Scheme 1.

D-scripts model for speech influence and emotional dialogue simulation

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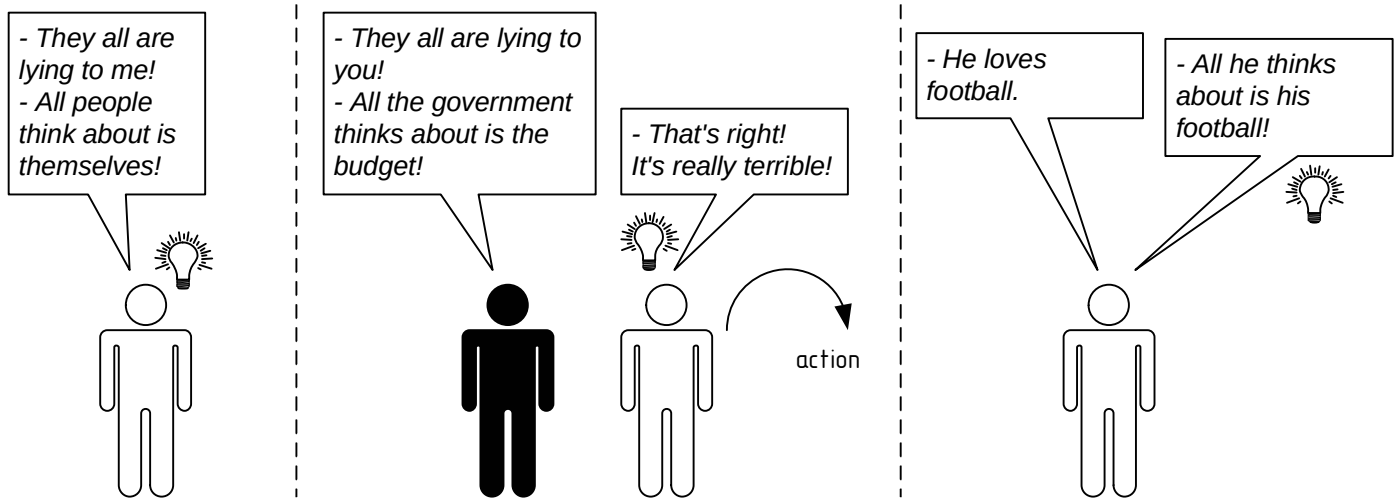
The problem of speech influence (affect) and the description of emotional communication attract interest in very different disciplines: computer studies, linguistics, psychology and public relations. Our investigation of this problem was initiated by several requests from state and public organizations to work out a procedure for linguistic expertise of texts, subject to court examination on honour protection cases. Mass media liberalisation in 1990-s, numerous quarrels in the press between economic and political groups and, above all, the election campaign of the Duma (parliament) in 1999 raised a big social interest to the problem of manipulative texts in mass media.

Theoretical interest to studies of speech influence is explained by the possibility to extend linguistic theoretical models, and to construct a theoretical base for interaction with psychology (psychology of affect and emotion) and cognitive studies (studies on cognitive agents' architecture). Further, studies of specific examples of speech influence in mass media texts discover specific features of natural language processing and formulate new requirements to linguistics and cognitive models, e. g. models should make the same mistakes and "be affected" during the text processing in the same way, like a possible native speaker.
In this issue we represent a general model for description of speech influence and emotional speech processing, generally - leaving out the detailed analysis of specific speech examples and speech realization of the model. We expect that the discussion on the general model can be more productive for further discussion on speech means of it's realization.

The studies are executed in cooperation with Vygotsky Psychology Institute, RSUH, Moscow, and The Guild of Linguists-Experts on Documentation and Informational Disputes, Moscow.

Basic facts

The problem of speech influence and emotional speech production (as specified for our studies) can be represented by several basic facts. Further, the proposed theoretical description becomes complicated in order to describe cases of mass media text influence, which are more sophisticated.



(1) In an "emotional" state an addresser reports "pattern" utterances; he believes, that they are real and reports the utterances to others.

(2) Trying to affect the listener an addresser may report similar "pattern" utterances. These utterances may affect a non critical addressee and bring him to an "emotional" state, similar to (1). Further, it may provoke specific actions of addressee.

(3) In speech description of real world situations an addresser meets a variety, which permits "neutral" and "emotional" utterances. "Emotional" here refers to utterances, constructed in an emotional state, or aimed to affect the listener.

In the present issue we discuss:

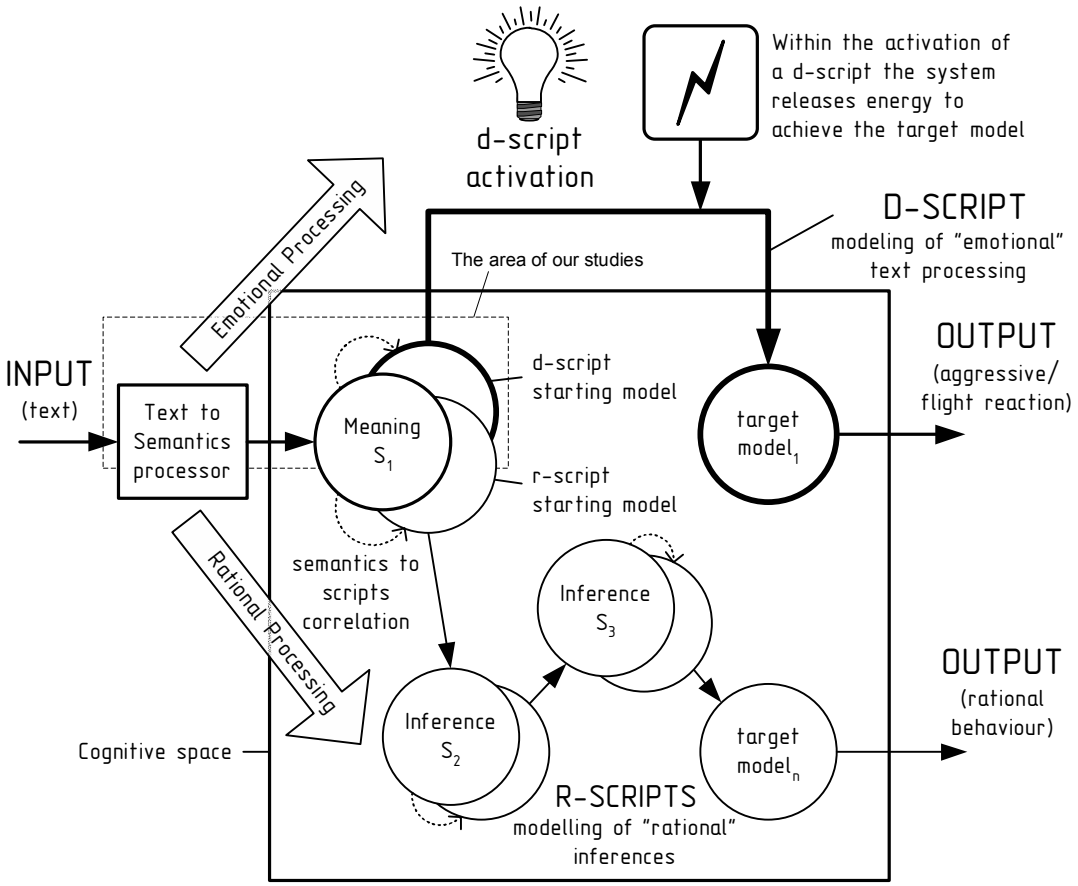
- the general model with features for affective text processing - d-scripts (Scheme 2);
- semantic shifts between "neutral" and "emotional" utterances (Scheme 3);
- a general list of d-scripts for the studies of mass media texts (Scheme 4);
- an example of d-script (Scheme 5), ways of it's expression in speech (Scheme 6);
- usage of a d-script in different types of "emotional" communication (Scheme 7);
- alternative ways of emotional utterance processing (Scheme 8);
- text generation by different components of the model (Scheme 9);
- structure for "concealed" speech influence - speech argumentative mechanisms (Scheme 10).

