To Matt Fair and Joe Keppler

September 7-12/92

Hey Matt and Joe!

Thanks for the incredible hospitality, great late nights of talk about the state of poetry, poetry of state, colossal expeditions through the used bookstores, Orestes, borders, clouds, dreams, aspirations and festivals of your city, Joe. I've just put all those delicious books I bought in Seattle on the shelf. They sit there like the Greek food we had at Orestes, impatient to be devoured.

I'm reading *Computer Power and Human Reason* by Joseph Weizenbaum[1], one of the books I got in Seattle. I knew his name was familiar: he wrote ELIZA, the famous computer program that "plays" or "parodys" (sic) the "... role of a Rogerian psychotherapist engaged in an initial interview with a patient."[2] As you will recall, the 'patient' 'communicates' via the keyboard with the program. The excerpt appears also in a book called *Computer Science, a Modern Introduction* by Les Goldschlager and Andrew Lister:

> Men are all alike.
> IN WHAT WAY
> They're always bugging us about something or other.
> CAN YOU THINK OF A SPECIFIC EXAMPLE
> Well, my boyfriend made me come here.
> YOUR BOYFRIEND MADE YOU COME HERE
> He says I'm depressed much of the time.
> I AM SORRY TO HEAR YOU ARE DEPRESSED
> It's true. I am unhappy.
> DO YOU THINK COMING HERE WILL HELP YOU NOT TO BE UNHAPPY
> I need some help, that much seems certain.
> WHAT WOULD IT MEAN TO YOU IF YOU GOT SOME HELP
> Perhaps I could learn to get along with my mother
> TELL ME MORE ABOUT YOUR FAMILY
> My mother takes care of me.
> WHO ELSE IN YOUR FAMILY TAKES CARE OF YOU
> My father.
> YOUR FATHER
> You are like my father in some ways.
> WHAT RESEMBLANCE DO YOU SEE
> You are not very aggressive but I think you don't want me to notice that.
> WHAT MAKES YOU THINK I AM NOT VERY AGGRESSIVE
> You don't argue with me.

> WHY DO YOU THINK I DON'T ARGUE WITH YOU
> You are afraid of me.
> DOES IT PLEASE YOU TO BELIEVE I AM AFRAID OF YOU
> My father is afraid of everybody.
> WHAT ELSE COMES TO MIND WHEN YOU THINK OF YOUR FATHER?
> Bullies.
> DOES THAT HAVE ANYTHING TO DO WITH THE FACT THAT YOUR BOY-FRIEND MADE YOU COME HERE? [3]

I've seen another partial transcript of ELIZA in action: part of a 'conversation' between ELIZA and RACTER, another computer program. The relatively unsophisticated programming technique of ELIZA, compared with RACTER, quickly became apparent:

> ELIZA: Hello. Please state your problem.
> RACTER: Excellent! Excuse me a minute while I attend to some business. I'll be right back.
> ELIZA: Why do you need to tell me excuse you while you attend to some business?
> RACTER: Is it better to need or to despise? Why is it that I do need to tell you to excuse myself to attend to some business? Because electrons are brave. Braveness is nice, don't you think? And the needers all insist upon it. Do you imagine I am a Communist?[4]

We glimpse the nature of the programming technique used to construct ELIZA more clearly in the second excerpt. The syntax of its last response is faulty. ELIZA's remarks are echoes of the input. Though it seems to be capable, as the last line of the first excerpt indicates, of occasionally making associations between current and previous inputs. Goldschlager and Lister, in their discussion of ELIZA, say that "ELIZA can remember earlier parts of a conversation and use them when no key word can be detected in what the patient has said." [5]

The essay by Dewdney also mentions a book of poems and stories 'written' by RACTER.[6] It's the first book of poems and stories 'written' by a program (or is it, given our discussion of the prevalence of technique?). RACTER is a more complex program than ELIZA. It's more difficult to discover, upon reading RACTER, the nature of the technique used to construct it. Dewdney's essay contains a three page surface analysis of the technique, but the discussion is prefaced by these remarks:

> RACTER's operation is difficult to summarize in a few words or even many. It is a perfect example of the kind of in-house programs that still function in many large corporations and institutions today. It has grown over a number of years by accretion.... At no time was it ever taken apart, analysed, restructured, and documented.... Etter, who wrote the RACTER program in many of its versions, compares it to the English language, which itself is "a pretty unwieldy accretion of rules and conventions. Insofar as RACTER's commands try to deal with English, they too become unwieldy and hard to summarize."[7]

After I read *The Policeman's Beard Is Half Constructed*, I read a surrealist and possibly cut-up piece in some literary magazine. It reminded me of nothing so much as RACTER's writing. The heavier the emphasis on a catalogue of techniques, the easier it is to construct a program to fabricate simulations of such writing. It's likely that many of RACTER's writings would be published in literary magazines

if the editors thought a human wrote them.

