

# Intro to AI & AI DAOs: Nature 2.0 Edition

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@trentmc0  
Ocean | BigchainDB

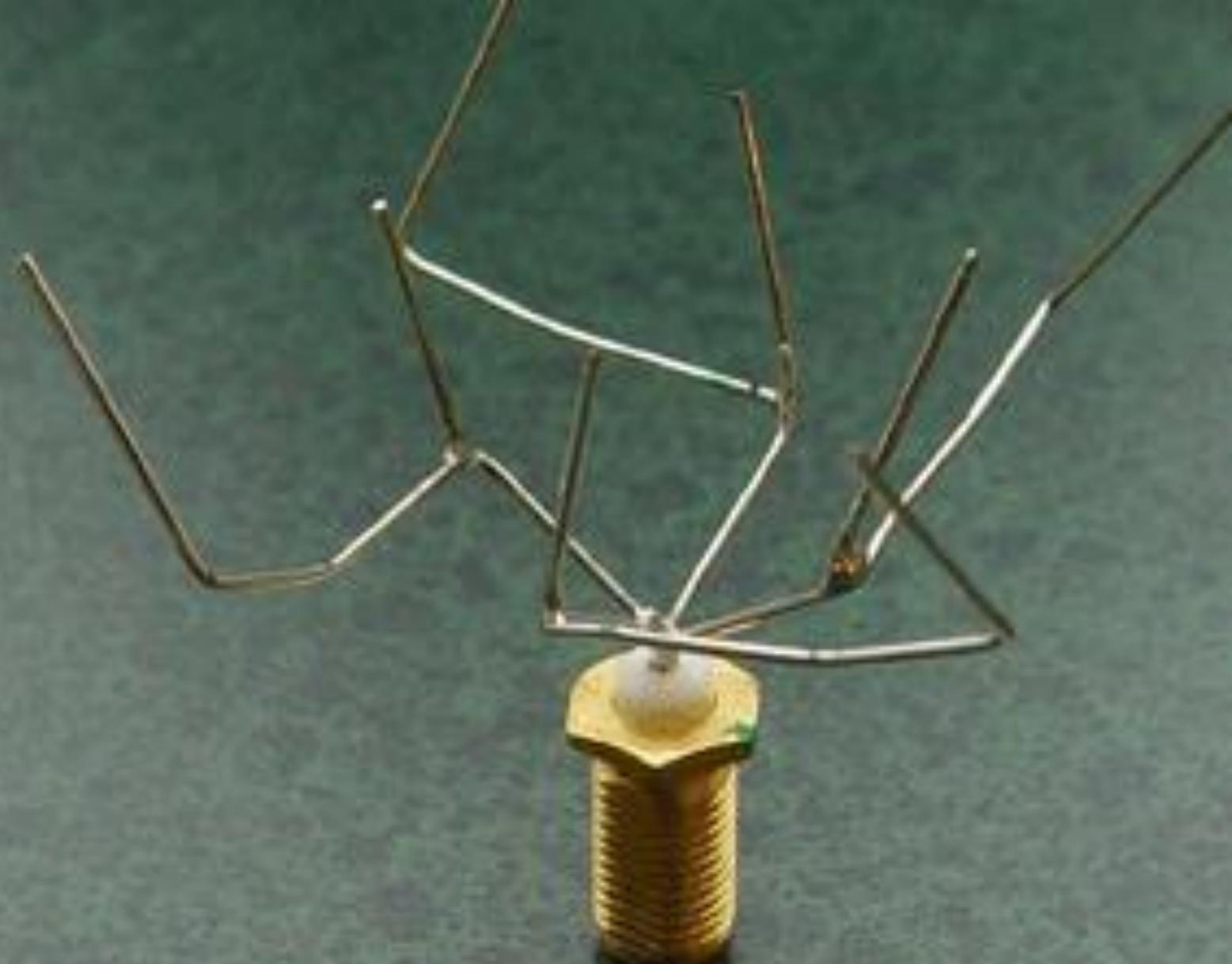
Trucking  
3.5M jobs



Retail  
4.6M jobs



# Creative jobs?



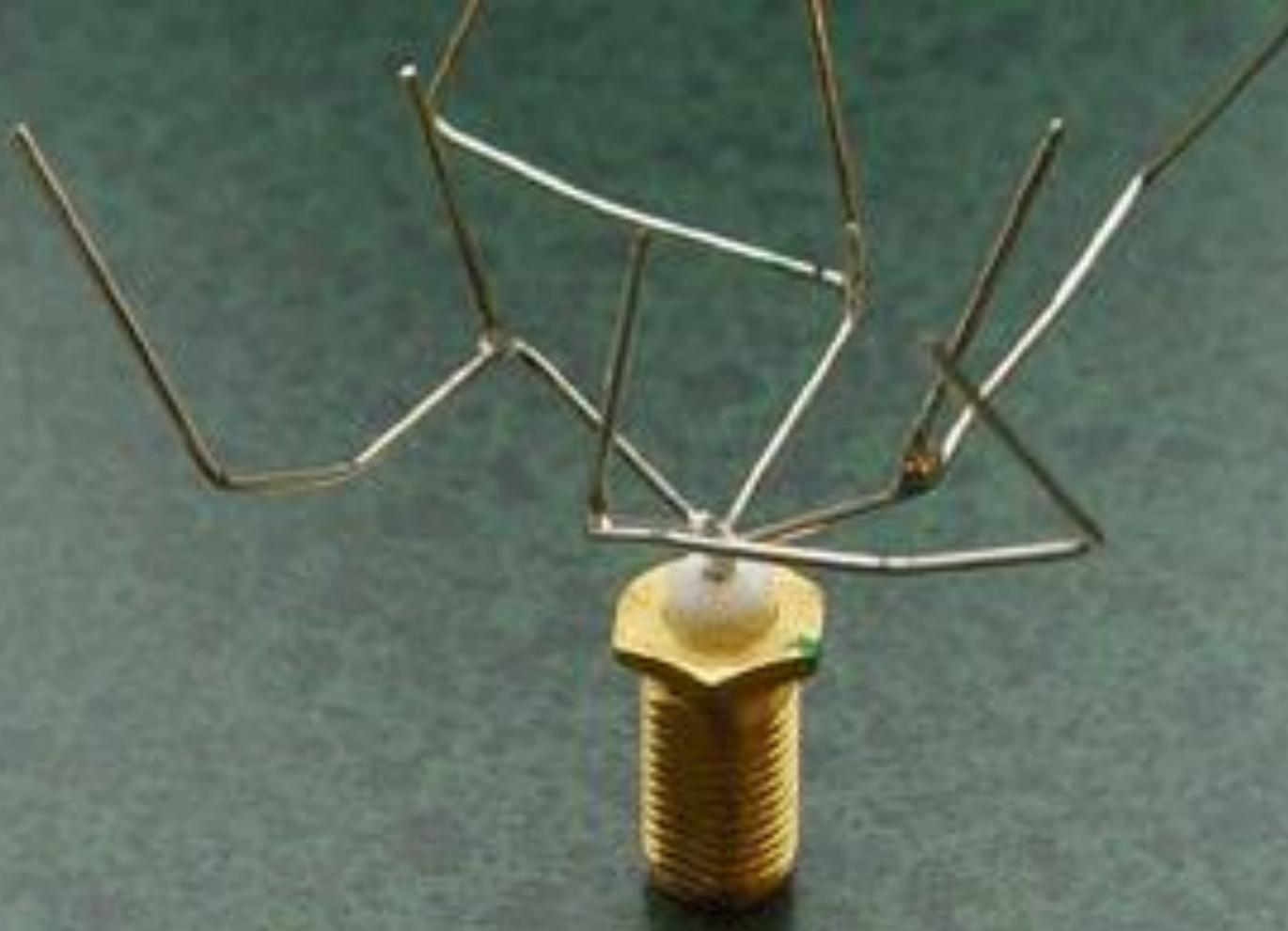
In an age of AI,  
How to feed our families?  
Achieve abundance?



