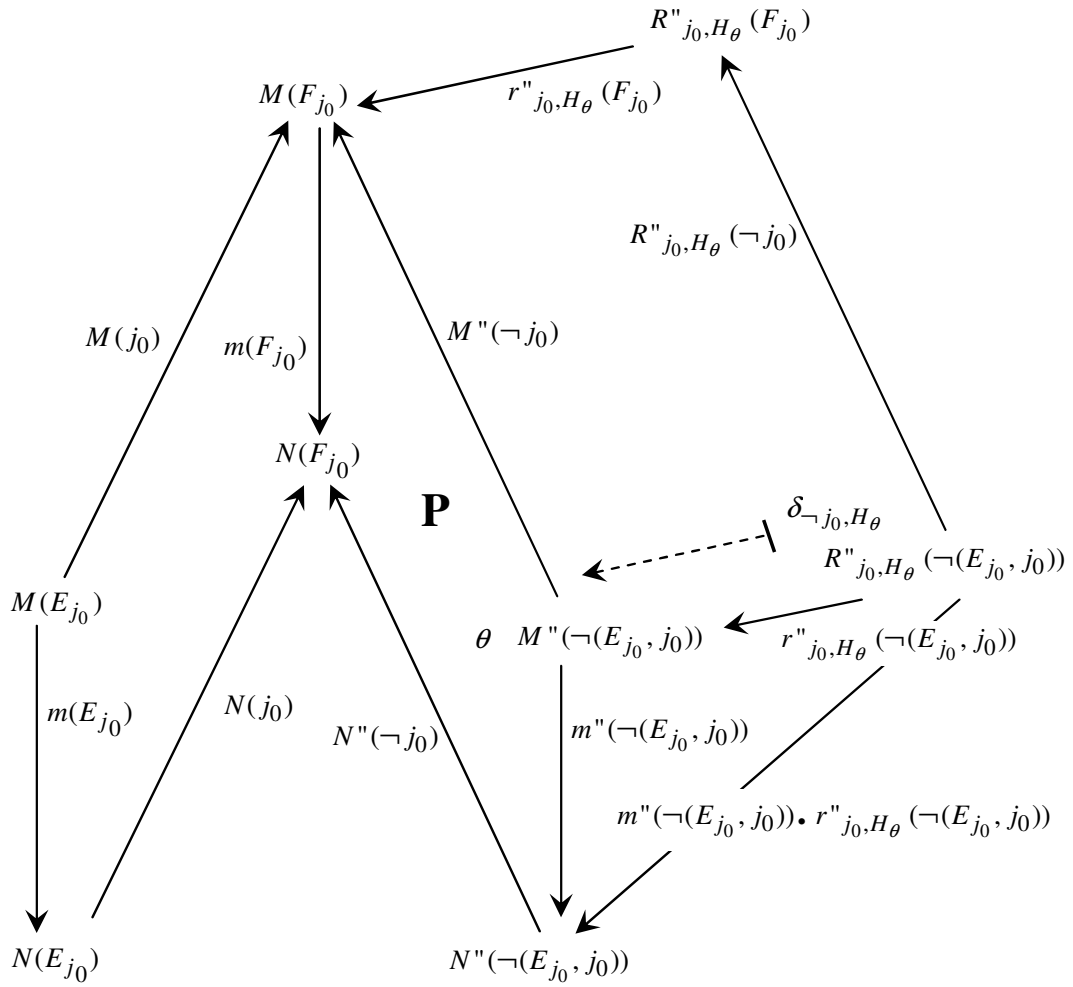

$R"_{j_0,H_\theta}(F_{j_0})$
$M(F_{j_0})$
$r"_{j_0,H_\theta}(F_{j_0})$
$R"_{j_0,H_\theta}(\neg j_0)$
$M(j_0)$
$m(F_{j_0})$
$M"(\neg j_0)$
$N(F_{j_0})$
P
$\delta_{\neg j_0,H_\theta}$
$R"_{j_0,H_\theta}(\neg(E_{j_0}, j_0))$
$M(E_{j_0})$
θ
$M"(\neg(E_{j_0}, j_0))$
$r"_{j_0,H_\theta}(\neg(E_{j_0}, j_0))$
$m(E_{j_0})$
$N(j_0)$
$N"(\neg j_0)$
$m"(\neg(E_{j_0}, j_0))$
$m"(\neg(E_{j_0}, j_0))\bullet r"_{j_0,H_\theta}(\neg(E_{j_0}, j_0))$
$N(E_{j_0})$
$N"(\neg(E_{j_0}, j_0))$

