

Pienter: Towards gamification of police interrogations using artificial conversational characters

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There is nothing mysterious about interrogation. It consists of no more than obtaining needed information through responses to questions. As is true with all craftsmen, some interrogators are more able than others; and some of their superiority may be innate. (from: the CIA's 1963 KUBARK Counterintelligence Interrogation manual)



Pienter is an interrogation game, a digital serious game with virtual artificial characters that helps policemen to learn effective interrogation strategies in a game like setting. **Pienter** also helps the police students to become aware of their own behavior during an interrogation and the effect that this has on the behavior of the other, the suspect or witness. **Pienter** is (or will be) used as a social learning tool in the Police Academy as an intricate part of the teaching method for learning interrogation of suspects and witnesses. In this document I will answer the following questions.

1. What does learning police interrogation imply? (about the qualities of interrogation)
2. Is doing police interrogation learnable?
3. What methods are used in training police interrogation?
4. What are the background ideas and theories of **Pienter** ?
5. What does playing **Pienter** imply ?

6. What is the current status of **Pienter**?

Police interrogation (PI)

Is a PI indeed *“no more than obtaining needed information through responses to questions”* ?

Yes and no. Yes, because getting and checking information is what it is all about. No, because in order to reach that goal eventually the interrogator has to apply social interrogation strategies. The fact is that the suspect (interrogee) will not be compliant and helpful. Insight in how people respond to certain behaviors is important as well as insight in how to get the other in a mood that she complies with the interrogator and is willing to give the information that is needed.

Is doing police interrogation learnable?

Yes and no. Yes there are basics that can be learned. No: there are students who don't have the talent, they just don't see it; they can learn to apply the basic rules, but there is a great chance they will not become an expert. It's just like playing football or maths. Practice, that is: real live experience is the best way to learn. As is said in the quote *“some interrogators are more able than others; and some of their superiority may be innate”*.

What methods are used in training police interrogation?

The idea is that it is possible to train interrogation outside the practical situation. How is that done?

There are theoretical and practical means.

Role playing. Telling about and exchange practical experiences. Social psychology theories relevant for social communication. The book used: Handleiding Verhoor. Van Amelsfoort et al.

Is it possible to evaluate methods to measure if they are indeed helpful?

Do student learn to analyse a police interrogation with Leary's Rose? (treated in Handleiding Verhoor)

Do student agree on the analyses with Leary's Rose of a police interrogation?

Do teachers agree on the their analyses with Leary's Rose?

Is it measureable if learning Leary's Rose helps in doing it better in practice?

What are the strategies that police students learn to master and how are they related to the theory of interpersonal relationship?

What are the background ideas and theories of Pienter ?

Two types. Police interrogation theories based on personality and interpersonal relationship theories.

We use Handleiding Verhoor as theoretical background. Theories of interpersonal stance according to Wiggins, Leary is used for analyzing behavior and influencing others' behavior. We look at theories about interrogation and negotiation strategies of Giebels et al. ("Tafel van Tien"). The role of Leary's Rose is to help understanding (clarifying, describing) the effects that behaviors and response to others behaviors have on the interpersonal relationship in a conversation, interrogation. There are different types of behavior to get something done from the other and to be respected by the other.