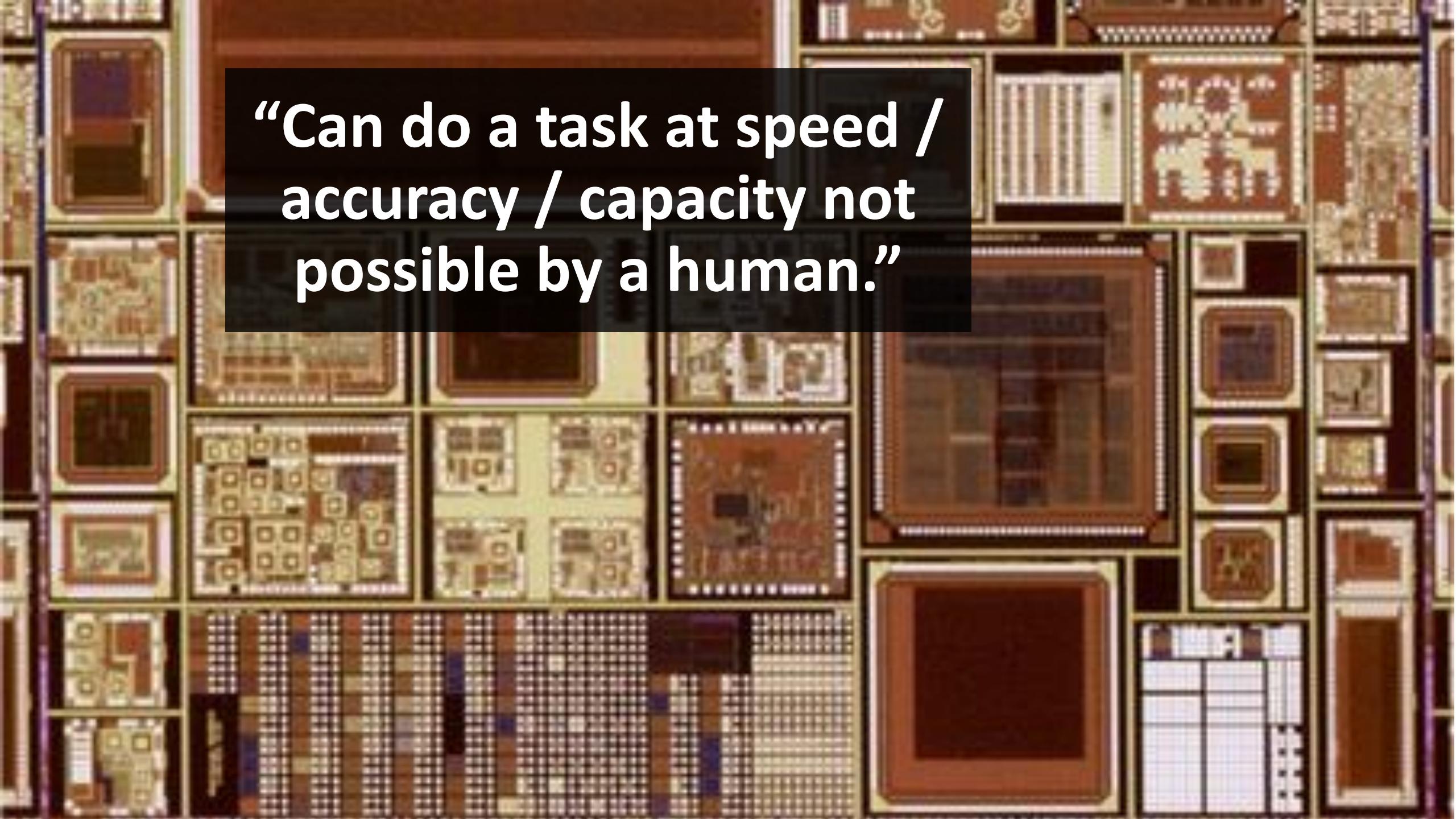
# Ways to frame AI

**“Replicates human cognitive behavior” [Turing test]**





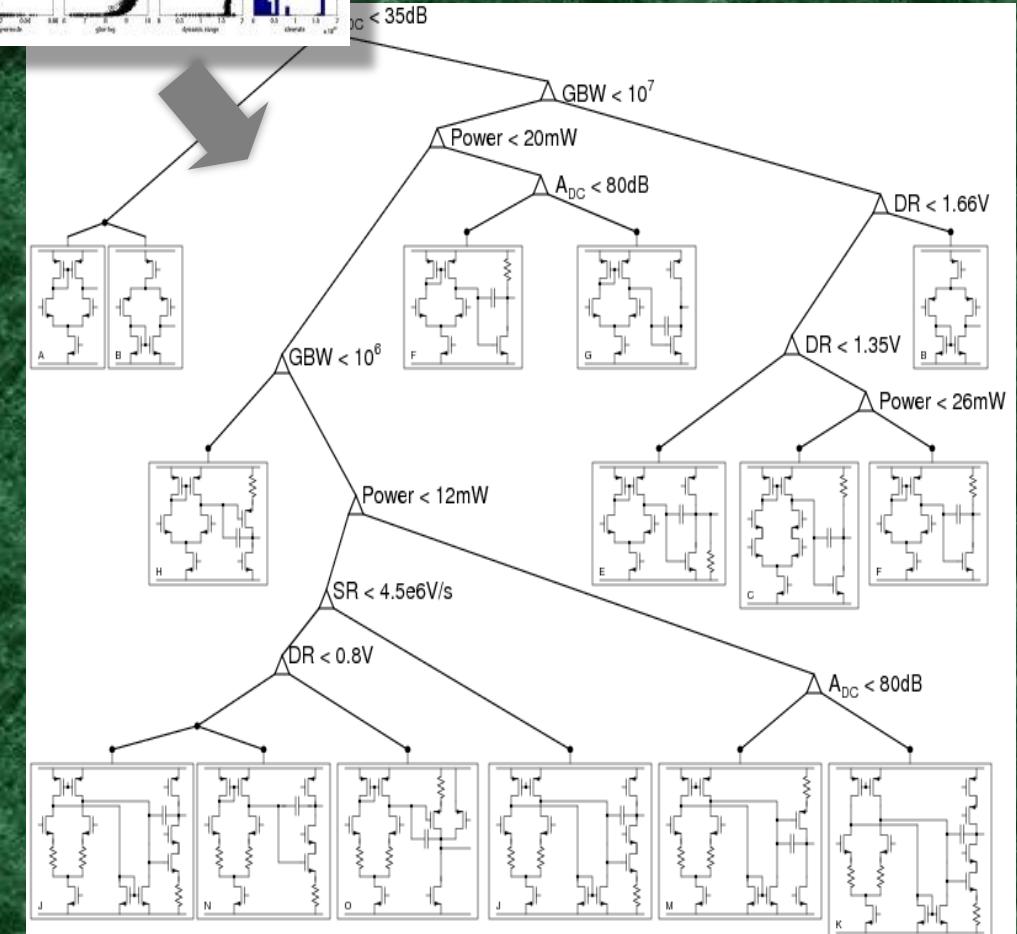
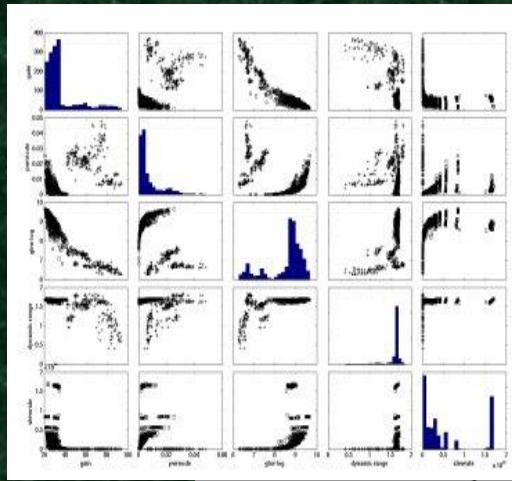
“Can do tasks that only a  
human could previously do”



**“Can do a task at speed /  
accuracy / capacity not  
possible by a human.”**

# “A set of tools”

- Classification
- Regression
- Knowledge extraction
- Optimization
- Creative / Structural design
- ...





“Embodied agents” (AGI)

# AI Tools: Deep Dive

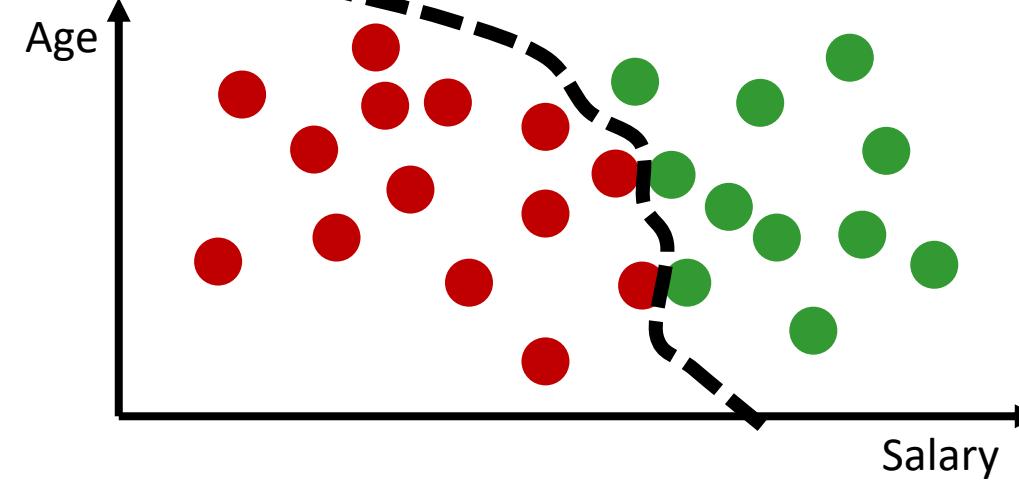
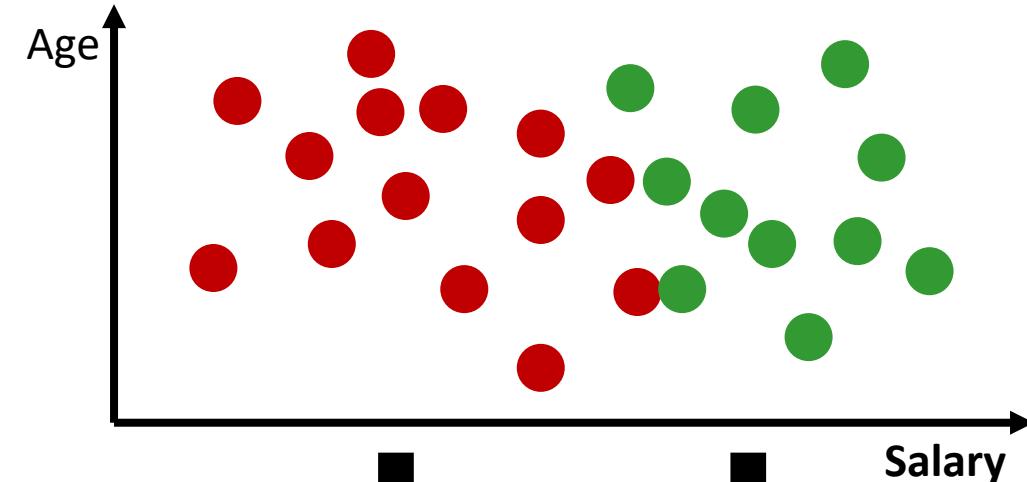
# Classification, in 2D

## Use case: credit card applications

Credit profile:

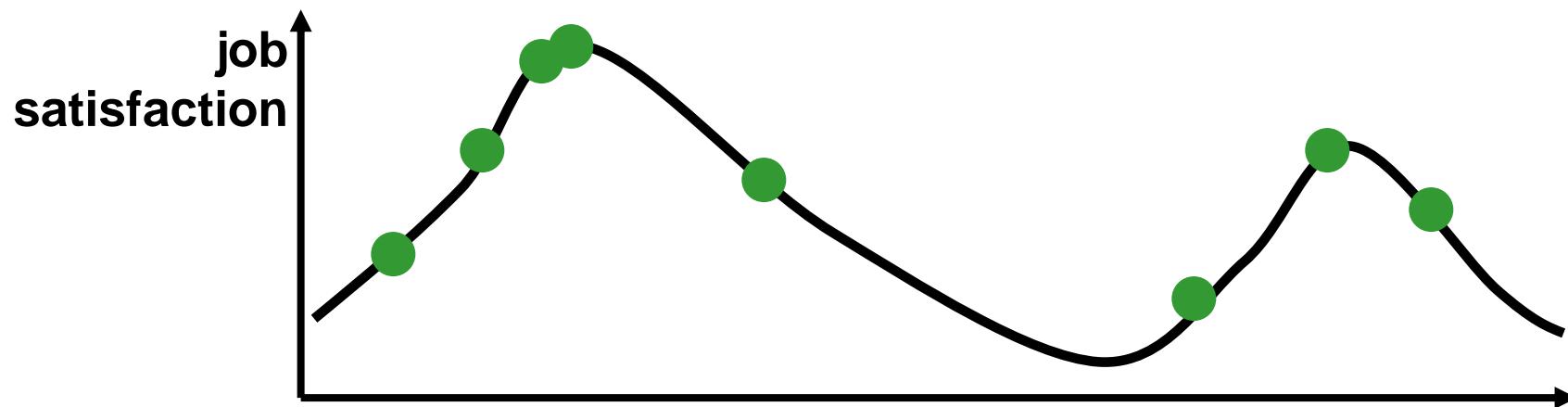
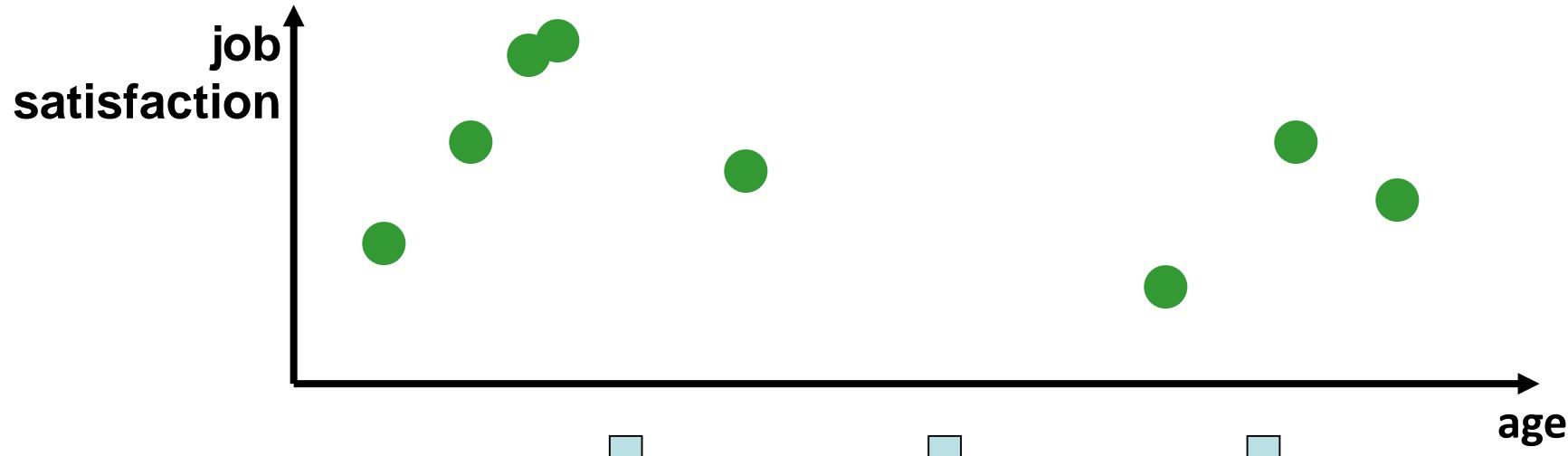
● Paid bills

● Didn't pay

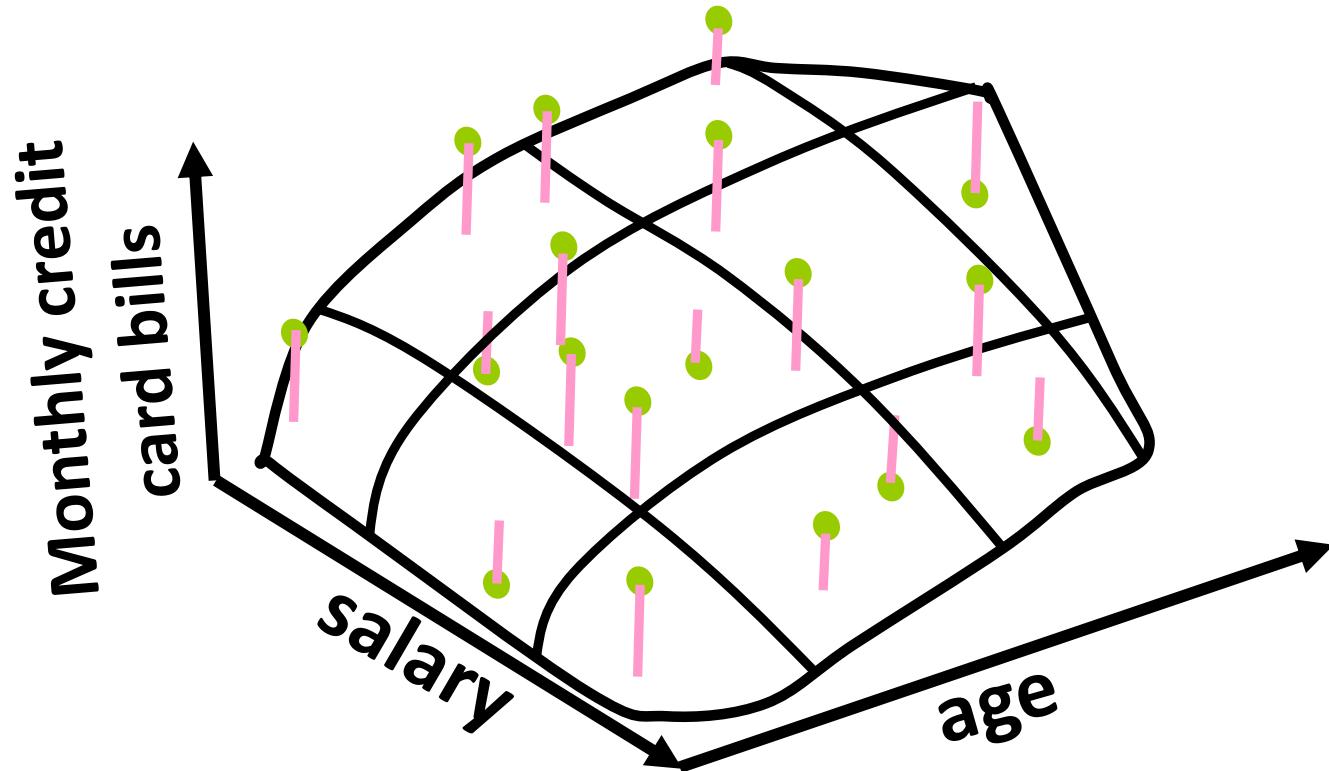


How: linear classifiers, neural networks / deep learning, support vector machines, boosted trees, random forests / bagged trees

