Quantifying into Belief Contexts

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Applying my definition of belief

(1) (x) S believes R(x,b,c) at time t

iff

(2)(x)(∃w)(∃y)(∃z) belief_r(S,t,w,y,z) & ,Symbol_1r(S,t,w,R) & Symbol_0r(S,y,b,t) & Symbol_0r(S,t,z,c)

We also will have

(3) (∃x) S believes R(x,b,c) at time t

iff

(4)(∃x)(∃y)(∃z) belief_r(S,t,w,y,z) & Symbol_1r(S,t,w,R) &Symbol_0r(S,t,y,b) & Symbol_0r(S,t,z,c)

On Quanifying into Belief Contexts

In Word and Object[1], Quine gives the example:

in my notation – the simple form.

(∃x) Tom believes denounced(x,Cateline) at time t

On my definition this is true iff

(∃x)(∃d)(∃z)(∃u) Belief_r(Tom,t,d,u,z) & Symbol_1r(Tom,t,d,denounces) & Variable_0r(Tom.t,u,x) & Symbol_0r(Tom,t,z,Cataline)

(note we need both a ‘variable symbol’ “u” occuing in the belief_r and a vatiable connected to it by the variable_0r relation (which I hadn’t worked out before))

Substitutivity of Identity

But Quine says we can express the substitutivity of identity as

(x)(y)(if x = y and (S believes denounced(x,Cateline) at t) then (S believes denounced(y,Cateline) at t)

Case 1 – Using NAMES

If we analyze this so *names* could be quantified over we get

(x)(y) (∃d)(∃u)(∃w)(∃z)((if x = y & belief_r(S,t,d,x,z) & Symbol_1r(S,t,d,denounced) & Symbol_0r(S,t,x,u) & Symbol_0r(S,t,z,Cateline)

then belief_r(S,t,d,u,z) & Symbol_1r(S,t,d,denounced) & Symbol_0r(S,t,y,w) & Symbol_0r(S,t,z,Cateline)

Now consider when x =' Cicero' & y = 'Tully' & substitute in.

(∃d)(∃u)(∃w)(∃z)(if 'Cicero' = 'Tully' & belief_r(S,t,d,'Cicero',z) & Symbol_1r(S,t,d,denounces) & Symbol_0r(S,t,'Cicero',Cicero) & Symbol_0r(S,z,Cateline)

then belief_r(S,t,d,'Tully',z) & Symbol_1r(S,t,d,denounces) & Symbol_0r(S,t,'Tully',Tully,t) & Symbol_0r(S,z,Cateline)

With this substitution 'Cicero' is not equal to 'Tully' so the premise is not met – and the conclusion is not true, but this does not violate substututivity!

Case 2 – Using OBJECTS

If we analyze this so *objects* could be quantified over we get

(x)(y) (∃d)(∃u)(∃w)(∃z)((if x = y & belief_r(S,t,d,u,z) & Symbol_1r(S,t,d,denounced) & Variable_0r(S,t,u,x) & Symbol_0r(S,t,z,Cateline)

then belief_r(S,t,d,w,z) & Symbol_1r(S,t,d,denounced) & Variable_0r(S,t,w,y) & Symbol_0r(S,t,z,Cateline)

Now consider when x =Cicero & y = Tully & substitute in.

(∃d)(∃u)(∃w)(∃z)(if Cicero = Tully & belief_r(S,t,d,u,z) & Symbol_1r(S,t,d,denounces) & Substitute Cicero for value of variable u & Symbol_0r(S,z,Cateline)

then belief_r(S,t,d,w,z) & Symbol_1r(S,t,d,denounces) & Substitute Tully for value of variable w & Symbol_0r(S,z,Cateline)

Here Cicero = Tully, but as objects are referred to in the conclusion it also follows and again this does not violate substitutivity!

Additional thoughts (added January 12, 2008) from Blog entry

Suppose you want to say (1) Tom believes someone is a spy and (2) George believes someone is a banker and (3)Sam has beliefs about these beliefs and that these someones are the same person.

On my analysis of belief we have

1. (∃ s)(∃ x)(∃ v)belief_r(Tom,.now,s,x) & symbol_1r(Tom,now,s,is_spy) & variable0_r(Tom,now,x,v)

2. (∃ b)(∃ y)(∃ v)belief_r(George,now,b,y) & symbol_1r(George,now,b,is_banker) & variable0_r(George,now,y,v)

3. (∃ s)(∃ b)(∃ x)(∃ v1)(∃ y)(∃ v2)(belief_r(Sam,now,belief_r,Tom,now,s,x) & belief_r(Sam,now,symbol1_r,Tom,now,s,is_spy) & belief_r(variable0_r,Tom,now,x,v1) & belief_r(Sam,now,belief_r,George,now,b,y) & belief_r(Sam,now,symbol1_r,George,now,b,is_banker) & belief_r(variable0_r,George,now,y,v2) & belief_r(Sam,now,=,v1,v2)

Notes:

1.Quine, Word and Object, pp. 166-167.

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