

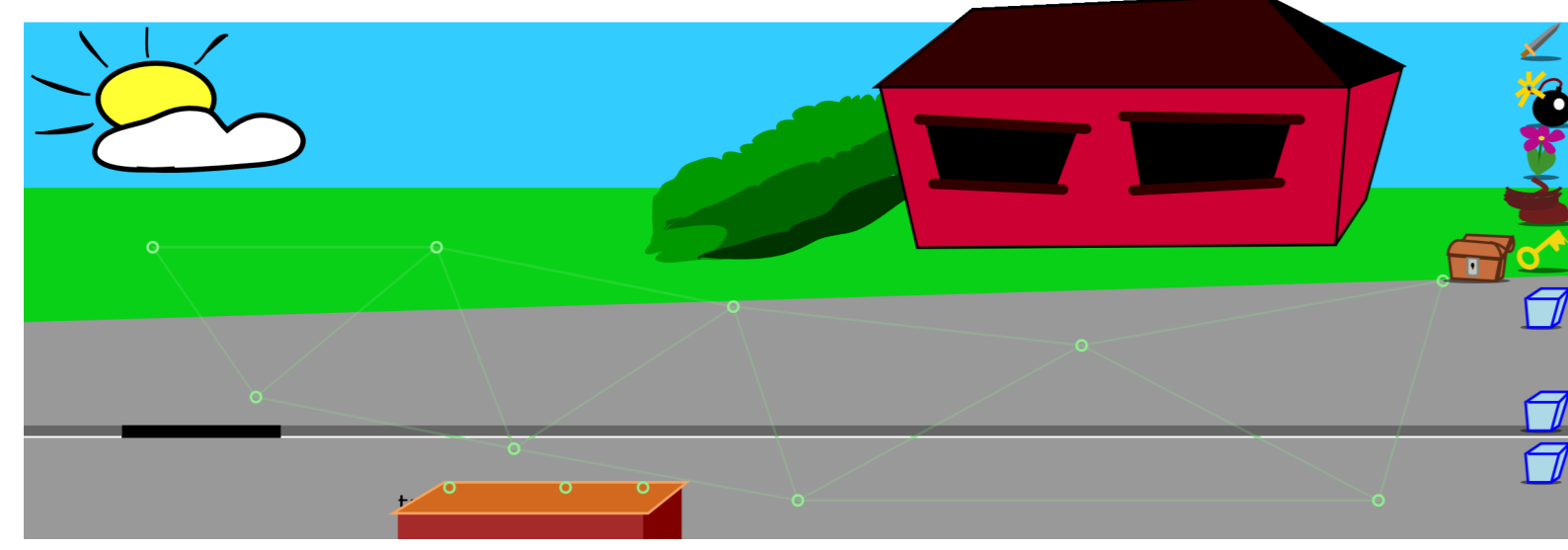
# Appraisal for a Character-based Story-World

Stefan Rank<sup>1</sup> & Paolo Petta<sup>1,2</sup>

<sup>1</sup>Austrian Research Institute for Artificial Intelligence

<sup>2</sup>Institute of Medical Cybernetics and Artificial Intelligence, Center for Brain Research, Medical University of Vienna

Generation of interesting narratives in a simulated dramatic story-world requires situated software agents with emotional competences



## Simulated Environment

A necessary foundation for situated software agents

- Situated agents just run!
- **Situatedness**  
The predicament of being in a world  
“Where you are when you do what you do matters”
- A situated agent employs an executive, whose responsibility is coordination of behaviour
- Operations on lower levels of an agent run in parallel and are reactive to the environment
- Resource allocation and scheduling of these parallel processes is the challenge posed by dynamic environments
- Simulated processes in complex scenarios have *several timescales*  
Story-world scenarios include the timescales of simulation substrate, story (significant character moves), and plot

## Role of Emotions

- Emotions are crucial for dealing with dynamic environments
- Modal Emotions: frequent episodes in a given lifeworld (cf. structuralist plot functions)
- Operationalisation? → appraisal theories of emotion
  - Appraisal criteria  
*relevance, standard compliance, intrinsic pleasantness, novelty, who is responsible, coping potential*
  - Action tendencies:  
commitment devices for coherent action
  - Coping including expressive actions
  - Regulation
- Implementation in ActAffAct via behaviour categories
  - Represent social commitments
  - Provide current situational meaning structure frames
  - *Help an agent, Hinder an agent, ...*

## Dramatic Story-World

Simulation inhabited by software actors for enacting dramatically interesting (minimal) structures

- Based on a rich simulation substrate that allows for situatedness
  - Populated with characters whose interactions create plot-links
- Dramatic interactions focus on the social lifeworld of characters
- **Social Lifeworld**  
Patterned ways in which the continually enacted social environment is functionally significant

→ What is a simple control architecture for such characters?

→ What are the characteristics of dramatic scenarios?

(cf. A. Sloman: design and niche space)

What scenarios warrant what kind of architecture?  
What is the relation to emotion theory?  
(<http://emotion-research.net>)

## ActAffAct

Acting Affectively affecting Acting, a prototype story-world

- An environment prone to conflict with four archetypal characters
  - Emotions as causal links in plots
- Comprehensible and diversified conflict resolution sequences

Inspiration from cognitive appraisal theories of emotion

The mediating function of emotion is key to adaptive motivation

- **Concerns** colour the world (changes) with meaning  
Dispositions to desire occurrence or non-occurrence of a given kind of situation (no connotation of activity control), lie dormant until a pertinent event takes place  
*to be well-fed, to be competent, ...*  
The active part of a concern is the **Motivation**
- Emotional processes influence continuous activity according to **Appraisals**: evaluations of *subjective significance* of internal and environmental changes according to current concerns