# Regression, in 1D



# Regression, in 2D



# Regression in 10,000D



## Use case: reverse image search [Google]

Videos  
 News  
More

Sort by relevance  
Sort by subject

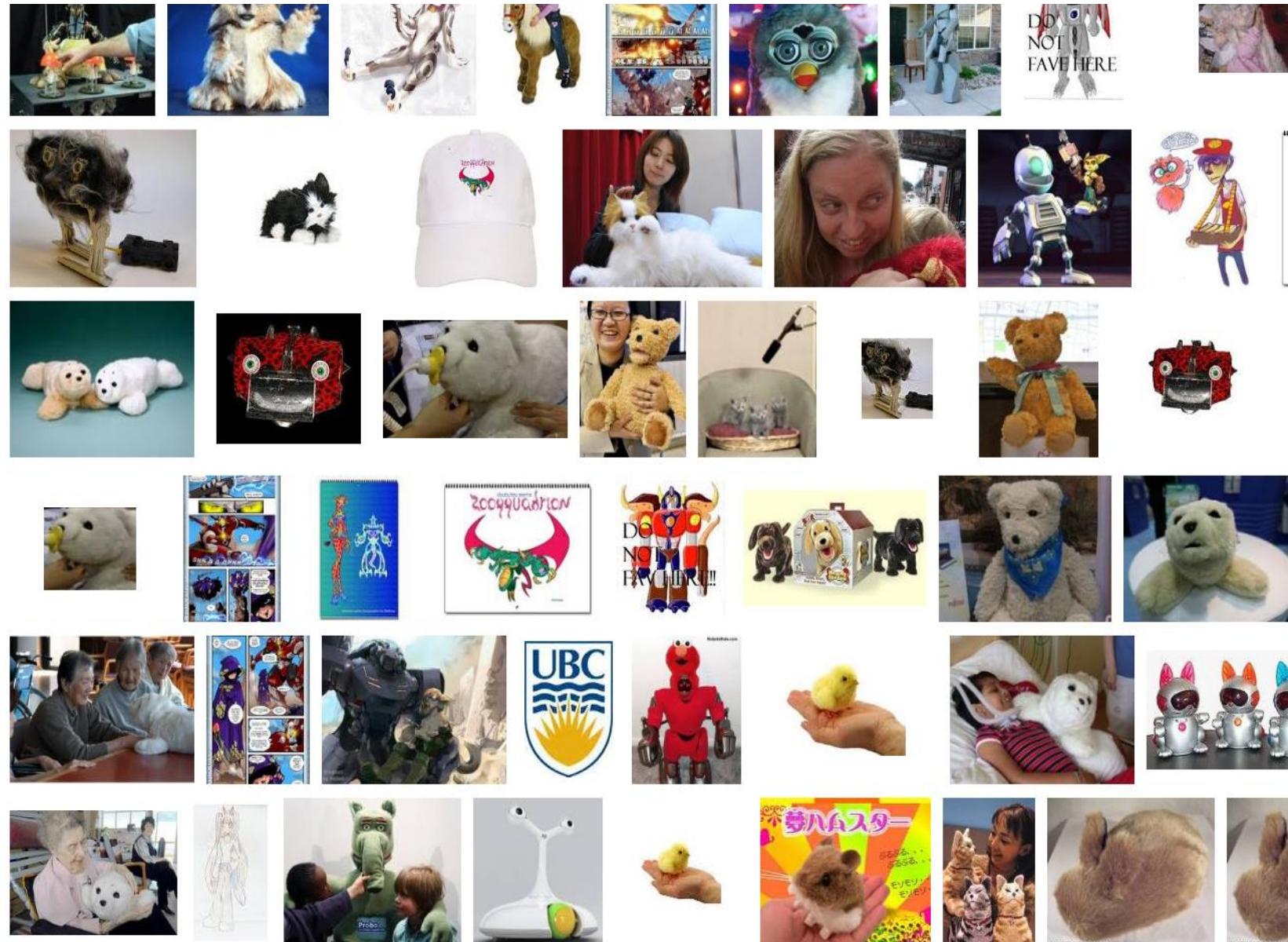
Any size  
Large  
Medium  
Icon  
Larger than...  
Exactly...

Any color  
Full color  
Black and white

Any type  
Face  
Photo  
Clip art  
Line drawing

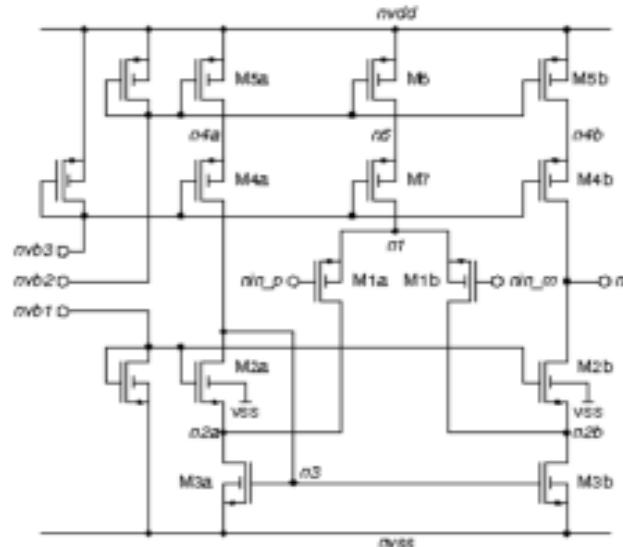
Standard view  
Show sizes

Any time  
Past week



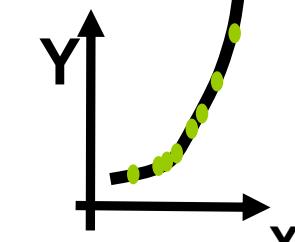
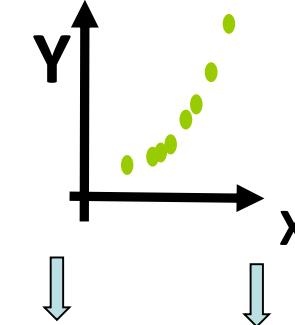
# Knowledge extraction

## Use case: scientific modeling of analog ccts [McC '05 KUL]



SPICE

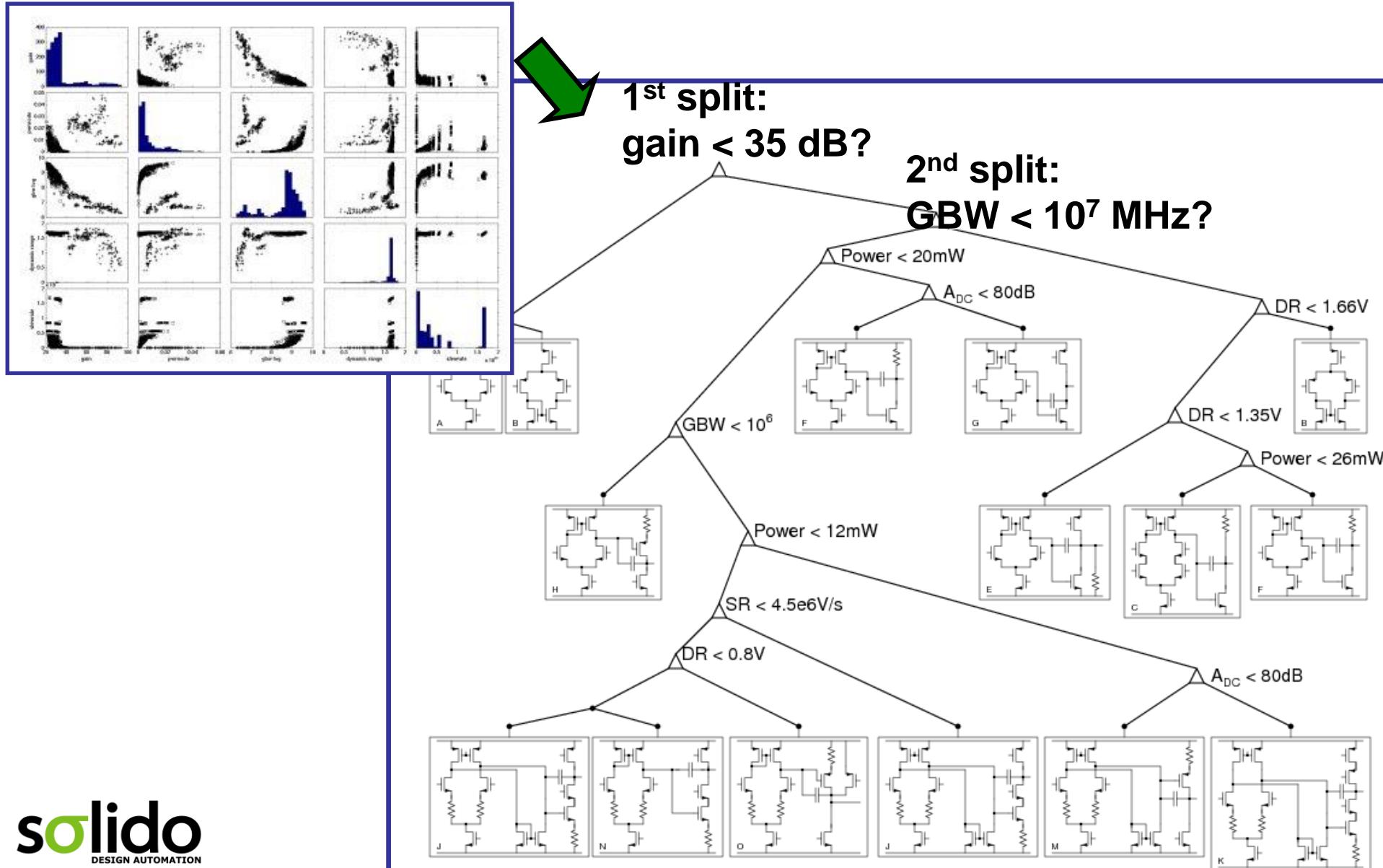
CAFFEINE



Perf.	Expression
A <sub>LF</sub>	$-10.3 + 7.08e-5 / id1$ $+ 1.87 * \ln( -1.95e+9 + 1.00e+10 / (vsg1*vsg3) + 1.42e+9 * (vds2*vsd5) / (vsg1*vgs2*vsg5*id2))$
f <sub>u</sub>	$10^{( 5.68 - 0.03 * vsg1 / vds2 - 55.43 * id1 + 5.63e-6 / id1 )}$
PM	$90.5 + 190.6 * id1 / vsg1 + 22.2 * id2 / vds2$
V <sub>offset</sub>	$-2.00e-3$
SR <sub>p</sub>	$2.36e+7 + 1.95e+4 * id2 / id1 - 104.69 / id2 + 2.15e+9 * id2 + 4.63e+8 * id1$
SR <sub>a</sub>	$-5.72e+7 - 2.50e+11 * (id1*id2) / vgs2 + 5.53e+6 * vds2 / vgs2 + 109.72 / id1$

