

ShanghAI Lecture Series 2011



In Search of Embodied Intelligence in Markets

Claude Patrick Siegenthaler
Hosei University Tokyo

In Search for Embodied Intelligence in Markets

Disclaimer

A brief little introduction to economics

An evolutionary perspective on markets

Is there Embodied Intelligence?

What is Economics About?

Resources



Production



Households



Economics is the **social science** that studies the production, distribution and consumption of goods and services (and the emergence of institutions).

A focal perspective of Economics is the search for a rational and optimized **allocation** of scarce resources with the aim to **maximize benefits** for society (or to avoid damages).

The Exchange of Resources, Goods & Services is Key



Since the invention of money, markets drive the system

Resources



Production



Markets



Households



Companies



Money



Markets are crucial institutions for rational exchange



Characteristics of Markets

Markets....

Used to be the place, where demand meets supply

Ideally enable agents to compute all necessary information

Provide the stage for a competitive race towards the optimum

Encode the value/price of things

Often fail....and hence need institutional infrastructure (rules)

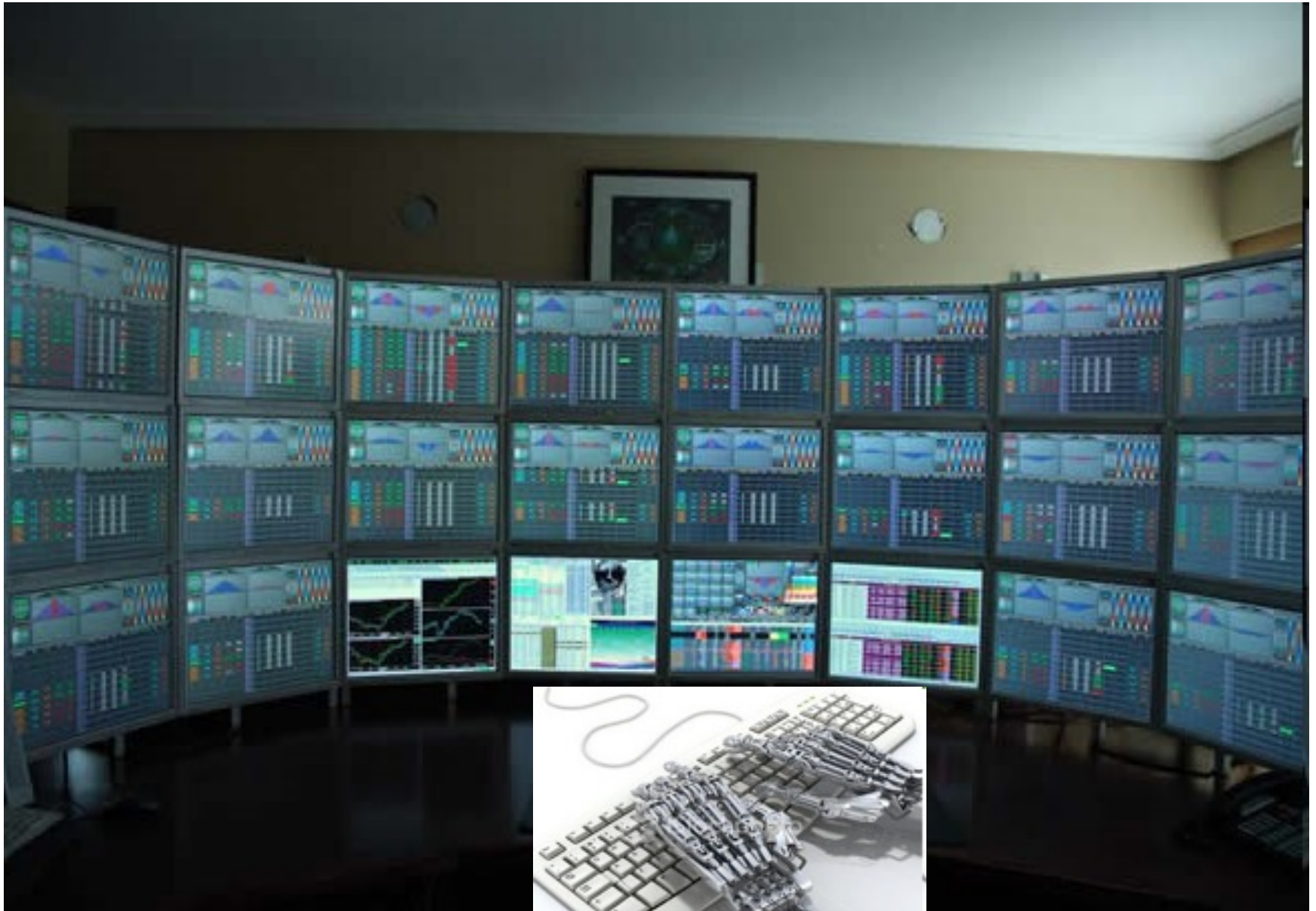
Evolve from spontaneous to organized and designed artefacts