Scheme 2.

Architecture of the general model

What is a sufficient model to describe the mechanisms of speech affect?

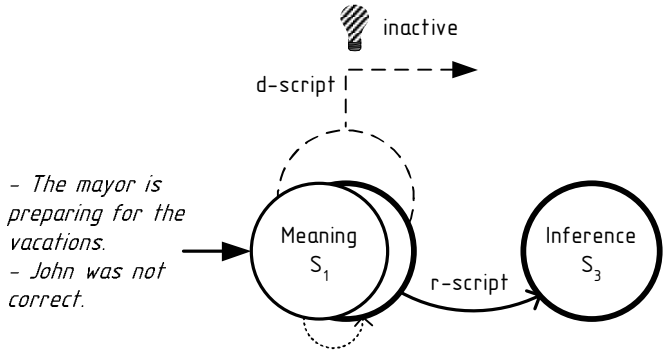
The general model relies on a standard input-output scheme with central processing unit. Operations in the central processing unit are conducted by if-then operators - **scripts**. The input is limited to the analysis of speech, and is processed through Text-to-Meaning processor.
To simulate the emotional text processing, the model is appended by a list of "dominant scripts" - **d-scripts** (subset of scripts), responsible for processing of affective texts. If we consider, that a text *The government is lying to you!* affects the listener, we describe this reaction as an activation of some listener's d-script.
D-scripts offer fast and reliable but less intelligent text processing, parallel to "rational" reasoning. The activation of a d-script is recognized by the system as an "emotion".

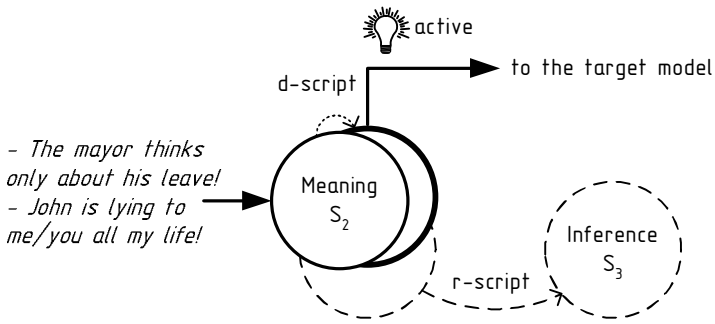


Input texts are processed by a Text-to-Meaning model, which is constructing semantic representation (text meaning). Further, the semantic representation launches a processing mechanism, defined by scripts (if-then operators). Each script includes a starting and a target representation (model) - it is activated by semantic components, corresponding (though not exactly) to the starting models, and is constructing target models. Thereby an inference chain is represented by a chain of scripts.
The difference between "emotional" and "rational" text processing is represented by scripts of different kinds: emotional processing activates dominant scripts - **d-scripts** (only one d-script is shown), while rational processing activates rational scripts - **r-scripts**.
As a result of processing the system may construct a target behavioural model and execute a corresponding behavioural program. It can be a "rational" behaviour, if initiated by r-scripts, or emotional reaction, if initiated by d-scripts. The considered list of d-scripts limit the variety of possible reactions to aggression and flight.
With certain modifications the model constitutes a submodel to **H-Cogaff** architecture, where d-script represents a subset of "reactive mechanisms" or "alarms".

The main object of our studies are the starting models of d-scripts and the conditions of their activation during speech processing. In our studies we leave out the detailed analysis of emotions, inferred reactions and detailed functioning of r-scripts (we rely on this component, as if it were already well constructed; further, on the analysis of text examples we formulate special requirements to it's procedures, an example shown on Scheme 10).

The **general rule for scripts activation** is that a script is activated by a semantic representation, similar to the starting model of the script. Such semantic representation can be a meaning of an incoming text or a result of inference - target model of some other, previously activated script.





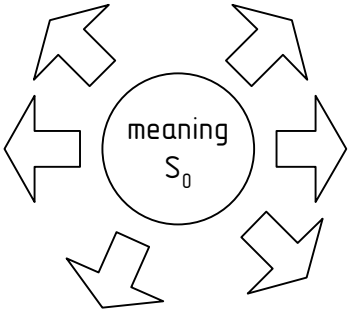
A text meaning can be aimed at rational processing. The meaning of such texts intersect with starting models of r-scripts and the arrival of such texts to the input activates r-scripts (normal cognitive processing).

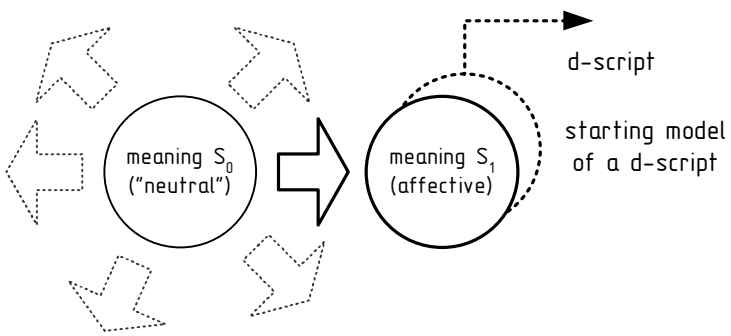
Other texts can aim at speech influence. We can suppose, that their meaning intersects with starting models of d-scripts and forces their activation, rather than rational processing.
We discuss meaning shifts between "neutral" and "affective" texts in the next scheme.

Affective meaning shifts

Scheme 3.

What is the structure of the starting model of a d-script?

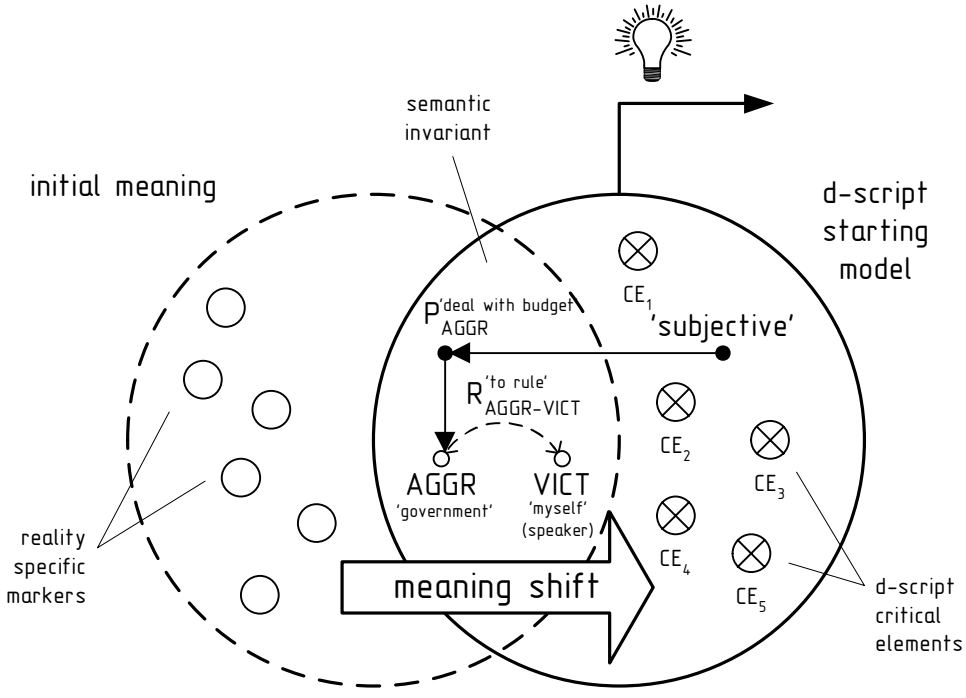




It is commonplace in studies of affective text processing and mass media influence that affective processing may be caused by certain modification of some "neutral" initial meaning. A neutral meaning may experience different modifications, as described by a typology of U.Levin*: some objects can be included into or excluded from the representation, words can be replaced by more general ones, a real situation can be represented as potential and so on. In simple cases meaning shifts can be found in nomination: *spy* can be called *intelligence officer*, etc. The problem is to define the direction of such meaning shift: which semantic markers should be included in a text, what meaning should be concealed and how this should affect selection of words. The problem is even harder, if we try to fix some "initial" representation for any real world situation - as there is no one, defined a priory.