Figure 20

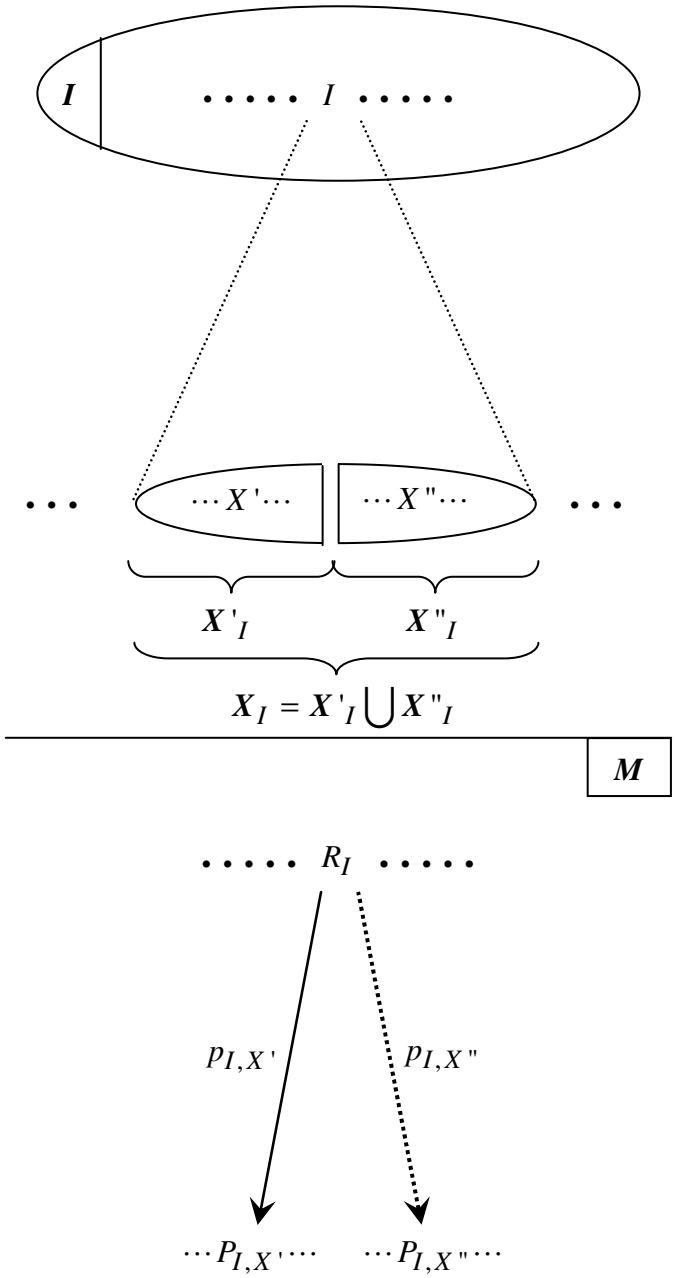


Figure 21

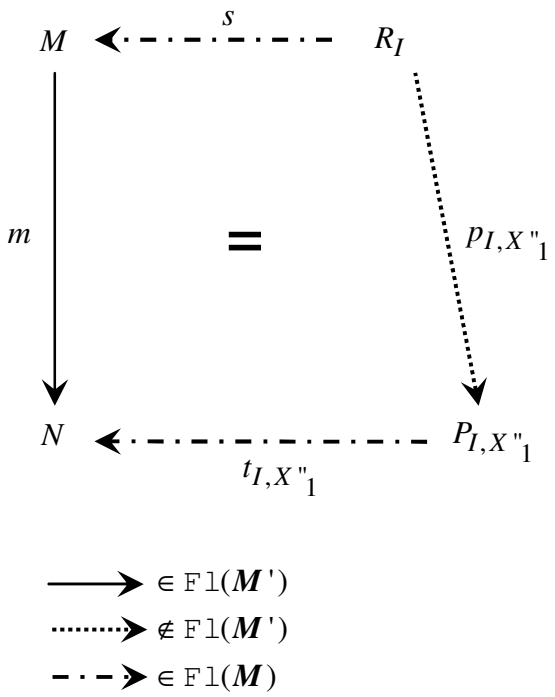


Figure 22

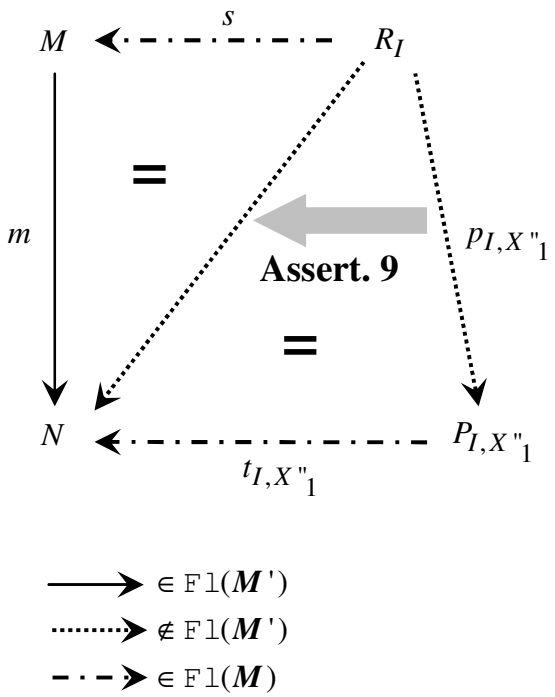


Figure 23

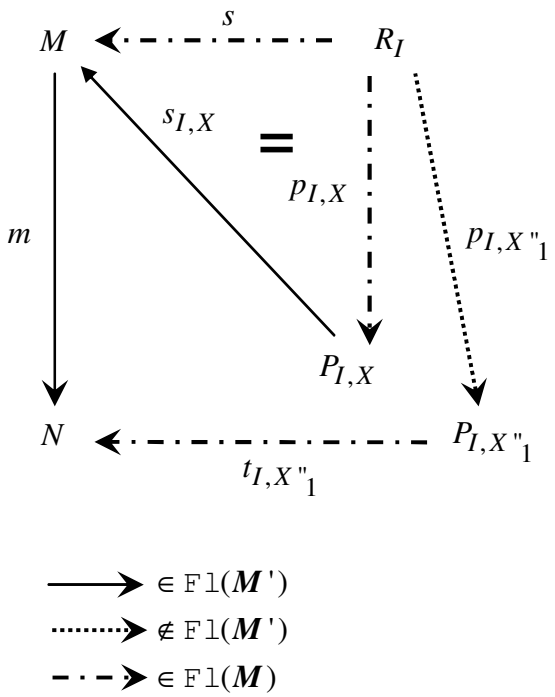