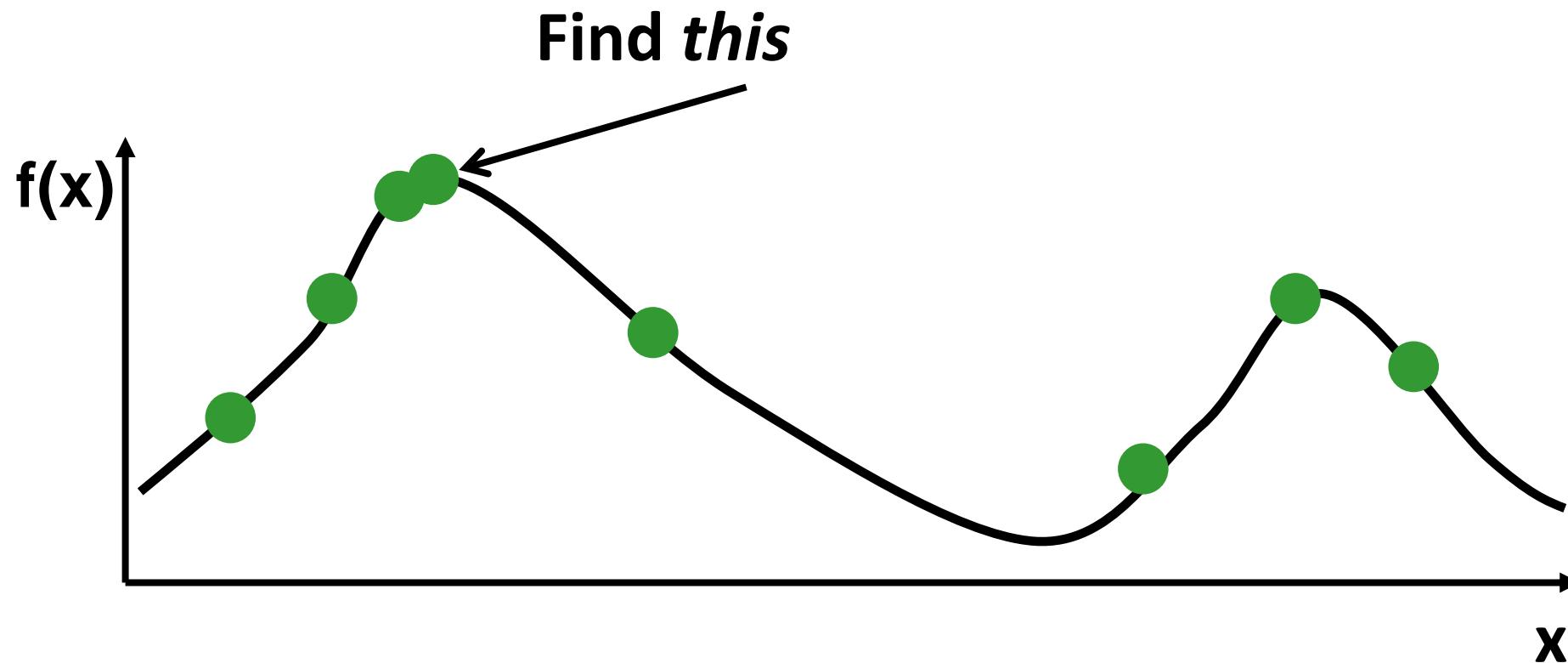
# Knowledge extraction

## Use Case: Topology decision tree [McC '08 KUL]



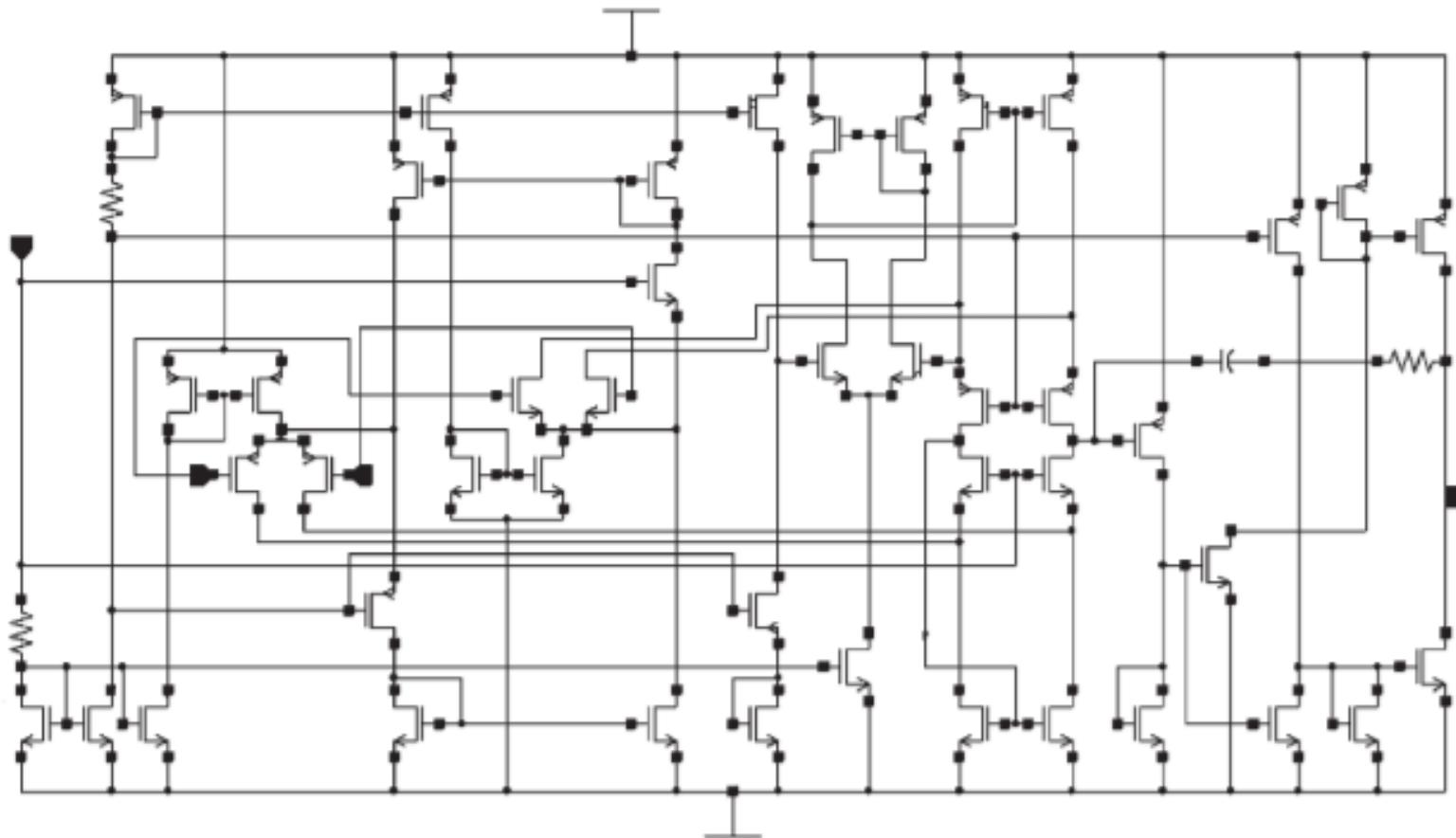
# Optimization

“Find the  $x$  that maximizes  $f(x)$ ”  
(With as few evaluations of  $f(x)$  as possible)



# Optimization

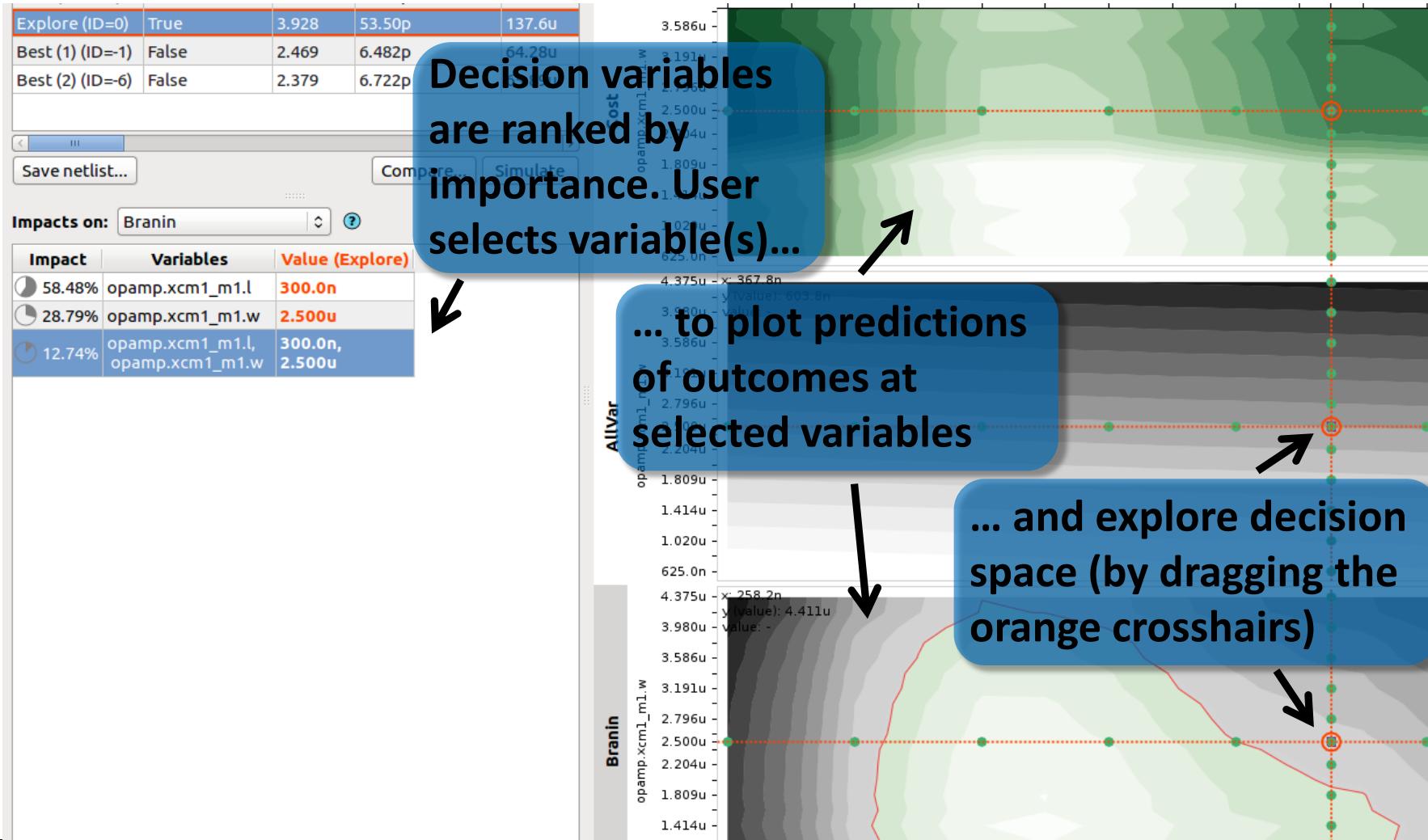
Use Case: Optimize perf. of lg. analog circuits [McC '01 ADA]



# Optimization

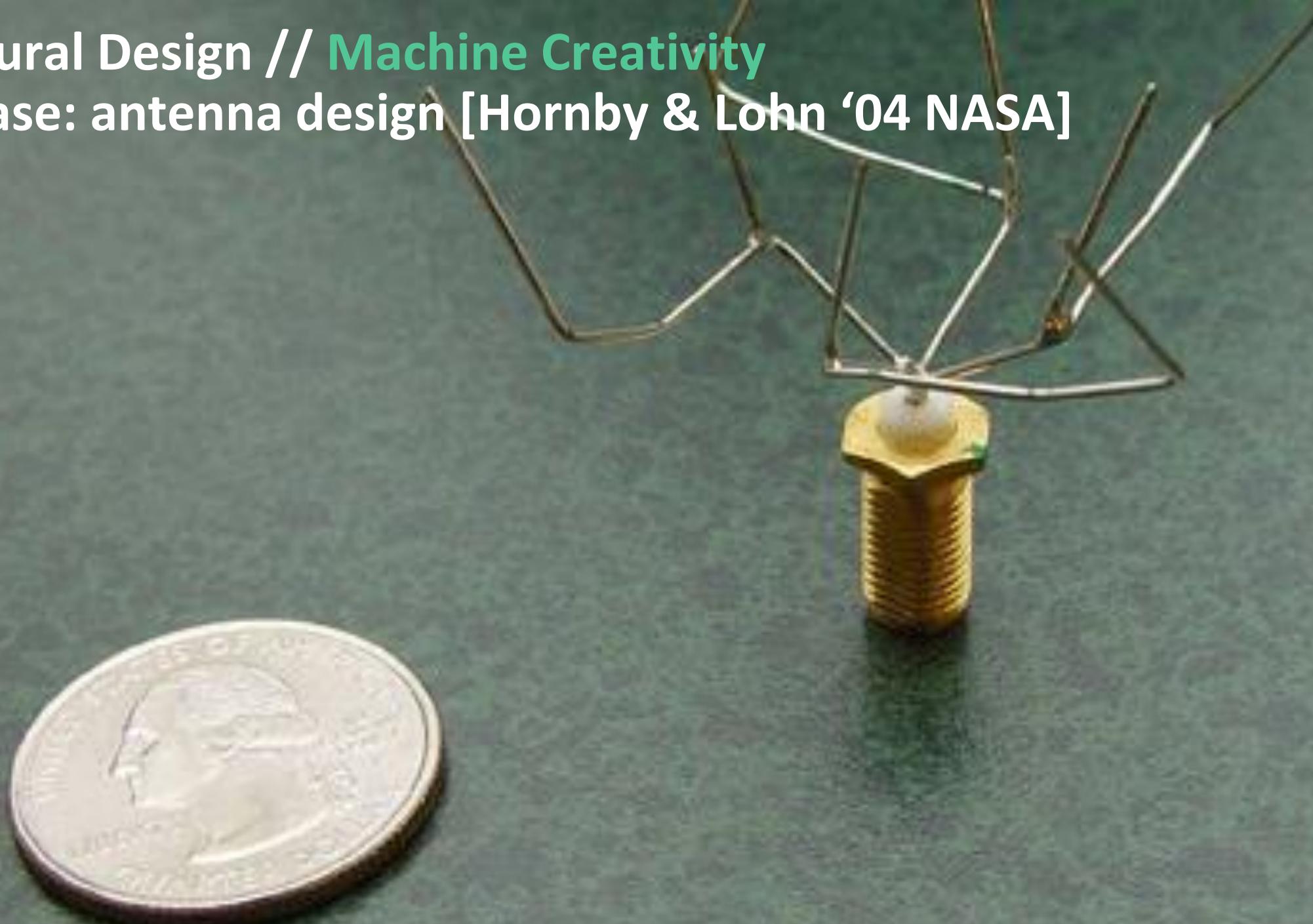
## Use Case: Interactive Circuit Design [McC '12 Solido]

Under the hood, a machine learning engine adaptively samples the space of possible decisions, and measures outcomes.