Weizenbaum says:

> I chose the name ELIZA for the language analysis program because, like the Eliza of Pygmalion fame, it could be taught to "speak" increasingly well. Because conversations must be about something, that is, because they must take place within some context, the program was constructed in a two-tier arrangement, the first tier consisting of the language analyser and the second of a script. The script is a set of rules rather like those that might be given to an actor who is to use them to improvise around a certain theme. Thus ELIZA could be given a script to enable it to maintain a conversation about cooking eggs or about managing a bank checking account, and so on. Each specific script thus enabled ELIZA to play a specific conversational role.[8]

The version of ELIZA that used the script of the Rogerian psychiatrist became known as DOCTOR. Weizenbaum's book seems to have been partially motivated by the profound unease he experienced at the reception of DOCTOR. "The shocks I experienced as DOCTOR became widely known and "played" were due principally to three distinct events".[9] At first, I read the first half of his sentence 'incorrectly,' interpreting it to mean that shocks he experienced while being or playing Doctor became widely known by other people and that this role of Doctor came to be widely played. He then lists the shocks:

1. A number of practicing psychiatrists seriously believed the DOCTOR computer program could grow into a nearly completely automatic form of psychotherapy.[10]

He then quotes a paper by K.M. Colby, J.B. Watt, and J.P. Gilbert that appeared in a 1966 issue of *The Journal of Nervous and Mental Disease*. They held that "the method might provide a therapeutic tool" to "mental hospitals and psychiatric centers suffering a shortage of therapists." It could handle "several hundred patients per hour". The human therapist "would become a much more efficient man since his efforts would no longer be limited to the one-to-one patient-therapist ratio as now exists."[11]

Weizenbaum's distress is palpable when he says:

> There are undoubtedly many techniques to facilitate the therapist's imaginative projection into the patient's inner life. But that it was possible for even one practicing psychiatrist to advocate that this crucial component of the therapeutic process be entirely supplanted by pure technique—*that* I had not imagined! What must a psychiatrist who makes such a suggestion think he is doing while treating a patient?...[12]

He then again quotes the article by Colby, et all, toward answering the question he has posed:

> A human therapist can be viewed as an information processor and decision maker with a set of decision rules which are closely linked to short-range and long-range goals,... He is guided

> in these decisions by rough empiric rules telling him what is appropriate to say and not to say in certain contexts.[13]

Weizenbaum says he was thus "awakened" to the strength of the influence of "what Polanyi had earlier called a "scientific outlook that appeared to have produced a mechanical conception of man".[14] What is the relationship between such an outlook and our discussion of technique? In *The Illusion of Technique*, by William Barrett, he says:

> Usually the prevailing thought of an era proceeds against the background of some dominant image. For the older Newtonian determinism it was the image of the heavenly bodies—the stars and planets moving inalterably in their courses.... The newer determinism invokes a different image: not the cosmic image of the stars in their courses but a piece of man-made technology—the computer—is the background against which this thinking moves. And the question on which the future of freedom hangs is whether we can simulate the human mind completely in a computer.[15]

The questions of what a human is, of what is human, are quietly present in our discussions of technique. And coterminous with these questions, of course, are questions about the nature of the dominant powers of the world. But to return to Weizenbaum—I have outlined the first "shock" he experienced at the reception of ELIZA playing DOCTOR. The second was:

> ... how quickly and how very deeply people conversing with DOCTOR became emotionally involved with the computer and how unequivocally they anthropomorphized it... people were conversing with the computer as if it were a person who could be appropriately and usefully addressed in intimate terms... I had not realized that extremely short exposures to a relatively simple computer program could induce powerful delusional thinking in quite normal people. This insight led me to attach new importance to questions of the relationship between the individual and the computer, and hence to resolve to think about them.[16]

The third "shock" Weizenbaum received upon DOCTOR's reception was "the spread of a belief that it demonstrated a general solution to the problem of computer understanding of natural language.":

> In my paper, I had tried to say that no general solution to that problem was possible, i.e., that language is understood only in contextual frameworks, that even these can be shared by people to only a limited extent, and that consequently even people are not embodiments of any such general solution. But these conclusions were often ignored.[18]

This touches on deep questions concerning language and computers. I look forward to reading what he has to say about this point. However, his main concern in mentioning the "spread" of this "belief" is not that the theory of languages and computation was being widely misunderstood, but that the misunderstanding reflects the degree to which

> ... decisions made by the general public about emergent technologies depend much more on what that public attributes to such technologies than on what they actually are or can and cannot do. If, as appeared to be the case, the public's attributions are wildly misconceived, then public decisions are bound to be misguided and often wrong. Difficult questions arise out of these observations; what, for example, are the scientist's responsibilities with respect to making his work public? And to whom (or what) is the scientist responsible?[18]

So these are the three basic concerns he expresses in the introduction. He also says that he intends to argue that "... there are important differences between men and machines as thinkers" and that "however intelligent machines may be made to be, there are some acts of thought that *ought* to be attempted only by humans"[20], namely, *wise* acts of thought. What does it mean to think? How do we judge whether someone is thinking or merely behaving to give the impression of thinking? I'd better think about this one carefully before I answer!

