

A simple treatment of the attitudes

Record types as the object of the attitude.

$$\left[\begin{array}{l} x \\ c_1 \\ p= \\ c_2 \end{array} \begin{array}{l} : \textit{Ind} \\ : \textit{girl}(x) \\ \left[\begin{array}{l} y : \textit{Ind} \\ c_3 : \textit{man}(y) \\ z : \textit{Ind} \\ c_4 : \textit{donkey}(z) \\ c_5 : \textit{own}(y, z) \end{array} \right] \\ : \textit{RecType} \\ : \textit{believe}(x,p) \end{array} \right]$$

The girl's belief is *true* of a record r just in case r is of type

$$\left[\begin{array}{l} y : \textit{Ind} \\ c_3 : \textit{man}(y) \\ z : \textit{Ind} \\ c_4 : \textit{donkey}(z) \\ c_5 : \textit{own}(y, z) \end{array} \right]$$

(corresponding to a judgement in type theory or an Austinian proposition in situation semantics) and true simpliciter if there is such an r (corresponding to a Russellian proposition in situation semantics).

A girl seeks a unicorn

$$\left[\begin{array}{l} \mathbf{x} \\ \mathbf{c}_1 \\ \mathbf{p} = \left[\begin{array}{l} \mathbf{y} : \text{Ind} \\ \mathbf{c}_2 : \text{unicorn}(\mathbf{y}) \\ \mathbf{c}_3 : \text{find}(\mathbf{x}, \mathbf{y}) \end{array} \right] \\ \mathbf{c}_4 \end{array} \right. \begin{array}{l} : \text{Ind} \\ : \text{girl}(\mathbf{x}) \\ : \text{RecType} \\ : \text{seek}(\mathbf{x}, \mathbf{p}) \end{array} \left. \right]$$

r is a *successful outcome* for the girl's search just in case r is of type

$$\left[\begin{array}{l} \mathbf{y} : \text{Ind} \\ \mathbf{c}_2 : \text{unicorn}(\mathbf{y}) \\ \mathbf{c}_3 : \text{find}(\mathbf{Bo}, \mathbf{y}) \end{array} \right]$$

The girl's search would be *successful* just in case there is such an r .

Perception attitudes

a man sees that a donkey kicked a farmer

$$\left[\begin{array}{l} \mathbf{x} \\ \mathbf{c}_1 \\ \mathbf{p} = \\ \mathbf{c}_5 \end{array} \begin{array}{l} : \mathit{Ind} \\ : \mathit{man}(\mathbf{x}) \\ \left[\begin{array}{l} \mathbf{y} : \mathit{Ind} \\ \mathbf{c}_2 : \mathit{donkey}(\mathbf{y}) \\ \mathbf{z} : \mathit{Ind} \\ \mathbf{c}_3 : \mathit{farmer}(\mathbf{z}) \\ \mathbf{c}_4 : \mathit{kick}(\mathbf{y}, \mathbf{z}) \end{array} \right] \\ : \mathit{RecType} \\ : \mathit{see}(\mathbf{x}, \mathbf{p}) \end{array} \right]$$

Veridicality

$$\left[\mathbf{f} : (r : \left[\begin{array}{l} \mathbf{x} : \mathit{Ind} \\ \mathbf{T} : \mathit{RecType} \\ \mathbf{c} : \mathit{see}(\mathbf{x}, \mathbf{T}) \end{array} \right]) \left[\mathbf{a} : r.\mathbf{T} \right] \right]$$

Note that this does not require that the man saw a donkey-kicking-farmer situation – he may just have seen donkey hoof marks on the farmer’s legs.

Naked infinitive perception complements

a man sees a donkey kick a farmer

$$\left[\begin{array}{l} x : \textit{Ind} \\ c_1 : \text{man}(x) \\ s : \left[\begin{array}{l} y : \textit{Ind} \\ c_2 : \text{donkey}(y) \\ z : \textit{Ind} \\ c_3 : \text{farmer}(z) \\ c_4 : \text{kick}(y, z) \end{array} \right] \\ c_5 : \text{see}(x,s) \end{array} \right]$$

Veridicality is required.

Also perception of the donkey-kicking-farmer situation.

Three apparent problems

- Does treating types as objects lead to paradoxes?
- Too finegrained - most (but not all) beliefs individuated by corresponding σ -types
- We need families of types rather than types as attitudinal objects

Types are not enough

- Proper names
- Presuppositions

Sandy kicks a farmer

$$\left[\begin{array}{l} y : Ind \\ c_2 : \text{named}(y, \text{“Sandy”}) \\ z : Ind \\ c_3 : \text{farmer}(z) \\ c_4 : \text{kick}(y, z) \end{array} \right]$$

Frames of mind

A *family of types* – function from records of a given type to a record type.

$$\lambda r : \left[\begin{array}{l} y : Ind \\ c_2 : \text{named}(y, \text{“Sandy”}) \end{array} \right] \left[\begin{array}{l} z : Ind \\ c_3 : \text{farmer}(z) \\ c_4 : \text{kick}(r.y, z) \end{array} \right]$$

A *setting* for a frame of mind is a record in its domain.

The *presupposition* associated with a frame of mind is the type characterizing its domain.

A *mental state* is a pair consisting of a frame of mind (agent internal) and a setting (agent external).

The *content of a mental state* is the result of applying the frame of mind to the setting.

Advantage over Cooper and Ginzburg (1996) : no restricted objects

Pierre

Frame of mind

$$\lambda r : \left[\begin{array}{l} x : Ind \\ c_1 : \text{named}(x, \text{"Londres"}) \\ y : Ind \\ c_2 : \text{named}(y, \text{"London"}) \end{array} \right] \left[\begin{array}{l} c_3 : \text{pretty}(r.x) \\ c_4 : \neg\text{pretty}(r.y) \end{array} \right]$$

Setting

$$\left[\begin{array}{l} x = \text{london} \\ c_1 = \text{pf named}(\text{london} \text{"Londres"}) \\ y = \text{london} \\ c_2 = \text{pf named}(\text{london} \text{"London"}) \end{array} \right]$$

Content of Pierre's mental state

$$\left[\begin{array}{l} c_3 : \text{pretty}(\text{london}) \\ c_4 : \neg\text{pretty}(\text{london}) \end{array} \right]$$

Frames of mind

Double role as

- objects of attitudes
- information states

Questions

yes/no

If T is a record type we define $?T$ to be the following function type:

$$(r:[]) [q:\text{tuple}(r, T)]$$

Here tuple is a type constructor such that $\text{tuple}(a_1, \dots, a_n)$ is a type whose unique inhabitant is $\langle a_1, \dots, a_n \rangle$.

If $f : ?T$ then *the answer to f* is “yes” if for some r , $f(r)_0 : f(r)_1$ and “no” if for no r , $f(r)_0 : f(r)_1$.

wh

If $\lambda r : T_1(T_2(r))$ is a family of record types (i.e. a function from records r of type T_1 to the type T_2 , dependent on r) then we define $? \lambda r : T_1(T_2(r))$ to be the following function type:

$$(r:T_1) [q:\text{tuple}(r, T_1, T_2)]$$

If $f : ? \lambda r : T_1(T_2(r))$ then *an answer to f* is a set of records R such that for all $r \in R$, $f(r)_0 : f(r)_1$ and $f(r)_0 : f(r)_2$.