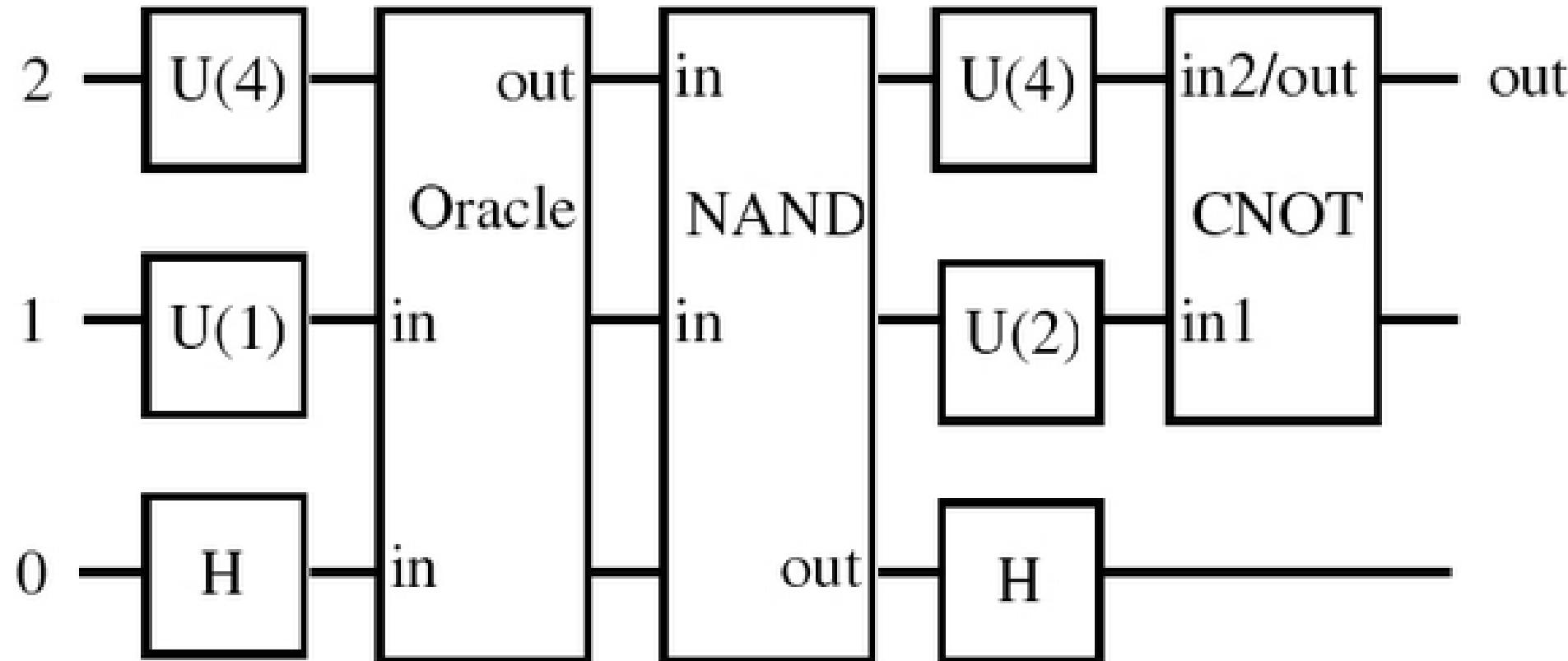
# Structural Design // Machine Creativity

Use Case: antenna design [Hornby & Lohn '04 NASA]



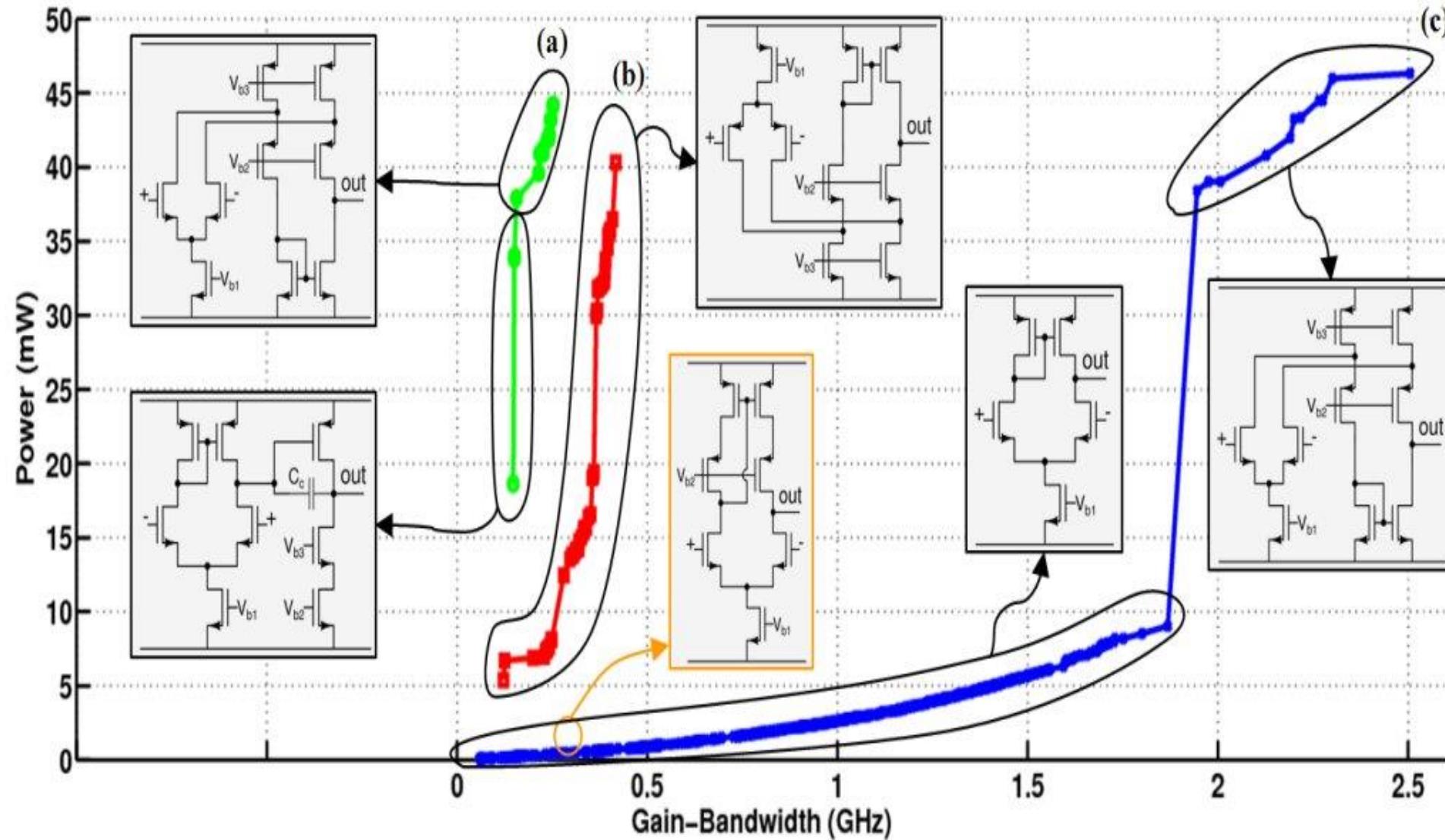
# Structural Design // Machine Creativity

Use Case: quantum computing algorithm design [Spector '04]



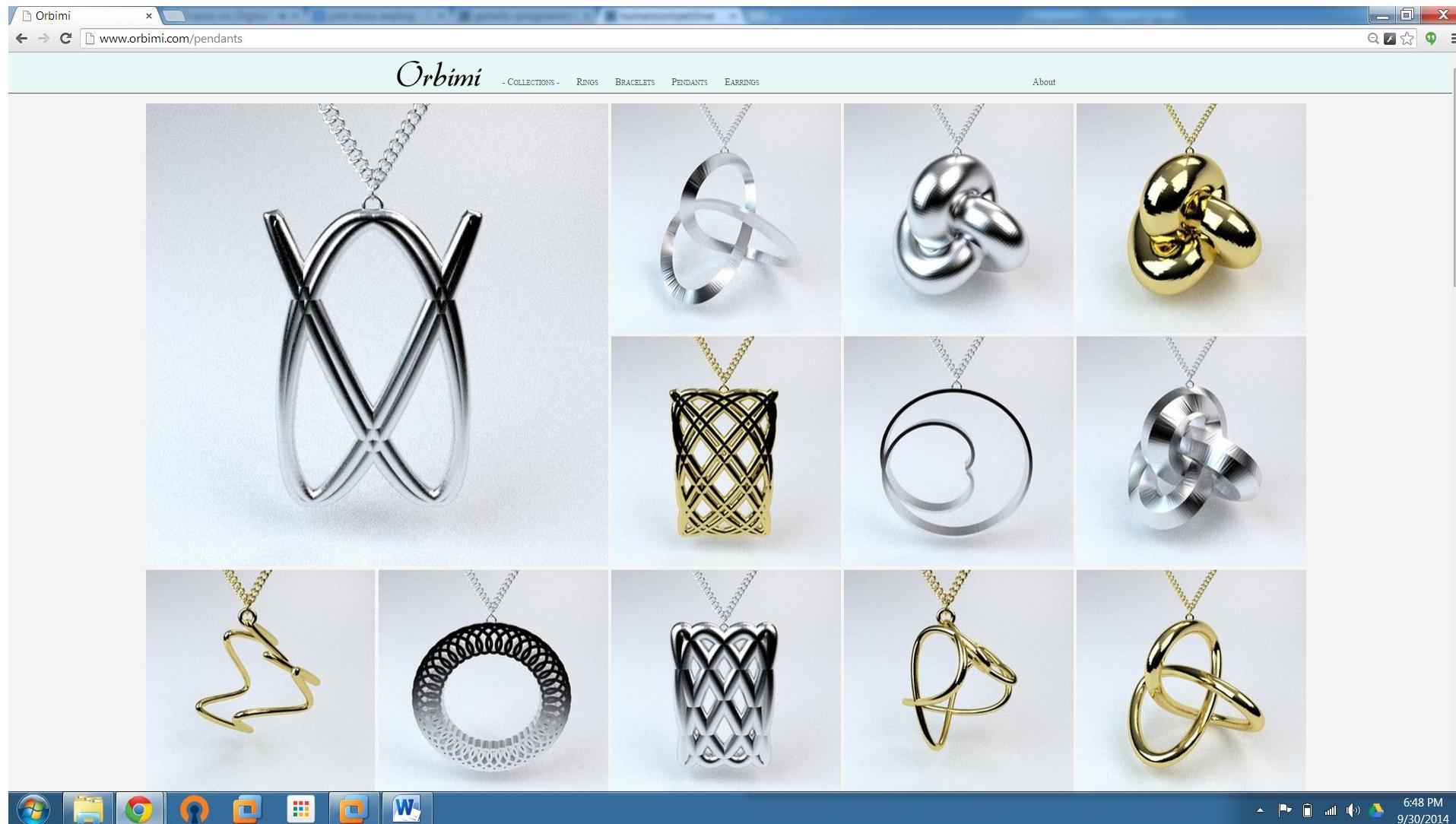
# Structural Design // Machine Creativity

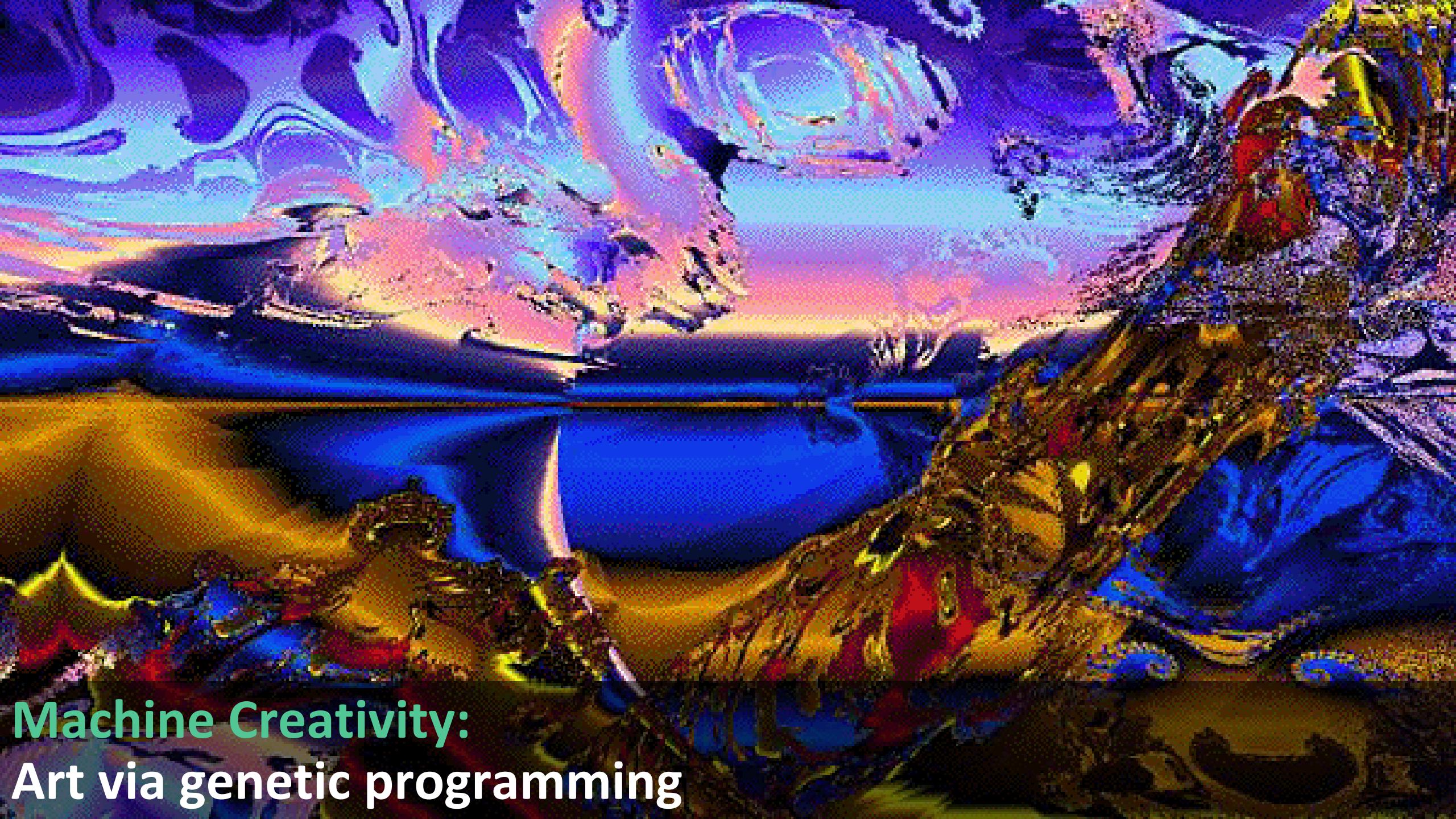
## Use Case: circuit topology design [McC '06 KUL]



# Structural Design // Machine Creativity

## Use Case: jewelry design [Hornby '11 Orbimi]





**Machine Creativity:**  
Art via genetic programming

A deep dream image generated from a Claude Monet painting. The scene depicts a bridge over a pond with people in boats. The image is heavily distorted with vibrant, swirling colors and abstract patterns, particularly around the central bridge structure and the water surface.