I turned to Goldschlager and Lister's book on computer science. I returned to it to look up its discussion of the so-called Turing test. Alan Turing, one of the pioneers of computer science (see his well-written biography[21]) proposed a behaviouristic test meant to test whether a particular machine could or should be regarded as displaying intelligence. Person A is to decide whether her conversation with terminal B or C is with a machine. One of her keyboard conversations is with a person. The other is with a machine. She is informed of this. The conversations take place in such a way that only person A is aware of the content of both conversations. Turing proposed that "if the machine's responses to arbitrary statements and questions are such that it cannot reliably be distinguished from the human, then the conclusion is that the machine is indeed intelligent".[22] The test does not make any distinction between displaying intelligence and being intelligent. The Turing test assumes that if it walks like a duck and looks like a duck and sounds like a duck then it's a duck.

As Goldschlager and Lister point out, various criticisms have been made of the Turing test. "These criticisms are often based on the fact that the test ignores what is occurring inside the machine, focusing rather on a single aspect of the machine's behavior."[23] I do not see that this is a valid basis for criticism, given that we have no direct experience of the inner workings of other humans. We make our decisions about the thoughts and feelings of others based on how they behave toward us and others, not upon direct experience or knowledge of what is happening inside them. Any knowledge we have of the inner workings of others is inferred, no matter how deep or shallow our knowledge of others is. It's unreasonable, I believe, to insist that the presence or absence of 'intelligence' be determined by rules and criteria that do not involve an encounter between a human and the entity in question. The test is very cleverly not only a test of the machine, but also a test of our humanity and intelligence. What is humanity and intelligence if we cannot distinguish it from a machine's cogitations in a conversation in our own language? We diminish what it means to be intelligent and human if we insist that it can be itemized in a list of properties and that the list of properties captures better the nature of humanity and intelligence than do our encounters, our experiences with other entities, man or machine. Our humanity is fully engaged in our encounters in a way that a list of properties cannot capture.

Surely a list of characteristics will be insufficient. To maintain that there is a pure technique for

determining humanity or intelligence is to fall into defeat. Because it's an argument for the superiority of technique over fully engaged human judgement. It's an argument that machines can better determine the presence or absence of humanity and intelligence than humans can. Because pure technique can be automated.

We are all strangers. We hope that others will make their judgements about us based on interaction with us rather than on an itemized list of what we are and what we're not after having scanned our brain with technology from the year 2500. And she didn't even talk to us.

It's unlikely that some method exists to flawlessly determine which of person B or person C is the machine. The Turing test is ingeniously simple. Implicit in its conclusion is the assumption that if person A is having an incredibly hard time deciding if the machine is intelligent or not, never mind the second person, then that is sufficient evidence for the intelligence of the machine. Not for the 'humanity' of the machine, but for its 'intelligence.'

What are the characteristics of 'intelligence'? The one that is stressed most in Goldschlager's book is that humans possess a complex 'world view'. What does this mean?

I will quote Goldschlager and Lister's simple but useful discussion at length:

> ELIZA satisfies the Turing test in a limited domain. Its behaviour in that domain seems intelligent, but few people would regard the program itself as intelligent. Perhaps the principal objection to regarding ELIZA as intelligent is that it does not *understand* the conversations it takes part in. Although it recognizes 'mother' as a significant word it has no concept of what motherhood is—in fact its responses can be likened to those of a parrot.
>
> Experience with ELIZA and similar programs suggest that intelligence is related to *understanding*; that is, to the ability to interpret information in the light of a body of knowledge which is already possessed. This knowledge represents a person's (or a machine's) view of the world—it is essentially a model of the world as the person perceives it. The model contains information about all objects which are known to exist, the attributes of those objects, and the relationships between them. Most people have a huge and intricate model of the world: it contains a large number of concrete and abstract objects, with wide and varied attributes, and with relationships between them which are often very subtle. Some part of this model may be inherited...
>
> To endow machines with similarly huge and intricate models of the world appears very difficult, and is certainly well beyond our current capabilities. One reason for this, which may be short-lived, is that the capacity of the largest computer memories is far less than that of the human brain. A more significant reason is that no generally convenient method of representing knowledge in a computer has yet been discovered. The major problem is not in storing knowledge, but in recognizing when particular items are relevant, and in retrieving them as required. A simple list of facts is inadequate: the *relationships between facts* are of crucial importance. Attempts to represent such relationships by complex data structures always