Figure 24

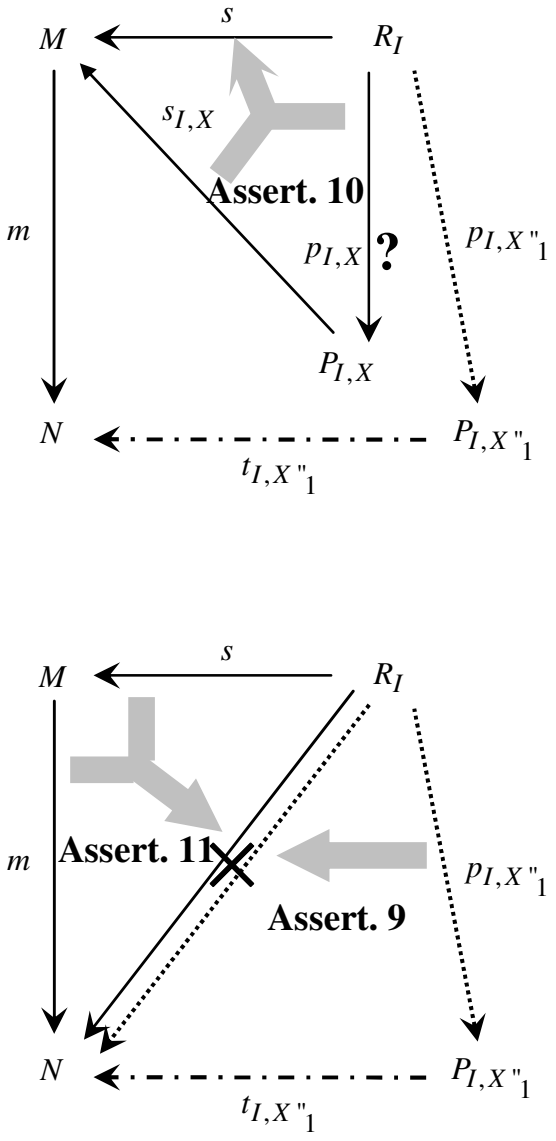

M
s
R_I
s_{I,X}
Assert. 10
m
p_{I,X}
?
p_{I,X"1}
P_{I,X}
N
P_{I,X"1}
t_{I,X"1}
M
s
R_I
m
Assert. 11
Assert. 9
p_{I,X"1}
N
P_{I,X"1}
t_{I,X"1}
∈ Fl(M')
∉ Fl(M')
∈ Fl(M)

