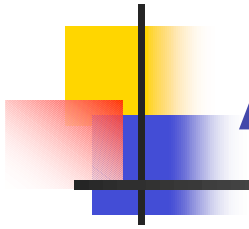
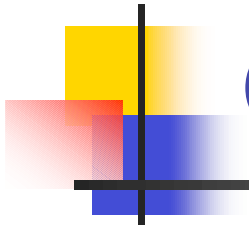


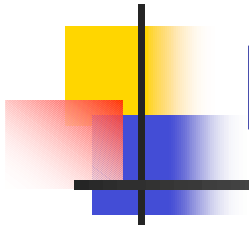
A Theory for **GEN**

- Although there is a similarity between GEN and non-monotonic reasoning (NMR), there are differences in outlook
  - A semantic theory for GEN
    - An account of the conditions under which GEN sentences are true
  - A theory of inference for NMR
    - An account of what NMR inferences are default-valid and which aren't



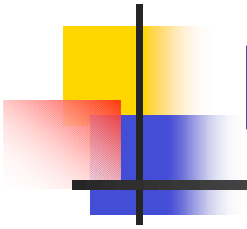
Generics and NMR

- The semantics for generics should also give an account of the use of generics in reasoning…in NMR
- NMR validity not to be confused with "ordinary" validity [= "if the premises are true, then the conclusion must be too"]



NMR Inferences we accept

- Defeasible Modus Ponens
- Penguin Principle
- Weak Penguin Principle
- Extended Nixon Diamond
- Defeasible Transitivity
- Defeasible Strengthening of Antecedent
- Non-interacting Defaults



NMR Inferences we don’t like

- Nixon Diamond
- The defeats of the earlier defeasible arguments

“Dogs bark”

1. GEN[x](Dog(x); Bark(x))
2. GEN[x,s](Dog(x)&In(x,s);∃y(e<s&Barking(x,e))

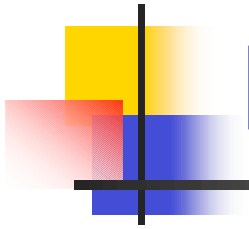
(in general we are sort of “intuitive” about what the appropriate variables are)

We want to evaluate 2 at world w. The idea is:

For every d consider the worlds that are “normal” with respect to both w and to the *proposition* that d is a dog. [proposition = set of possible worlds]

Selection function, *

- *(w,p) $\Rightarrow$
  - “the set of all the normal p-worlds, according to w”
  - “the worlds in which p, together with all of p’s typical consequences (typical according to w) hold”



Restrictions on *

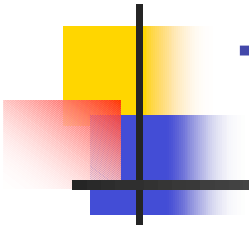
- Facticity:
  - *Dogs are dogs:* GEN[x](Fx;Fx)
  - *(w,p) $\subseteq$ p
- Weakening of Consequent:
  - *If all B's are C's, then if A's are B, then A's are C*
  - If [p] $\subseteq$ [q], then *(w,p) $\subseteq$ *(w,q)
- OR:
  - *If men are allowed to vote and women are allowed to vote, then (things that are) men or women are allowed to vote*
  - *(w,p$\cup$q) $\subseteq$ [*(w,p) $\cup$ *(w,q)]

Restrictions we don't want

- Centering
  - If w p then w *(w,p)
  - Would make MP be valid
- ∀x((Ax&Bx)→GEN[x](Ax;Bx))
  - Makes generics extensional

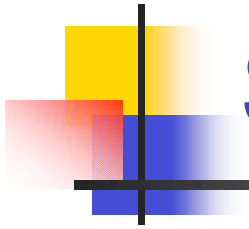
Restrictions we don't want

- Centering
  - If w p then w *(w,p)
  - Would make MP be valid
- ∀x((Ax→Bx)→GEN[x](Ax;Bx))
  - Makes generics extensional
- ((GEN[x](Ax;Bx)&Gen[x](Ax&Bx;Cx)) → GEN[x](Ax;Cx))
  - *Dogs bark, and Dogs that bark annoy Fred; so Dogs annoy Fred.*



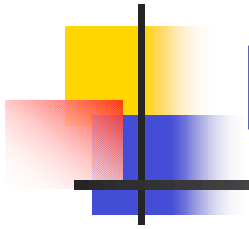
Tricky example

- Elephants like zookeepers
  - GEN[x,y](Eleph(x)&Zook(y); Like(x,y))
- Elephants don’t like Clyde
  - GEN[x](Eleph(x); ¬Likes(x,y))
- Clyde is a zookeeper
  - Zook(c)



Solution

- Wrong translation of first premise. Instead of:
  - GEN[x,y](Eleph(x)&Zook(y); Like(x,y))
- It should be
  - GEN[x](Eleph(x);GEN[y](Zook(y);Like(x,y)))
- So, deny “exportation” for GEN (unlike $\rightarrow$, for which exportation works)



Problem with other theories

- Even fancy theories with normal worlds have problems if they insist on just one absolutely normal world
  - Turtles live to be 100 or more years old
    - Surely not all turtles can live to 100 and still be a “normal possible world”!
  - GEN[x](Turtle(x);Hundred-Yr(x))
    - For each individual turtle t, * determines, together with w and the predicate ‘is a turtle’, a set of “t-turtle with respect to w” normal worlds. In each of these t lives to 100. But other turtles don’t have to.