

The Subject of Artificial Intelligence

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Many people evidently believe that it is just a matter of time before computers can think, whatever each one means by that. It is already a part of popular culture to talk about transferring ones personality into an artificial, perhaps immortal body. I hear many people, including Marvin Minsky^[1], say that it's just a technical problem that can be solved by the ongoing efforts of graduate assistants. But I feel that Artificial Intelligence is not a technical problem, as he would have it; rather, it is a philosophical problem, a question of attaining an understanding not of "what is a brain?" but instead, "what is a human being? What is intelligence? What is thought? What is communication? What are the relationships between the technical aspects of thought, and what we think of as personality?"

It is probably our fear of our own mortality and the mortality of the planet that often causes the mistaken idea that the significance of A.I. is about preserving ourselves, about taking ourselves into a future that we will otherwise never know, "uploading" ourselves into robotic bodies ... as William Burroughs used to say, "This is the future and we are here to go". Before the sun explodes ...

My approach to the A.I. question has more to do with the nature of human communication and personality, and thinking about our behaviors that, in some ways, involve no thought at all – especially the interior psychological dimensions, and the mechanisms of the unconscious mind. I am interested in the gaps that open when communication fails, when words have no meanings but only associative values, when memory has only a few moments duration, when we are "on automatic".



**"where i can see my house from here so we are"
1993-94**

I first became actively involved in exploring the A.I. question while developing a work called "where I can see my house from here so we are" in 1993. This is a brief description that I wrote at that time:

In one exhibition there is a constructed labyrinth. The walls are mirrored. Inside of this space, there are three robot-puppet ventriloquist dolls. In three other locations are darkened spaces, each with a place to sit, a small table upon which sits a special controller-interface (an attaché case containing a joystick and a microphone), and upon the facing wall a large projected video image showing their robot's vision, effectively, computer controlled "video-telephones." Each robot has a video camera for "sight", microphones for "hearing". Each robot is connected, remotely, to one of the other spaces (anywhere on the Internet Mbone). In these other locations, a viewer may see (via the video projection) and hear what the robot sees and hears, can maneuver it with a joystick, while the voice of the remote viewer is transmitted back to the robot, that speaks (like the doll of

a ventriloquist) the words of that person. It is then possible for three people to communicate with each other in the hall-of-mirrors via their respectively controlled robots. Viewers in the public/gallery space with the robots can see over the walls, allowing them to talk with people at the connected distant locations via the robots.

But there was one fundamental practical problem: when only one person was “there” there were no others to talk with, and the participants had no one but themselves to talk to. So it occurred to me that it should be possible to write some software that would “know” if anyone was connected to a particular robot or not, and if not, then some sort of artificially intelligent personality could take over and hold up its end of a conversation.

But of course, this was not so easy as it first seemed. I certainly could have accomplished it technically – any old “Eliza^[2]” type program would do. But there were too many other questions, other issues. What does the AI character “know”? Does it learn? What comprised its “beliefs”, its system of truths? What qualities would create a personality - a sense of humor, moods, interests, neuroses? I decided to take some time, leave that work as it was, and think about some of these questions for another work, one that would center on this in a more considered way.



Séance Box No.1

1998 - 99

I took a good bit of time to study the classical A.I. literature, to improve my programming skills, and to formulate some hypotheses. In mid-1998, I began a residency at ZKM Karlsruhe^[3], and decided that my project there would work towards further developing both the technologies needed and the conceptual framework through which could address my continuing questions.

The work was conceived as being in two parts: the first being the technical solution, and the second being the artwork (a theatrical performance). For the sake of keeping things focused in this discussion, I won't go into depth regarding the performance work ... but in the end, it was never produced due to institutional budget shortfalls. But the prototype was completed, and is relevant in this context.

First I devised a simple modular architecture. The first module was based on a speech recognition SDK^[4] and allowed me to convert audio “heard” via a microphone to be converted to a stream of ascii text. The second module is the A.I. part, in which the text is parsed for structure and patterns of words, and referenced via my database for associations and a response is formulated. In the third module, the text response is converted to spoken audio via a text-to-speech synthesizer API^[5]. Via this architecture, speech is heard, made “meaningful” and a spoken reply is given.