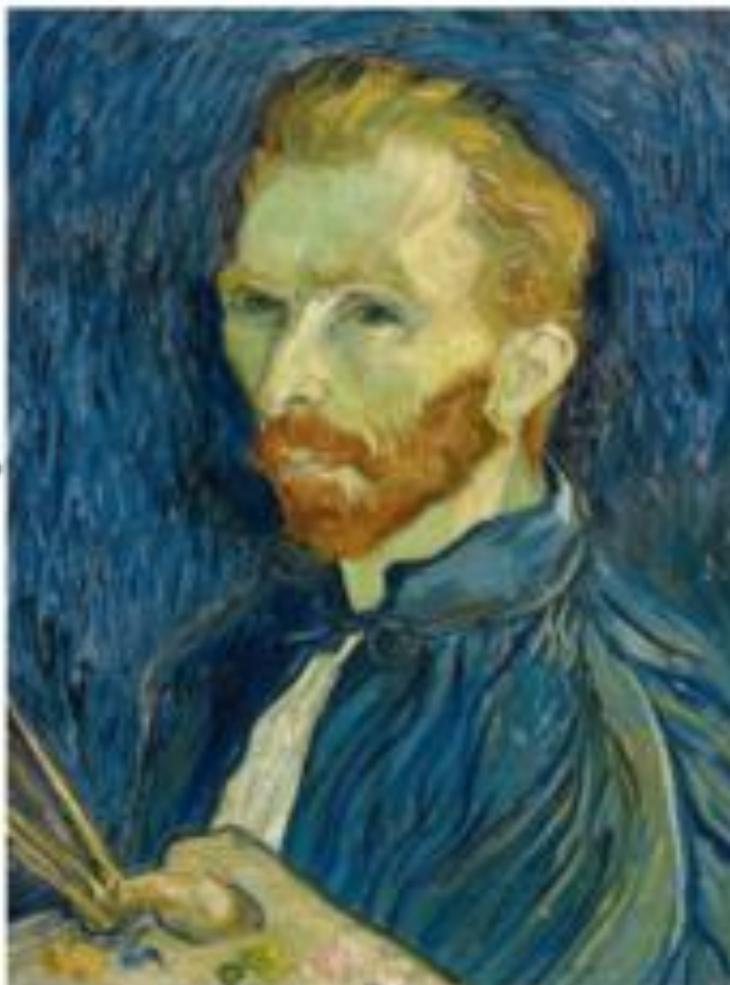
# Machine Creativity: Art via deep learning – deep dreams

# Machine Creativity:

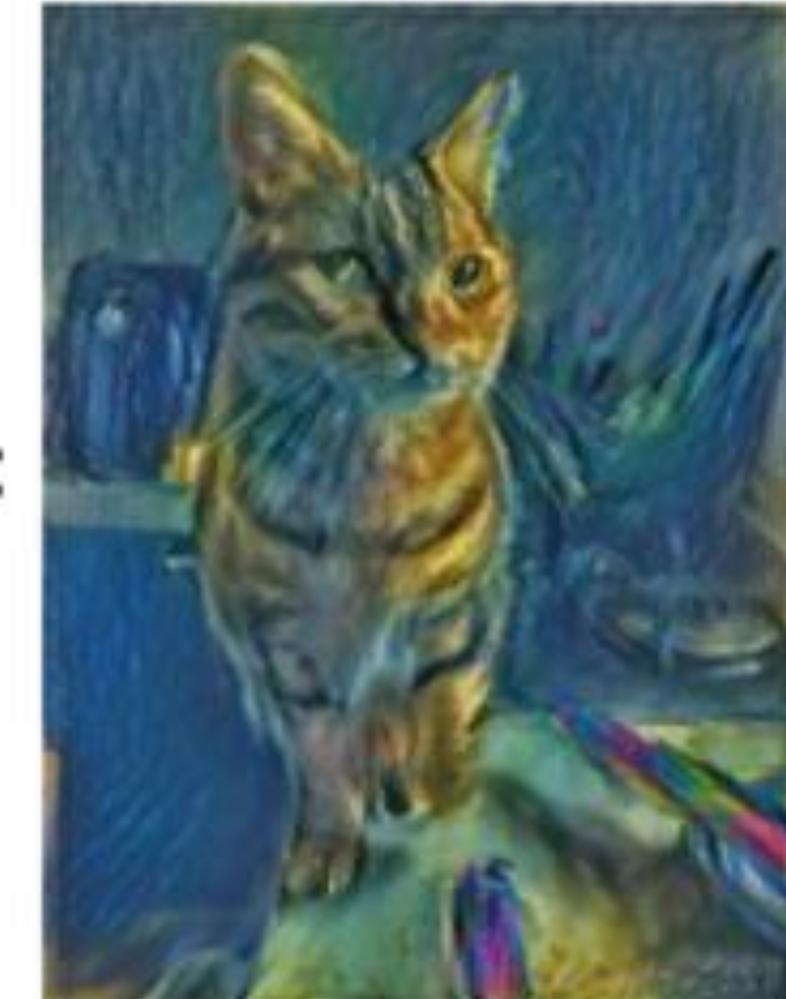
## Art via deep learning - style transfer



+



=



- machine learning
- neural networks / deep learning
- evolutionary computation (GAs, GP, ES, ..)
- swarm algorithms (ACO, PSO, ..)
- artificial general intelligence (AGI)

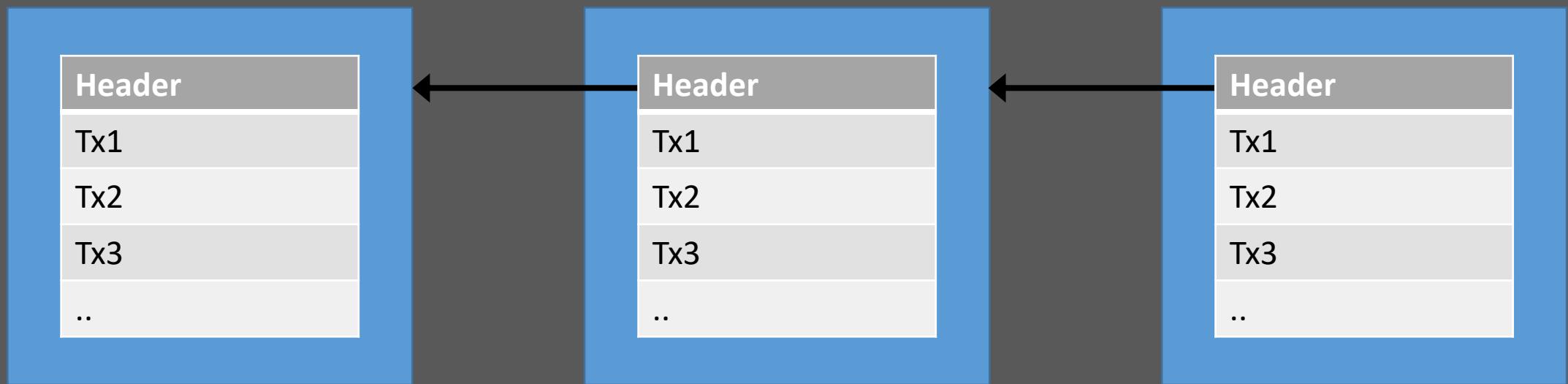
## Strong relations to:

- statistics (“ML *is* modern statistics”), probability
- linear algebra (“flow of tensors” – TensorFlow)
- nonlinear programming, optimization
- control systems / cybernetics
- Monte Carlo methods
- philosophy, ethics (friendly AIs, AI rights, ..)

# Ways to frame blockchain



# “A Chain of Blocks (of transactions)”



The image shows a row of five modern office buildings with curved, glass-fronted facades. The buildings are set against a clear blue sky. The building on the far right has the word "ORACLE" written on its upper left side.

“Decentralized database”

INSIDE: A 12-PAGE SPECIAL REPORT ON COLOMBIA

# The Economist

OCTOBER 31ST-NOVEMBER 8TH 2015

Economist.com

- 007 and the spectre of Britain's past
- Turkey votes to the sound of bombs
- Those ever-creative accountants
- America takes the fight to IS
- Coywolves: the new superpredator

## The trust machine

How the technology behind bitcoin could change the world



**“Trust machine” :  
minimizes trust needed  
to operate.**

# “DAO: Decentralized Autonomous Organization”

A computational process that

- runs autonomously,
- on decentralized infrastructure,
- with resource manipulation.

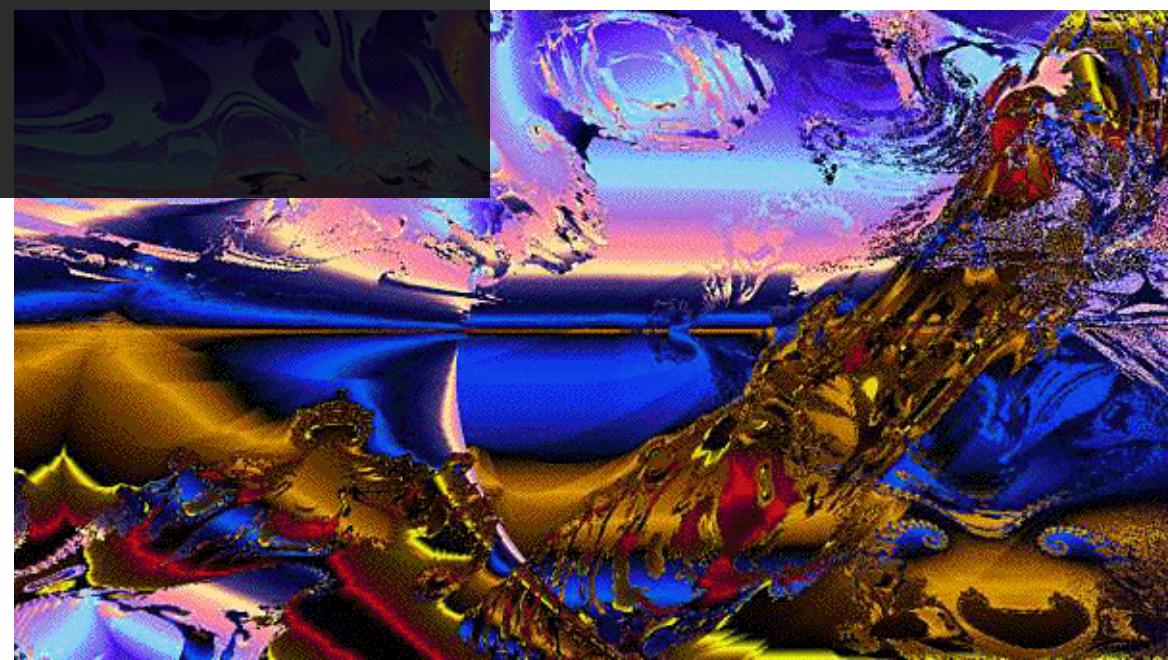
It's code that can *own* stuff!