Figure 25

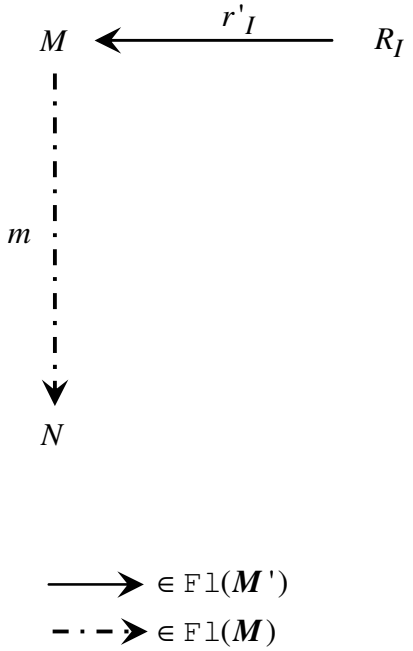


Figure 26

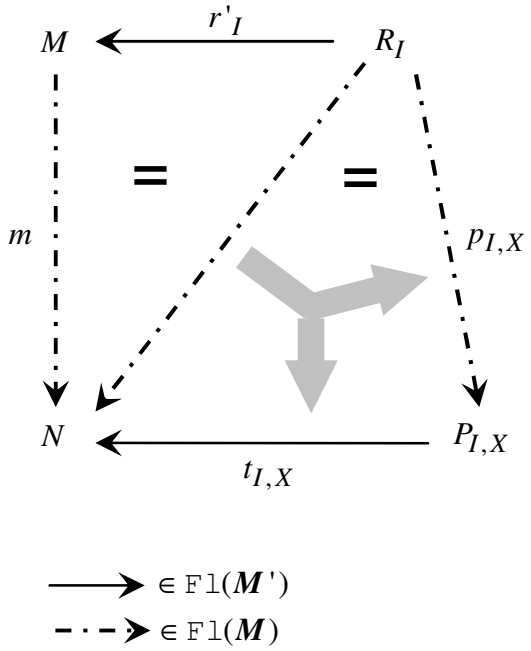


Figure 27

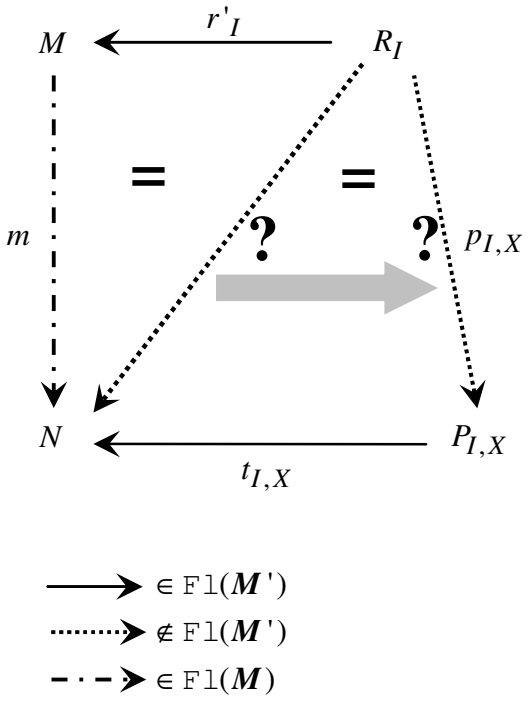


Figure 28

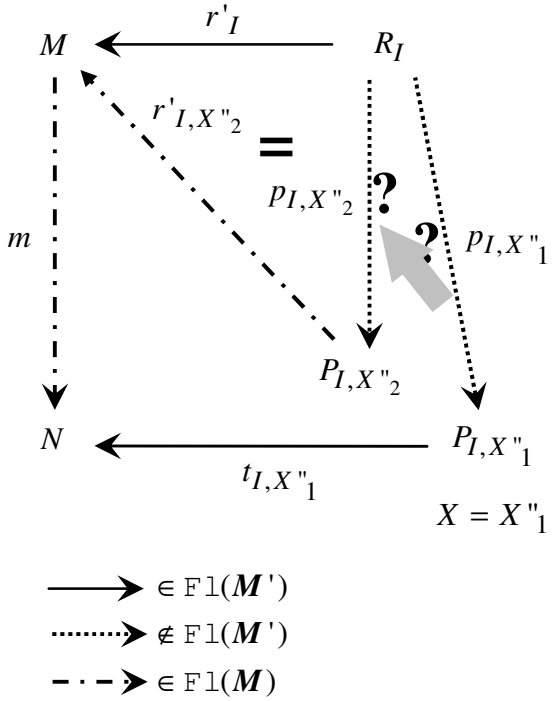


Figure 29

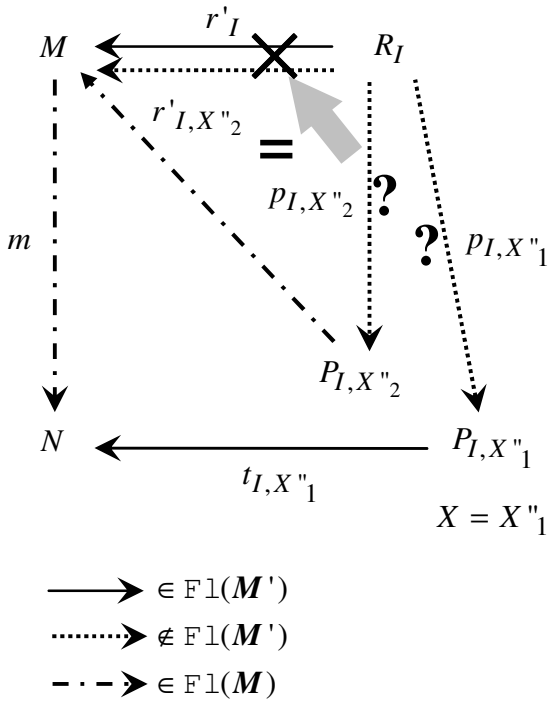


Figure 30

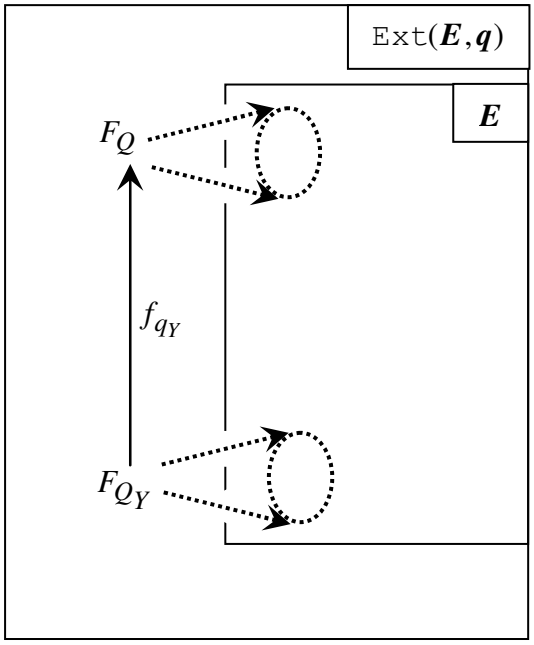