BS : aims at influence and acceptances; leading behavior

OS: aims at acceptance, not at influence: following

OT: not directed to influence and not to acceptance: defending behavior

BT: not aiming at acceptance, but at influence, dominating: offensive behavior

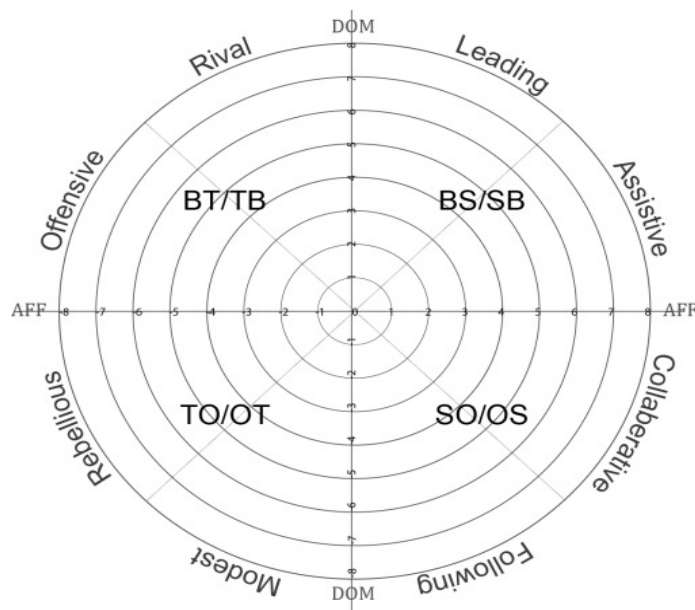


Figure: Leary's Rose (interactional circumplex)

Tabel 2.1.: De Tafel van Tien

Strategie	Onderliggend principe	Omschrijving van gedrag
Aardig zijn	<i>Sympathie</i>	• Bereidheid tonen tot luisteren • Empathisch reageren
Gelijkwaardig zijn	<i>Gelijkoortigheid</i>	• Gezamenlijkheden benadrukken • Externe vijand benoemen
Geloofwaardig zijn	<i>Autoriteit</i>	• Tonen betrouwbaarheid • Tonen expertise
Emotioneel appel	<i>Zelfbeeld</i>	• Inspelen op gevoelens (aandacht vragen voor slachtoffers) • Wijzen op te verdienen respect
Intimidatie	<i>Afschrikking / angst</i>	• Waarschuwen voor consequenties • Persoonlijke aanval
Beperking opleggen	<i>Schaarste</i>	• Uitstellen concessies • Negeren tegenpartij
Directe druk	<i>Kracht van herhaling</i>	• Verzoek herhalen (het zaadje planten) • Voldongen feit
Legitimiseren	<i>Legitimiteit</i>	• Refereren aan regels en wetten • Beroepen op mening anderen
Ruilen	<i>Wederkerigheid</i>	• Iets terugvragen • Concessie na hoog inzetten
Rationeel overtuigen	<i>Consistentie</i>	• Aandragen argumenten • Confronteren met tegenstrijdigheden

De Tafel Van Tien (bron: Ellen Giebels & Sigrid Noelanders, 2004)

The Table of Ten (“Tafel van Tien”)

By mean of interviews with Dutch and Belgian police officers and observations of their interrogation behavior in practice, Giebels et al. have identified ten categories of behavior change strategies. Known as the Table of Ten (‘*Tafel van Tien*’). There is a distinction between: relational strategies and information- or task-related strategies. The first type of strategies aim at building an interpersonal relation. The second type aim at getting the task done: getting information from the other. The Table gives an overview of the Tafel van Tien: strategies as well as the underlying principles and a description of behavior that is typical for the type of strategy.

ToT is concerns the interpersonal relation strategies (cf. Leary’s rose) as well as the task-related strategies.

Examples of each of the ten strategies:

1. Being kind. "Tell me how are you doing?" or; "Fancy a coffee" or "I can imagine you have a terrible time."
2. Equality. "I played football with your neighbor. He is a Twente fan also." "I had a divorce so I know what it is."
3. Being trustworthy. "I told you I would do that." "Didn't you have an accident 2 years ago?"
4. Emotional appeal. "You will feel much better if you have told me the true story." "That must have made you real angry."
5. Intimidation. "I think that is not true." "If you continue this way, this is going to be a long story."
6. Putting constraints. "In half an hour I have to quit. So you better hurry a bit." "I have no time for coffee now."
7. Direct pressure. "I want to talk with you about yesterday evening." "So who was joining you?"
8. Legislation. (referring to laws or authorities to support your position). "I can't do that you know, law forbids me to." "The OM says so, I can't help it."
9. Interchange. "If you answer my questions, then I promise you will be free within half an hour." "What if I talk to your teacher? Will you tell me who was with you then?"
10. Rational conviction. "Now you tell me you weren't there, but yesterday you told me you saw her going out. How is that possible?" "How do you explain that scarf on your left hand?" "You said you did not know him. But you have lent him your car!" (confronting information)

On the level of speech acts we look at possible face threatening acts. (Face is positive: need for respect; or negative: need for autonomy.) Direct versus indirect speech/talk. Sometime indirect requests are less face threatening than direct requests or questions. "What did you see?" "How did you go there?"

