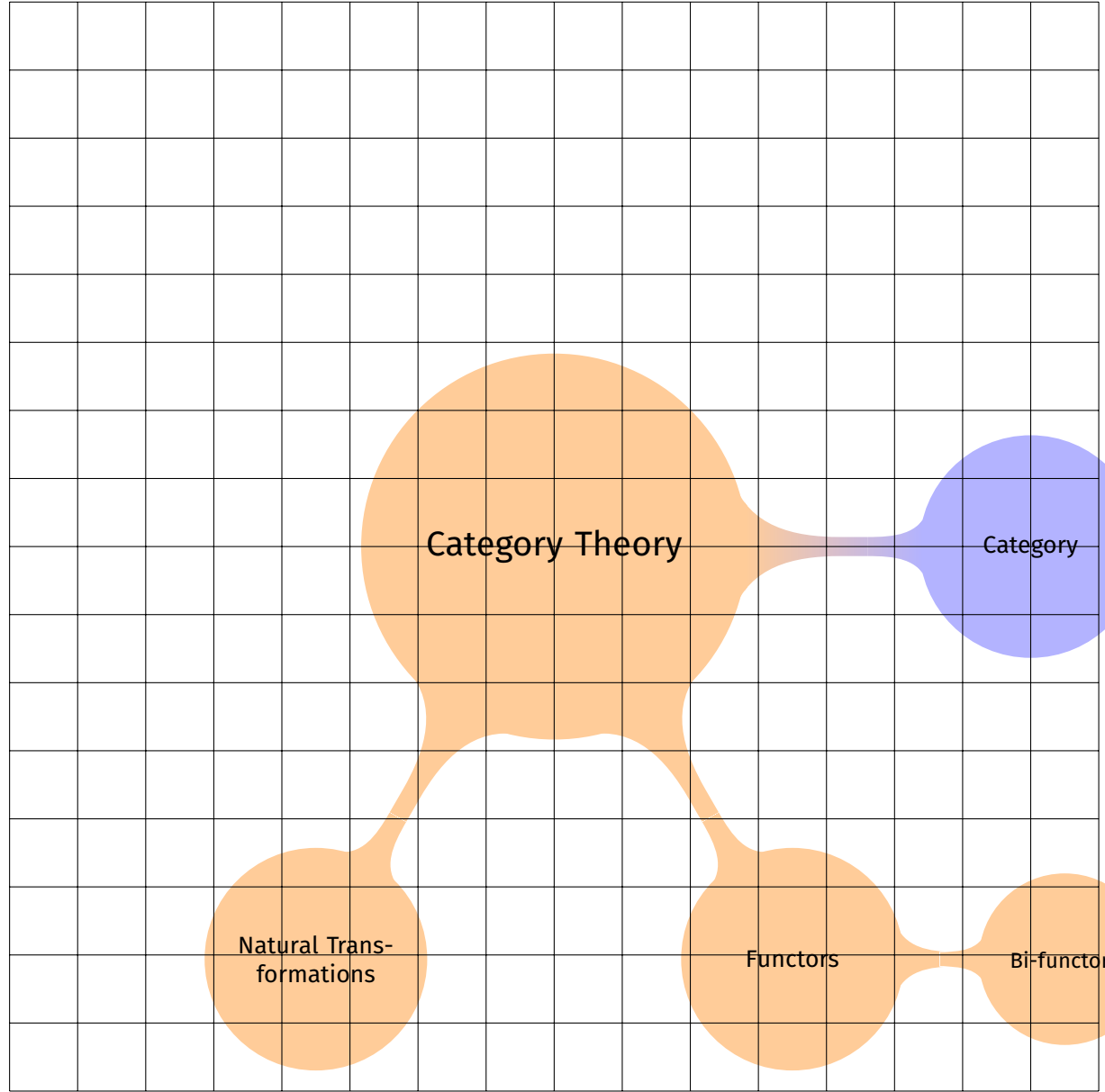


8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8



Category:
A triple $C(O, M, \bullet)$ where

- $\forall o \in O, \exists id_o \in M$
- \bullet is defined for all connected objects
- $\bullet(A \rightarrow B, B \rightarrow C) = A \rightarrow C$
- $(f \bullet g) \bullet h == f \bullet (h \bullet g)$
- $id_x \bullet f = f \bullet id_y$

Free Monoid:
A free monoid of M is just a monoid $\mathcal{M}(List[M], [], ++)$.

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A free monoid of M is just a monoid $\mathcal{M}(List[M], [], ++)$.

Action:
An action of a $\mathcal{M}(M, id_0, *)$ over a set S of states is a function

$$M \times S \rightarrow S$$

It is equivalent to an automata

-8 -7 -6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8