

How MEXICA works

Rafael Pérez y Pérez www.rafaelperezyperez.com



Chapter I: Introduction

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The model behind the program

Organisation of the program

The model behind the program



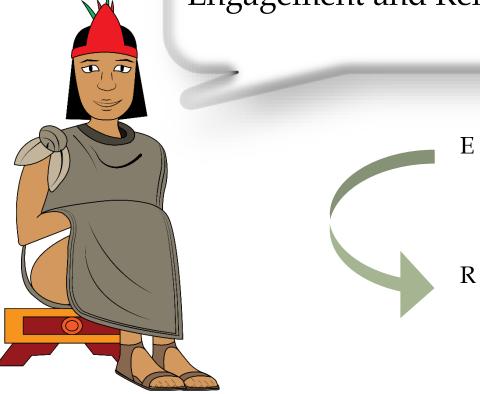
MEXICA produces
plots of stories
about the Mexicas,
the inhabitants, in
centuries past, of
what is now México
City



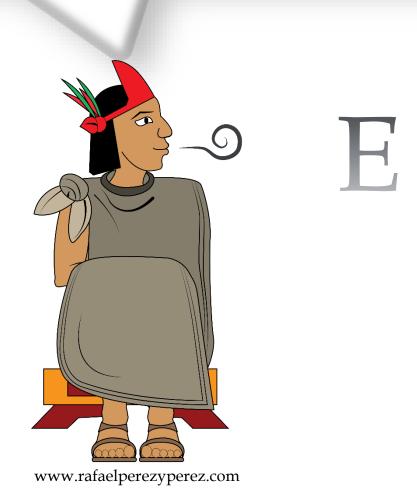
It is inspired on Sharples (1999) cognitive account of writing:

Sharples, M. (1999). How we write? Writing as creative design. London: Routledge.

MEXICA includes two main processes: Engagement and Reflection



During engagement the system generates sequences of actions guided by rhetorical and content constraints



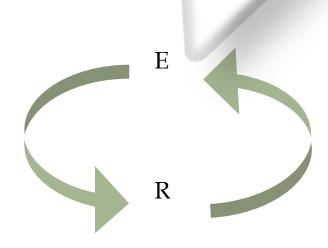
during reflection, the system breaks impasses, evaluates and, if necessary, modifies the material generated so far

R



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Then, the system switches back to engagement and the cycle continues until the narrative is finished

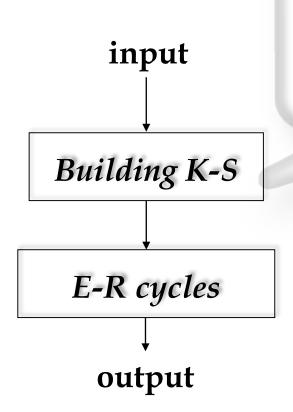


Organisation of the program

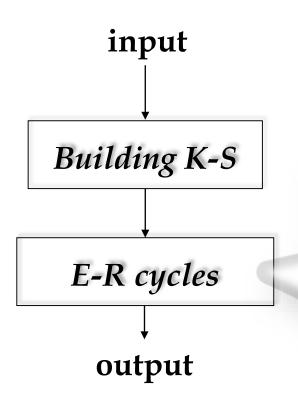
MEXICA is formed by two main blocks



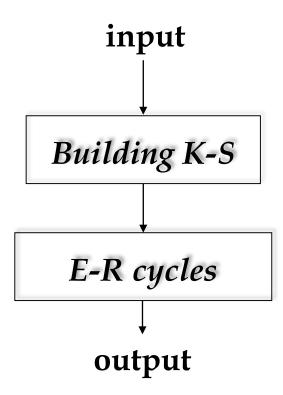
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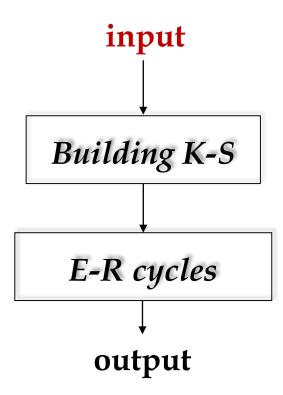