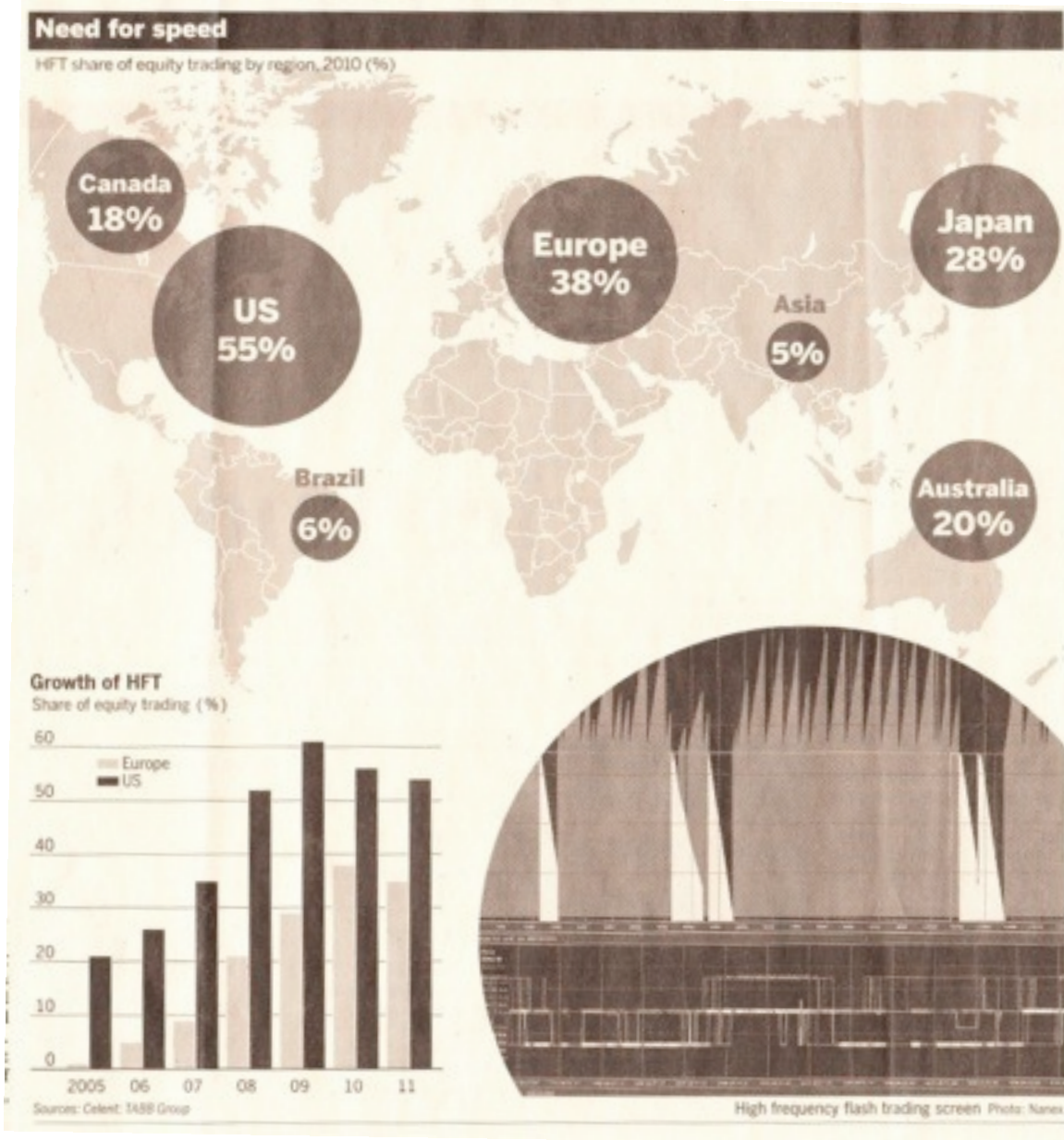




Evolution towards Embodied Intelligence?



Volume of High Frequency Trading 2011



Financial Times
October 13, 2011

Voting

Please rise your hand!

Having in mind the principles outlined in this course

Would you qualify markets as intelligent agents?