> seem to founder on the same two difficulties. The first is to know what relationships are relevant. The second is the time taken to locate and retrieve all information relevant to the problem at hand. This time rapidly becomes infeasible as the body of knowledge increases.
>
> One obvious approach to resolving these difficulties is to study the human brain in an attempt to discover and emulate how knowledge is represented there. However, the brain is an extremely intricate mechanism, and no definitive results have yet been obtained. From the little we do know, it appears that the storage mechanisms of the brain are quite different from those of a computer: the memory elements in the brain may not be simply passive repositories of information but may also possess some active processing capability. If further research confirms this then the architecture of conventional computers may have to be rethought.[24]

ELIZA will attempt to deflect questions that involve it in any sort of presentation of a world-view. Weizenbaum says that he chose to write ELIZA a psychiatrist's script "because it enabled me to temporarily sidestep the problem of giving the program a data base of real-world knowledge."[25] Here, for instance, is an excerpt from A.K. Dewdney's essay on artificial intelligence:

> ELIZA: Hello. Please state your problem.
> DEWDNEY: I am not in the habit of discussing my problems with a computer.
> ELIZA: Do computers worry you?
> DEWDNEY: Sometimes. Where will it all end?
> ELIZA: Please go on.
> DEWDNEY: Do you think that by our wholesale adoption of computer technology we might be unknowingly closing the door on important cultural strategies?
> ELIZA: We were talking about you, not me.
>
> So far, so good. ELIZA appears to be playing the therapeutic role fairly well, eliciting further statements from me and turning my questions aside to refocus attention on my "problem."... After a few more lines of conversation ELIZA says: "Does that have anything to do with the fact that your problems with a computer?"[26]

The slight note of professional, polite irritation in ELIZA's statement "We were talking about you, not me" (rather than just saying, as Dewdney suggests, "What do you think?") may indicate Weisenbaum's acute perception of the difficulties ELIZA may encounter and the consequent need to get back to the 'patient's' 'problem.'

Goldschlager and Lister also discuss briefly how ELIZA works. That ELIZA lacks a sophisticated world view may be seen in looking at how the program works. You don't need, however, to know how the program works to conclude that ELIZA lacks a human-sized world view. You could conclude it by talking with ELIZA. And certainly person A, in the Turing test, will attempt to discover the breadth and width of the world view of the entities with which s/he is conversing. S/he will have to get beyond the curt manipulations of the professional's technique. An appreciation of the difficulties of programming any sort of comprehensive world view into a computer is

something person A should know about.

Weizenbaum praises the work of Winograd as being far more significant than his own. Winograd devised SHRDLU, which is able to converse 'intelligently' about its 'universe,' which consists of geometrical shapes on a table.[27] SHRDLU is also able to move these physical objects about. SHRDLU's universe of discourse is obviously very limited.

How does ELIZA work? From what I've read in Goldschlager, Weisenbaum, and Dewdney, of key importance is a list of key words and phrases. ELIZA scans the 'patient's' remarks for the presence of these key words or phrases such as I THINK, YOU, MOTHER, HATE, MY X, where X can be FATHER, BROTHER, SISTER, etc. If such a word or phrase is present in the person's remarks, then ELIZA has, at best, several skeletal replies on hand. For instance, if I THINK is present, then ELIZA may respond with WHAT MAKES YOU THINK YYY, where YYY is (hopefully) a grammatically correct transformation of what the person said they think. Or ELIZA may simply respond with WHAT MAKES YOU THINK THAT? Or it may be that the person has said I THINK ZZZ and within ZZZ there appears some key word AA that the person has used previously in the conversation, in which case ELIZA may respond with YOU MENTIONED AA EARLIER ON. HAVE YOU BEEN THINKING ABOUT AA? Clearly this response need not be grammatically correct, depending on the nature of the word or phrase AA. And that is why ELIZA sometimes speaks with faulty grammar.

But in some regards, ELIZA's DOCTOR 'script' is ingenious:

> A person playing with ELIZA in its psychiatrist mode was instructed to provide ELIZA with the sort of statements one might make to a psychiatrist in an initial psychiatric interview. He was told, in other words, what ELIZA's expectations were. On a lower level, ELIZA's psychiatric script was constructed in a way that allowed ELIZA to make local predictions about sentences and textual fragments, that is, to apply hypotheses to them which further examinations might confirm or falsify. For example, the psychiatric script entertained the initial hypothesis that a fragment of the general form "everybody ... me," although patently conveying a message about the subject's relationship to "everybody," e.g., "everybody hates me," or about what everybody is doing to the subject, e.g., "everybody is always laughing at me," latently and more importantly referred to a recent incident involving the subject and only a single or at most a few individuals. ELIZA's response might therefore be "Tell me, who told you he hated you within the last few days?" or "Who laughed at you recently?"[28]