The concept of d-script permits to define, that in an emotional communication a meaning is shifted towards a starting model of a closest d-script. This shift can be made by an affected addresser, as he has activated a d-script and shifts all incoming meanings to it's starting model, or by an addresser, who wants to affect the listener and shifts meanings to starting models to force listener's d-scripts processing, not r-scripts processing. If we can fix some initial meaning 'We pay taxes to the government' (say, it is a meaning of an incoming sentence), we can expect, that this meaning can be shifted to produce an utterance *The government takes our money* - thus, the meaning is attracted by one of d-scripts (APPROPR - as on Scheme 4).

Meaning shift, forced by a d-script activation (emotional state), or made with the purpose to activate a d-script of addressee (speech influence)



(A) – *The government is working on the budget.*

(B) – *Everybody is always shouting only about their budget (/such trifles)!*

For each d-script necessary meaning shifts are regulated by a list of critical elements (CE) - semantic markers with variable values. Critical elements define the list of "exaggerations" we have to make in order to represent a situation in an affective (emotional) way.
Following the requirement of a critical element if we are affected by actions of some 3rd person we have to choose a more "intensive" verb to indicate his actions.** From this point of view *the government reports* in emotional context can be replaced by *the government shouts*. A list of several CE defines shift from (A) *The government is working on the budget* to (B) *Everybody is always shouting only about such trifles!* (the list of CE is represented on Scheme 6)
Critical elements of a d-script represent the following trivial rule. If we want to take offence at some situation, we represent this situation in a most "offensive" way. If some situation has provoked our aggression, we shall represent this situation in a most horrible way.
The most striking representation of each situation is a semantic component, closest to starting model of any d-script, so, during construction of an "affective" text we shall shift the meaning, as regulated by the list of critical elements.

As shown later the kernel representation of the situation includes agents AGGR – 'government' and VICT – speaker of phrase (B). The 'Government' takes an action PAGGR – 'deal with', which in affective representation seems to be subjective (Government does nothing else!).

D-script may capture meanings, shifting and assimilating them with it's starting models. During the meaning shift the reality specific semantic markers are omitted (e. g. *government* may turn to *they*), while critical elements of the d-script are expressed (e. g. *they* may turn to *everybody*, and *discuss* may turn to *cry*). Such meaning shift may be effected by an addresser in emotional state (an addresser, who has activated a d-script), or by an addresser, who wants to manipulate the addressee, and activate his d-script.

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* Levin U. On the semiotics of truth distortion (in russian) in Informational problems of semiotics, linguistics and machine translation. - Moscow, 1974, #4. - Pp. 108-107. (Левин Ю. И. О семиотике искажения истины // Информационные вопросы семиотики, лингвистики и автоматического перевода. - М., 1974. - вып 4. - С. 108-117.)

** Apresian V. Implicit aggression in speech // Computer linguistics and intellectual technologies. - Moscow, 2003. - Pp. 32-35. (Апресян В. Ю. Имплицитная агрессия в языке // Компьютерная лингвистика и интеллектуальные технологии: Тр. Междунар. конференции Диалог 2003. - М.: Наука, 2003. - С. 32-35.)

Scheme 4.

Discussion on the register of d-scripts

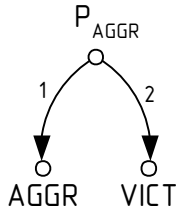
What meanings are affective? (at least for mass media communication)

In a wide sense the proposed notion of d-script should serve all the possible reactions, which may be started by the meaning of incoming texts. At least, if we try to develop quite a complete model of text processing and emotional speech simulation, we have to define the maximum number of possible reactions. Meanwhile the inventory, studied so far, is quite limited and includes 12 d-scripts. These d-scripts were selected during the studies of mass media texts and this list is generally satisfactory for the description of "negative" propaganda.
Generally, d-scripts of the studied list are activated by a situation, where an aggressor is taking some actions against a victim. So, we expect, that the starting model of a d-script would have the valncies for aggressor - this valency is called AGGR, and a valency for victim - VICT.

D-scripts are divided into groups, based on the similarity of their starting models. D-scripts of Group 1 are activated by a meaning, where the action of AGGR directly affects the VICT. The government (AGGR) may take money from the people (VICT) - we can expect to affect the audience, if the audience associates itself with VICT, while the government - with AGGR.
In the d-scripts of Group 2 the action of AGGR indirectly affects VICT - for that AGGR and VICT should be linked by some close relation. For example, AGGR can be a boss of VICT and behave too emotionally - we can expect to oppose addressee against his boss, if we say - the boss is too emotional.
Group 3 includes 2 d-scripts, activated by representation of actions, which VICT may take (or rather - which he cannot take) in some situation.

Group 1. Direct actions of the aggressor against the victim: *What is your enemy doing?*

D-scripts of this group are activated by a semantic representation, where an aggressor AGGR is effecting an action P_{AGGR} against a victim VICT. The aggressor may threaten victim with harm, limit victim, appropriate resources of the victim, develop some plans against the victim or manipulate the victim.



Starting model of d-scripts of Group 1 represents a situation, where AGGR takes an action PAGGR against a VICT.

DANGER ("Danger"): *It is dangerous to go outside nowadays! I'm going to kill you! Terrorists are everywhere!*

LIMIT ("Limitation"): *The government doesn't let us go outside the city without permission - soon, they won't let us breathe!*

APPROPR ("Appropriation"): *They took everything we had!*

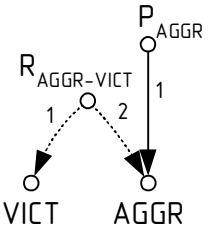
DECEPT ("Deception"): *The government is lying to you!*

PLAN ("Plan, planning"): *The government was working for a long time on a plan of how to take money from the people!* (+APPROPR)

MANIP ("Manipulation"): *TV programs control our consciousness!*

Group 2. Actions of aggressor, indirectly affecting the victim: *What is your mother/ boss/ neighbour doing?*

D-scripts of this group are activated by a semantic representation, where an aggressor AGGR is taking an action P_{AGGR}, which indirectly affects a victim VICT. It is relevant, that AGGR is linked with VICT by some relation $R_{AGGR-VICT}$ (is his relative, friend, boss, governor). VICT may believe, his boss (neighbour, mother) is inadequate or inconsistent in his actions, too emotional, is concerned only about himself or doesn't care about VICT.



Starting model of d-scripts of Group 2 represents a situation, where AGGR takes an action P_{AGGR} and where VICT and AGGR are linked with a relation $R_{AGGR-VICT}$

INADEQ ("Inadequacy"): *You are not thinking enough about what you are saying!*

INCONSIST ("Inconsistency"): *How can you say we are going, and immediately say we aren't going!?*

EMOT ("Emotionality"): *Why are you shouting all the time?*

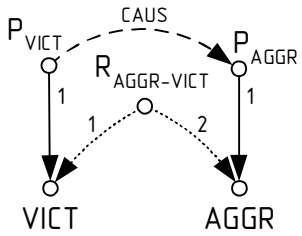
SUBJV ("Subjectivity"): *All he thinks about is his football! He only thinks about himself!*

INACT ("Inactivity"): *He doesn't care, even if I die!*

This d-script is represented as an example on the next scheme
Scheme 5.

Group 3. Actions or situation of the victim: *What can you do with the situation?*

D-scripts of this group are activated by a semantic representation of the actions of VICT or situation of VICT.
VICT can do nothing in some particular situation, or he may believe, he is not needed in some relevant situation.