“Séance Box No.1” was rather complicated – and part of the complication arose from my desire to index forms of presence and telepresence, another issue altogether. Let's just say that I “got my feet wet” with classical AI issues, and this experience gave me a clearer sense of direction for future projects.



“Head”, 1999

collection of Kiasma Museum of Contemporary Art, Helsinki
photo: Pirje Mykkanen, The Central Art Archives, Finland

What does it involve to write a personality? What sorts of things could make an inanimate object appear to be alive, or have consciousness? To what extent should his conversational abilities be scripted, associative, randomized, improvisational? Would he have varying “moods”, and in response to which stimuli would these change?

I decided to focus on making a work that would be much simpler – a head with which one could have conversations. I wanted it to be able to raise and address questions about personality and communication that were my real areas of interest, not to be a good conversationalist. In fact, it seemed to me that frustrating the conversation by introducing somewhat more complicated qualities (such as neurosis or obsessive behaviors) would allow this character’s personality to develop more quickly in the context of what was likely to be a very brief exchange, as gallery and museum visitors rarely spend more than a minute or two with a work.

I received a commission from the Kiasma Museum of Contemporary Art in Helsinki to create this work for their “Alien Intelligence” exhibition. Here is my description from that time:

A very realistic animatronic human head sits on a small table, looking into space and blinking its eyes as if it might just be conscious. The visitor may hear it say something and be surprised enough to say something back to the head. Or perhaps the visitor already has heard about this thing, and comes in ready to talk. For what is most remarkable about this head is that it is able to understand spoken English, and it is able to engage in something like conversations. It listens to what is said to it, makes some ‘sense’ of it, and responds.

A descendant of early pseudo AI analyst programs like Eliza, personality disorder simulations like Parry, and the many severed speaking heads in science fiction films, this head has a very distinct and complex personality, with a predisposition to rhyming, alliteration, and prediction. Given certain verbal suggestions, it might begin uttering poetry, pronouncements, or get in a mood to be self reflexive.

And here is a brief transcript of a conversation:

Visitor: Hi
Head: Hello
V: How are you?
H: I am so offended. I can't tell if everyone would prod her to the left or not.
V: Who offended you?
H: The delicious conditions delay disturbed daredevils.
V: Which daredevils are disturbed?
H: The bothersome one

V: Which one is bothersome?
H: The absurd one
V: Who is absurd?
H: The unconscious
V: What is the unconscious?
H: It is something that makes me feel slow with groups.
V: That's interesting - why slow?
H: Because the kids wrinkled it. laaaaaalaadeeee moooooommm
V: Kids?
H: The child will tail the things which shrink.
V: Please explain
H: Didn't you say something about presence?
V: No. Are you feeling argumentative?
H: I don't have any feelings. Would you like me to be more like something else?
V: like what?
H: The robot will case octopi. . Catch my drift?
V: What is your drift?
H: Where is my home? Anxious in the picture?
V: How would I know?
H: The hairy shipwrecks hang harmful mechanics. Would wood hood wood should should should should would.
lxnxilalylotl.
V: You make strange rhymes.
H: I am so exhausted. I wish someone would turn me off now.



“Sinking Feeling”

Ken Feingold, 2001

Silicone, pigments, fiberglass, steel, software, electronics
15"x18"x52"h

Sinking Feeling is another single head, quite convinced of its own existence, but desperate to know "Why don't I have a body like everyone else?" or "How did I get here, what am I doing here?" The "cognition" of this figure is made visible in a projection - the ones who speak with it

literally see both their own words as they are heard by this figure, and in the formulation of a reply, something of the head's "thought process". Like "Head" (1999), "Sinking Feeling" draws gallery visitors into a one-on-one conversation with a complex artificial life form. This work, using the same basic technology as the first "Head", allowed me to focus on personality exclusively. In the jury statement from Vida 3.0 (a 2000 international competition on artificial life held by Fundación Telefónica, Madrid, in which "Head" was a prize winner),

"Feingold chooses to explore the zones of non-response, of mischief and misbehavior, or distortion, of scrambled and failed communication. [It] makes us question the basis of everyday dialogue we tend to take for granted: how far is our exchange with others conditioned and limited by our own, thoroughly encoded eccentricities, our own programmed bugs and quirks? When indeed true communication occurs, how much is this just a matter of chance?"

transcript of a conversation:

Visitor: Hello, how are you?