Yes

Please rise your hand.

Why?

No

Please rise your hand.

Why?

Markets as Agents?

Markets....

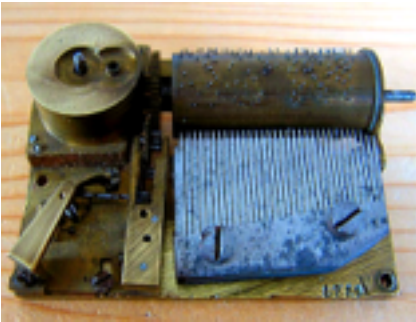
Are subject to the laws of physics

Generate sensory stimulation

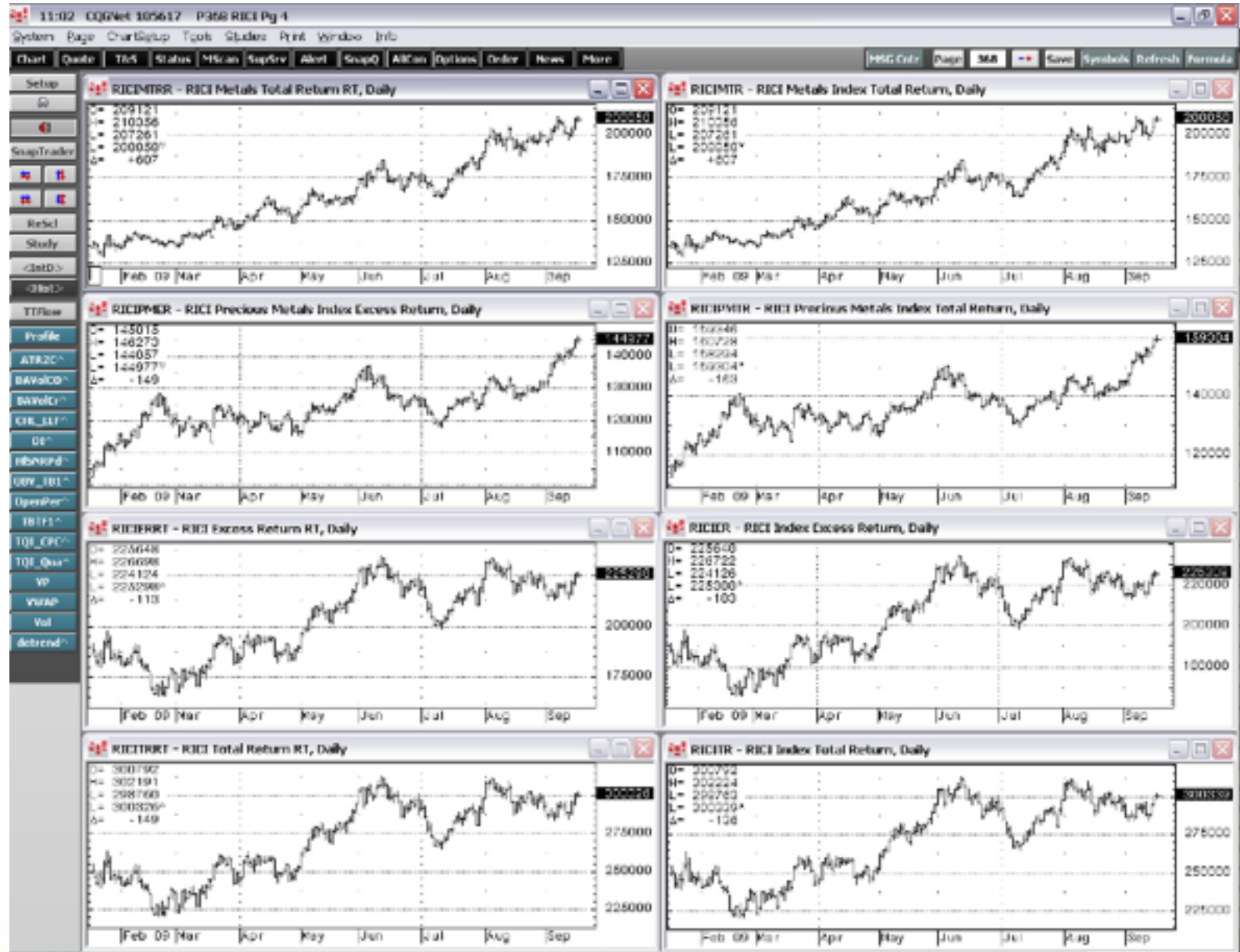
Affect the environment through behaviour