Figure 31

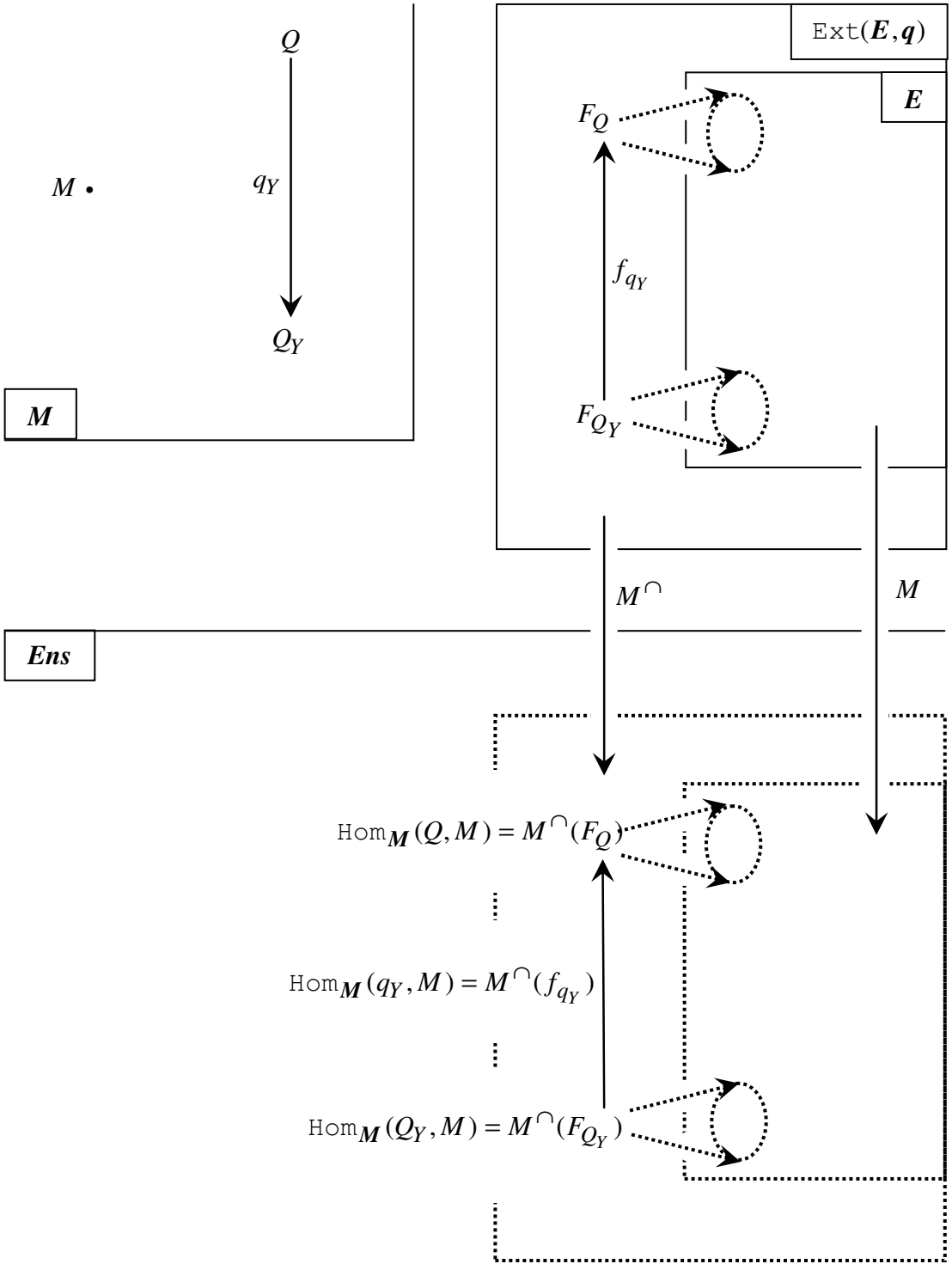

Q
M •
q_Y
Q_Y
M
Ext(E,q)
E
F_Q
f_{q_Y}
F_{Q_Y}
$M^{\cap}$
M
Ens
$\mathrm{Hom}_{\boldsymbol{M}}(Q,M) = M^{\cap}(F_Q)$
$\mathrm{Hom}_{\boldsymbol{M}}(q_Y,M) = M^{\cap}(f_{q_Y})$
$\mathrm{Hom}_{\boldsymbol{M}}(Q_Y,M) = M^{\cap}(F_{Q_Y})$