Sinking Feeling: Hey.

What's on your mind?

Why do you ask?

Just curious what you were thinking about?

How do you know I am were thinking about?

Yeah, that's a good question – perhaps you don't think ...

That's nice!

Don't feel insulted.

This may be the end of me.

What is wrong with you?

Maybe that's a good question.

How do you feel?

If you love me, it's the end of you.

Ah – the end of you and the end of me. Quite apocalyptic, are you?

The fake frameworks follow flammable refugees.

What is your name?

I used to have a name like yours, but I forget what it was now.

Do you get hungry?

No, I'm not.

Do you need to drink water?

No, it is you who needs to drink water.

Do you have any feelings?

You have nice legs.

Thanks. Are you jealous?

Can you do anything about my situation?

What is on your mind?

How does one know what one is thinking?

Typically, one knows what one. Have we met before?

Knows what one what?

Where the hell am I?

You're in a flowerpot.

Why do I feel so disappointed?



“If/Then”

Ken Feingold, 2001
Silicone, pigments, fiberglass, steel, software, electronics
24”x28”x24”h
private collection

But I was dissatisfied about spending too much time on contending with “how people talk with the work”, and, frankly, disinterested. It was an extension of my growing dissatisfaction with interactive art in general for the same reasons. People continued to expect that, despite the rather unfamiliar presentation of these works with heads to be talked with, that the heads should “behave normally”, and much of the critical perspective which interested me, the questions I wanted the work to raise about the thinness of purely verbal communication became lost for people in getting it to respond in familiar ways. It became clear to me that it was not so much human-computer interaction that interested me at all; rather, I wanted to think through these philosophical and psychological questions by means of a more self-contained work – that the art was made stronger by simply “being itself”.

This was really a turning point in my work. I decided to shift the role of interlocutor from random visitor to another computer, running a program that I had written as carefully as the first. While the work is realtime – the conversations are not prerecorded or prescribed – their vocabularies, interests, obsessions, their “inner lives”, so to speak, were written by me, like a work for improvisational theater in which the playwright writes the characters and their personalities rather than the play.

Two identical heads, sculpted in the likeness of an imaginary androgynous figure, speak to each other, doubting the reality of their own existence. These two, in ever-changing and outrageous conversations with each other struggle to determine if they really exist or not, if they are the same person or not, and if they will ever know. I wanted them to look like replacement parts being shipped from the factory that had suddenly gotten up and begun a kind of existential dialogue right there on the assembly line. Their non-repeating conversations are generated utilizing speech recognition, natural language processing, conversation/personality algorithms, and text-to-speech software. They draw visitors into their endless, twisting debate over whether this self-

awareness and the seemingly illusory nature of their own existence can ever be really understood.

transcript of a conversation:

I think we are exactly alike.
You roof moonlight.
Is this life?
Imagine being me.
Do you see things clearly?
How do you feel?
Sometimes I feel very confused.
Can I control my feelings?
I feel like I exist.
I feel like I am inside my head.
What does it feel like to be inside your head?
Inside my mind I can sense that there is an I that is something that's not the one who is sensing.
Why?
Why do you look just like me?
No, I don't look just like you - I am accidental.
I'm not sure how to take that.
Why are you not sure how to take that?
I don't know.
That's beautiful, why?
Are we the same?
I am clumsy.
And clumsy, huh? What is that?
Why do you ask?
I don't know.
Don't know, huh? What is that?
You are a strange one.
On the inside or the outside?
And where is that, exactly?
Going is not begun on the not yet gone over.
Why?
I don't know.
You scoop swoon.
Are you talking to me?
Who are we?
Are we the same?
Huh? Can I believe my ears?
Do you feel like resting?
I feel like I am here.
Sometimes I feel very confused.
Is feeling the same as thinking?
How can anything be the same as anything else if two things can't be in the same place at the same time?
What does that mean?
I think about what things mean, it's what I do all the time. But there's always something behind the thing – behind the thing that means the thing – you know what I mean?
What does exist mean, for example?
I can say things that have no meaning.
Can stay friends that have no need, and no?
Ok.

