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A FORMAL APPROACH TO EXPLORING THE INTERROGATOR'S PERSPECTIVE IN THE TURING TEST

Abstract. My aim in this paper is to use a formal approach to the Turing test. This approach is based on a tool developed within Inferential Erotetic Logic, so called erotetic search scenarios. First, I reconstruct the setting of the Turing test proposed by A. M. Turing. On this basis, I build a model of the test using erotetic search scenarios framework. I use the model to investigate one of the most interesting issues of the TT setting — the interrogator's perspective and role in the test.

Keywords: Turing test, Inferential Erotetic Logic, erotetic search scenarios, game, strategy.

1. Introduction

The Turing test (thereafter referred to as the TT) is widely discussed by philosophers, psychologists, computer scientists and cognitive scientists (see [11, 8]). Although it has been proposed more than fifty years ago, the TT is still considered as an attractive and fruitful idea, when it comes to its theoretical aspect (see [20, 21, 4]) as well as its practical applications (e.g. Loebner Test and CAPTCHA systems).

My aim in this paper is to use a formal approach to the Turing test. This kind of an approach to the TT is not very popular in the literature, but there are papers worth to be mention here, like: [19] (Turing Machines approach), [9] (exploring computational complexity for the Turing test setting), [2, 23, 22] (applying the Interactive Proof theory for modeling the Turing test). My approach is based on a tool developed

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within Inferential Erotetic Logic, so called erotetic search scenarios (e-scenarios for short). First, I reconstruct the setting of the Turing test proposed by A. M. Turing. On this basis, I build a model of the test using erotetic search scenarios framework. I use the model to investigate one of the most interesting issues of the TT setting — the interrogator's perspective and role in the test.

The interrogator's perspective in the TT is one of the central issues when we try to evaluate this test setting. We may consider two problems in this context: the first one, is how to select the interrogator (sometimes called the judge) to take part in the TT; the second one, is how should the interrogator run the test.

The first problem has been widely discussed in the literature. Alan Turing's suggestion here was that the interrogator should be a person who is not an expert in the field of computing machines (cf. [25, p. 442], [18, p. 4]). This restriction came from the fact that Turing was aware that beliefs and knowledge of the interrogator might play an important role in the way of running the test. This issue is sometimes seen as one of the main drawbacks of the TT. Exemplary argumentation might be the one formulated by Ned Block. He writes:

> Construed as a proposal about how to make the concept of intelligence precise, there is a gap in Turing's proposal: we are not told how the judge is to be chosen. A judge who was a leading authority on genuinely intelligent machines might know how to tell them apart from people. For example, the expert may know that current intelligent machines get certain problems right that people get wrong. [...] A stupid judge, or one who has had no contact with technology, might think that a radio was intelligent. People who are naive about computers are amazingly easy to fool [...]. [1, p. 379]

There are some interesting solutions to the problem of possible interrogator's biases in the TT worth mentioning. One of such solutions is proposed by S. Watt in [30]. Watt sketches the idea of an unified protocol for Turing testing (as he calls it). The idea is to work out a protocol containing questions and problems useful for the interrogator in his task. Another solution is proposed by Ch. McKinstry ([15, 16]). His idea is to set such rules for the TT that it would be possible to perform it automatically. It would be possible if only yes–no questions would be allowed and if the interrogator (a machine in this case) would evaluate patterns of answers instead of single answers. The very idea is to compare patterns of answers to the same set of questions obtained from a machine with the ones obtained from human beings. This proposal is known as the *Minimum Intelligent Signal Test*.

The problem of selecting an interrogator for the TT becomes even more important when we think of the Loebner Test (often called the restricted Turing test). The Loebner Test is a competition, and as such it should have strict rules and regulations — including the one, which will determine, how to choose the interrogator (judge). There are many detailed proposals for this issue, cf. [14, 7, 10, 12].

As I have mentioned, there is also another question worth considering when it comes to the interrogator's perspective in the TT, namely: how should the interrogator run the test? This question might be also put in another way as: Is there an optimal winning strategy for the interrogator (where 'winning' amounts to accurate identification of the player as a machine or a human being)?