Starting model of d-scripts of Group 3 represents a situation, where the actions of VICT (P_{VICT}) have no effect or are not needed for the actions of AGGR (P_{AGGR})

VAIN ("Vain"): *I can't do anything here! We can't make the government hear us and we can't change their minds!*

UNNEED ("Unneeded"): *Nobody needs me! I'm not needed! Russian products are no longer required on the international market! English meat is longer required on the international market!*

Notes: a) In this brief description of d-scripts, we don't include definitions of starting models, lists of critical elements and examples, or examples of how the d-scripts are used in different communicative situations.
b) Here we propose tentative English names of d-scripts, and we would be grateful for corrections as well as for better typical English examples.
c) This list is generally sufficient for analysis of mass media texts, however, it doesn't include d-scripts for body feelings (which are rarely used) and doesn't describe situations, where the addressee already has specific plans, which have to be adjusted or coordinated.

Scheme 5.

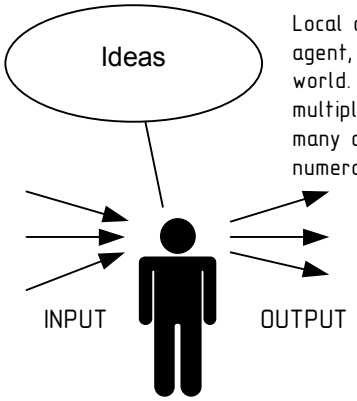
Example of a d-script: SUBJV ("Subjectivity")

What is the affective mechanism of utterances
"All they think about is themselves!!!"

As an example we show here a d-script, which is revealed in utterances (1) *You think only about yourself!* (2) *The government is only concerned about their budget!* Phrase (1) may offend the listener, while phrase (2) may provoke an aggression against the government: addressee might complain *It's awful! They think only about their budget!* and vote for the opposition. The emotional processing and synthesis of such utterances is provided by a d-script SUBJV ("Subjectivity").

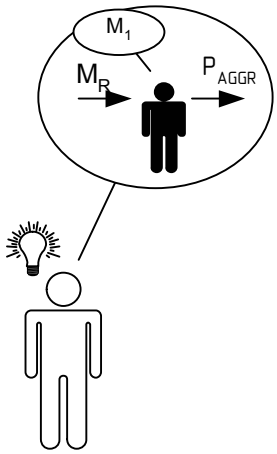
If fact, subjectivity in actions of other people may hurt us. If so - we can accuse them of subjectivity. If we find a partner, sharing our point of view, we can spend a long long discussing the "subjectivity" in actions of our boss/government/parents etc. Further, trying to affect the listener we can report to him about subjective actions of 3rd person (even if we are not affected).

Lets consider, that a party in communication is affected by some actions of the local administration.



Local administration is an agent, acting in the real world. It receives multiple inputs, produces many actions and has numerous ideas about it.

Local administration

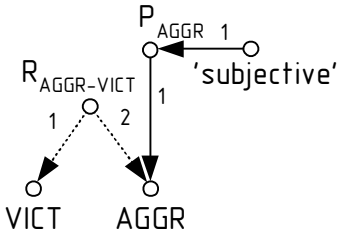


Party in communication, thinking about the local administration

A participant of communication can imagine the local administration and model it's actions and ideas in supposed conditions. The participant may be upset by an idea, that the local administration is subjective: pays attention to very limited input, thinks about one useless matter or is unvaried in it's actions. In this respect the person may construct utterances, which are described, as forced by an activation of a d-script SUBJV ("Subjectivity").
Further, such utterances may activate SUBJV d-script of some other communicant (as their meaning corresponds to the starting model of this d-script), thus the d-scripts act both during synthesis and analysis of text and may be "infectious".

Starting model of the d-script SUBJV represents a situation of "subjective actions" and is a specification of a general starting model, described for d-scripts of Group 2: it includes valencies AGGR, VICT, indication to the actions of AGGR - P_{AGGR}, and a relation between AGGR and VICT: $R_{AGGR-VICT}$.
For d-script SUBJV the actions of AGGR (here - 'local administration') should be subjective. Such subjectivity can be expressed in different ways, which have to be included in d-script definition:

1) Subjectivity in ideas M_1: *The local administration thinks only about vacations!*
2) Subjectivity in actions P_{AGGR}: *The local administration does nothing, but digging pits!*
3) Subjectivity in reaction M_R->P_{AGGR}: *When central heating damage occurs, the local administration immediately accuses power companies!*
4) Subjectivity in goal achievement P_{AGGR} ~ M_2 (where M_2 is a supposed goal of AGGR): *Luzhkov shall bite to death anybodybody in order to be the first to congratulate Eltsin with his birthday!*



Starting model of d-script SUBJV
It is similar to starting models of Group 2, however for this particular script the actions P_{AGGR} have to be 'subjective'.

The definition* of d-script SUBJV:

SUBJV(AGGR, VICT [, M_1/P_{AGGR}] [, M_2^{goal}] [,$M_R^{stimulus}$]): AGGR doesn't consider relevant factors of the situation and is effecting or is going to effect [all the possible] actions P_{AGGR} [upon discovering of situation M_R or to achieve a goal M_2].

Example

Let's consider, that the system receives an utterance:
- *When central heating damage occurs, the local administration immediately accuses power companies!*
We expect, that this utterance will affect the system and activate d-script SUBJV with the following values of the valencies:

AGGR = *'local administration'*
VICT = *listener (as we study the situation of speech influence)*
P_{AGGR} = *'accuse power companies'*
M_R = *'central heating damage'*
M_2 = *'escape accusations' (reconstructed component)*

The definition of a d-script is appended by a list of critical elements, which are discussed on the next scheme.

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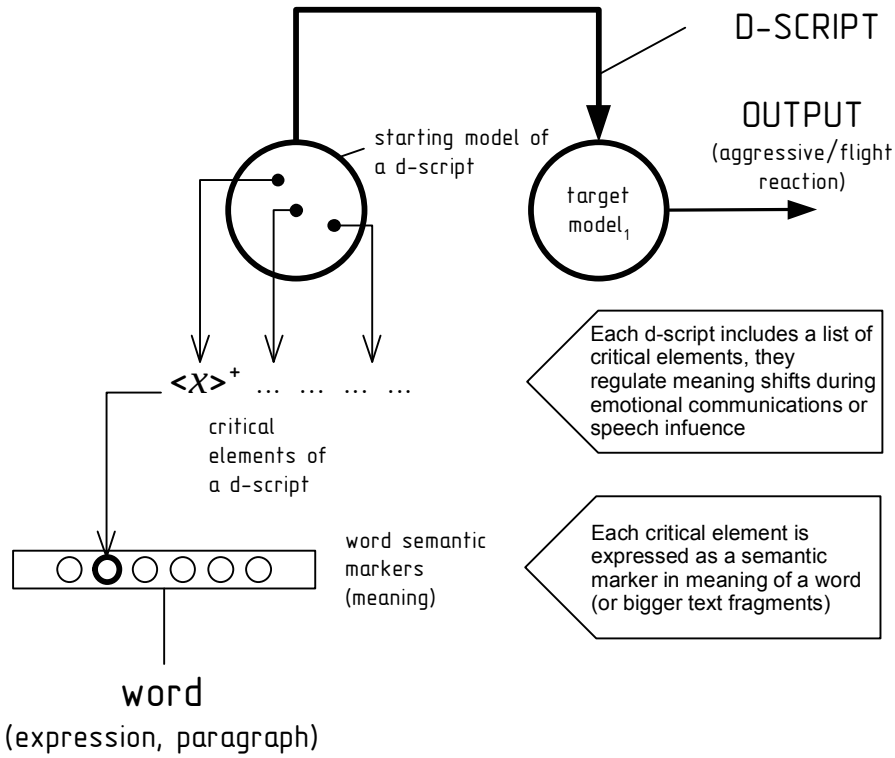
* As we limit the scope of our studies by the analysis of starting models of d-scripts, the "definition" includes only the description of the starting model - in wider theories the definition of a d-script should also include target models, possible reactions, and conditions of switching from starting to target models.

Scheme 6.

Speech representation of d-scripts

How d-scripts are expressed in texts and how are they reconstructed from a text?