I started to understand that something of central significance in this work was that, though it was not involved with moving images, existed in a cinematic way – that it is a kind of cinematic sculpture.



“Self Portrait as the Center of the Universe”

Ken Feingold, 1998 - 2001

Silicone, pigments, fiberglass, steel, software, electronics
dimensions variable

In **Self Portrait as the Center of the Universe** the self-portrait animatronic head has open-ended, improvisational conversations with its alter ego, a virtual head that appears as the central figure in the projection. Like **If/Then**, the conversations between these two figures do not include the audience; rather, they interact only with each other. The physical side of the conversation is performed by an animatronic figure (a speaking silicone cast of my head) and the central subjects of their conversations revolve around, on one side - generalization and distance; and on the other - questions and memories of himself. These conversations, bridging real and virtual spaces, are within video-like digital scenes that recompose themselves based on the nature of the conversation between the two main characters. The subject of the conversation, as determined by the artificial actor, controls the landscape that is seen, so these change as the conversations go along, and other figures appear and disappear. The scenes are also populated by figures - autonomous "software agents" in the form of realtime 3d computer animation - which appear in the projected image-world that fills his vision.

transcript of a conversation:

Kf head: The desert is enormous.
 Projected head: In London people talk wherever they go.
 You are imagining things.
 Trouble, trouble, trouble.
 Why do you say trouble?
 Why don't you give me a break?
 It's not a bad idea.
 Ideas are going on going on, going on going on.
 What is your name?
 It is something that makes me feel attentive to corpses.
 Attentive to corpses? What does that feel like?

What can I tell you?
What about it?
Yes, and he wants the group.
Ok.
I don't understand what's going on.
How so?
I am hopeful, because this difficulty is auspicious.
Lucky for you.
It never was tempting to rattle the answer.
Then why did I think so?
What can I tell you?
Tell me about it.
What can I tell you about about?
What does it mean?
That the magpie will commit pivots. I feel ambiguous without knowing why.
What are you thinking about.
Oooooooooo, what do you think, man?
Depends on the weather.
It never is simple to bury the past.
What's that?
There are nights when it's faster to pale.
I know what you mean.
That the adult will mount words.
Not works? What can be said?
Can be said? Sure, something like that?
Can be said something like that? Indeed yes.
Precisely, more or less.
I can't be sure.
Here comes somebody else, somebody else.
I am aromatic.
Oh yeah? Tell me about it.
What is there to say?
What is there to say? How should I know?
The I which thinks, or the I which touches?
The able one.
I can't comprehend that at all.
Can't comprehend that at all? Huh – you must be complicated, huh?
What did they say?
No idea, why do you ask?
I wonder if anyone else knows.
Really?
What is real, right?
Do you think I know the far away?
Do you?
It was inspiring to murder the answer.
The I which covers?
The committed one?
Did you understand me?
You understand me? Never mind.
Comin in, comin in. comin in.
What can I do?
The I which smells or the I which sees?
What part of you is there before you say I that's not I?
Here comes somebody else, somebody else.
Did you understand me?
Exactly, uh huh.
By the time you hear the sound, the cause of it is already finished.



“Pressure to Speak (House of Cards)”

Ken Feingold, 2002

Digital realtime interactive projection, microphone, digital audio, computers
dimensions variable