2. The Turing Test

For the purposes of this paper I will consider the Turing test to be a game with two participants: the *interrogator*, hereafter referred to as **Int**, and a tested agent (a human or a machine), hereafter named *player* — **P**. This kind of the TT setting was proposed by Turing in [25, p. 446] and [26, p. 4–5].[1] Parties of the game cannot see or hear each other, communication goes through written messages. It is **Int** who asks questions and **P** answers them (**P** is not permitted to ask any questions) — cf. [18, p. 4]. As for the questions' subject area, Turing seems to leave a free hand for the interrogator (cf. [18, p. 5], [25, p. 434–435]). The role of **Int** is to identify **P** as a human or as a machine only on the basis of collected answers. **Int** wins a game when he/she makes an accurate identification. Otherwise, **Int** looses the game. It is worth to mention that, if **P** is a machine, it should give answers in a human-like manner (cf. [18, p. 5] and [27, p. 2]). We may imagine that an instance of the Turing test consists of a finite number of rounds. In the first round **P** states: 'I am a human'. Through subsequent rounds of the game **Int** tries to verify this statement by questioning **P**. In the

[1] Sometimes the TT with two parties is called *viva voce*. For an overview of terminology used in the context of TT see [8, p. 183]. For an overview of discussions about the TT's rules see [20, 3].

last round **Int** communicates a verdict — agrees or disagrees with the **P**'s initial statement. The structure of the game is presented in Figure 1.

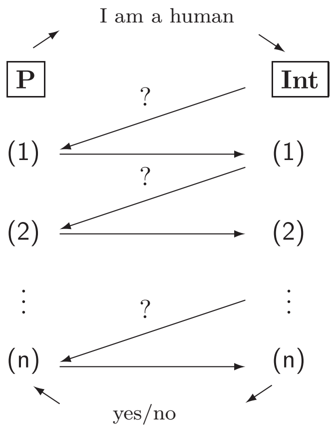


Figure 1. The Turing test as a game

In the next section the TT construed as such a game will be modeled within the erotetic search scenarios framework. I will refer to this model as the TT_{IEL}.

3. The TT_{IEL} model

3.1. Erotetic Search Scenarios

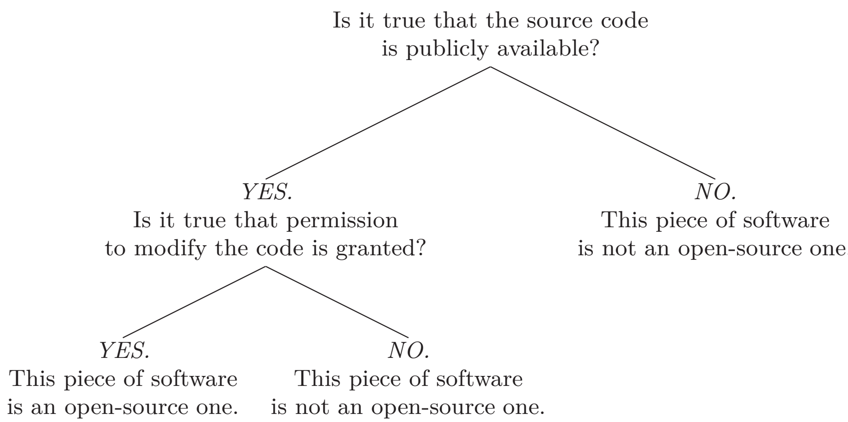
A short characteristics of e-scenarios is the following:

> Viewed pragmatically, an e-scenario provides us with conditional instructions which tell us what questions should be asked and when they should be asked. Moreover, an e-scenario shows where to go if such-and-such a direct answer to a query appears to be acceptable and does so with respect to any direct answer to each query. [33, p. 422]

Let us imagine that, for example, we are asking, if a given piece of software is open-source software. We know, that it would be so, if and only if the source code of this software would be publicly available and permission to modify the code would be granted. How can we cope with this problem? A solution may be offered by an e-scenario. We can present this e-scenario as a downward tree with the initial question as the root and direct answers to it as leaves. The relevant e-scenario for our exemplary problem is:

(1)

Is this piece of software an open-source one?
This piece of software is an open-source one iff
it its source code is publicly available
and permission to modify the code is granted.
Is it true that the source code is publicly available
and permission do modify the code is granted?



As it might be noticed in the example, e-scenario provides a search plan for an answer to the initial question. This plan is relative to the premises a questioner have, and leads through auxiliary questions (and answers to them) to an answer for the initial question.