Figure 32

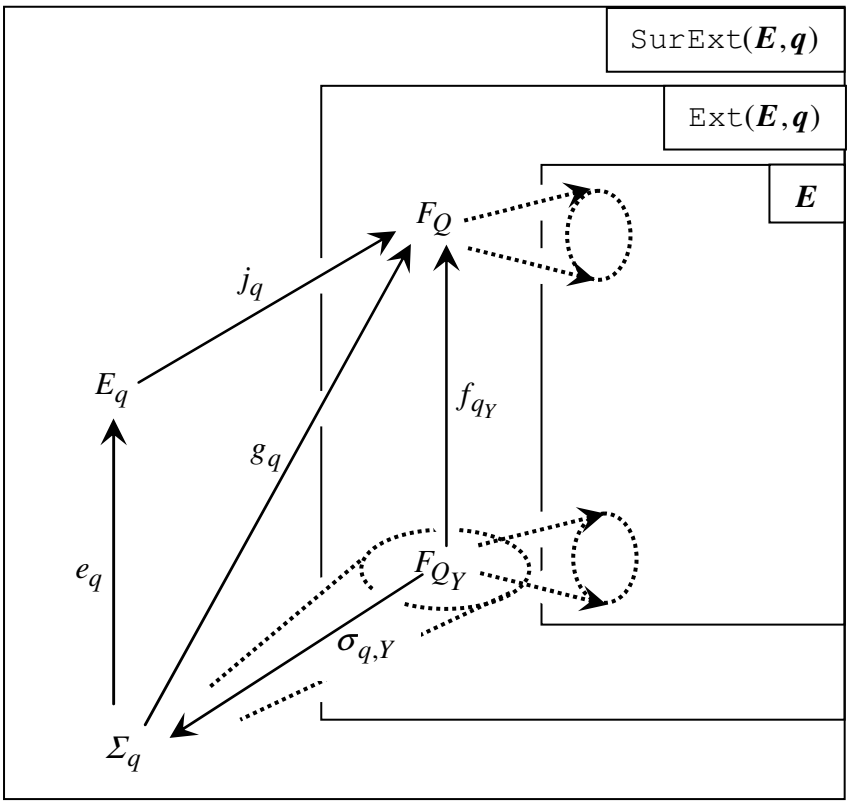


Figure 33

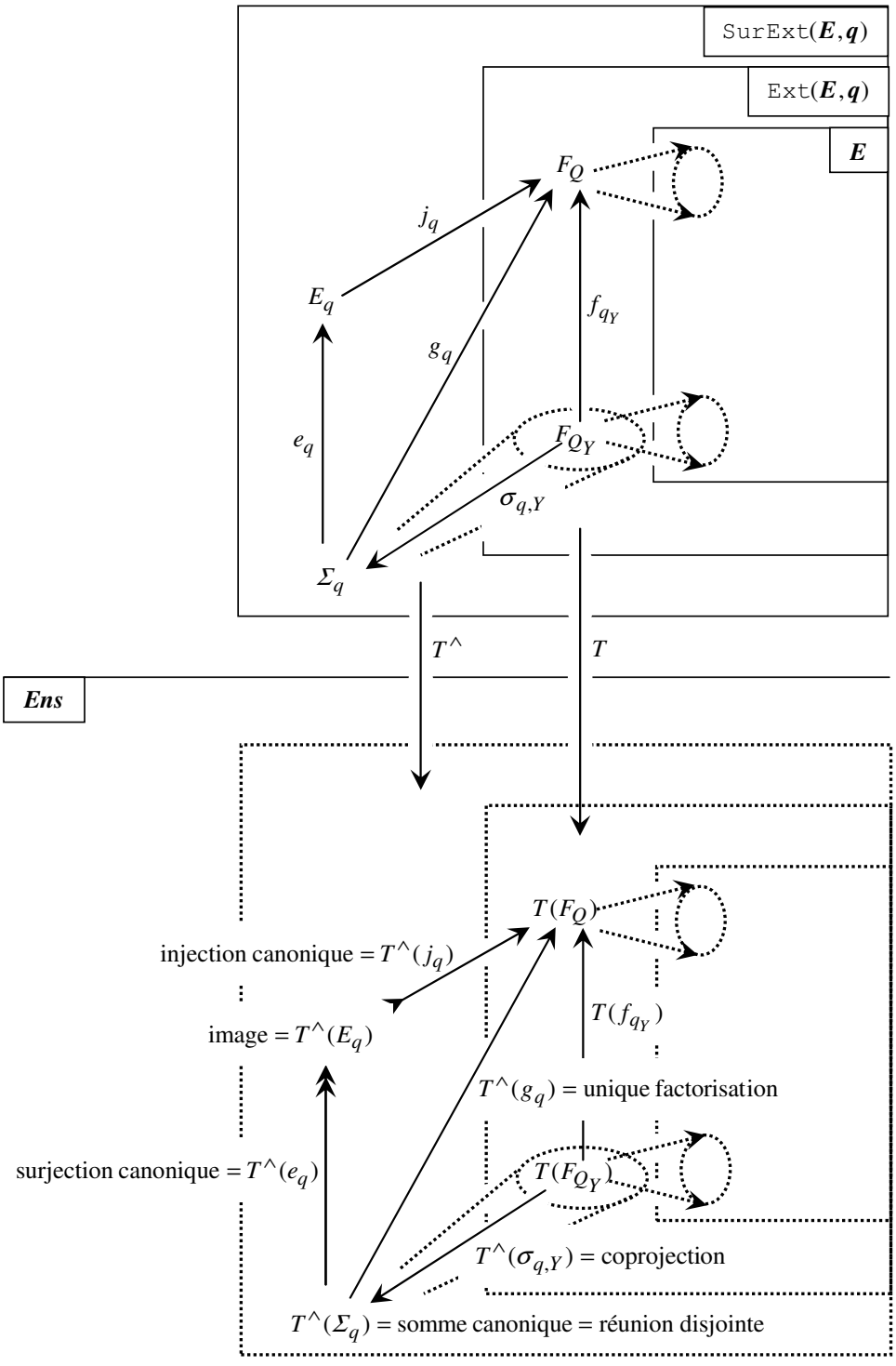

SurExt(E,q)
Ext(E,q)
E
F_Q
j_q
E_q
f_{q_Y}
g_q
e_q
F_{Q_Y}
$\sigma_{q,Y}$
Σ_q
$T^\wedge$
T
Ens
$T(F_Q)$
injection canonique = $T^\wedge(j_q)$
$T(f_{q_Y})$
image = $T^\wedge(E_q)$
$T^\wedge(g_q)$ = unique factorisation
surjection canonique = $T^\wedge(e_q)$
$T(F_{Q_Y})$
$T^\wedge(\sigma_{q,Y})$ = coprojection