Perform morphological computation

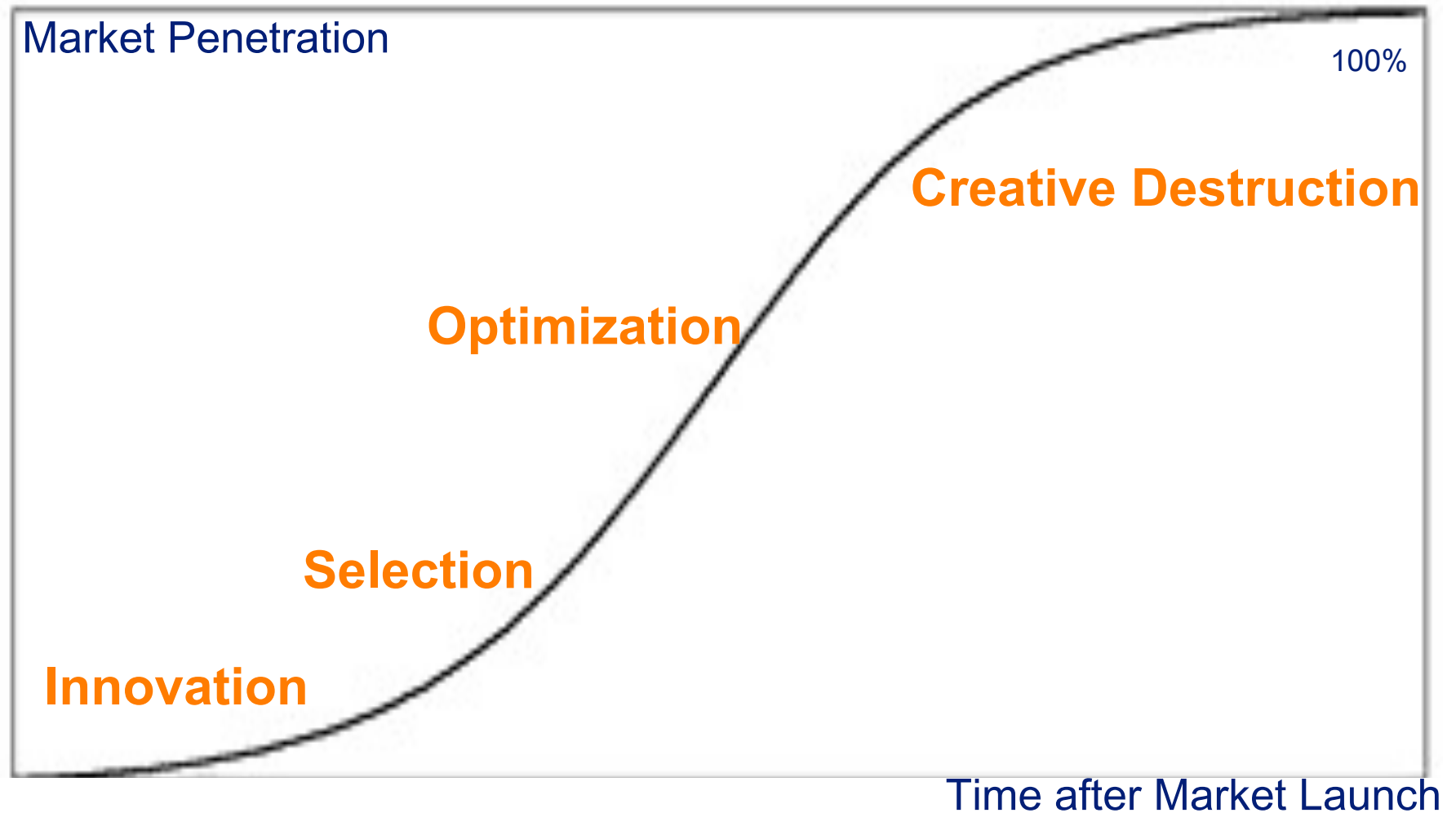
Subject to the Laws of Physics



Generate Sensory Stimulation and Affect the Environment



Complex Dynamic Systems operating in Attractor States



