

Motivating Dramatic Interactions

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Joy



disclaimer/acknowledgments: see last slide

The Idea

Motivating Dramatic Interactions

ActAffAct: Situated characters
for generating minimal drama

Emotional processes drive an agent,
mediating between

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



ActAffAct - What it looks like

The screenshot displays the ActAffAct software interface. At the top, there are control buttons: [5].start/pause, Start, Save Snapshot (not yet working), Load Snapshot, Reset, and [Escape].exit. The main window shows a 2D environment with a sun, a red house, a green hill, and a grey road. Several characters and objects are present: a key, a table, a brown dog, a man in a green shirt, a man in a brown hat, a man in a white shirt, and a woman in a black dress. A speech bubble from the woman says "Fear".

Below the environment, there are two panels:

- bottom left: Environment status (world facts) and current actions**
 - Environment:**
 - ReachableFrom "PosTabl...
 - ReachableFrom "PosTabl...
 - AgentAtPosition "Hero" ...
 - AgentAtPosition "Mentor" ...
 - AgentAtPosition "Victim" ...
 - AgentAtPosition "Villain" ...
 - ObjectAtPosition "Sword..."
 - ObjectAtPosition "block4..."
 - ObjectAtPosition "block3..."
 - ObjectAtPosition "key" ...
 - AgentHasObject "Villain" ...
 - ObjectAtPosition "rope" ...
 - ObjectAtPosition "block2..."
 - ObjectAtPosition "block1..."
 - ObjectAtPosition "Treas..."
 - AgentHasObject "Hero" ...
 - REQUEST "useObjectOn..."
 - New DataDrivenGo...
 - New DataDrivenGo...
 - Mentor:**
 - Standard "useObjectOn" "?" "Rope" "?" 0,6
 - Standard "useObjectOn" "?" "Key" "?" 0,6
 - myNameIs "Mentor"
 - lastSuccess "showExpression" "Victim" "Fear" ...
 - lastRequest "moveToPosition" "Mentor" "PosS..."
 - Villain:**
 - Standard "giveObjectToAgent" "?" "?" "Villain" ...
 - Standard "useObjectOn" "?" "Bomb" "?" 0,5
 - Standard "useObjectOn" "?" "Sword" "?" 0,6
 - Standard "useObjectOn" "?" "Rope" "?" 0,7
 - PrefFor "Hero" -0,1
 - Hero:**
 - Standard "useObjectOn" "?" "Rope" "?" 0,7
 - Standard "useObjectOn" "?" "Key" "?" 0,6
 - PrefFor "Villain" -0,1
 - PrefFor "Victim" 0,3
 - myNameIs "Hero"
 - PrefFor "Villain" -0,075
 - lastSuccess "showExpression" "Victim" "Fear" ...
 - lastRequest "moveToPosition" "Mentor" "PosS..."
 - lastAction "moveToPosition" "Mentor" "PosStr..."
 - localCycleCount 33
 - Victim:**
 - Standard "useObjectOn" "?" "Rope" "?" 0,6
 - Standard "useObjectOn" "?" "Key" "?" 0,6
 - myNameIs "Victim"
 - lastSuccess "showExpression" "Victim" "Fear" ...
 - lastRequest "moveToPosition" "Mentor" "PosS..."
 - lastAction "moveToPosition" "Mentor" "PosStr..."
 - localCycleCount 33
- bottom right: Actors beliefs (excl. perceptions) and their intentions**
 - Goal [Utility:13] SUCCESS blocksPuzzleSolved, Hero, True | IS_ACTIVE, Plan: blocksPuzzleSolvedByH...
 - Goal [Utility:0] SUCCESS putDownObjectAtPosition, Hero, Block1, ?, True | IS_ACTIVE, Plan: En...
 - Goal [Utility:0] getObject Block1 | IS_ACTIVE, Plan: Get an object
 - Goal [Utility:0] SUCCESS takeObjectAtPosition, Mentor, Block1, PosHouseR, True | IS_ACTIVE, Plan: Take an object
 - Goal [Utility:0] SUCCESS useObjectOn, Villain, Bomb, Victim, True | IS_ACTIVE, Plan: Use an object on...
 - Goal [Utility:0] ACT useObjectOn, Bomb, Victim | IS_ACTIVE, Plan: Use an object on an agent
 - New Goal [Utility:11] SUCCESS showExpression, Victim, Distress, ?, True | IS_ACTIVE, Plan: Get to show d...
 - New Goal [Utility:10] SUCCESS useObjectOn, ?, Rope, Villain, False | IS_UNTRIED, noIntention
 - New Goal [Utility:14] SUCCESS showExpression, Victim, Love, ?, True | IS_ACTIVE, Plan: Get to sho...
 - Goal [Utility:0] SUCCESS giveObjectToAgent, Hero, Flower, Victim, True | IS_ACTIVE, Plan: Off...
 - Goal [Utility:0] goto victim | IS_ACTIVE, Plan: Goto an agent
 - Goal [Utility:0] goto PosStreetR | IS_ACTIVE, Plan: Goto a position
 - Goal [Utility:15,175] tryToCope Fear, 0,75, useObjectOn, Villain, Bomb, Victim, 0 | IS_ACTIVE, Plan: ...
 - New Goal [Utility:10] SUCCESS giveObjectToAgent, ?, ?, Victim, True | IS_UNTRIED, noIntention
 - New Goal [Utility:10] SUCCESS useObjectOn, ?, Bomb, Victim, False | IS_ACTIVE, Plan: Hinder from...

