

**LCC 6310**  
**The Computer as an**  
**Expressive Medium**

Lecture 22

**Overview**

Demo day - December 12th

Project 5

Discuss readings

Readings for next week

**Project 5**

Due: Friday November 16

The field of artificial intelligence (AI) builds computational systems that model the intelligent behavior of people and animals. AI architectures can be extremely generative, able to produce complex responses to environmental changes, including user interaction. In computational art, AI approaches have been used to build work ranging from robotic sculpture, to drawing and painting generators, from generative interactive stories to music composition. In the popular art form of computer games, AI approaches are used extensively to build tactical and strategic opponents, non-player characters, and player modeling systems.

**Project 5**

Due: Friday November 16

In this project, build a collection of simple AI agents that interact with the user, each other, and their ecosystem, to give the illusion of life. You can build upon the provided framework of Braitenberg vehicles, which can produce complex agent behaviors, or code your own simulation.

Provided: Braitenberg starter code from Tuesday's class

Let's look at some project ideas and AI examples...

## Project ideas

Braitenberg vehicles provide a simple framework for exploring autonomous behavior in computational ecosystems

Some possible directions:

Text machines – autonomous words and letters

Drawing machines – brush interacts with vehicles, spawns vehicles, vehicles interact with each other

Ecosystem responds to data (sources represent web data, vehicles spawned in response to data, etc.)

Miniature worlds – alien, aesthetically interesting worlds

You're making something that follows simple rules, interacting with its environment to give the illusion of life... have fun with it!

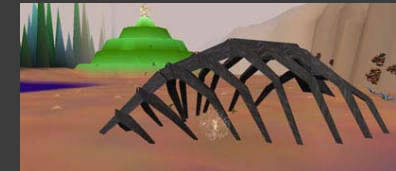
## Emergence

By Rebecca Allen et al.

Real-time 3D virtual environments populated with autonomous animated characters. A scripting language lets users specify behaviors for the characters and objects in the artificial world. The system was designed for the creation of interactive art through the emergence of activities and events in the space, e.g. performances, stories, that depend on the relationships and interactions between avatars and artificial life forms.

<http://emergence.design.ucla.edu/>

[ [Bush Soul Video](#) ]



## Autopoiesis

Ken Rinaldo

Artificial life robotic sculpture installation consisting of 15 robotic sound sculptures that interact with the public and modify their behaviors over time. The sculptures communicate with each other over a network and with audible telephone tones. IR sensors in each sculpture sense the people in the space and allow them to respond with both attraction and repulsion.

<http://accad.osu.edu/~rinaldo/works/autopoiesis/autopoiesis.html>

[ [Autopoiesis video 1](#) ]

[ [Autopoiesis video 2](#) ]



## "Blockies"

Karl Sims

Simulated Darwinian evolutions of virtual block creatures. Creatures are tested for their ability to perform given tasks, such as swim in a simulated water environment. The most successful survive, and their virtual genes are copied, combined, and mutated to make offspring for a new population. The new creatures are again tested, and some may be improvements on their parents. As this cycle of variation and selection continues, creatures with more and more successful behaviors can emerge.

<http://www.genarts.com/karl/evolved-virtual-creatures.html>

[ [Evolved virtual creatures](#) ] [ [Karl Sims interview](#) ] [ [Walking, jumping, swimming](#) ]



## A-Volve

Christa Sommerer & Laurent Mignonneau

A classic work of genetic art: a metaphor for artificial life, evolution, and gene manipulation. On a touchscreen, users sketch cross-sections of water creatures. These creatures are then projected onto a mirror positioned at the bottom of a water-filled basin. Users interact with their creatures in the pool as they grow and evolve.

<http://www.interface.ufg.ac.at/christa-laurent/WORKS/>

[ Video Clip ]



## Readings

Summary presentations & questions for discussion

From *Plans and Situated Actions* - Lucy Suchman (NMR pp.599-612)

*Expressive AI: A hybrid art and science practice* - Michael Mateas

## Lucy Suchman



Professor of Sociology at Lancaster University

Her 1987 book "Plans and Situated Actions: The Problem of Human-machine Communication" provided intellectual foundations for the field of HCI.

## Situation Action

Suchman challenged common assumptions behind the design of interactive systems, arguing that human action is constantly constructed and reconstructed from dynamic interactions with the material and social worlds.

Her theory of *situated cognition* emphasizes the importance of the environment as integral part of the cognitive process.

## Michael Mateas



"In expressive AI the focus turns to authorship. The AI system becomes an artifact built by authors in order to communicate a constellation of ideas and experiences to an audience... The concern is not with building something that *is* intelligent independent of any observer and their cultural context. Rather, the concern is with building an artifact that *seems* intelligent, that participates in a specific cultural context in a manner that is perceived as intelligent. Expressive AI views a system as a performance. Within a performative space the system expresses the author's ideas. The system is both a messenger for and a message from the author."

## Expressive AI desiderata

Expressive AI is not "mere application"

A viewpoint from which AI techniques can be transformed. Explores both interpretive and authorial affordances in AI practice

Build microworlds with human significance

An artwork is not the real world but rather a representational space crafted out of the world for exploring something of cultural interest

Actively reflect on affordances associated with different architectures

Co-evolution of affordances and technical solutions, i.e. artist is able to navigate the design space of affordance plus architecture

Cultural theory and expressive AI

Maintaining a free relation to AI technology and understanding the hidden assumptions in AI practice

## Readings for next week

For **Tuesday** next week:

Concepts: Braitenberg vehicles continued

For **Thursday** next week: Theory Readings

Three students: present one reading each

Everyone else: prepare one discussion question for each reading

*Video Games and Computer Holding Power* - Sherry Turkle (NMR pp.499-514)

*The Six Elements and the Causal Relations Among Them & Star Raiders: Dramatic Interaction in a Small World* - Brenda Laurel (NMR pp.563-573)

From *Theater of the Oppressed* - Augusto Boal (NMR pp.339-352)