Perform Morphological Computation



Let's Vote again

Please rise your hand!

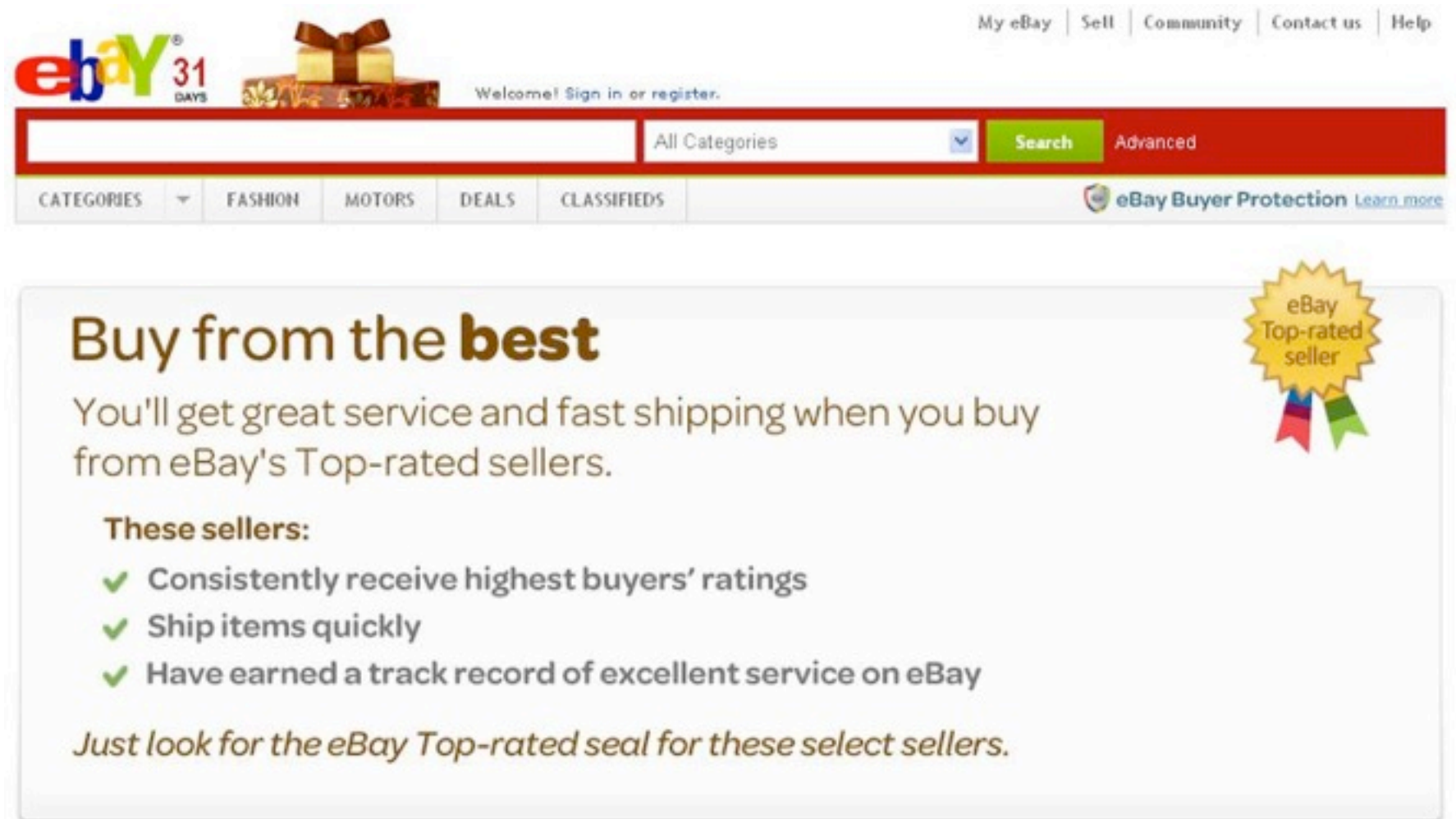
Having in mind the principles outlined in this course....