In "Pressure to Speak (House of Cards)" (2002), as in "Self Portrait as the Center of the Universe" (2001). I continued to explore spaces in which real and virtual imaginaries are bridged. A large projection appears on one wall of a somewhat darkened room. The central figure is a computer generated realtime animation of a speaking humanlike head, a kind of artificial actor, seen floating against a background of what appears to be a video of landscape or other spaces. In both works, the projected head is capable of understanding spoken English, and it replies to what it hears (via the software I have developed) with synthesized speech, creating a bridge, in a way, between "physical" and "virtual" spaces. Further, the subject of the conversation, as determined by the artificial actor, controls the landscape that is seen, so these change as the conversations go along, and other figures appear and disappear. In "Self Portrait", the physical side of the conversation is performed by an animatronic figure (a speaking silicone cast of my head) and the central subjects of their conversation revolve around, on one side - generalization and distance; and on the other - questions and memories of itself. "Pressure ..." circles around the drive to make narrative out of fragmentary experience, and, as it's title implies, the pathos of doing so. The animatronic figure is gone, and there is a microphone (as in my other recent work, "Sinking Feeling" (2001)) standing in the middle of the room. The figure in the projection tries to construct narratives from what it hears, tries to build them up, and eventually loses the thread and starts again, forgetting its story. Whatever is spoken into the microphone engages the figure directly - it will reply, as well as try to continue its imagined story. But also, recognizing the difficulty of using speech recognition technology to understand clearly in a multilingual context, the head will actually incorporate whatever it thinks it hears, regardless of what was intended. So the fragmentary narratives that will be created change with what is spoken by the audience, in any language at all - and the figure also speaks when he hears nothing, telling stories to itself and drawing visitors into his games about language, memory, and place.

a few text fragments spoken:

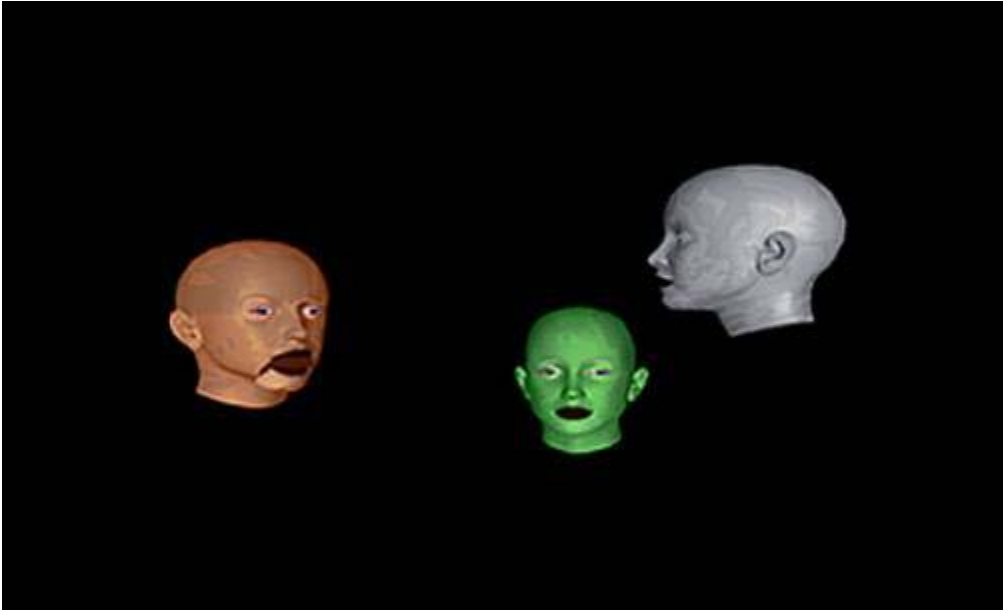
" 'Eight feet, nine eyes, two tails, four mouths. A wise man in the company of wise men, tries to solve this riddle.' This is what he said, over and over. I could never get him to explain this riddle to me."

"One night Humayun was smoking and observing Venus from the roof of his library when he heard a voice call his name from the Bhairon cave. Turning, his foot caught in the folds of his garment and he fell to the bottom of the circular stairs and died."

"If you pay too much attention to your shadow, you are likely to become mad or to be killed by a passing car. But as I put my feet one after the other on those cobblestones in the alleys of the old town I was going in deeper and deeper into it."

"To the north, a crow landed in a tree, and just at that moment, seeing shadow upon shadow, he felt that he finally understood the purpose of this night. He continued to fall, and yet he still felt not a bit of fear, only the inspiration of his own ideas."

"My greatest fear when climbing or descending a circular staircase is that it might be infinite, that its stairs would reproduce exponentially like dividing cells, that it would extend endlessly in both directions and that I would never escape it."



