Accounting for Irony and Emotional Oscillation in Computer Architectures
Artemy Kotov (kotov@harpia.ru)
Institute of Linguistics, Russian State University for the Humanities (www.rsuh.ru)
www.harpia.ru/english.html

1. Architecture of the model
The model combines features of (a) rule-based models and (b) connectionist models.

(A) The model consists of numerous “scripts” (like a rule-based model). The agent receives semantic trees on its input and for the output (a) constructs semantic trees and (b) replays with ready phrases from a database. Input semantic structure forces activation of scripts and subsequent speech reactions: d-scripts (to-5) simulate emotional speech reactions and r-scripts (number varies) are responsible for “rational” speech reactions: problem solving, etiquette replies, consultation with addresses.

In the case of a single-sentence answer the winning script forms the speech output of the model. Groups of scripts are linked to microstates (M1-M3). In case of an emotional monologue (emotional oscillation) microstates consecutively discharge, resulting in speech output from the connected scripts (here indicated as 1-2-3). This simulates Emotional Oscillation of the computer agent.

(B) The model operates on semantic trees and semantic markers (like a connectionist model). Incoming semantic tree ‘the user clicks me’ (1) activates scripts (bottom-up processing) and (2) is enriched with key markers of the winning script: “all these bad users click me with force” (top-down processing). During comparison the agent prefers scripts with active microstates (interprets situations depending on “it” mood). Appended markers allow to handle deictic references during the usage of phrases in multiagent environment.

(1) Irony serves as one of the speech strategies (A) Numerous actions/irony

![Diagram of the model with various elements labeled](image)

2. Blueprint for the Cases of Irony and Emotional Oscillation

(A) Hypocrisy

![Diagram showing the hypocrisy case](image)

(B) Oscillation

![Diagram showing the oscillation case](image)

(C) Sarcasm

![Diagram showing the sarcasm case](image)

(D) Substitution

![Diagram showing the substitution case](image)

3. Cases of “script exploitation” in Russian Emotional Corpus (REC) – studies and future design of the computer agent

Within the Russian Emotional Corpus (REC) we collect video records of natural emotional interactions:

(a) university exams: 235 records, 4 faculties, 4 courses, (b) children vs. staff in summer linguistic school: 39 records (c) clients of a municipal center for public utilities (current project)

The address of the corpus is www.harpia.ru/rec (video is not available for download)

(A) Numerous actions/irony

Irony serves as one of the speech strategies and may be surround by other expressive roles within “emotional oscillation”.

Irony combined with other cues

At the same time, irony usually occurs at the end of an expressive sequence – after interactions, substantive gestures and minor utterances.

Agent design
1. Ironical expression doesn’t suppress other microstates, except for the “exploited” microstate.

2. Subtitutive gestures are “more simple” than irony – it is due to deliberate nature of irony?

(B) “Overirritation”

Infomatrixes imitate “high” degree of emotion in moderate/concealed situations. They change direction (look aside) and smile, then lower bowing (inclined) to smiling.

Caprice

Aggression (posed)

Approach

Low degree of script activation may “exploit” a high degree expression: (a) to denote internal emotion or (b) as uncontrollable shift to usual patterns of emotional expression (statistical evaluation of scripts)

(C) Me-goal > You-goal

Cases typical to express “internal” emotions may be modified to influence the speaker, see me-you-goal-opposition in [Snukh 2008]

Mincrecy: losing grip

Gustures: countign

Proudly: rising tone

Speech answer: combined rules probably influence

Influence (rational you-goal) may “exploit” expressive emotional scripts (originally corresponding to me-goals).

You-goal scripts will develop from basic expressive scripts.

(D) Transferring locus of control

Contradictory strategies force informants (a) to take control in communication and (b) to give control to the listener.

Control-competence

Capture of control

Etiquette rules force to give control to the listener while rational goal “show competence” pass the exam may force to capture locus of control in communication.

1. Managers of scripts may belong to speaker/listener

2. Emotional script may force transfer of control (manager)

3. Managers may get in conflict with each other.

(E) Coquetry, influence strategies

In case of failure (wrong answers) informants may turn to another influence strategy, like coquetry, demand, asking for indulgence

“Coquetry” appears on the peak of tension, not during a relaxation!

In a near situational informations may change the strategy: every 3 seconds

1. Frustration in achieving rational goals may exploit emotional strategies with different emotional roles.

2. Tension may cause poor coordination of the strategies and their frequent change.