Would you qualify markets as intelligent agents?

Yes

Please rise your hand.

Markets Embody Experience and Trust

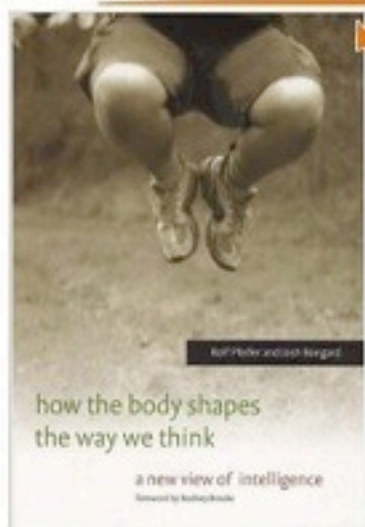


The screenshot shows the eBay homepage with the following elements:

- Header:** eBay logo with '31 DAYS' and a gift icon. Navigation links: My eBay, Sell, Community, Contact us, Help.
- Search Bar:** A red search bar with a dropdown menu set to 'All Categories', a green 'Search' button, and a link to 'Advanced' search.
- Categories:** A row of buttons for CATEGORIES, FASHION, MOTORS, DEALS, and CLASSIFIEDS.
- Trust Badges:** An 'eBay Buyer Protection' badge with a 'Learn more' link.
- Promotional Box:** A large white box with a yellow starburst seal that says 'eBay Top-rated seller'. The text inside reads:
 - Buy from the best**
 - You'll get great service and fast shipping when you buy from eBay's Top-rated sellers.
 - These sellers:**
 - ✓ Consistently receive highest buyers' ratings
 - ✓ Ship items quickly
 - ✓ Have earned a track record of excellent service on eBay
 - Just look for the eBay Top-rated seal for these select sellers.*

[Shop All Departments](#) Search

GO

[Books](#)[Advanced Search](#)[Browse Subjects](#)[New Releases](#)[Bestsellers](#)[The New York Times® Bestsellers](#)[Libros en español](#)Click to **LOOK INSIDE!**

How the Body Shapes the Way We Think: A New View of Intelligence (Bradford Books) [Hardcover]

[Rolf Pfeifer](#)  (Author), [Josh C. Bongard](#)  (Author), [Rodney Brooks](#) (Foreword), [Shun Iwasawa](#) (Designer)

★★★★☆  (1 customer review)

 Like (0)

List Price: ~~\$44.00~~

Price: **\$31.05** & this item ships for **FREE with Super Saver Shipping**. [Details](#)

You Save: **\$12.95 (29%)**

In Stock.