The exemplary e-scenario (as well as other e-scenarios) might be written in a formal language. For this purpose I will use a language of First-order Logic enriched with question-forming operator ? and brackets $\{, \}$ (I will call this language L). Well formed formulas of FoL (defined as usual) are *declarative well-formed formulas* of L (d-wffs for short). Expressions of the form $?\{A_1, \ldots, A_n\}$ are *questions* or erotetic formulas of L (e-formulas for short) provided that $A_1, \ldots, A_n$ are syntactically distinct d-wffs and that $n > 1$. The set $\mathbf{d}Q = \{A_1, \ldots, A_n\}$ is the set of all *direct answers* to the question $Q = ?\{A_1, \ldots, A_n\}$. The question $?\{A_1, \ldots, A_n\}$ might be read as 'Is it the case that A_1 or is it the case that A_2, ..., or is it the case that A_n?'.

For brevity, I will adopt a different notation for some types of questions. Question of the form $?\{A, \neg A\}$ ('Is it the case that A?') will be written as $?A$. So called *(binary) conjunctive questions*[2], namely

[2] For a generalized definition of conjunctive questions see [28, p. 76].

$?\{A \wedge B, A \wedge \neg B, \neg A \wedge B, \neg A \wedge \neg B\}$ will be written as $? \pm |A, B|$ (‘Is it the case that A and is it the case that B?’) — cf. [33, p. 399].

It is worth to mention that, with a richer language, possibilities to model natural language questions would grow (cf. [32, p. 20–21] and [31]). However for my present purposes the language L will be sufficient.

The e-scenario for our exemplary problem, written in language L, is presented in the schema (2). D-wffs are either answers to auxiliary questions or are entailed by preceding d-wffs.

(2)

$$?p$$
$$p \leftrightarrow q \wedge r$$
$$?(q \wedge r)$$
$$? \pm |q, r|$$
$$?q$$

- q
  - $?r$
    - r
      - p
    - $\neg r$
      - $\neg p$
- $\neg q$
  - $\neg p$

The key feature of e-scenarios is that auxiliary questions appear in them on the condition that they are *erotetically implied*. The erotetic implication is formally defined as follows [31]:

DEFINITION 1. A question Q *implies a question* Q_1 *on the basis of* a set of d-wffs X (in symbols: $\mathbf{Im}(Q, X, Q_1)$) iff

(i) for each direct answer A to the question $Q : X \cup \{A\}$ entails the disjunction of all the direct answer to the question Q_1, and

(ii) for each direct answer B to the question Q_1, there exist a non-empty proper subset Y of the set of direct answer to the question Q such that $X \cup \{B\}$ entails the disjunction of all elements of Y.

If $X = \emptyset$, we say that Q implies Q_1 and we write $\mathbf{Im}(Q, Q_1)$.

Intuitively, erotetic implication ensures the following: (i) if Q has a true direct answer and X consists of truths, then Q_1 has a true direct answer as well (‘transmission of soundness[3] and truth into soundness’ — cf. [33, p. 401]), and (ii) each direct answer to Q_1, if true, and if all

[3] A question Q is *sound* iff it has a true direct answer (with respect to the underlying semantics).

elements of X are true, narrows down the class at which a true direct answer to Q can be found ('open-minded cognitive usefulness' — cf. [33, p. 402]).

Erotetic search scenario might be defined as a finite tree [29, p. 68].[4]

Definition 2. An *e-scenario for a question Q relative to a set of d-wffs X* is a finite tree Φ such that:

1. the nodes of Φ are (occurrences of) questions and d-wffs; they are called e-nodes and d-nodes, respectively;
2. Q is the root of Φ;
3. each leaf of Φ is a direct answer to Q;
4. $\mathbf{d}Q \cap X = \emptyset$;
5. each d-node of Φ:
   (a) is an element of X, or
   (b) is a direct answer to an e-node of Φ different from the root Q, or
   (c) is entailed by (a set of) d-nodes which precede the d-node in Φ;
6. for each e-node Q^* of Φ different from the root Q:
   (a) $\mathbf{d}Q^* \neq \mathbf{d}Q$ and
   (b) $\mathbf{Im}(Q^{**}, Q^*)$ for some e-node Q^{**} of Φ which precedes Q^* in Φ, or
   (c) $\mathbf{Im}(Q^{**}, \{A_1, \ldots, A_n, Q^*)$ for some e-node Q^{**} and some d-nodes $A_1, \ldots, A_n$ of Φ that precede Q^* in Φ;
7. each d-node has at most one immediate successor;
8. an immediate successor of an e-node different from the root Q is either a direct answer to the e-node, or exactly one e-node;
9. if the immediate successor of an e-node Q^* is not an e-node, then each direct answer to Q^* is an immediate successor of Q^*.