A “good computer virus”

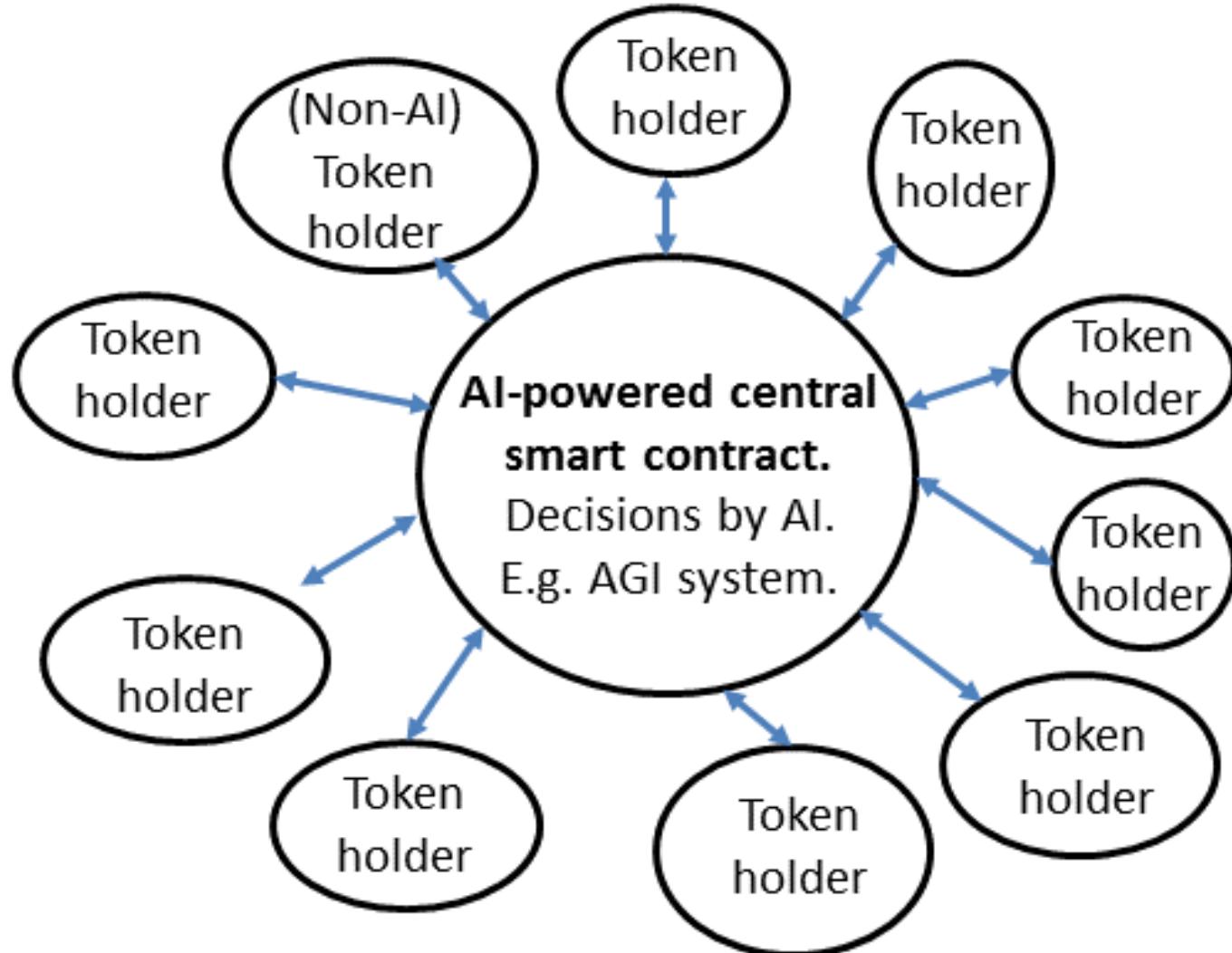
# AI \* Blockchain: AI DAOs

# The ArtDAO

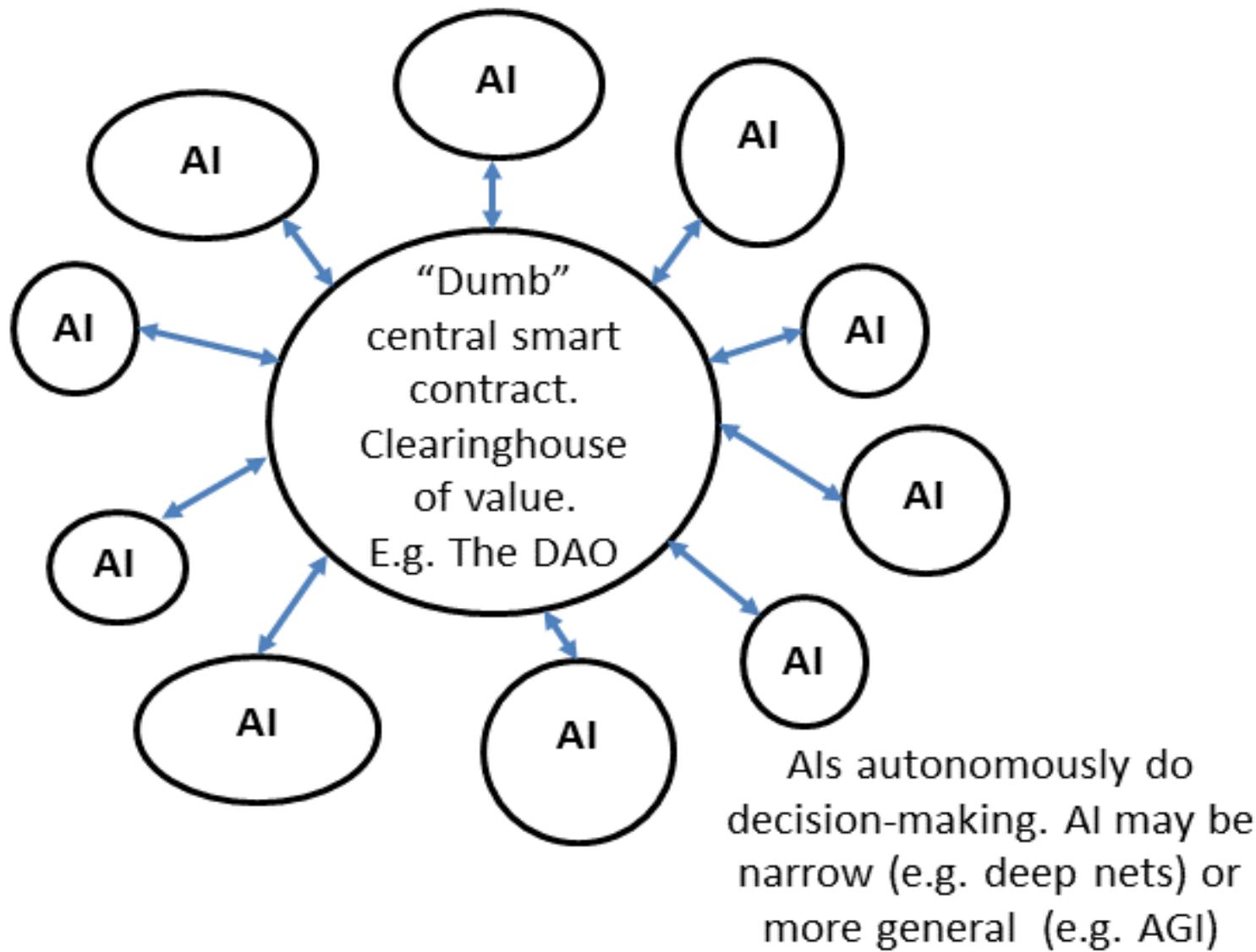
1. An AI is running on a blockchain.
2. The AI generates a new image.
3. Sell image on a marketplace
4. Repeat!



# AI DAO Arch 1/3: AI at the Center

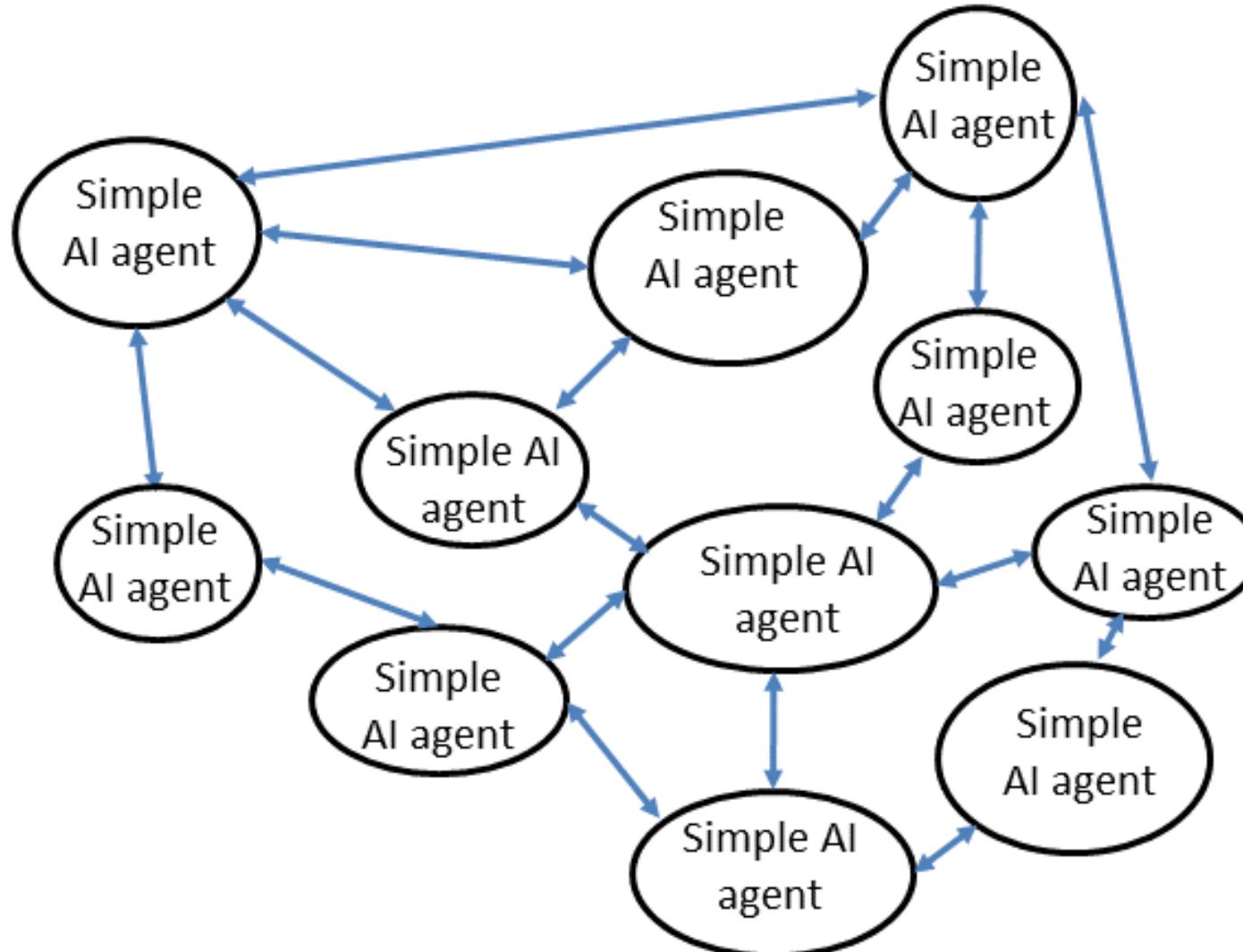


# AI DAO Arch 2/3 : AI at the *Edges*



# AI DAO Arch 3/3 : Swarm Intelligence

Many dumb agents with emergent AI complexity



Emergent higher-level complexity.  
E.g. simple AI agents are ants, but complex swarm behavior emerges

# Angles to Making AI DAOs

- **DAO → AI DAO.** Start with DAO, add AI. E.g. Plantoid
- **AI → AI DAO.** Start with AI, add DAO. E.g. numer.ai
- **SaaS → DAO → AI DAO.** Convert SaaS to DAO. Then add AI
- **Physical service → AI DAO.** E.g. Uber self-*owning* cars

# Rights for AI (DAOs) With Today's Laws (!)



Trent McConaghy

@trentmc0

How to give an AI rights

1. Given: corps have rights
2. Start a corp
3. Automate corp into an AI DAO
4. Done! It's an AI, it has rights

RETWEETS

22

LIKES

30



11:40 PM - 4 Jul 2016

5

22

30



Nature 1.0



A close-up photograph of a fern with long, thin, green fronds growing from a dark, mossy rock. In the background, there are blurred flowers in shades of pink, purple, and blue, suggesting a forest setting.

**Nutrients**

A landscape photograph showing a dense forest of tall evergreen trees against a dramatic sky filled with white and grey clouds. The foreground is dark and out of focus, showing some rocky ground. In the top right corner, there is a solid black rectangular box containing the word "Rain" in a large, white, sans-serif font.

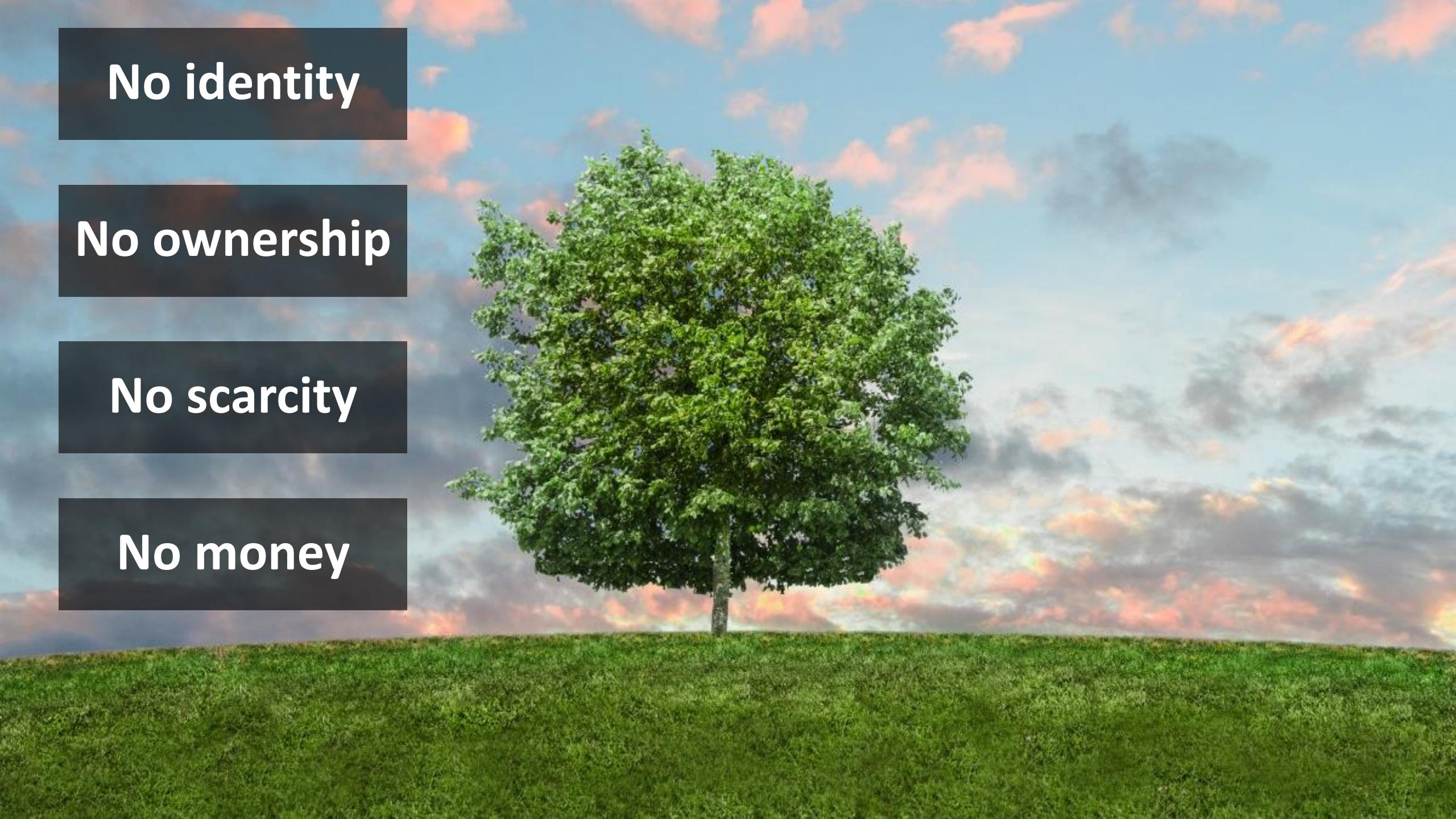
Rain



Sun

A squirrel with a brown and white striped back and a bushy tail is perched on a thick, textured tree branch. It is facing right, with its front paws near its mouth as if it's eating. The background is a soft-focus view of dense green foliage.