Ships from and sold by **Amazon.com**. Gift-wrap available.

Want it delivered Friday, November 26? Order it in the next **1 hour and 57 minutes**, and choose **One-Day Shipping** at checkout. [Details](#)

Ordering for Christmas? To ensure delivery by December 24, choose **FREE Super Saver Shipping** at checkout. [Read more about holiday shipping](#).

17 new from **\$31.05** **12 used** from **\$30.95**

Frequently Bought Together

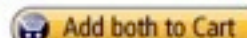
Customers buy this book with [Understanding Intelligence \(Bradford Books\)](#) by Rolf Pfeifer Paperback **\$38.89**

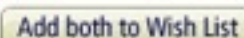


+



Price For Both: \$69.94

 Add both to Cart

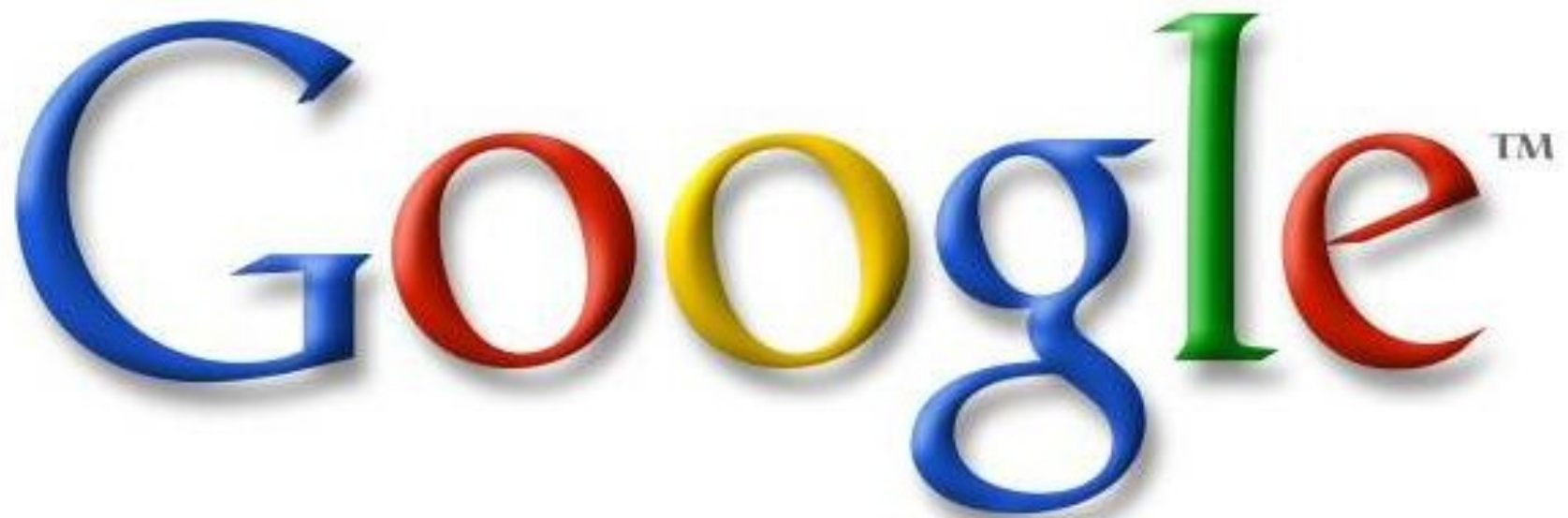
 Add both to Wish List

[Show availability and shipping details](#)

Customers Who Bought This Item Also Bought



Algorithmic Data Mining Turns Advertizing into Information



ShanghAI Lecture Series 2011



Thank you for joining the experiment!

Claude Patrick Siegenthaler
Hosei University Tokyo