Theories about gamification for tutoring.

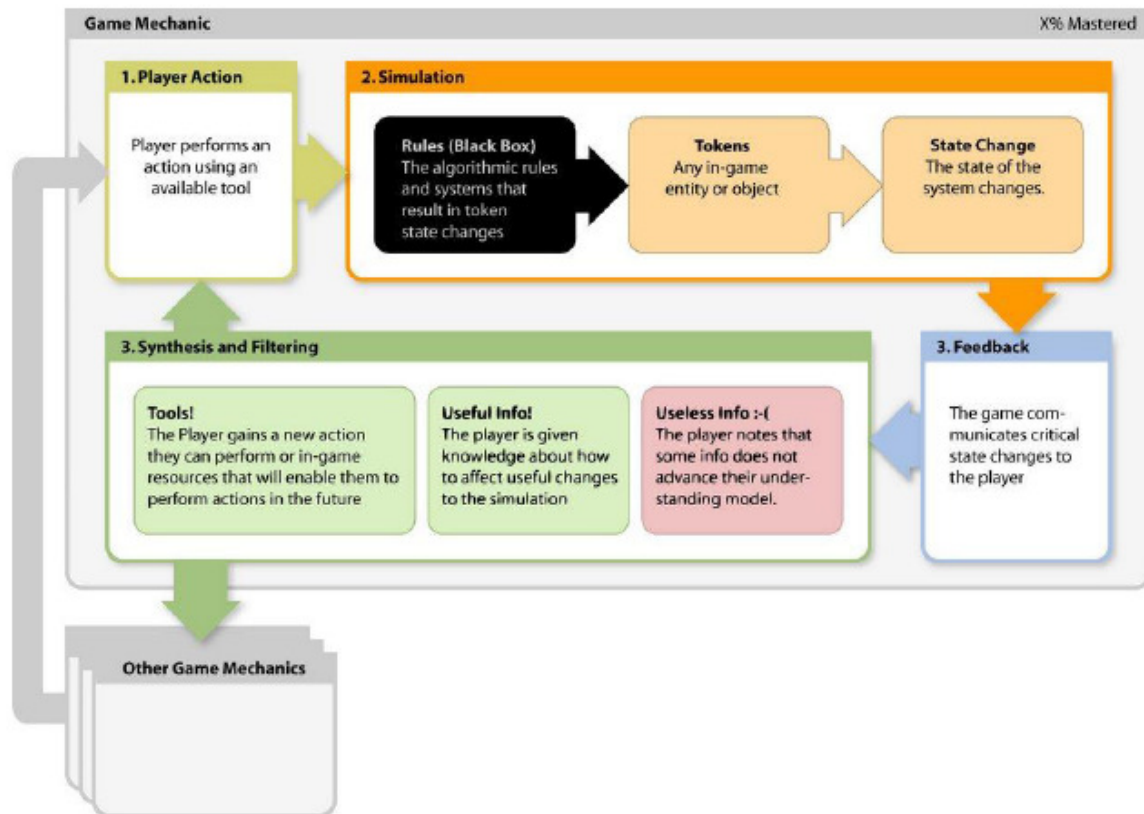
Gamification is the use of game mechanics, like rewarding points and achievement badges, in non-game-related situations to increase user engagement. These game mechanics can be applied to various activities in life, such as tutoring, learning, to improve learners' and tutors' engagement.

What are basic rules for gamification so that they are effective?

To play on our needs to explore and learn new things, we can use a simple feedback loop.

1. The loop starts with the player performing an action.
2. This action causes an effect within the game. However, the player does not know the *exact way* in which this happens and is highly unlikely to instantly understand the complete algorithm. These unknown rules in which actions lead to certain changes are the so-called "black box", which the player is striving to decipher.
3. The player receives feedback based upon his actions. Critical changes within the game are communicated to the player.