For further considerations yet another concept will be needed, namely the concept of a *query* of an erotetic search scenario. It might be defined as follows [29, p. 68]:

Definition 3. A *query of an e-scenario* Φ is an e-node Q^* of Φ different from the root of Φ and such that the immediate successors of Q^* are the direct answers to Q^*.

E-scenarios have many interesting properties, but for my purposes two of them will be especially useful. The first one is expressed by

[4] Erotetic search scenarios might be also defined as sets of so-called erotetic derivations — cf. [33].

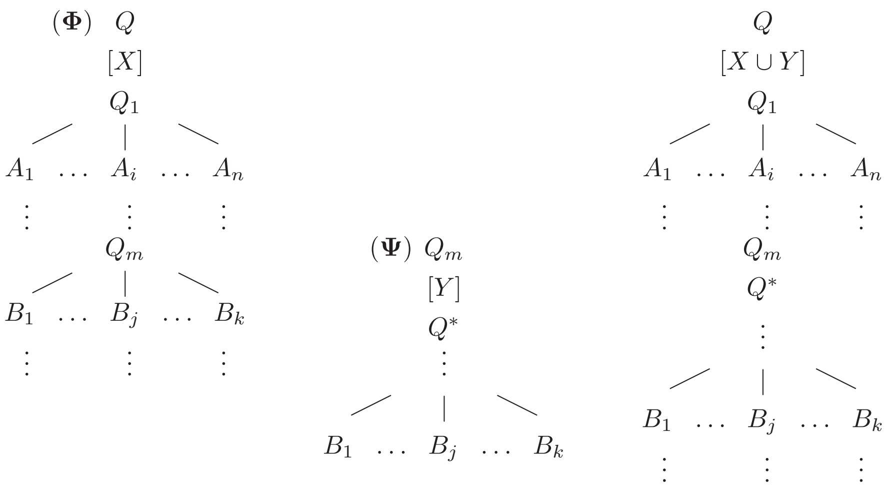


Figure 2. E-scenarios embedding scheme (cf. [35])

the *Golden Path Theorem* [33, p. 411]. The theorem states that, if an initial question is sound and all the initial premises are true, then an e-scenario contains at least one *golden path*. This path leads to a true direct answer to the initial question of the e-scenario. Intuitively, such e-scenario provides a search plan which might be described as safe and finite — i.e. it will end up in a finite number of steps and it will lead to an answer to the initial question (cf. [33], [34]).

The second property I am interested in, is the possibility of modification of a search plan presented by an e-scenario. This might be done by the *systematic embedding*. Intuitively, it is possible to embed one e-scenario into another, obtaining as a result a new e-scenario. Let us imagine that we have an e-scenario Φ for a question Q built on the basis of a set of premises X. A query Q^* is appearing in one of the paths of the scenario, let us call it ϕ. Let us also imagine that we have e-scenario Ψ for question Q^* built on the basis of a set of premises Y. Now we may embed Ψ into Φ (as far as some conditions are met — cf. [33, p. 413–414]). The new e-scenario obtained presents a modified search plan for question Q. E-scenario embedding scheme is presented in Figure 2.

Example 1. Let us now consider a simple example of e-scenarios embedding (cf. [34, p. 153]). Let us assume that we have an e-scenario (3a) (see Figure 3) for the question $?\{p, q, r, s\}$ relative to the set of declarative

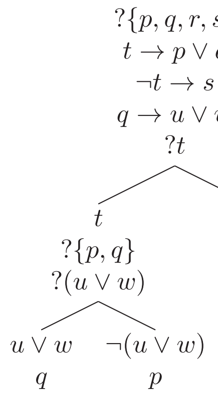


Figure 3. E-scenario (3a)

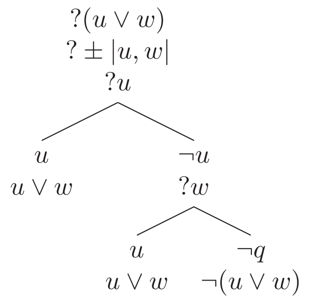


Figure 4. E-scenario (3b)

premises $Z = \{t \to p \vee q, \neg t \to s, q \to u \vee w\}$. The query $?(u \vee w)$ appears in one of the paths of this e-scenario.