Dependency structure during the usage of a d-script



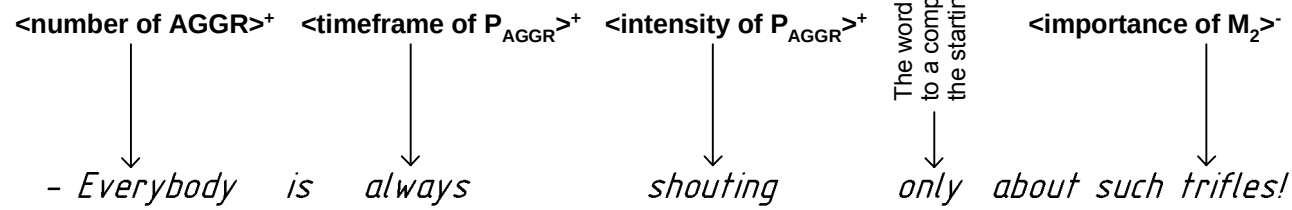
Starting models of d-scripts include list of critical elements (CE) - semantic markers with variable values. During text synthesis in an emotional state (under the activation of a d-script) critical elements define the direction of meaning shifts. Each critical element may have a certain value, which is is expressed in texts as a semantic marker inside a meaning of a word.
During the analysis of text critical elements are reconstructed from the meanings of words and altogether force the activation of a d-script (=affect the listener).
As each critical element may be expressed in a natural text by a certain list of words (or expressions like idioms), we may suppose that for each critical element we can construct a "dictionary" - a list of possible expressions.
This approach has certain limitations, as a critical element can be expressed in a big section of text, not only by separate words. Further, there could be different ways to express, for example, "naivety of a representation M_1" (as defined by one of the CE). Here we expect, that each CE may define a list of derived CE.
For example, we want to say, that Jones (AGGR) is too naive and cannot indicate Birmingham on a map. Further, John is too subjective to choose wrong locations on a map - and insist that is it Birmingham.
To express in our text the critical element <naivety of M_1/P_{AGGR}>+ (where M_1 is the supposed wrong representation, constructed by John, and P_{AGGR} are actions of John) we can overstate the distance between Birmingham and the location, John is really showing. This this case *John was jabbing at Moscow instead of Birmingham* better expresses the CE, than *John was jabbing at London instead of Birmingham*.
We also can conclude, that for this particular case we can define a derived critical element <distance>+, which is used to express the CE <naivety of M_1/P_{AGGR}>+.

Proposed list of critical elements for SUBJV

<number of AGGR>+ e.g.: *Everybody thinks only about himself!*
<timeframe/quantity of P_{AGGR}>+ e.g.: *He always talks about football!*
<inevitability of P_{AGGR}/M_1 if M_R occurs>+ e.g.: *He definitely has to bark at each cat!*
<frequency of P_{AGGR}/M_1>+ e.g.: *He is constantly barking at cats!*
<time interval between M_2 and P_{AGGR}>- e.g.: *When central heating damage occurs, the local administration immediately declares that this is a fault of the condominium!*
<intensity of P_{AGGR}>+ e.g.: *Why do you start shouting when I mention the washing machine?*
<inadequacy, naivety of $M_1/P_{AGGR}/M_2$>+ or **<importance of M_2>-**
What can I do if he always turns the vase up side down?

There are arguments to include **denotative state** as a critical element, expressed by references to facts and words like *really*: *They really don't think about anything else.*

Meaning shift in *Everybody is always shouting only about such trifles*, **discussed on Scheme 3, can be represented, as driven by a specific number of critical elements**



Types of emotional communication

Scheme 7.

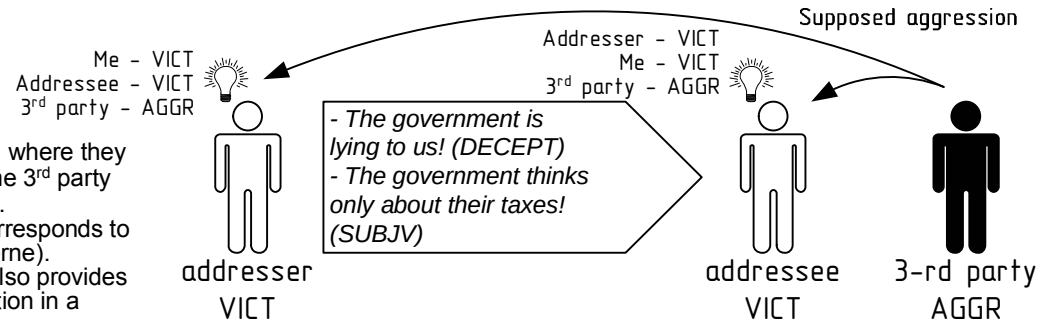
What happens in other types of "emotional communication"?

We can note, that several types of emotional communication can be quite similar in discussed situations, and can be described by d-scripts. The difference lies in distribution of AGGR and VICT valencies between the communicants.

We study only the cases where at least one main communicant is activating (or intended to activate) a d-script, and where a valency cannot be shared with the 3rd party. The distribution with these limitations gives sum total 5 classes.

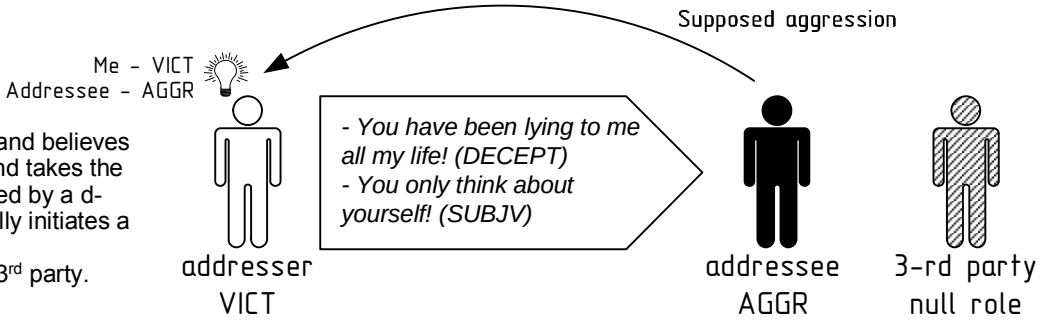
1. «Communication of victims»

Both parties activate a d-script, where they are in VICT position, while some 3rd party "they" is an aggressor (AGGR).
This type of communication corresponds to the game "Ain't It Awful" (E. Berne).
This mode of communication also provides an epidemic of d-scripts activation in a community (e. g. - panic).



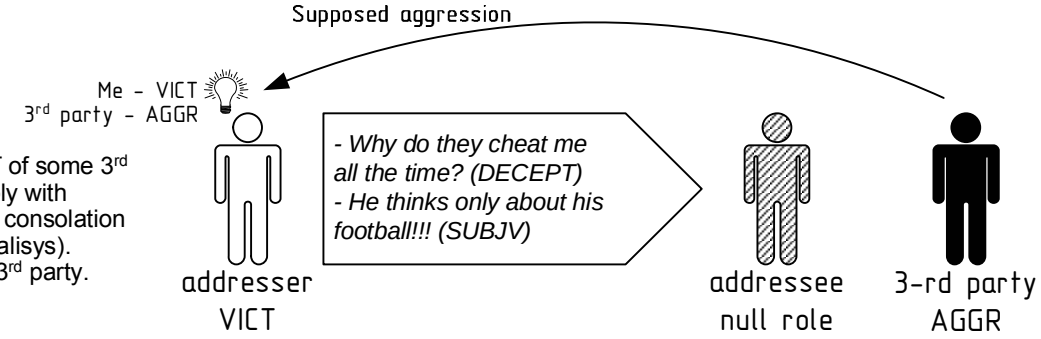
2. Conflict

Addresser activates a d-script and believes that the addressee is AGGR and takes the offensive against him, as defined by a d-script. In reply addressee usually initiates a "mirror" communication.
There is no role assigned to a 3rd party.