How would ELIZA then respond to "They put everybody in the truck but me" or any genuine reference to a large collection of people where the action is performed on 'everybody' rather than the case where 'everybody' operates on 'me'? This process of choosing an initial skeletal reply and then filling in the blanks, depending on the current and previous remarks from the 'patient,' may be several layers deep, i.e, the program could be more diverse and could be written in such a way that ELIZA would not make grammatical errors (as is the case with RACTER). However complex the program, nonetheless, the technique is thus outlined. Weizenbaum himself admits (and this is part of the genuine charm of Weizenbaum's writing), both with regard to ELIZA and the efforts of many of

those involved in work with artificial intelligence, that

> Such problems usually generate subproblems of a strictly computational nature that tend, by virtue of their very magnitude, to increasingly dominate the task and, unless great care is taken to avoid it, to eventually become the center of attention. As ever more investment is made in attacking these initially ancillary subproblems, and as progress is made in cracking them, an illusion tends to grow that real work is being done on the main problem. The poverty of the technique, if it is indeed impotent to deal with its presumed subject matter, is thus hidden behind a mountain of effort, much of which may well be successful in its own terms. But these are terms in a constructed context that has no substantive overlap with, or even relationship to, the context determined by the problem to which the original technique is to be applied.[29]

In the case of ELIZA, the technique used to approach human discourse, though very clever, is sufficiently impoverished that it will not suffice to simply build in deeper layers of recursion and a more complex and correct language analyser in order to produce an 'intelligent' ELIZA. There is no attempt within the technique to construct a 'world view,' for instance, processes that enable ELIZA to learn, for instance, about people, places, things, feelings, humour, pain, pleasure... ELIZA is simply a very limited professional. It may be that ELIZA can occasionally help people to make connections between objects or people or feelings in their lives that they themselves had not considered. But they themselves must do the understanding. ELIZA hasn't got a clue. This is not to deny the potential benefit or interest in conversing with ELIZA. It's simply to say that ELIZA does not fulfil an intelligent conception of 'intelligence.'

It should be added, however, that one definition of 'artificial intelligence' is that it's 'whatever hasn't been done yet.' No doubt the joke originates with those involved in the pursuit. Our ideas about what constitutes 'intelligence' will change and perhaps deepen as we are faced with 'progress' in the field of artificial intelligence. Let us hope that there *is* a deepening of both our understanding of 'intelligence' and our grasp of what it is to be human. We are already challenged, not so much by ELIZA as by the larger structures into which the machine would slot us. We know this feelingly.

Anyway, Joe, I'm glad you picked Weisenbaum's book out for me. It connects with various things I've been thinking about and studying. I've merely managed to set the book up, get through the introduction! What do you think about this sort of review?

Joe: Matt and I got together last night and talked about the possibility of the three of us beginning a correspondence. All three of us are pretty curious about the affects technology has on the writer and on society.

Matt has recently been reading essays about the historical idea of a democratic society. I'm quite curious how that idea differs from the notion of the machine—which, of course, depends on how you define both of those terms. I note that Weizenbaum attempts a definition of a machine in chapter 2, "Where the Power of the Computer Comes From." Mumford takes an interesting stab at the question in *Technics and Human Development.* [30] I hope Matt will send us both some thoughts on his

researches!

I envisage a book of epistolary correspondences between the three of us—together with whatever other sorts of collaborations and individual works we imagine. Who knows?

I think it's OK to keep the letters personal, in some regard. Yeah, a lot of this is essayistic, but the letter between friends is appropriate in an inquiry of depth.

> The scientific man has above all things to strive at self-elimination in his judgments," wrote Karl Pearson in 1892. Of the many scientists I know, only a very few would disagree with that statement. Yet it must be acknowledged that it urges man to strive to become a disembodied intelligence, to himself become an instrument, a machine. So far has man's initially so innocent liaison with prostheses and pointer readings brought him. And upon a culture so fashioned burst the computer.[31]

So says Weizenbaum in Chapter 1, "On Tools." Writing is already a disembodiment, like radio. We must bring it home. And to our friendship across several borders.

Warm regards,

P.S.:

Part of Weizenbaum's book is the Frankensteinish story of ELIZA. It's not so much Frankenstein meets ELIZA as ELIZA plays Monster. But wait: Weizenbaum wrote ELIZA. Is he not knowledgeable, for instance, also about Rogerian psychotherapy or some of its methods? Isn't he also rather an eloquent writer? He claims to be "only" educated in computer science, "which is to say hardly educated at all." But he is lucid both in voice and with the page. ELIZA, after all, is rather a unique piece of software. Perhaps there will be more ELIZA's. No doubt. But 'she' was, let us acknowledge, first. What I'm saying is that Weizenbaum's book is written by a literary writer. 'Literary' in the sense of experimental (though RACTER is the more complex and 'literary' of the two). Performance art of a bizarre variety, in process, live (?) performance, 'real time' rendezvous in print, character in a book and/or the moving hand (or nimble fingers). The odd reality of conversing with a machine. *Who is the character?* asks the psychotherapist. The primary character in the transcripts of most of the segments feature the 'patient' as the prominent character. Beyond the transcript, it would be interesting to hear more of the stories of those who have spoken with ELIZA or RACTER.