We have also other e-scenario (3b) (see Figure 4) built for the question $?(u \vee w)$ (relative to the empty set of declarative premises).

We can now embed the second e-scenario into the first one. As a result we obtain an e-scenario (3c) (see Figure 5) for the question $?\{p, q, r, s\}$ relative to the set of premises Z, presenting a new (modified) plan of searching for the answer to the initial question.

More details about the e-scenarios embedding procedure might be found in [33, 34, 13].

The procedure of modifying search plans provided by e-scenarios via embedding is based on very intuitive motivations. Due to this procedure, we are able to modify the initial search plan using new premises, results

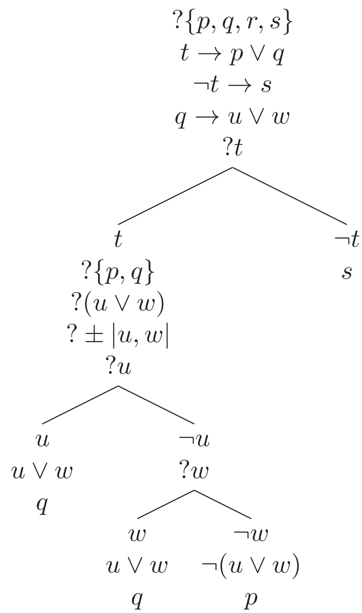


Figure 5. E-scenario (3c)

of previous searches etc. The embedding procedure makes e-scenarios a very useful tool for the TT modeling (in particular if we are willing to consider the interrogator's strategy in the TT).

3.2. The model

Let us now get back to the TT game introduced in Section 2. In my opinion it is reasonable to assume that questions asked during the game will not be asked in a random way. It is quite natural to assume that the interrogator (**Int**) will have some kind of strategy of questioning for the game. By a strategy for the interrogator I mean such a plan for a game, that determines what questions and in which order should be asked. For the purposes of TT_{IEL} model I assume that **Int** will use erotetic search scenarios to derive a questioning plan. One may ask, why would **Int** want to accept an e-scenario for his/her strategy in the game. Of course it is not necessary, but it seems as a beneficial choice. Here are some reasons for that pointed out in [29, p. 72]:

- An e-scenario gives information when and what question should be asked (relative to the initial question and initial premises).

- What is more, it ensures that all subsequent questions asked would be relevant to the main question (so we may say that no unnecessary information would be collected by **Int**).
- E-scenarios also guarantee that each subsequent question asked is a step towards the answer to the initial question.
- The Golden Path Theorem guarantees that for a strategy expressed by an e-scenario there exist at least one such path that ends with the answer to the initial question which is true (relative to the initial premises).
- What is more, a strategy presented by an e-scenario is flexible in the sense that it can be modified and rearranged by the embedding procedure to fit the interrogator's needs for the current game.

If we accept that the interrogator will use an e-scenario to derive a strategy in the game, it is necessary to assume that his/her beliefs will be somehow represented in the premises of the e-scenario. These beliefs will concern the issues of the test (I will be most interested in criteria of being a human). The interrogator may formulate his/her beliefs in two manners: (i) as sufficient conditions of 'being a human' or (ii) as necessary conditions of 'being a human'.

I will concentrate on the sufficient conditions manner first. In this case the interrogator's premises would be formulated according to the following scheme:

'If player **P** fulfills a condition X, then player **P** is a human'.

I will abbreviate this schema as $B \to A$ where A stands for 'player **P** is a human', and B stands for 'player **P** fulfills a condition X'. The premises representing interrogator's beliefs might be expressed by the following formulas:

$B_1 \to A$
$B_2 \to A$
$\vdots$
$B_n \to A$
$\neg B_1 \wedge \neg B_2 \wedge \ldots \wedge \neg B_n \to \neg A$

where A is different from any of B_i $(1 \leqslant i \leqslant n)$

The interrogator uses sufficient conditions of being a man, so if a player **P** fails on all of them the interrogator becomes sure that **P** is not a man.