## Appraisal-based Agent

Emotional processes drive an agent, mediating between

- Subjective concerns and preferences,
- Current state of activity, and
- Status and offerings of its environment

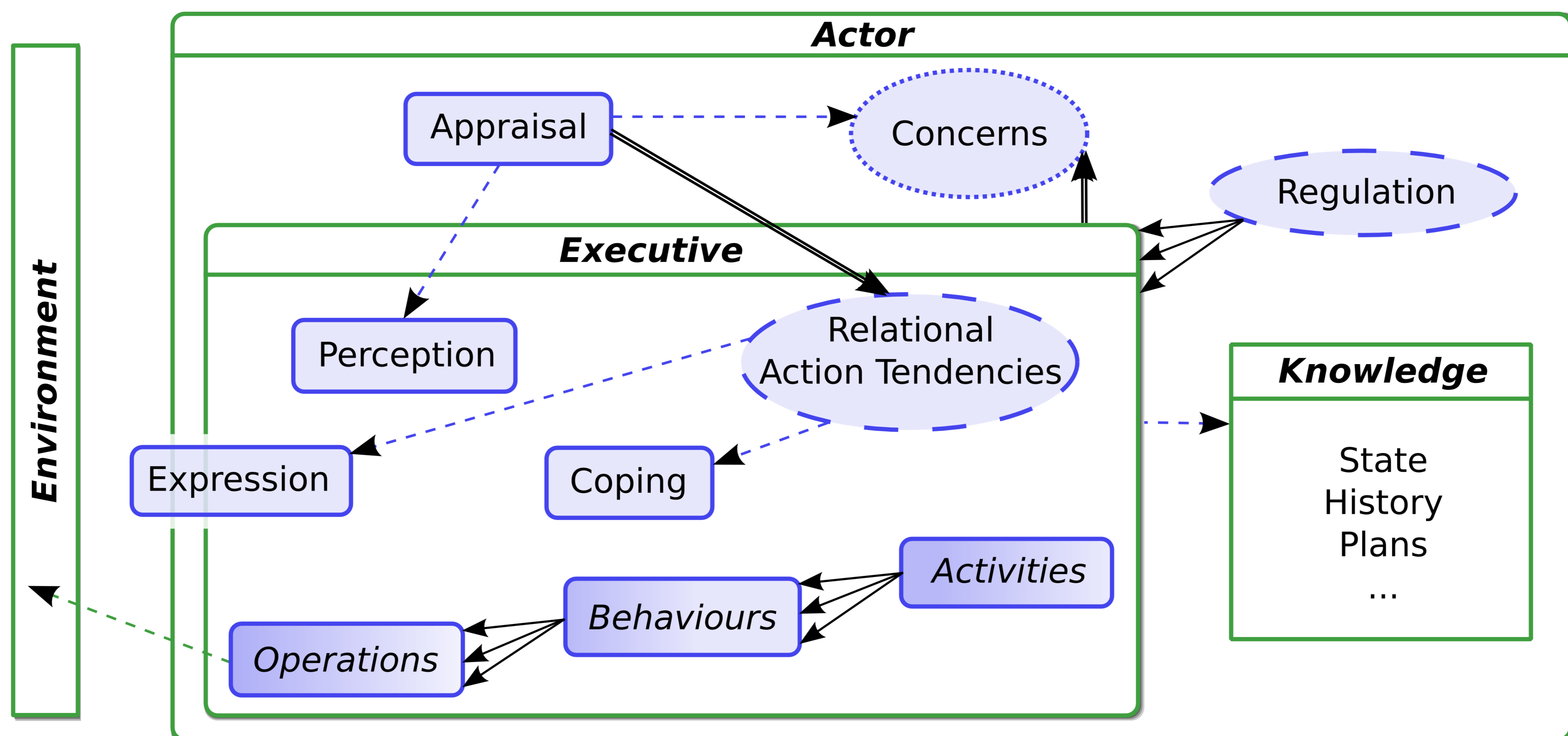
Motivational effects of appraisal relevant to plot generation

1. Coping  
ranges from problem-oriented to emotion-oriented and support-seeking strategies, may motivate new behaviours
2. Affective expression  
unconditionally perceived by others (social imperative)
3. Information-processing effects  
adaptation of preferences & mood

Architectural terminology for the implementation of appraisal

- An **Operation** is the basic unit of interaction of the agent's **Executive**, always part of a **Behaviour**, i.e. a compound operation that can run in parallel with others and unsupervised  
*acquire an object/information, wave hands, ...*  
ActAffAct's behaviours are split into three phases, of which the first and last are harder to interrupt, simulating commitment
- **Activity**  
Context of an agent's current behaviours, defines semantics  
*to lead a conversation, to shop, to idle, ...*
- **Perception**  
Translation of outside information to inside information, fills situational meaning structures
- **Situational Meaning Structure**  
A subjective mode of appearance of a situation  
*ObjectAtPosition obj pos → ObjectReachable obj*  
*Agent has flower → Agent wants to give it to me*
- **Relational Action Tendencies**  
States of readiness to achieve or maintain a given kind of relationship with the environment  
*situation-driven*, not goal-oriented ( $\neq$  Plans)  
*approaching, avoiding, rejecting, dominating, being-with, ...*

## Situated Appraisal-based Agent Architecture



### Disclaimer and Acknowledgments

• This poster reflects only the authors' views. The European Community is not liable for any use that may be made of the information contained herein. This work was funded by the EU FP6 Network of Excellence Humaine [IST-2002-2.3.1.6 507422]  
• OFAI is supported by the Austrian Federal Ministry for Education, Science and Culture and by the Austrian Federal Ministry for Transport, Innovation and Technology [FFP 808818/2970 KA/SA]