Non-Defeseable

$$holds(L) \leftarrow \quad rule(R, L, Body), \tag{1}$$
$$hold(Body).$$

$$hold([]). \tag{2}$$

$$hold([H|T]) \leftarrow \quad holds(H), \tag{3}$$
$$hold(T).$$

Defeseable

$$holds\_by\_default(L) \leftarrow \qquad\qquad\qquad holds(L). \tag{4}$$

$$holds\_by\_default(L) \leftarrow \qquad rule(R, L, Body), \tag{5}$$
$$hold\_by\_default(Body).$$

$$holds\_by\_default(L) \leftarrow \qquad default(D, L, Body), \tag{6}$$
$$hold\_by\_default(Body),$$
$$not\ defeated(D),$$
$$not\ holds\_by\_default(\neg L).$$
$$hold\_by\_default([]). \tag{7}$$

$$hold\_by\_default([H|T]) \leftarrow \quad holds\_by\_default(H), \tag{8}$$
$$hold\_by\_default(T).$$

Defeating axioms

$$defeated(D) \leftarrow \qquad\qquad default(D, L, Body), \qquad (9)$$
$$holds(\neg L).$$

$$defeated(D) \leftarrow \qquad\qquad default(D, L, Body), \qquad (10)$$
$$default(D_1, L_1, Body_1),$$
$$holds(conflict(D_1, D)),$$
$$holds\_by\_default(prefer(D_1, D)),$$
$$holds\_by\_default(Body_1),$$
$$not\ defeated(D_1).$$

$$holds(conflict(D_1, D_2)). \qquad\qquad (11)$$
$$\neg holds(conflict(D, D)). \qquad\qquad (12)$$
$$holds(conflict(D_1, D_2)) \leftarrow \qquad holds(conflict(D_2, D_1)). \qquad (13)$$
$$D_1 \neq D_2$$

$$\neg h\_by\_d(prefer(D_1, D_2)) \leftarrow \qquad h\_b\_d(prefer(D_2, D_1)). \qquad (14)$$
$$D_1 \neq D_2$$

Uniqueness of names

$$rule(R, F_1, B_1) \leftarrow \qquad\qquad default(R, F_2, B_2), \qquad (15)$$

$$\neg rule(R, F_1, B_1) \leftarrow \qquad\qquad rule(R, F_2, B_2). \qquad (16)$$
$$rule(R, F_1, B_1) \neq rule(R, F_2, B_2)$$
$$\neg default(D, F_1, B_1) \leftarrow \qquad\qquad default(D, F_2, B_2). \qquad (17)$$
$$default(D, F_1, B_1) \neq default(R, F_2, B_2)$$

$$(18)$$

Auxilary

$$\neg holds(L) \leftarrow \qquad\qquad holds(\neg L). \qquad (19)$$

$$\neg holds\_by\_default(L) \leftarrow holds\_by\_default(\neg L). \qquad (20)$$

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