4. With the new information that has just been gathered the player performs a new action, slowly deciphering more and more of the black box of algorithms



SOURCE: LOSTGARDEN.COM

In principle, a simple award system or leaderboard makes a game more engaging. But there is a way to make the game mechanics work even better. According to Gabe Zichermann: "It's not about rewards, it's about status. Status is what drives loyalty." So even though physical rewards like cash or discount can help engage players status is what helps even more. Zichermann explains that people value status above stuff in this order: status, access, power, stuff (SAPS). The proven way of designing leaderboards is putting the subject in the middle, showing a few users below him and a few users above him. This way, the subject already has a certain status by being above other users. On the other hand, scores that are close to the subject are shown above him, triggering his competition element causing a drive to beat them.

What does playing Pienter imply ?

Playing Pienter works as follows.

1. The player reads about a case.

2. Then he has to interrogate three characters: suspects or witnesses (in a face-to-face dialog, each of the three separately). The interrogation/interview starts with the policeman letting the character tell about the case.
3. Then he is asked questions about the case
4. For every question that is correct he obtains points.
5. The player's scores are compared with best scores in a peer group of players, according to Zicheman's game mechanics (see above).

The focus here is on step 2. : the interrogation part of the game. This part is also gamified.

For the game characters we construct artificial embodied conversational agents, programmed virtual characters. Learners can interact with the characters and play the game using different modalities, such as speech and text input and selection from choice lists.

The game characters (suspects, witnesses) have a certain relation with the case at hand. Suppose there is a murder case. A character may be: either a) witness: does know who did it, but wants to hide this; b) he has done it himself alone; c) he has done it with others. A character has a certain personality and initial stance towards the interrogation and the interrogator. These two make how the character responds to the policeman. The player investigator has to find a strategy to get information from the suspect.

Why should the suspect cooperate? Because he wants to get out of **the situation**? But at what price?

What mechanisms play here? What role do emotions play? What role does face play?

Cognitive pressure. The suspects wants to relief this pressure.

What is the current status of Pienter?

At the moment Pienter is just fiction. We are working on the idea and the implementation.

We have a first prototype for collecting interrogation transcripts annotated by participants themselves.

See screenshots below.

Here we describe how far we are.

The parts of the artificial agents that we have worked on:

1. InteractionalStance Interpreter: analyses of the input from the user in terms of stance.
2. ResponseModel: the computation of the stance that the character takes in response to the stance of the player and the current situation
3. The Presentation of the response by the character. (text, speech, postures, gestures)

4. The Character Model: personality and other factors that influence interactional stance and behaviors.

We need to work on information values (confrontation) and on behavior strategies. (see Leary and ToT)

Ad 1. InteractionStanceInterpreter. We did an annotation exercise in which we classified contributions to a police interrogation in terms of Leary's Rose (8 categories of the Rose plus neutral).

It turned out to be hard. The agreement is low. (kappa between 2.4 and 5.0 -with weights).

The current system works with a scripted dialog.

Ad 2. ResponseModel. We have implemented different RMs. We have developed and implemented a method to validate the Models against human annotations of a police interrogation.

Ad3. We coupled the dialog system to a virtual human platform that can be used to show a virtual character and let him speak, using speech synthesis (text to speech system).

We need to do research for a good way to visualize the stance of the character.

Ad 4. Literature study is done to see what is needed in a character model. What make an interrogate talk, say the things he says? Behave the way he does? The knowledge feeds the ResponseModel (2)

The Game

Being the police investigator your task is to interrogate Richard and Jane.