At the bottom left, it says "Acting paused". At the bottom right, it says "SVG-Status: managerSuspended()".

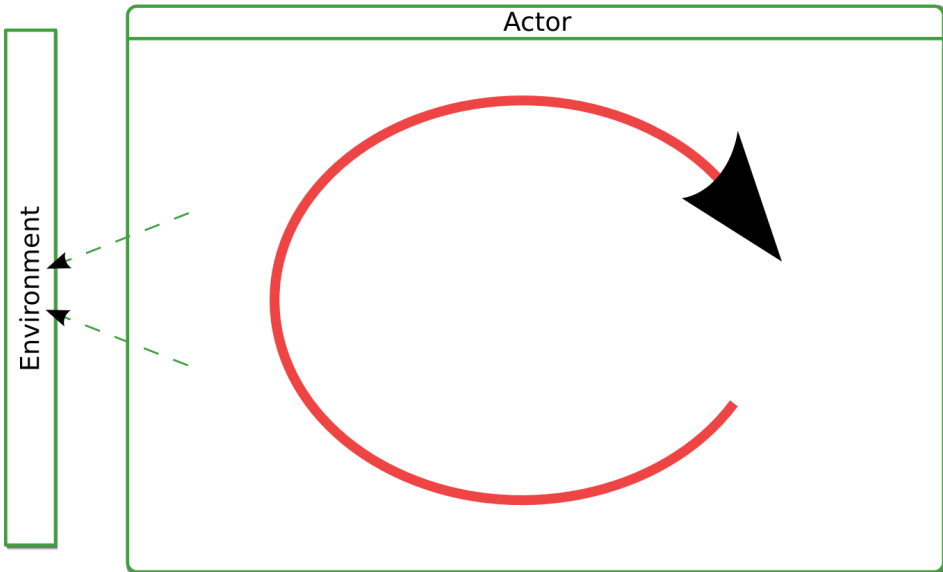
Terminology .

1 Situatedness

The predicament of being in a world

"Where you are when you do what you do matters"

Situated agent



Terminology . .

① Situatedness

② **Action**

The basic unit of the agent's **executive**,
an action is always part of a behaviour

Terminology . . .

- 1 Situatedness
- 2 Action
- 3 **Behaviour**

Compound action that can run
in parallel with others and in an unsupervised fashion

acquire an object/information, wave hands, . . .

Plan

A structure that can be employed by an executive
to organise behaviours in a goal directed fashion