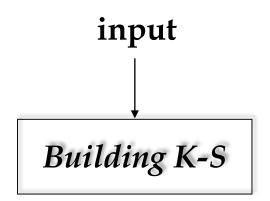
The construction of knowledge structures (building the K-S)

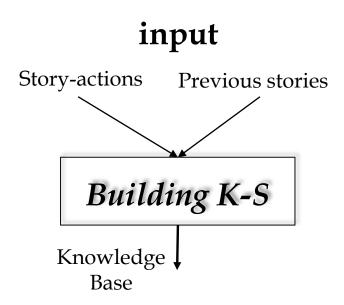


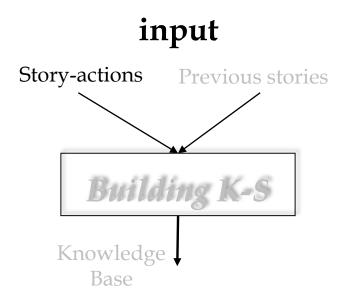
and the generation of plots through engagementreflection cycles (E-R cycles)











The building of the K-S takes as input two text files defined by the user:

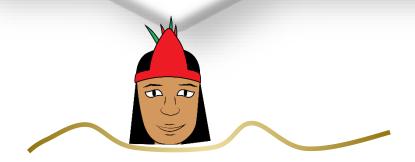
input

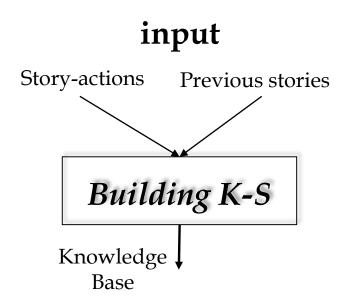
Story-actions Previous stories

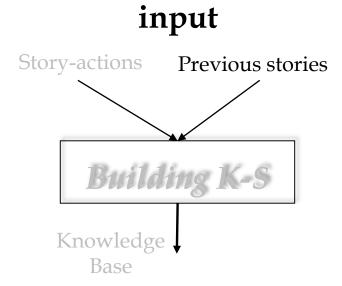
It includes the names of all actions that can be performed by a character within a narrative along with a list of preconditions and post conditions for each deed

The building of the K-S takes as input two text files defined by the user:

In MEXICA, all preconditions and post conditions are described in terms of emotional links and tensions between characters (e.g., jaguar knight hates the enemy)





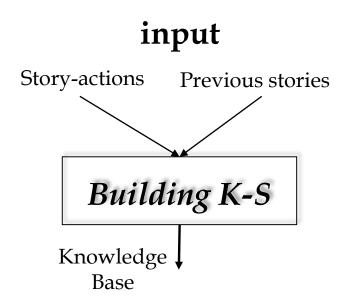


The building of the K-S takes as input two text files defined by the user:

input

Story-actions Previous stories

The Previous Stories are sequences of story actions that represent well-formed narratives. They characterize the "experience" of the agent.

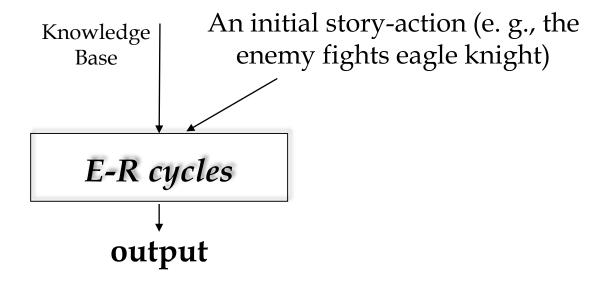


Story-actions Previous stories **Building K-S** Knowledge Base**

E-R cycles

output

input Story-actions Previous stories Building K-S Knowledge Base E-R cycles output