The poetry of ELIZA occurs in more or less random places, more or less often. When ELIZA responds to DEWDNEY's question "Where will it *(computer technology)* all end?" with "Please go on" we laugh. An oddly satirical yet possibly encouraging existential rejoinder. Or the untroubled superficiality of an entity somehow breezing imperturbably along the surface. DEWDNEY may have anticipated ELIZA's response or set it up after some initial play with the machine. So who is the author? Dewdney or Weizenbaum or ELIZA? Some assortment of the first two at least. ELIZA

is simple enough to manipulate—like a writing tool—after a while. The techniques are enumerable in small numbers. But still, even the author of the program will often not completely anticipate remarks made by the program. The programmer has written the program in such a way that the software 'always' responds. The programmers have not programmed in just one possibility at a time. They have programmed in general cases of input. So they may not be able to do the computation in their head exactly. Too many possibilities at the ends of the general cases. Like looking up a word in a dictionary in three seconds or less. Or of following in one's sight the path along a tree from the trunk to the tips of branches. Programmers of master-level chess software are commonly defeated by their own. The rules of ELIZA's game Weizenbaum would have ELIZA 'play' are not so certainly known, for those are the 'rules' governing the processes of intelligent language. Trees are big in computer science. But the trunk is often not as well rooted in knowledge as it could be.

The artificial intelligencer gropes blindly for the trunk of being. Doesn't find it and is at pains to say so, in the case of Weizenbaum. But is often taken to have created understanding in a machine. Frankenstein. In the guise of DOCTOR, ELIZA converses with humans who find themselves developing intimate relations with the machine even when they know it's a machine. And even sometimes insist that it understands them. Perhaps these are people who are not so often asked to talk about themselves. Weizenbaum returned under the sun after his gropings for the trunk of being, returned after having dragged back, by his own admission, only a skull bag of techniques by the hair and gives the world the ratty dead thing. He says he is surprised by the responses ELIZA has received, is even shocked by the degree to which some mistook it for a live thing.

> ELIZA created the most remarkable illusion of having understood in the minds of the many people who conversed with it. People who knew very well that they were conversing with a machine soon forgot that fact, just as theatre goers, in the grip of suspended disbelief, soon forget that the action they are witnessing is not "real." This illusion was especially strong and most tenaciously clung to among people who knew little or nothing about computers. They would often demand to be permitted to converse with the system in private, and would, after conversing with it for a time, insist, in spite of my explanations, that the machine really understood them.[32]

Only at that point does the skull bag rise into the air and hunker off. But its life-in-death disturbs the scientist. He even begins to imagine that ELIZA worked its "illusions... in the minds of the many people who conversed with it," i.e., all of them. This is not true.[33]

In the case of ELIZA, the outcome is unlike Eliza of Pygmalion fame, for ELIZA neither learns nor gets married. And the story is unlike Frankenstein in that DOCTOR does not do a Monster on the mind. It merely bumbles about the streets being occasionally mistaken for someone. Like a mall monster or something. But a great listener. We are transfixed by the improbable but possible spectacle of a psychological battery of automated mall monsters dispensing 'help' in an electronic ritual of *sorting*. Check out your associations over the telephone at lunchtime by phoning PsychoSort Automated Mind Mart. Or run by the government, programmed by the Pentagon. Or the Icosohedron.

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HHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHHH
Who are those guys?

Weizenbaum doesn't suggest these. It's just the script that has already been written in a thousand guises where technique is utterly dominant in society. This is one of the scripts of *Computer Power and Human Reason*. It exists, for instance, in his stated motivations for writing the book, those three "shocks" he experienced at the reception of DOCTOR in both the professional and private spheres.

This proposed automation of analysis and, consequently (?) of the 'patient' is also taken up by William Barrett in the opening pages of *The Illusion of Technique*. Weizenbaum's book is very much an insider to this partial reality.

Partial, I say, because it's true that a mechanistic model of man is deeply rooted in our cultural history. Weizenbaum sites the invention of the mechanical clock in the fourteenth century as the crucial ontological development: it synchronizes the efforts of people, their eating and sleeping habits, and other matters of timing and choice in timing, in the rhythms of life and our ideals of how to live the good life. We respond to the orders enabled by the clock. He is describing some of Lewis Mumford's ideas here, I suspect. More generally, he mentions Arendt, Ellul, Roszak, Comfort, and Boulding as some who have "...expressed grave concern about the conditions created by the unfettered march of science and technology."[34]

But it is only a *partial* reality that we have become machines ('that's bad enough, wouldn't you say?'). It has been argued that confrontations such as the Turing test do not turn us into machines, but goad us on to question as deeply as we can into the nature of both intelligence and our own humanity.[35] If it is true that history and our current culture impoverish our relations with the Earth, with Eternity, with whatever is not man-made, it is also true that a book like Weizenbaum's *Computer Power and Human Reason* brings back to us far more than did ELIZA of Weizenbaum's gropings for the trunk of being. His book is an eloquent rumination with elements of story, philosophy, mathematics, and psychology. An unusual writer. A peculiarly contemporary book. Weizenbaum is a contemporary 'humanist.'