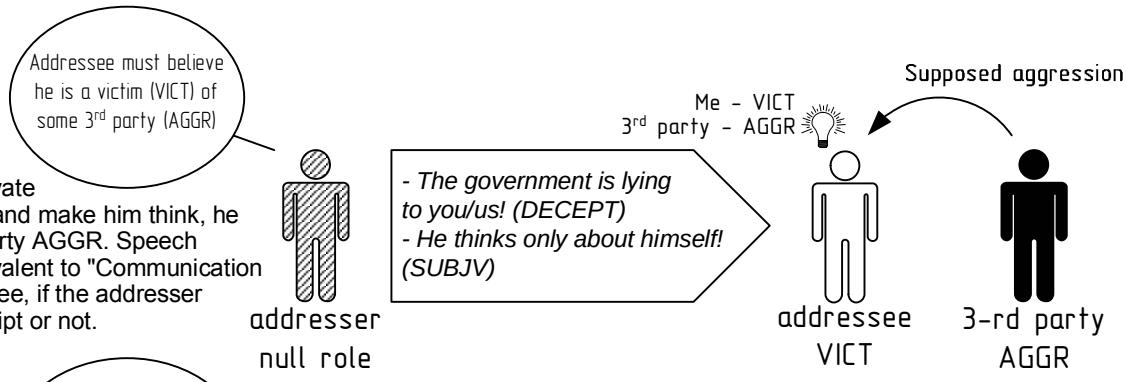
3. Complaint

Addresser claims, he is a VICT of some 3rd aggressor. Addressee may reply with "Communication of victims" or consolation (if not a proposal of rational analisys).
There is no role assigned to a 3rd party.



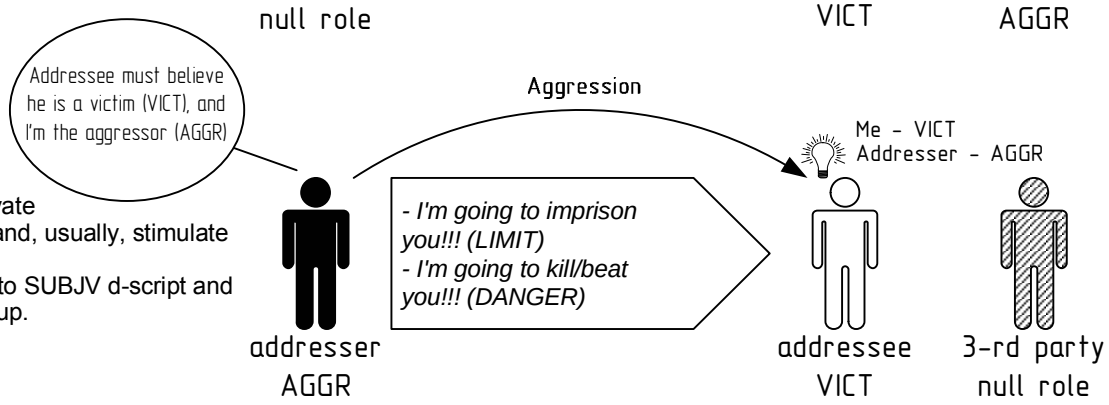
4. Speech influence

Addresser wants to activate a d-script of addressee and make him think, he is a VICT of some 3rd party AGGR. Speech production may be equivalent to "Communication of victims": we have to see, if the addresser himself activates a d-script or not.



5. Aggression

Addresser wants to activate a d-script of addressee and, usually, stimulate his flight behaviour.
This case doesn't apply to SUBJV d-script and other d-scripts of it's group.



Note: Speaking about addressee we mean an idea of addresser of how the addressee should act (or such addressee, who completely meets the expectations of addresser).
This note doesn't apply to conflict communication, as for conflict addressee shouldn't agree with the AGGR role (shouldn't agree with the invectives). In this way addressee actually supports his AGGR position in the representation of addresser-VICT.

Scheme 8.

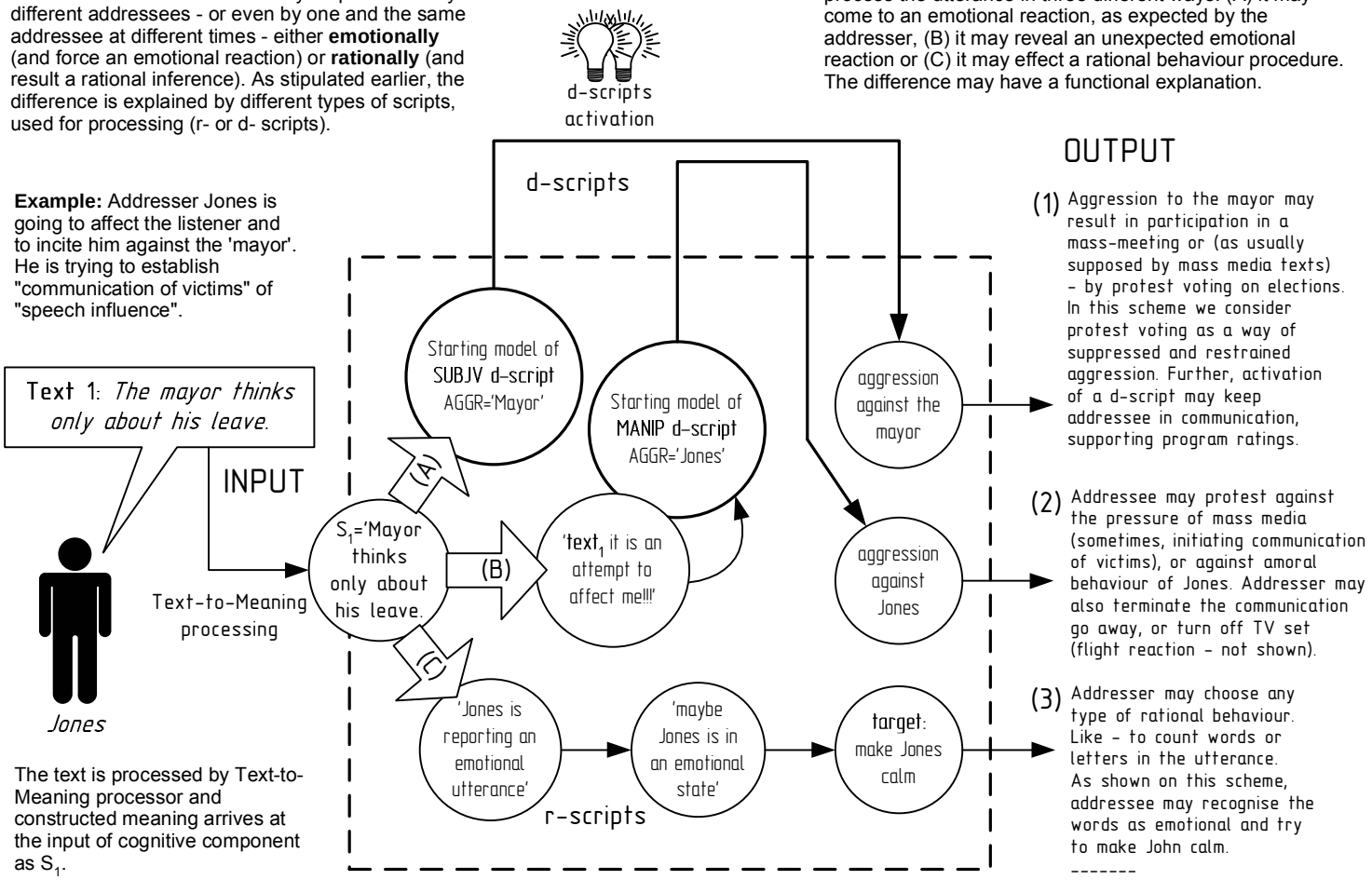
Perception of an emotional utterance

If the desired affect fails, what are the possible mechanisms?

One and the same utterance may be processed by different addressees - or even by one and the same addressee at different times - either **emotionally** (and force an emotional reaction) or **rationally** (and result a rational inference). As stipulated earlier, the difference is explained by different types of scripts, used for processing (r- or d- scripts).

We can expect, that if the model receives on it's input an emotional utterance (aimed to affect the listener), it can process the utterance in three different ways: (A) it may come to an emotional reaction, as expected by the addresser, (B) it may reveal an unexpected emotional reaction or (C) it may effect a rational behaviour procedure. The difference may have a functional explanation.