**Richard (41) and Jane(35) were close friends.
Jane was the first who Richard called after he found his wife.
At least that is what he said when the police arrived at the scene. From Jane we only know that she was indeed with Susan that afternoon.
But we have no information when she left and what she did after she left Susan.**

Figure: The Game explanation for the policeman

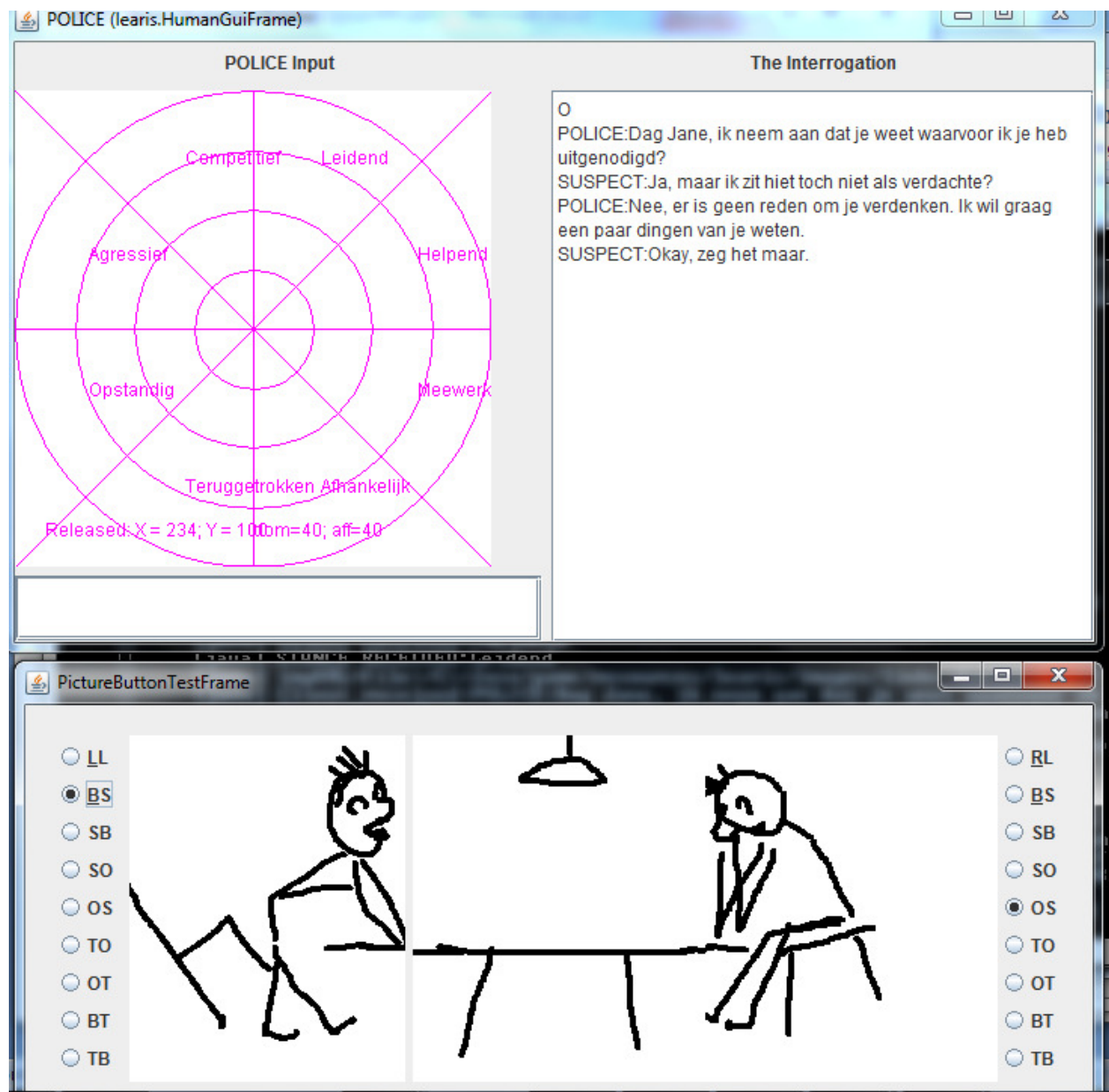


Figure: Pienter Screen during the interrogation (interrogator site). Below a visual presentation of stances. The Rose (upper left corner) is used to tag the contributions with a stance marker (one of 8 categories of Leary's Rose). The upper right corner shows the transcript of the whole conversation.

Tagged conversations are stored in memory. They can be used as training data for an artificial suspect agent.