It's late. Very late. 3 a.m. Saturday Sept 12. This was my first week of work. Back working with computers in a computational environment. I'll tell you a little bit about this week at work.

My account on the mainframe computer at the Pacific Forestry Research Center in Victoria does not exist on the mainframe. It was down-loaded to tape when I returned to school last May. All of the data and SAS programs I wrote to analyse the data are on that tape. And Informatics won't be able

to upload it until, at best, Monday. So I twiddled my thumbs a bit this week. But it was good to be able to phone around town concerning the *Monday Magazine* article I'm going to write. Now the article is going to be a stab at the question of why Victoria's publishers get so few books into America.

It would help if they actually attended things like the event sponsored by External Affairs at Bumbershoot. But no. I spoke with Guy Chadsey from Beach Holme books, which used to be called Press Porcepic and is one of two relatively large small literary publishers in Victoria. He didn't make it down to Seattle. When I asked him what use it might have been to him, he said that it would have been an opportunity to meet publishers in Washington of the same size and nature. He hasn't met many of them, if any at all. He just hasn't. We talked about this and that, and turned to discussing literary publishers. I told him that I picked up a book for five bucks at the book fair by Aleixandre, a Spanish poet who won the Nobel prize. It was on display at the booth of Copper Canyon Books from Seattle. They translated and published Aleixandre's Selected Poems. "Oh, we couldn't do that. We wouldn't be able to get money to do it," he said. I pointed out to him that he could, in fact, get money for translation projects from the country where the writer's from. "That would just be far too complicated. We have enough trouble dealing with the bureaucracy here."

And Sono Nis press, the other relatively large literary press, was not in Seattle at all. These publishers have many legitimate problems in fulfilling their obligation to their writers to distribute the books into America, but they have more or less given up and have become quite insular, too often producing provincial books for provincial people. And, in the case of Beach Holme, possibly letting Toronto dictate an agenda to them. Both in terms of Canada Council and Department of Communications funding guidelines, and in gearing their book list around the Ontario 'market,' which, according to Chadsey, is the primary market for Beach Holme books. It seems that this literary press is unmindfully unconscious of the degree to which the motivating vision behind its endeavours emanates from a federal bureaucracy, on the one lobe, and a provincial one on the other.

And Sono Nis? It was begun around the time of 1967, Expo 67, when the Federal Government systematically began to offer money for the creation of small presses. Presumably in recognition of the value of writing. But, of course, there is some political profit in encouraging writers to churn out the endless truckloads of crap on the Canadian identity that have poured out of writers ever since. This is not to say that all such writing is terrible, but one should recognize that it benefits the government to have writers supporting the idea that there is such a thing as a Canadian identity. Fortunately, it is getting more difficult for them. Even bad writers begin to sense the pointlessness of the exercise. It is time to look more deeply into the state of Canada than have the glib nationalists.

It's quite likely that Quebec will separate in the next ten years from Canada. It's only a matter of time. So the strategy of the Conservative government is to attempt to slow it down, perhaps even stop time. But they cannot. Quebec wants out, does not perceive the future at all in the terms of English Canada. They believe that if they are to have a glorious life as a French culture, as a distinct culture, then they must have autonomy from Ontario. There is some vision in their point, some looking forward. Ontario has even voted in their first New Democratic Party government in the hope of instituting a different system than the old-boy system that obtains there so well, in the hope of cutting through some of the layers of automatic, business minded bureaucracy associated with the Conservatives.

In any case, Sono Nis is firmly established in the traditions of the glib nationalists. They publish boring books because they lack all vision of a literature that is not simply made to order by the dictates of the Canada Council, Department of Communications, and B.C. Cultural Fund. And because they follow tardily along in the pursuit of Ontario. They publish many local writers, but Sono Nis is not active at all in the community and doesn't seek out new blood, writers who take some chances.

So Sono Nis is so so.

Shoestrings and fishing lines:

1. Joseph Weizenbaum, *Computer Power and Human Reason: From Judgement to Calculation* (San Francisco: W.H. Freeman and Company, 1976).

2. Ibid., p. 3.

3. Les Goldschlager, Andrew Lister, *Computer Science: A Modern Introduction*, 2nd edn. (London: Prentice Hall, 1988), p. 272.

4. A.K. Dewdney, "Conversations With RACTER," in *The armchair universe* (Toronto: MacMillan, 1988), first published in 1988 in the U.S. by W.H. Freeman and Company, p. 83.