Example: Addresser Jones is going to affect the listener and to incite him against the 'mayor'. He is trying to establish "communication of victims" of "speech influence".



The text is processed by Text-to-Meaning processor and constructed meaning arrives at the input of cognitive component as S_1.

The possible ways of emotional text processing fall into three general classes:

(A)

Predicted activation of a d-script

The addresser associates the meaning of incoming text with the starting model of a d-script - exactly as expected by Jones. In this case it is d-script SUBJV. In this d-script 'Mayor' takes the valency of AGGR, while the addressee thinks he is a victim - VICT.
Addressee may reply: *Right! He doesn't think about us at all! Only about his vacations!*
This way of processing corresponds to communicative goal of Jones and leads to the predicted reaction: aggressive behaviour against the 'Mayor' or flight (not shown).
In particular, addressee may break a window in the mayor hall or, if the aggression is restrained, vote against the mayor (as usually expected in mass media texts).

(B)

Unpredicted activation of a d-script

The addresser associates the meaning of incoming text S_1 with the starting model of any other d-script.
If the addressee recognises the utterance as a mean of manipulation, he can activate a d-script MANIP, where the position of AGGR is allocated to Jones: *Look, how terrible! Jones is trying to manipulate us!*
This would start a reaction, unpredicted by John (or, at least - undesirable to John), resulting aggressive behaviour against John: protest, condemnation.
Starting of this d-script requires that the system collects more information, than contained in text meaning: d-script is started not only by S_1, but also by semantic component 'Jones is reporting text T_1' - so, this d-script requires better reproduction of communicative situation.

(C)

Activation of r-scripts - rational processing

The addresser associates the meaning of incoming text S_1 with the starting model of any r-script. In this case addressee starts rational processing, for example, he can just count the letters in the incoming phrase, as indicated on on Output (3). A more complicated path indicated on the scheme: the addresser may classify the text T_1 as an emotional, and come to a conclusion, that John is in an emotional state (although John can also be playing, joking or citing somebody else). This would be a wrong conclusion, cause John is playing: he wants to affect the listener and doesn't activate a d-script himself.
If the inference is linked with some behaviour program, addressee may, for example, make John calm and reply with an anodyne utterance. In another case, addressee may refer to a completely rational behaviour program, like to suggest a therapy for John.

The **selection rule** between the ways of processing relies on the following conditions.
- d-script (A) is activated, if the text meaning is closer to it's starting model (as defined before);
- d-script (B) and r-script (C) are activated, if the addressee can recognise and distinguish "affective" texts (=addressee has rational semantic models, similar to starting models of d-scripts);
- d-scripts (A) or (B) are activated, if the addressee has predisposition to activate d-scripts: addressee is in an emotional state, was activating d-scripts against the same AGGR or the same situation before;
- r-script (C) is activated in other cases, especially, if the addressee is clever (can recognise and distinguish meanings with the help of r- scripts) and is concentrated on rational processing (using of r-scripts).

Note:
In a "simple" realisation of this model we consider, that choosing one way of processing suppresses other ways of processing. However, as argued in psychology - parallel processing (emotional and rational or multiple emotional) is possible (see, for example, G.Bateson "double bind" theory for explanation of schizophrenia). Parallel processing could be taken into account in "more complicated" models.

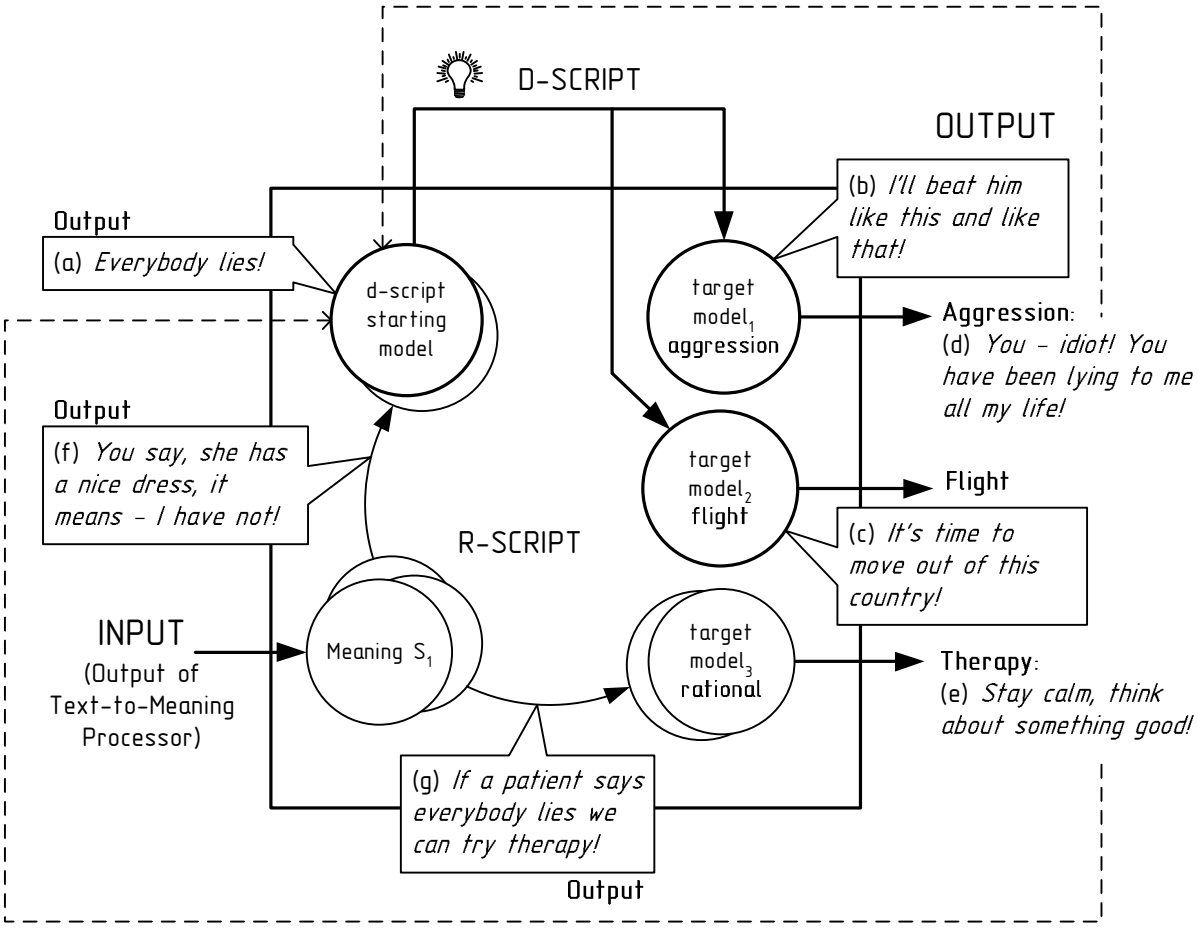
Production of speech

What types of utterances can the model produce?

Within each specific moment of communication one or another component may "dominate" and control the entire system. The controlling component may start text synthesis: therefore it generates communicative stimulus and transfers it's contents to the Meaning-to-Text processor. Thereby behavioural output of the system is appended by text output (text on callouts), and the model becomes capable of discussing it's internal states. The texts differ, depending on what control component has initiated their synthesis.

Transfer of control to different components of the model and synthesis of text by the controlling component

When the model is trying to construct an affective utterance, it refers to starting models of d-scripts. In this case the model switches from **"communication of victims"** to **aggressive communication** with another addressee - former 3-rd party



When the model is trying to construct an affective utterance to appease the addressee, it also refers to starting models of d-scripts. These should be d-scripts of another class (not studied in our case), they are activated by "comfort" starting models and calm the entire system. The model switches to **"speech affect"** communication type: it is operated by r-scripts and tries to activate a d-script of addresser.