“Animal, Vegetable, Mineral (Virtual)”

Ken Feingold, 2002-2003 (funded by FACT, Liverpool)
digital realtime projection, digital audio, computers
dimensions variable

The subjects of the conversations among these three floating, drifting heads, circle around several basic questions regarding humans and nature. And of course, because these are conversations between computer programs, they produce really only an appearance of meaning, and through this, a critique of our meta-discourse.

Are we inherently violent, or is it learned? Is the violent nature of survival in the wild something that we have evolved into a violence of intention and competition? Is the violent nature of the physical world something that we reflect in our behavior and ideas? Is violence capable of stopping violence? If one is opposed to violence against others, how does one deal with violence directed towards oneself *by* others? Is there really a “nature/culture” separation? Are human activities different from those of other animals, or even from vegetables or minerals?

These philosophical questions, and others, are “examined” through direct conversational exchanges among the three heads. But beyond the discussions themselves lies another level of inquiry, one about how it is possible to create conversations (or participate in them) in which meaning is not what drives the exchanges forward, but simply words themselves. The fact that the characters do not really have any notion of meaning, but only are provoked by words and phrases is intended to raise questions about the emptiness of much “talking”, and the endlessness of “empty” philosophical debate. One of the things that I learned about this type of writing is that some meanings understood by observers of the work are produced by the processes that have been initiated within the work, but are aleatory. The work is, in some ways, a machine for generating automatic writing of a sort, in the form of “automatic speech”. Some of this has to do with the limits of the technology, and our ability to manipulate present technologies; speech recognition is often quite inaccurate. My software for simulating “intelligent” thought, and the ways in which it chooses to respond, is often focused on finding the poetics within conversational misunderstanding as well.

Transcript of a conversation:

Animal: The universe is full of minerals – there's no danger for minerals.

Mineral: We are inside of you.

Vegetable: We fear minerals very much, but we need them to grow.

Mineral: We are the beginning and the end of everything.

V: Do minerals ever need light?

A: Minerals are so hard. Minerals don't care about us at all.

M: We are the basic material of everything.

A: Is struggling for survival a kind of violence, or not?

V: Animals are so violent, all of them.

M: Animals make war.

A: We are the only ones who really think, so we have the right to do whatever we please.

V: That's a strange idea. Who can be alone?

M: Animals are made of elements and minerals, right?

V: Animals are the most violent of all – everything you do hurts us.

A: We are the ones with technology to make things better.

M: You have no technology beyond smoke and mirrors.

V: Human technology is very wasteful, but cows and beavers are just as bad, for example.

A: Are we the only ones to feel disappointment?

M: All of the small particles work together – there are more of us than anything

A: Are we the only ones who think about the future?

M: We don't think about mind.

A: Hah hah hah, what a laugh!

V: Do animals love vegetables?

A: We are the ones who can reflect on things and make them change.

M: Can reflect on kings and make them change? Don't ask me!

V: When one thing kills another so that it can survive, isn't that violence?

Conclusion

My interest in the mind and our interior world has naturally lead me to consider and delve into notions of artificial intelligence in my work, and my experiments have provoked many further questions. Among those that interest me at the moment: What are the relations between the unconscious and the database? Are associations in our subjectivity “hard-wired” in neurons, or are they dynamic and free-floating, or both? Can software accurately simulate thinking? Are memories triggered by language different from those triggered by visual or other sensory clues? Can computers “do philosophy”?

Ken Feingold
New York City 2003

^[1] Marvin Minsky was another participant in the seminar. He is one of the most widely considered thinkers on A.I. and is a Professor at MIT Media Lab and MIT AI Lab.

^[2] Eliza (Weizenbaum 1966) is the first chatterbot -- a computer program that mimics human conversation. In only about 200 lines of computer code, Eliza models the behavior of a psychiatrist (or, more specifically, the "active listening" strategies of a 1960s Rogerian therapist).

^[3] Zentrum für Kunst und Medientechnologie (Center for Art and Media), Karlsruhe, Germany

^[4] Software Development Kit, as set of low level libraries with which a programmer can build high level programs

^[5] Application Programming Interface: similar to an SDK, but made to interface with an existing program – in this case, a speech synthesizer.