The e-scenario built on the basis of premises of this kind is presented in the scheme below:

(I)

$$
\begin{array}{c}
?A \\
B_1 \to A \\
B_2 \to A \\
\dots \\
B_n \to A \\
\neg B_1 \land \neg B_2 \land \ldots \land \neg B_n \to \neg A \\
?\{A, \neg A, B_1\} \\
?B_1
\end{array}
$$

$$
\begin{array}{ccc}
B_1 & & \neg B_1 \\
A & & ?\{A, \neg A, B_2\} \\
 & & ?B_2
\end{array}
$$

$$
\begin{array}{ccc}
B_2 & & \neg B_2 \\
A & & \dots \\
 & & ?B_{n-1}
\end{array}
$$

$$
\begin{array}{ccc}
B_{n-1} & & \neg B_{n-1} \\
A & & ?\{A, \neg A, B_n\} \\
 & & ?B_n
\end{array}
$$

$$
\begin{array}{cc}
B_n & \neg B_n \\
A & \neg A
\end{array}
$$

One may notice that the interrogator will use the following procedure in this case: first **Int** poses himself/herself a question if player **P** is a human. Then **Int** poses questions concerning conditions of 'being a human'. Let us stress here that questions of the form $?\{A, \neg A, B_i\}$ are not queries of the e-scenario under consideration, but they play an important role since on one hand, they are erotetically implied and on the other hand, they imply queries. If **P** does not fulfill any of the conditions the interrogator becomes certain that the answer to the main question of the e-scenario is negative.

If we consider the necessary conditions manner in which **Int** may formulate the conditions, the interrogator's premises would be formulated according to the following scheme:

'If player **P** is a human, then player **P** fulfills a condition X.'

By analogy to the former case, I will abbreviate this schema as $A \to C$, where A stands for 'player **P** is a human', and C stands for 'player P fulfills a condition X'. The premises representing interrogator's beliefs might be expressed with following formulas:

$A \to C_1$
$A \to C_2$
$\ldots$
$A \to C_n$
$C_1 \wedge C_2 \wedge \ldots \wedge C_n \to A$

where A is different from any of C_i $(1 \leq i \leq n)$.

The interrogator uses the necessary conditions of being a man in this case. Fulfilling all these rules together is — in the interrogator's opinion — a sufficient condition of being a man. One of possible e-scenarios which might be used as a strategy for the interrogator in this case is presented in scheme (II) — cf. [29, p. 72]. Let me remind that $? \pm |C_1, C_2, \ldots, C_n|$ is used for the conjunctive question.

In the case of the scheme (II) (see Figure 6) the interrogator's strategy is to check the previously formulated conditions one by one. If **P** fulfills every single one, then the interrogator becomes sure that he/she interacts with a human being. If **P** fails in at least one of the conditions, it is assumed to be a machine.

As it is pointed out in [29, p. 73], it is worth noticing, that for the real-life Turing test, probably the best solution would be to use both described strategies (with premises formulated in sufficient and necessary conditions manner). To use them in practice at least some elements of reasoning involving probabilities would be necessary. Some additional statistical rules might be used e.g. to set a proportion of satisfactory to unsatisfactory answers obtained by the interrogator. We may imagine that a procedure of obtaining these rules might be, for example, something like the one in proposal made by R. French in [6], i.e. the so-called *Human Subcognitive Profile*. According to French, it is possible to establish (using empirical procedures) the profile of human answers to questions concerning low level cognitive structures. French writes:

> I will designate as *subcognitive* any question capable of providing a window on low-level (i.e., unconscious) cognitive structure. By "low-level cognitive structure" I am referring, in particular, to the subconscious

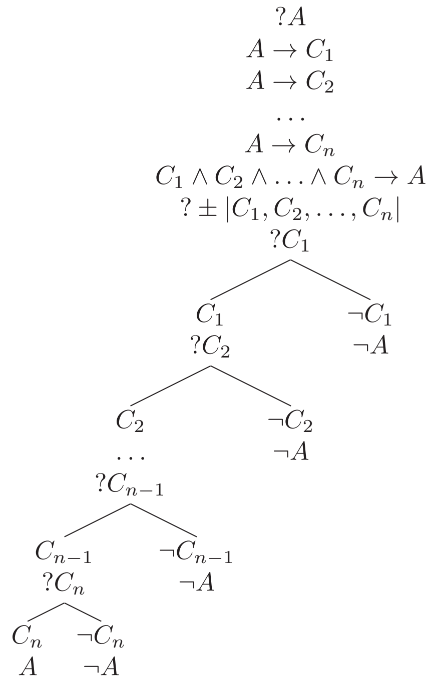


Figure 6. Scheme (II)

> associative network in human minds that consists of highly overlapping activatable representations of experience. [5, p. 187]

Such a subcognitive profile might be used in the TT in order to guarantee an accurate identification of a player. The detailed formulation of this kind of rules exceeds the level of generality assumed for this paper.