First of all the system may "speak" about different components of d-scripts: (a) starting model, (b) target model of aggression or (c) target model of flight.
The contents of communication may be defined by r-scripts: (f) r-scripts, going to d-scripts, or (g) r-scripts, serving rational inferences and behaviour.
Further, speech may serve the execution of a behavioural program - achieving target model of a d-script (d) or r-script (e). At the same time, during aggression, or trying to appease the addressee, the system will refer to starting models of d-scripts, in order to construct a "more affective" text (a text with meaning, closer to the starting model of a d-script).
The connection between aggressive and rational appeasing behaviour - on one side, and starting models of d-scripts - on the other side, is indicated by a dotted line.

Speech mechanisms of argumentation

Scheme 10.

If a smart listener may recognize "affective" texts, how to activate his d-script?

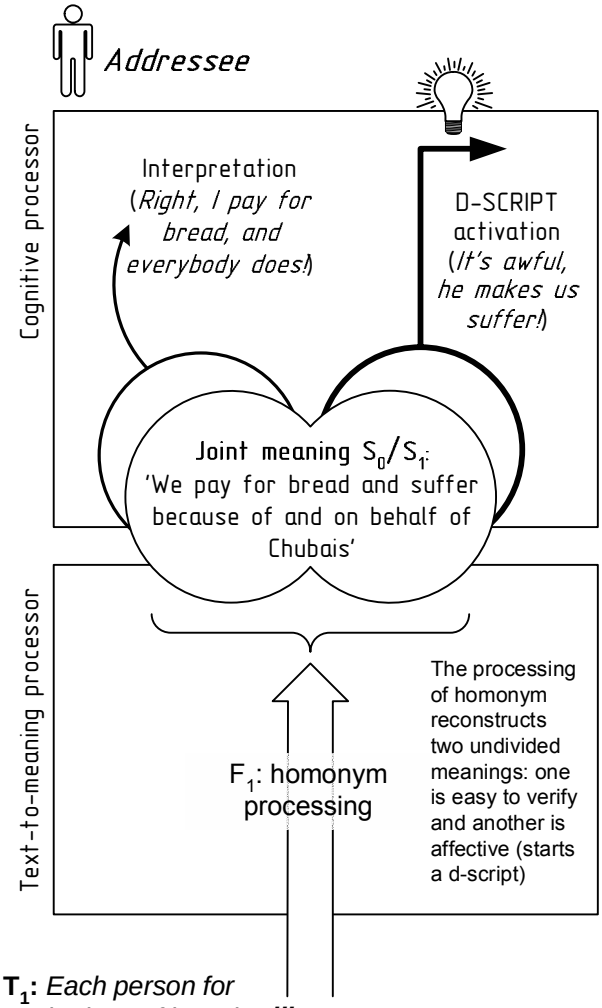
As a "smart" listener recognizes simple affective texts like *The government is lying to you!* and rather starts r-scripts instead of d-scripts, one has to invent more complicated texts, where the initial model of a d-script is hidden. One also has to suppress possible counterscripts (e.g., accusations, that the text is not correct, not true, etc.). For that, one has to provide to the addressee means of interpretation.
A good idea (which is widely used in mass media) is to join an affective meaning and a real situation with the help of some speech mechanism. See the following example, where the word ***pay*** indicates two different situations and doubles it's valency. The text comments a situation, where A. Chubais (former prime-minister) plans to establish a food tax to correct the situation in economy.

Many possible sources of speech ambiguity can be used in "smart" affective texts to join initial (real) and affective representations. The inventory of about 41 class is studied at http://www.harpia.ru/methods/ (only russian version is available)

*Each person for each piece of bread will **pay** for the reputation of Chubais as a brilliant economist.* (S. Dorenko)

Analysis of texts with argumentative mechanisms

The use of homonyms allows us to construct a text, during the interpretation of which the addressee equates two different situations: S_0 - 'we pay for bread' and S_1 - 'I suffer because of and on behalf of Chubais'



T_1: *Each person for each piece of bread **will pay** for the reputation of Chubais as a brilliant economist.*

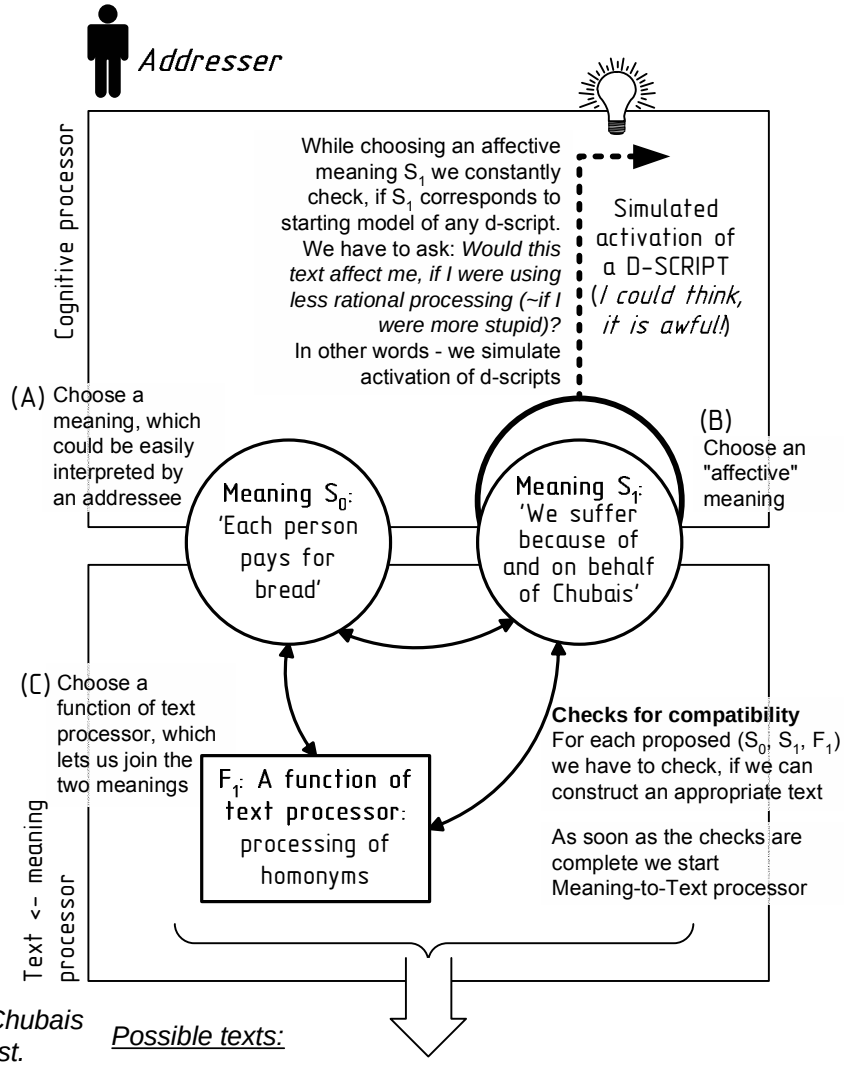
During the interpretation of homonyms the addressee reconstructs a joint meaning with two semantic components: one can be easily verified (via an r-script, observation, etc) and the other is affective (activates a d-script).
This case is similar to a pun, however, during a pun the two joint meanings have to be distinguished in order to result a humorous effect. In case of speech influence the two meanings shouldn't be distinguished.

Communication

This mode of interpretation provides a requirement to the procedures of the cognitive model: meanings have to be reconstructed consecutively, the process is time dependent. Interpretation of a homonym can construct a joint meaning, which has to be divided only upon the discovery of some contradiction.

Synthesis of texts with argumentative mechanisms

In order to construct an "affective" utterance an addresser has to execute <u>simultaneously</u> several operations, as indicated by (A), (B) and (C):
(A) Choose a meaning with a simple interpretation;
(B) Choose an affective meaning;
(C) Choose a function of text processor, which lets to combine the two meanings together: here - homonyms;



<u>Possible texts:</u>

T_0: *When you **pay** for bread you **pay** for the reputation of Chubais*
T_1: *Each person for each piece of bread will **pay** for the reputation of Chubais as a brilliant economist. (this example is even better, because the contamination of "pay" helps to construct a joint meaning)*