

Must Computer Systems Have Users ?

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Introduction

1. **This paper is out of the ordinary:**
 - (a) it would not have been written 30 years ago
 - (b) it deals with “timeless” issues which are of *present* concern (to the profession and to others)

2. **Possible answers to the title question (of interest to me):**
 - (a) No
 - (a1) “can”
 - (a1.1) another machine
 - (a1.2) a human
 - (a2) “cannot”
 - (b) Yes
 - (b1) must be a human

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3. **No one believes 2(a2); people (with my exception) tend not to believe 2(b) any more. (The circumstance detailed in 1(b) and the first sentence of 3 are good for this paper.)**

4. **Mr. Everyman's view (of the title question):**
 - (a) **Computers have usually had users, and**
 - (b) **They have been people (and/or their organizations)**
 - (c) **It is becoming more-and-more unclear about whether these "users" are necessary.**

5. **My view (a variation on Mr. Everyman's)**
 - (a) **Computers *must* have users (now and forever), and**
 - (b) **These users *must* be people-in-organizations (now and forever)**
 - (c) **Yes, this is becoming unclear in the public's mind, ... but not in mine.**

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6. I think this because:
 - (a) Responsibility is a part of *every* action (that has social significance)
 - (b) People-and-only-people can take responsibility; (these two points taken seriously mean that a computer without a user cannot perform *any* action!)

A theory of computer use – and Science

7. **My view of theory:**

It is not *opposed* to practice: it must *underlie* every practice – for in the end real theory is nothing but thinking-and-communicating tool; so: theory without practice is nothing; and the same is true of practice without theory.

8. **A theory of computer use must begin by answering the following 2 questions:**

(a) *Who* is the user?

(b) Of *what use* are computers (to which “general purpose” is not an answer.)

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9. **And soon thereafter is the question:
How do the answers to the previous questions relate to
'responsibility'?**

10. **The theory I favor says:**
 - (a) **the user is always a person fulfilling an organizational function**
 - (b) **the use (of hardware and software) is always to make the user's organized life easier, in helping him in all aspects that have to do with "information"**
 - (c) **the user *is* the one *responsible* for every socially relevant effect he creates – with or without the help of a computer. (Thus it is the user who will be rewarded or punished depending on the effect.)**

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11. There are two connections between organized activity and “information”
 - (a) “information” as relevant to computer systems is conceptually “at home” in the context of organized activity (which obviously pre-dates computer technology!)
 - (b) Much of the human effort involved in dealing with organized activity is-or-can-be made “informational”. (That means that computers can be *very* helpful – because organized activities can be *ubiquitously* helpful.)

12. A theory which gives the answers (10) cannot be “scientific” – as most “theories” that find acceptance today are bound to be.

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13. Science – which began about 400 years ago – was marked by rejecting motives/interests/responsibility as an explanation – of *anything*; which – of course – did not exclude the possibility of treating motives/interests/responsibilities as a part of the *subject matter* (but without crediting the fact that motives/interests/responsibilities *underlie* the conduct of all science – and, in that sense, are “more fundamental” than Science itself).

14. Particularly 10(c) makes clear that the theory I favor cannot be “scientific”; people are driven by motives/interests/responsibilities, always-and-everywhere (even in their conduct of science) and this is a fact that the “theory” I am after must take into account – in a “non-scientific” manner.

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15. But much of the argument above hinges on the idea that computers cannot take responsibility. About this, I think the following:
- (a) Responsibility can only be carried by someone-or-something who/which can be rewarded and/or punished – and that (according to me) means exclusively: *a person in society*. Without a doubt: this is a make-or-break point for this line of argumentation; and I realize also: beyond facts, a point of view is involved.)
 - (b) It is true that carrying responsibility is effort (and often highly paid); nevertheless: it is not an action – but certain to be part of *every* action.
 - (c) Of course it is true that taking responsibility can be aided by “information handling”, and, for that reason, computers can help; but this is not the same as saying/thinking that “the computer takes responsibility”.

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16. This line of argument leads to the following conclusion:
 - (a) A computer system by itself can do nothing; in *every action* in which a computer system plays a role, persons (that is to say, responsibility carriers) must be involved.
 - (b) If these persons are the users, it is clear that *a computer system must have (one-or-more) users.*

Examples

- 17. Kasparov-Deeper Blue – including the comment about devoting a part of the computer system capacity to keeping track of the human team responsible.**
- 18. Rock samples from Mars – which cannot be collected without robots (in contrast to facing Kasparov)**
- 19. *Increasing* the number of human players as a result of introducing computer use: “customer complaints”**

Conclusions

- 20.** We as a society still think the answer to the title question is “yes” – but we are drifting in the direction “no”.
- 21.** This drift has been set in motion by the Scientific Revolution some 400 years ago, and has been furthered in our own day by AI. AI regards computers not as ordinary machines but as a new type of being that can outperform man.

Conclusions

- 22. The purpose of this paper is:**
- (a) To make you aware of the drift**
 - (b) To assure you that this drift is not inevitable – but that counteracting this drift requires a new (non-scientific) theory**
 - (c) Obviously this theory applies to all technology, but is particularly relevant to computer-science/informatics because of the nature of service which computers deliver:**
 - (c1) These reach farther into human nature than other machines and other services.**
 - (c2) They are harder to understand than other machines and other services.**