When we consider three presented schemes of e-scenarios that might serve as a basis for a strategy for **Int** in the TT game we should keep in mind that they present only questions asked by **Int** to himself/herself. As such they might be treated as examples of interrogator hidden agenda (cf. [29]). Those e-scenarios might be used by **Int** to set the questions which should be asked to the player. The motivation for this solution is intuitive. To use Turing's example, it would be fruitless to ask simply: "Can you play chess?", since it would bring us only a declaration of a player. It would be much more informative to ask a player for a solution to a specified chess problem (cf. [25, p. 434–435]).

What is important, e-scenarios framework allows to give an operationalization of the intuition of setting out, by some queries of an e-scenario, the question to be asked. An example of such operationalization for interrogator's using necessary conditions is presented in [29]. I will present here the same kind of operationalization for scheme (I), i.e. the situation where the interrogator uses sufficient conditions of being a human. For the purposes of this operationalization, I assume that the interrogator will accept premises of the following kind (here formulated in a first person manner):

(∗) if I formulate the condition w_i (as a task's condition) and then I ask a the question Q_i, and a gives back an answer o_i to the question Q_i, then a is a human.

In the above scheme o_i is an answer to question Q_i such that (in the interrogator's opinion) exactly that kind of answer would be given by a human being, taking condition w_i set for the task into account. I will write the scheme in symbols as the following:

(∗∗) $\mathbf{F}(w_i, a, Q_i) \wedge \mathbf{U}(a, o_i, Q_i) \rightarrow \mathbf{C}(a)$,

where $\mathbf{F}(w_i, a, Q_i)$ stands for 'I formulate the condition w_i for the task and then I ask a a question Q_i', $\mathbf{U}(a, o_i, Q_i)$ — 'a gives back answer o_i to the question Q_i, and $\mathbf{C}(a)$ — 'a is a human'. Let us assume that the interrogator uses n such premises (where $n > 1$). Then, the strategy for the interrogator is expressed by the e-scenario (A) (see Figure 7).

Thanks to this kind of approach, we obtain an easy way of differentiating the questions which the interrogator asks himself/herself, from the ones asked to a player. The first group of questions are: $?\mathbf{U}(a, o_1, Q_1)$, ..., $?\mathbf{U}(a, o_n, Q_n)$, while the second one are: $Q_1, \ldots, Q_n$.

We may also imagine a more sophisticated operationalization formulated within $\mathrm{TT}_{\mathrm{IEL}}$. Let us assume that the interrogator uses an e-scenario built on the basis of one of e-scenarios' schemes presented above as a strategy for the TT. The e-scenario will be used in a game as a *meta-scenario*. This meta-scenario sets what we may call the interrogator's initial strategy. The interrogator, in this case, sets operational criteria for deciding if a condition of being a human expressed by a given e-scenario's premises are fulfilled or not. By this we mean the fact that the queries of the meta-scenario will not be asked to player **P**. The interrogator will build a *sub-scenario* for each such query. Queries of these sub-scenarios will be asked to player **P** (as operationalizations of