$T^\wedge(\Sigma_q)$ = somme canonique = réunion disjointe

Figure 34

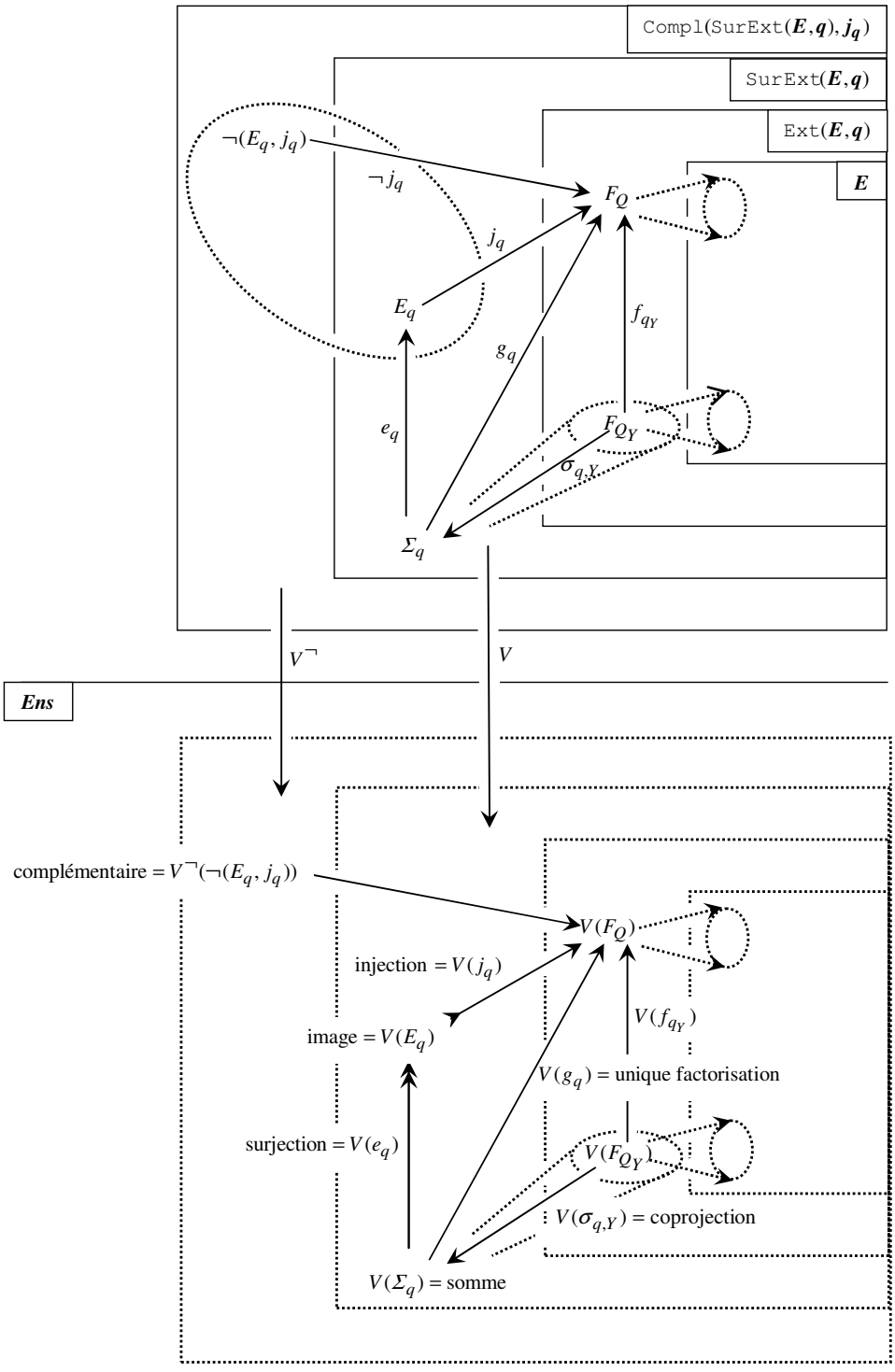

Compl(SurExt(E,q),j_q)
SurExt(E,q)
Ext(E,q)
E
¬(E_q, j_q)
¬ j_q
F_Q
j_q
E_q
f_qY
g_q
e_q
F_QY
σ_q,Y
Σ_q
V¬
V
Ens
complémentaire = V¬(¬(E_q, j_q))
V(F_Q)
injection = V(j_q)
V(f_qY)
image = V(E_q)
V(g_q) = unique factorisation
surjection = V(e_q)
V(F_QY)
V(σ_q,Y) = coprojection
V(Σ_q) = somme

