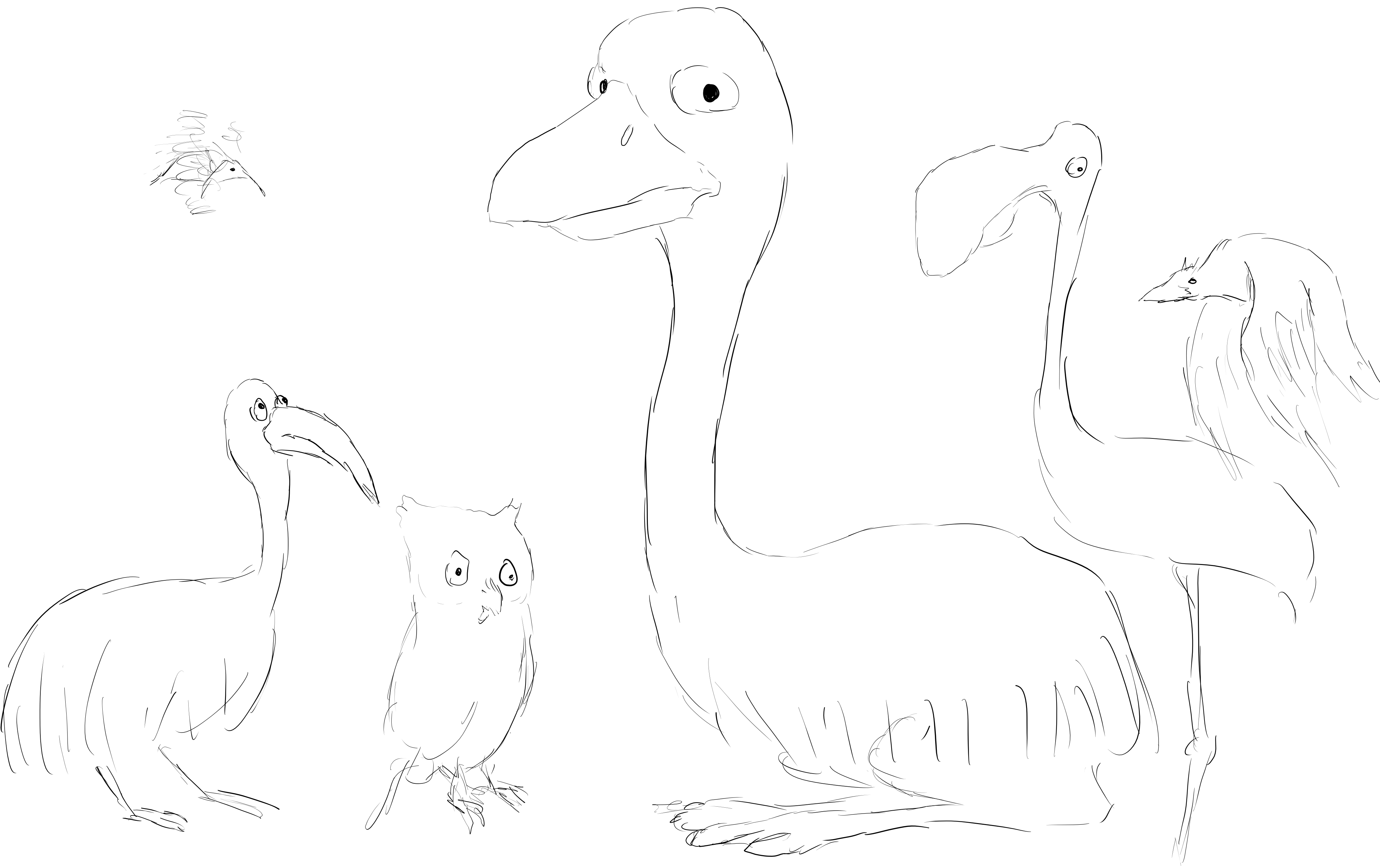

between any pair

assume the shortest walk is not a path

$\forall sw. \neg p$

Prop vs Pred

Prop: $\top$, $\bot$

Pred: incomplet prop

$$\forall \underline{\ x\ } . \underbrace{P(x)}_{\text{pred}}$$

You will marry me

$M(a, b)$

a___ will marry ___b

Pred

$P(x)$: ___x is prime

Prop

$P(3)$ $\top$

$P(4)$ $\bot$

$P(1231231234210371)$

Contradiction

Prove $\boxed{A}$ by

Sub-proof

assu $\boxed{\neg A}$

$\boxed{\text{Prove}}$ $\bot$

conclude: becau assumpt $\vdash \bot$, assumption is false

Direct

chain axioms

Induction

induction hypothesis

$$\underbrace{P(0)}_{\text{base}} \wedge \underbrace{\boxed{P(n) \to P(n+1)}}_{\text{induct}} \vdash \forall x \in \mathbb{N}.\ P(x)$$

Base case:

Induction step:

assume $P(n)$

$\vdash P(n+1)$

By principle of induction true

$$\{1, 2\}^* \equiv \{(), (1), (2), (1,1), (1,2), (2,1), (2,2), \ldots$$

$$(1,1,1,1,2,2,1,2,1,1,2,2), \ldots \}$$

$$\{1,2\}^3 \equiv \{(1,1,1), (1,1,2), (1,2,1) \ldots (2,2,2)\}$$

$|X| = n$ $\qquad$ $|X^k| = n^k$ $\qquad$ pick k elemen of X, w/ duplicat ok