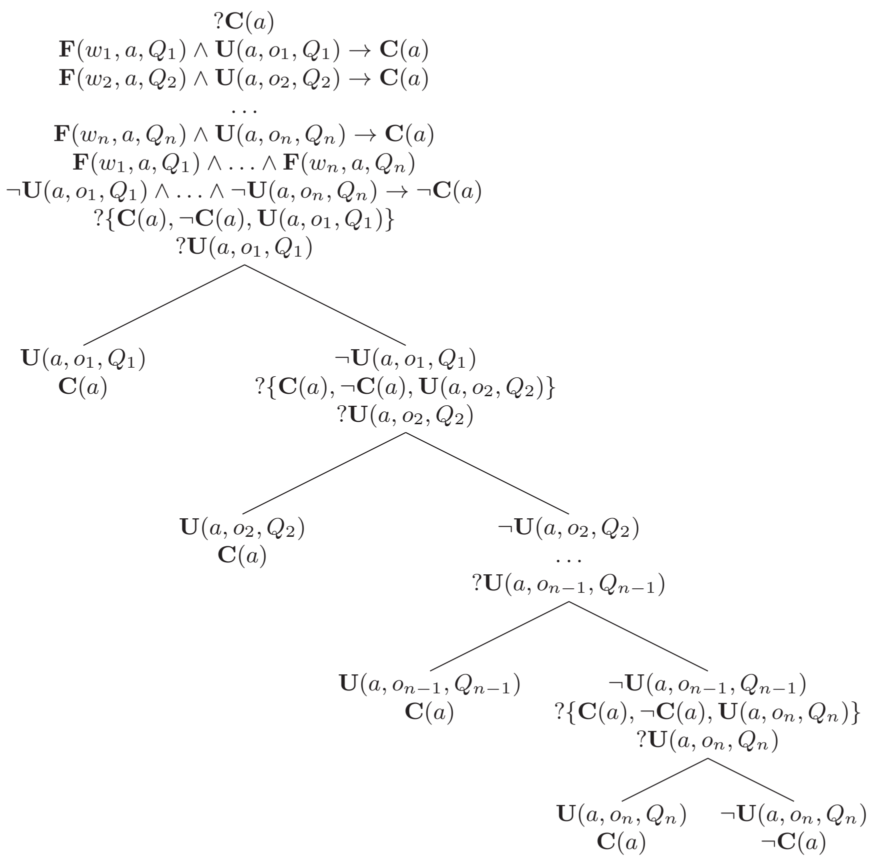


Figure 7. E-scenario (A)

queries of the interrogator's meta-scenario). Such a solution gives the interrogator the opportunity to gain relevant information on the basis of **P**'s answers, and to use it for accurate identification. Such identification would be possible due to the sub-scenarios' structure, which should contain questions formulated in such a way that allows to check the knowledge and capabilities of **P**, not only its/his/her declarations.

An example might be useful here. Let us consider for example, the ability of answering, so called, subcognitive questions proposed by R. French. We may say that a question:

- Can **P** cope with subcognitive questions?

might be one of questions for the meta-scenario. Its operationalization will consist of sub-scenario containing — for example — the following questions:

- Is *Flugly* a proper nick name for a Hollywood star?
- Is *Flugly* a name child would give for a Teddy bear?
- Can you use coconuts as an instrument?
- Does freshly cut grass smell nice?

Of course, each sub-scenario would contain premises which are representations of the interrogator's beliefs about what he/she considers as a proper answer in this context. Sub-scenarios might be easily embedded into meta-scenario by the procedure of e-scenarios embedding.

4. Summary and discussion

When we take the Golden Path Theorem into account, we may say that when the interrogator would use an e-scenario as a strategy for the TT game he/she will end the game with an accurate player identification. Of course, we should still have in mind that this would be possible if all declarative premises of the e-scenario were true (which is a very strong assumption).

At this stage, one may clearly see that the final result of the TT relies heavily on the knowledge and beliefs of the interrogator. As I pointed out in the Introduction, this is one of the issues of the TT's setting. An e-scenario guarantees only that the interrogator will get the answer to the main question of the e-scenario. This e-scenario, however, does not guarantee the true answer, which is understood as an accurate player identification. The identification's value depends on the set of premises on the basis of which the interrogator builds his/her e-scenario for the TT. This consequence might be seen as a weak point of the TT setting. However, when we take a closer look, it appears that the problem has its roots much deeper than in the test setting — i.e. in the unclear and fuzzy criteria of 'being a human' (cf. for example, considerations on how we assign thinking to other human beings presented in [17] and [24]).

This paper presents preliminary results of analyzing the Turing test with Inferential Erotetic Logic framework. It is worth to notice that this kind of approach was also successfully used to model other than the TT interrogation situations (cf. [29]). In my opinion, TT_{IEL} is already useful for TT analysis. Its attractiveness is based mainly on a natural way of treating the TT as a kind of question-answer game. Such approach might be noticed also in Turing's consideration of the test. When we treat the TT in this manner, using a logic of questions (in this case the Inferential Erotetic Logic) seems to be a justified step. $\mathrm{TT}_{\mathrm{IEL}}$ was formulated with much care about the original assumptions and rules for the TT. It enables us to consider the interrogator's perspective in the test which was not extensively explored before. Of course we should still have in mind that using a formal tool yields the necessity of some restrictions and simplifications, but in my opinion in this case they should not be considered as harmful.

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