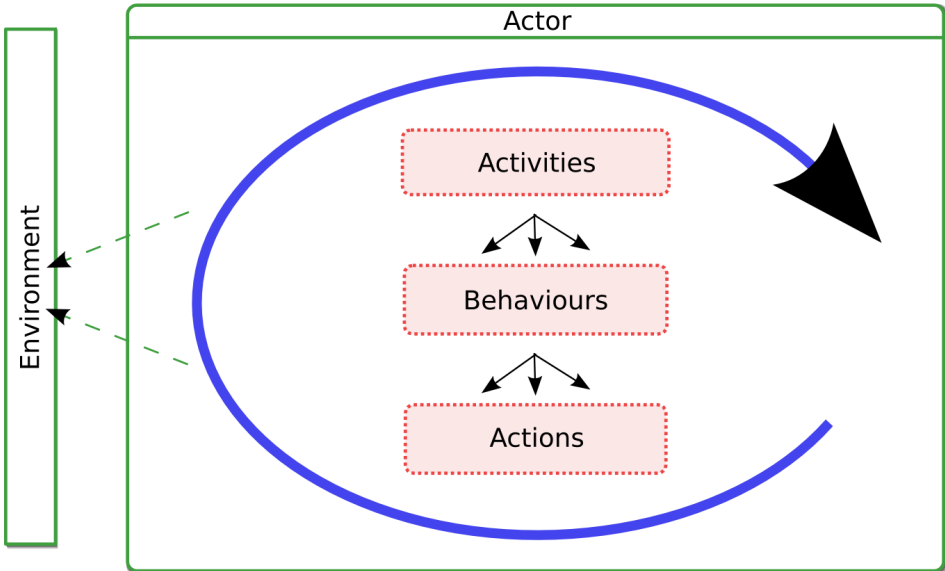
Terminology

- 1 Situatedness
- 2 Action
- 3 Behaviour
- 4 **Activity**

The broader context of what an agent is currently doing, i.e., of its current behaviours

to lead a conversation, to shop, to idle, . . .

Situated agent fleshed out



Terminology

- 1 Situatedness
- 2 Action
- 3 Behaviour
- 4 Activity
- 5 **Lifeworld**

Patterned ways in which an environment is functionally significant within some activity

Terminology

① Situatedness

② Action

③ Behaviour

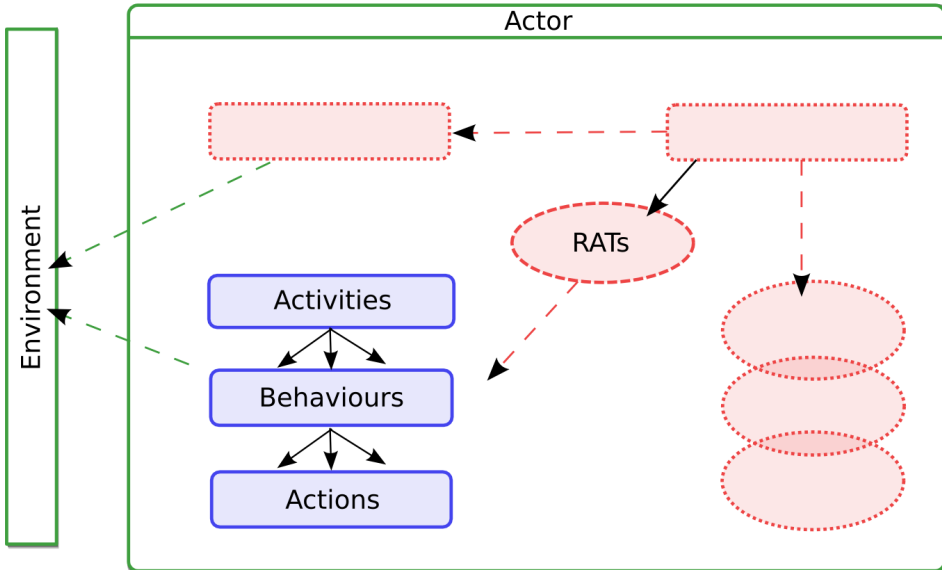
④ Activity

⑤ Lifeworld

⑥ **Social Lifeworld**

Patterned ways in which the continually enacted social environment is functionally significant

Why Emotions?



Appraisal-based agents

- Emotions as integral element for dealing with a dynamic environment
- How? → appraisal theories of emotion
 - appraisal criteria
 - action tendencies:
commitment devices for coherent action
 - coping including expressive actions
 - regulation
- Modal Emotions: frequent in a given lifeworld

Terminology

- 1 Situatedness
- 2 Action
- 3 Behaviour
- 4 Activity
- 5 Lifeworld
- 6 Social Lifeworld

- 7 **Concern**

Disposition to desire occurrence or non-occurrence of a given kind of situation,
no connotation of activity control,
lies dormant until a pertinent event takes place

to be well-fed, to be competent, . . .

Terminology

- ① Situatedness
- ② Action
- ③ Behaviour
- ④ Activity
- ⑤ Lifeworld
- ⑥ Social Lifeworld
- ⑦ Concern
- ⑧ **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