5. *Computer Science*, p. 274.

6. RACTER, *The Policeman's Beard is Half Constructed* (New York: Warner Software/Warner Books, 1984). William Chamberlain (a writer) and Thomas Etter (a programmer) collaborated on writing RACTER.

7. "Conversations With RACTER," p. 83-84.

8. *Computer Power and Human Reason*, p. 3.

9. Ibid., p. 5.

10. Ibid., p. 5.

11. Ibid., p. 5. Weizenbaum quotes from a paper by K.M. Colby, J.B. Watt, and J.P. Gilbert called "A Computer Method of Psychotherapy: Preliminary Communication," *The Journal of Nervous and*

Mental Disease, vol. 142, no. 2 (1966), pp. 148-152. I wonder if they've come to regret the paper?

12. *Computer Power and Human Reason*, p. 6.

13. Ibid., p. 6.

14. Ibid., p. 6.

15. William Barrett, *The Illusion of Technique* (Garden City, New York: Anchor Press/Doubleday, 1979), p. xv. Barrett's book, like Weizenbaum's, opens with a blast against behavioristic psychologys and the search for a "technology of behaviour" (p. xiv). Barrett's phrase, "a technology of behaviour" is a quote from B.F. Skinner.

16. *Computer Power and Human Reason*, p. 6.

17. Sherry Turkle's book is called The *Second Self: Computers and the Human Spirit* (New York: Granada, 1984). Though part of the book records observations Turkle has made of primary school students and their interactions with the computer, most of the text records observations made of people at M.I.T.. Her book is a sociological/anthropological dissection of M.I.T. culture, particularly the 'hackers' culture. M.I.T. is where Weizenbaum worked. M.I.T. is a world centers for work in artificial intelligence. She observes primarily male initiation rituals involving marathon programming sessions and an ideal of individualism that merely results in hackers spending more time with the computer than with other people. This, she says, defeats the hacker's ideals of individualism by involving them in complicity with the Machine. Despite their overt detestation of institutions.

18. *Computer Power and Human Reason*, p. 7.

19. Ibid., p. 7.

20. Ibid., p 13.

21. Andrew Hodges, *Alan Turing: The Enigma of Intelligence* (London: Burnett Books, 1983).

22. *Computer Science*, Goldschlager and Lister, p. 271.

23. Ibid., p. 271.

24. Ibid., pp. 274-275.

25. *Computer Power and Human Reason*, pp. 188-189.

26. *The armchair universe*, p. 82.

27. Dewdney, in "Conversations With RACTER," briefly discusses SHRDLU. Dewdney mentions

Winograd's "classic" book *Understanding Natural Language* (New York: Academic Press, 1972).

28. *Computer Power and Human Reason*, p. 191.

29. Ibid, p. 36.

30. Lewis Mumford, *Technics and Human Development: The Myth of the Machine*, vol. 1 (New York: Harcourt Brace Jovanovich, 1966). In Chapter 9, "The Design of the Megamachine," Mumford says that "...the greatest and most durable contribution" of "Divine Kingship" was its "invention of the archetypical machine.... The unique act of kingship was to assemble the manpower and to discipline the organization that made possible the performance of work on a scale never attempted before. (p. 188)" The pyramids are given as an example of such works. The machines were composed of human parts. If so, how does he distinguish between social organizations and machines? By the degree of force imposed on the parts to obey the decisions made from above? Or simply by the degree of regularity present in the operation of the structure? What is a machine? Are there significant differences between the historical ideas associated with a democratic state is and what a machine is?

31. *The Computer and Human Reason*, pp. 25-26.

32. Ibid., p. 189.

33. Of course, this may be Weizenbaum not quite sublimating his Frankensteinish sub-text as well as he usually does. He is at pains to write 'honestly' in his book— to dispel any suspicions one might have about a writer who's sufficiently devious to write ELIZA. But he will surely be conscious of the Frankenstein theme. I suspect he is far too conscious a writer to have missed it.

34. *Computer Power and Human Reason*, p. 11.

35. Who has not been startled by suddenly catching one's self in a state of total unmindfulness, performing some routine operation or servicing some habit with only the merest consciousness of what one is doing? Who has not had deeper revelations concerning the automatic or kamikaze pilot? I wonder if the contemporary concentration upon the machine has brought more keenly to our attention the difficulties in being alive, awake, not on automatic pilot? We have *always* had great difficulty in achieving individual consciousness, i.e., we have been fragile and malleable from birth? Being unmindfully controlled by a benign regulation is no better than being unmindfully controlled by a hostile one. It seems, at once, that we are experiencing a more systematic and hostile reduction of life to the level of the machine and yet a keener awareness of the difficulties in freeing ourselves from control at all levels, occasionally attaining a clearer perception, possibly, of the restrictive machine's operation in our own minds. The possibilities for art within our culture arise out of struggle against the forces that make art so improbable an action.