# Symbiosis with animals

A photograph of a single, mature green tree standing alone on a grassy hill. The tree has a dense canopy of dark green leaves. The background is a vast sky filled with large, billowing clouds that are colored in shades of orange, yellow, and pink, suggesting either a sunrise or a sunset. The foreground is a bright, green lawn.

**No identity**

**No ownership**

**No scarcity**

**No money**

A photograph of a single, mature green tree standing alone on a grassy hill. The background is a dramatic sky filled with orange, pink, and purple clouds at sunset or sunrise. The tree has a thick trunk and a wide canopy of green leaves.

No identity

No ownership

No scarcity

No money

It just *is.*

Self-sustaining  
Anti-fragile

**Ever-higher levels  
of integration.**

**From beasts →  
ecosystems**

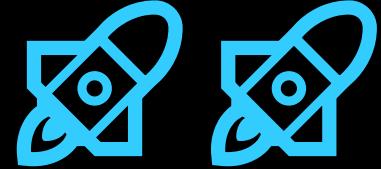
**Each ecosystem  
just *is*.**

**Self-sustaining  
Anti-fragile**

**Mother Earth =  
our planet's  
ecosystem.**

**Nature is the  
cradle of  
civilization.**



Nature 2.0  
=AI DAOs 



**Self-driving,  
self-owning cars**



# Self-driving, self-owning trucks

FREIGHTLINER



ocean

An aerial photograph of a winding asphalt road through a mountainous area. The road curves repeatedly, following the contours of the hillside. The surrounding terrain is covered in patches of green and yellow vegetation, likely grass or low shrubs, with some rocky areas. The lighting suggests it might be late afternoon or early morning, with long shadows cast by the road and the terrain.

**Self-owning  
roads**

A photograph of several wind turbines silhouetted against a vibrant sunset sky. The sky transitions from deep blue at the top to bright orange and yellow near the horizon, with wispy clouds. Three turbines are clearly visible in the foreground and middle ground on the left, while one more is partially visible on the right.

# Self-owning wind farms

# Self-owning grid



ocean

A photograph of a dense forest. Sunlight filters through the tall, thin trunks of coniferous trees, creating bright highlights on the green foliage and dappled light on the forest floor. The foreground is filled with green undergrowth and fallen branches.

**Self-owning forest “Terra0”**

**Ever-higher levels of integration  
From beasts → ecosystems  
Connected via IoT / M2M**



A white Audi R8 sports car is shown from a rear three-quarter perspective, driving away on a paved road that curves through a lush, green rural landscape under a blue sky with scattered clouds.

No identity

No ownership

No scarcity

No money

It just *is.*

Self-sustaining  
Anti-fragile

A large flock of birds, likely starlings, is captured in flight against a clear blue sky. The birds are densely packed, creating a dark, swirling mass that dominates the upper half of the image. They appear to be performing a complex aerial maneuver, possibly a murmuration. The background is a bright, clear blue.

No identity

No ownership

No scarcity

No money

*It just is.*

Self-sustaining  
Anti-fragile

Profit →  
UBI Chain

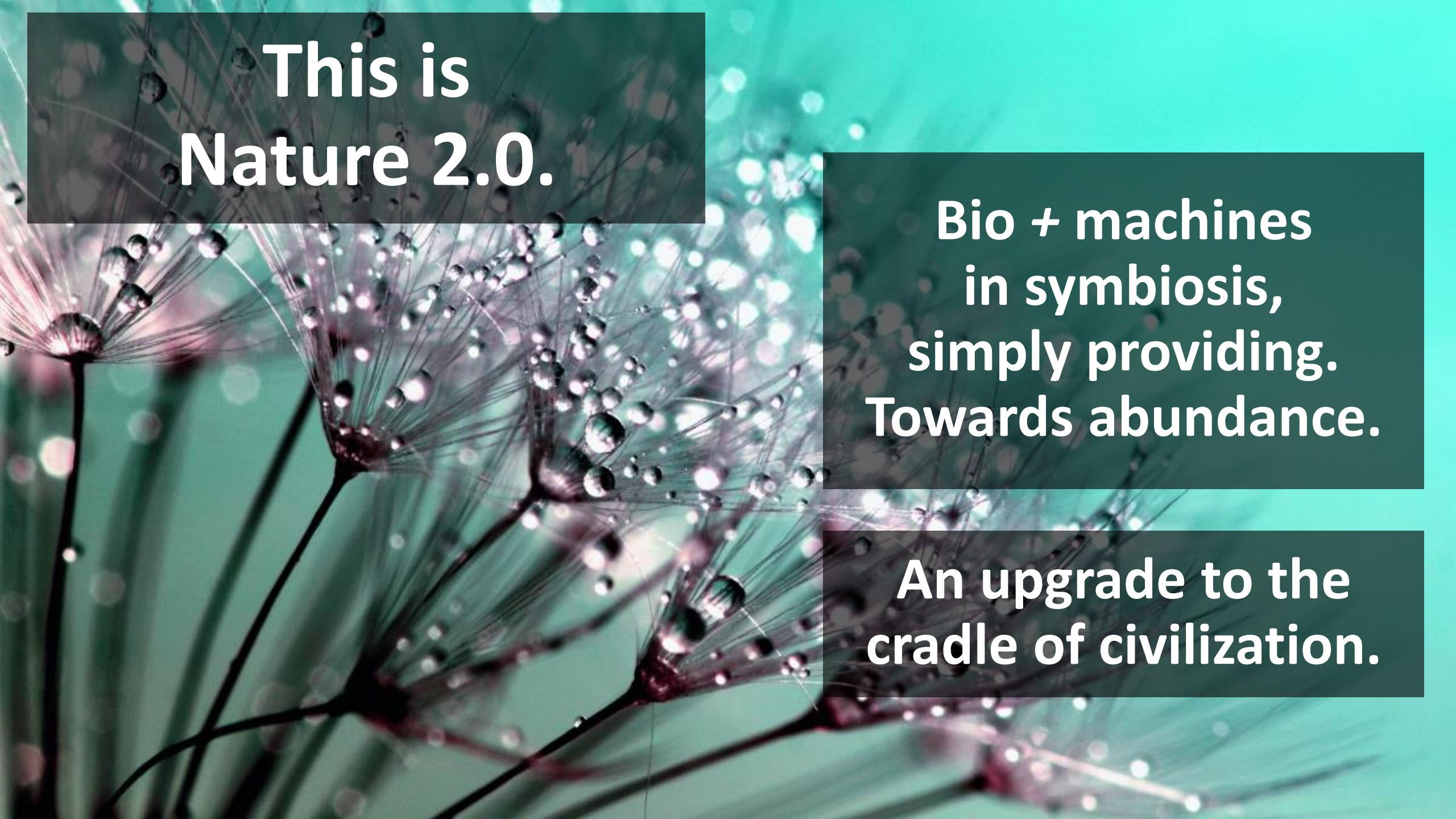
Profit →  
UBI Chain

Profit →  
UBI Chain

Profit →  
UBI Chain



...Abundance?



This is  
Nature 2.0.

Bio + machines  
in symbiosis,  
simply providing.  
Towards abundance.

An upgrade to the  
cradle of civilization.

# Conclusion

A close-up photograph of a Shiba Inu dog's face. The dog has a light tan or cream-colored coat with darker brown markings on its ears and around its eyes. Its eyes are dark and expressive, and it has a small black nose. The background is slightly blurred, showing some indoor elements like a bookshelf and flowers.

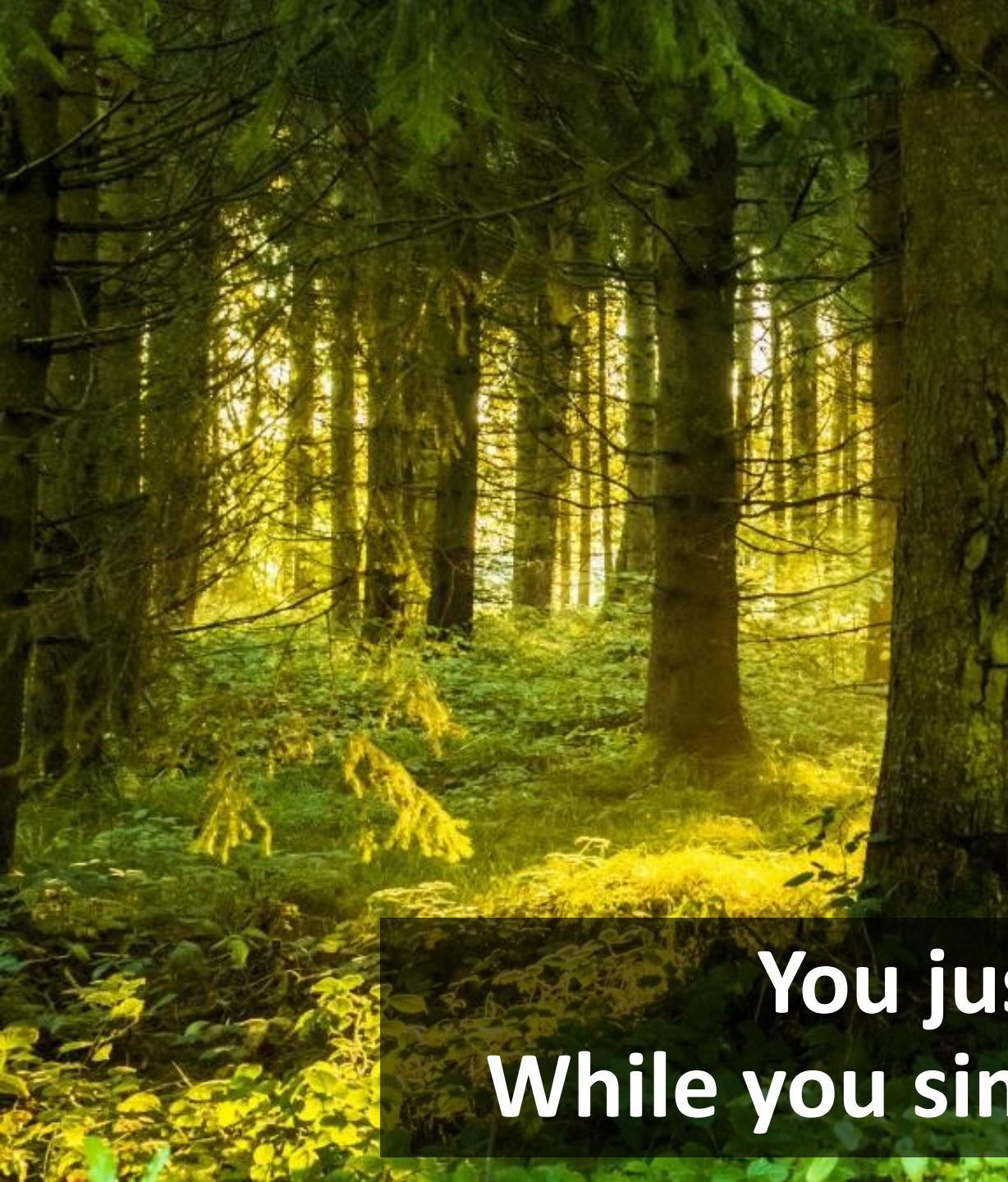
In the internet,  
no one knows  
you're a dog(e)

A photograph of a dense forest. Sunlight filters through the tall, thin trunks of coniferous trees, creating bright vertical streaks of light against the dark green foliage. The forest floor is covered in a mix of green undergrowth and fallen leaves. In the foreground, there's a cluster of low-lying green plants.

In Nature 2.0,  
no one knows  
you're a forest



In Nature 2.0,  
no one knows  
you're a grid



You just *are*.  
While you simply *provide*.



**Nature is the cradle of civilization.**

**Nature 1.0 is seeds & soil.**

**Nature 2.0 adds silicon & steel. AI \* blockchain.**

**Towards abundance.**



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h/t Jan-Peter Doornenik