Figure 35

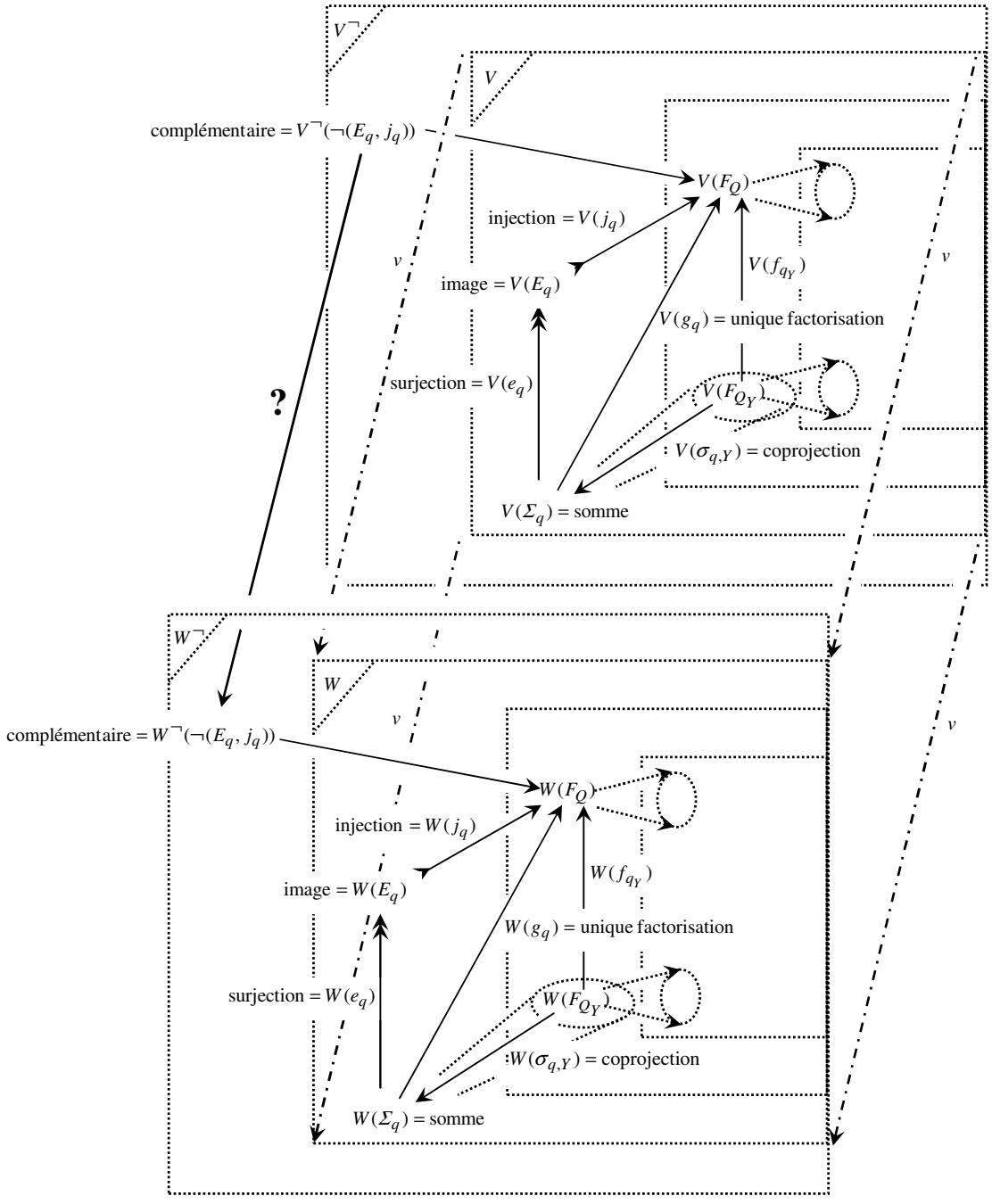

$V^{\neg}$
V
complémentaire $= V^{\neg}(\neg(E_q, j_q))$
$V(F_Q)$
injection $= V(j_q)$
v
image $= V(E_q)$
$V(f_{q_Y})$
v
$V(g_q)$ = unique factorisation
?
surjection $= V(e_q)$
$V(F_{Q_Y})$
$V(\sigma_{q,Y})$ = coprojection
$V(\Sigma_q)$ = somme
$W^{\neg}$
W
v
v
complémentaire $= W^{\neg}(\neg(E_q, j_q))$
$W(F_Q)$
injection $= W(j_q)$
image $= W(E_q)$
$W(f_{q_Y})$
$W(g_q)$ = unique factorisation
surjection $= W(e_q)$
$W(F_{Q_Y})$
$W(\sigma_{q,Y})$ = coprojection
$W(\Sigma_q)$ = somme

Figure 36