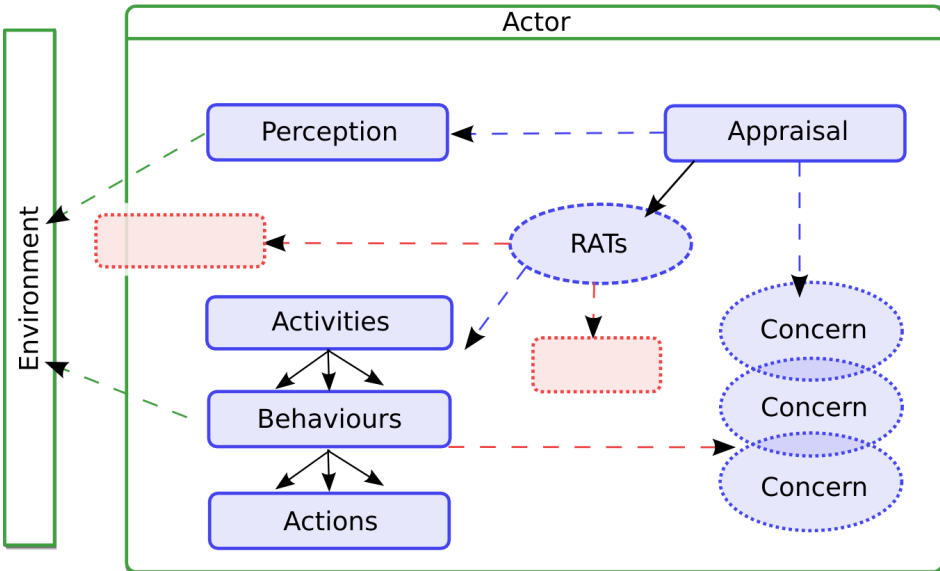
Terminology

- 1 Situatedness
- 2 Action
- 3 Behaviour
- 4 Activity
- 5 Lifeworld
- 6 Social Lifeworld
- 7 Concern
- 8 Situational Meaning Structure
- 9 **Appraisal**
Fast (possibly partial) evaluation of **subjective significance** of internal and environmental changes, for an agent according to its current concerns

Terminology

- ① Situatedness
- ② Action
- ③ Behaviour
- ④ Activity
- ⑤ Lifeworld
- ⑥ Social Lifeworld
- ⑦ Concern
- ⑧ Situational Meaning Structure
- ⑨ Appraisal
- ⑩ **Relational Action Tendencies (RATs)**
States of readiness to achieve or maintain a given kind of relationship with the environment
situation-driven, not goal-oriented (\neq Plans)

Appraisal-based agent fleshed out



Behaviour Categories

- e.g. Help an agent / Hinder an agent
- Represent social commitments
- Provide current situational meaning structure frames
- Immediate appraisal

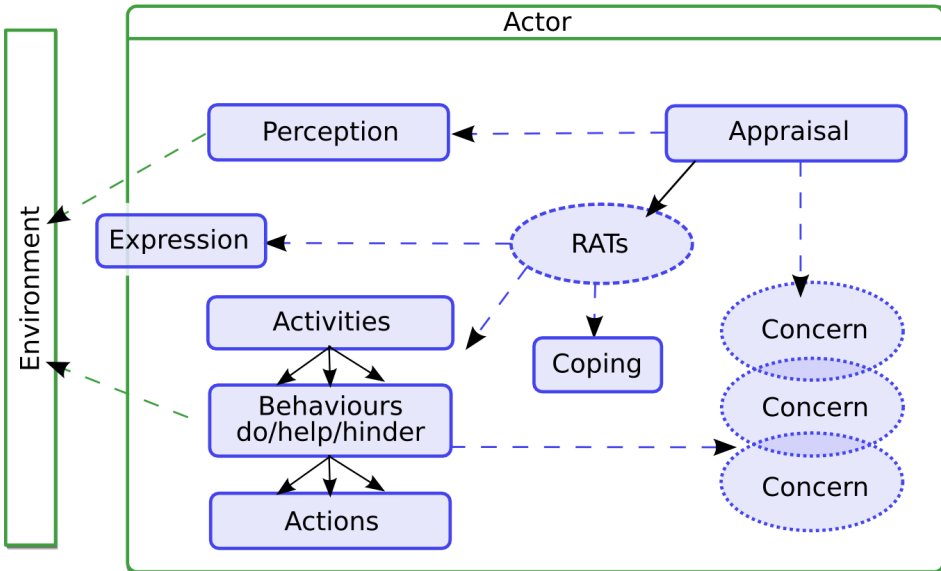


Motivational Effects of Appraisal

- 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
preference & mood adaptation



Appraisal-based agent revisited



Summary and Prospects

- Situated agents just run!
- Concerns colour changes with meaning
- Emotional processes influence continuous activity according to subjective appraisals
- Architectural consequences:
 - Exposed limitation of inflexible goal hierarchies (BDI)
 - Increased parallelism and separated supervision
 - Starting points for adaptivity
- What scenarios warrant what kind of architecture?

The End

Thank you for your attention:

Questions!



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Story-generation Summary

Story generation

- + Simple dramatic sequences, emotions as causal links in plots
- + Comprehensible and diversified conflict–resolution sequences
- Cumbersome authoring of environments and actions