Story-actions Previous stories **Building K-S** Knowledge Initial action**



Chapter II: Dictionary of Story- Actions and the File of Previous Stories

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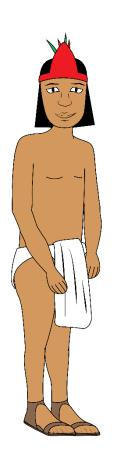
Properties of a Story-Action

Emotional Links

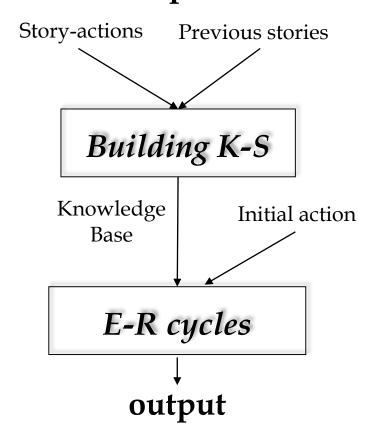
Tensions (conflicts)

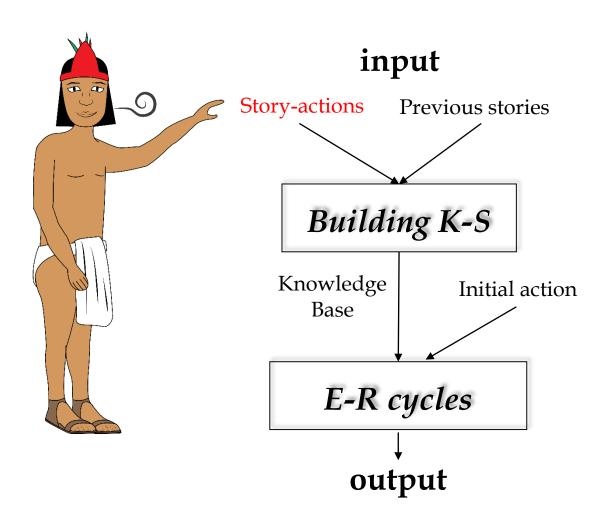
Definition of a Story-Action

Previous Stories



input





Properties of a Story-Action

The design of the system is based on structures known as Story-Actions

A ran away

A followed and found B

A waited for a while and at the right moment attacked B

A and B helped C

Properties S-A All Story-actions have a name A ran away A followed and found B A waited for a while and at the right moment attacked B

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A and B helped C

Story-actions must specify the number of characters that participate in the deed

A ran away

A followed and found B

A waited for a while and at the right moment attacked B

At this point, characters are represented as variables that will be instantiated by concrete actors during the development of the tale.

A ran away

A followed and found B

A waited for a while and at the right moment attacked B

A story-action might have one character

A ran away

A followed and found **B**

A waited for a while and at the right moment attacked B

A and B helped C

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A story-action might have two characters

A ran at

A followed and found B

 \longrightarrow A waited for a while and at the right moment attacked **B**

A story-action might have three characters

A waited for a while and a right moment attacked B



A ran away

A followed and found B

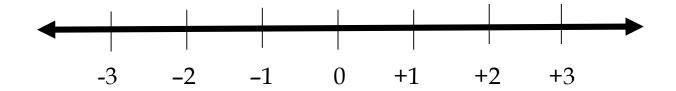
A waited for a while and at the right moment attacked B

Story-actions have an associated set of preconditions (which are optional) and a group of post conditions (which are enforced)

There are two types of possible preconditions and post conditions in MEXICA:

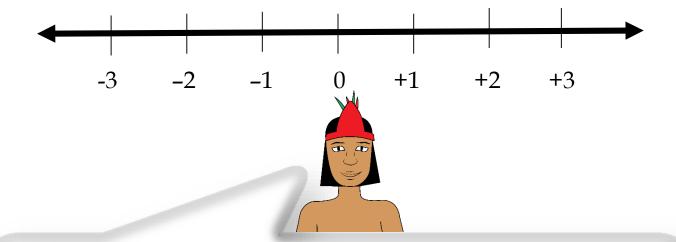
1) Emotional links between characters

2) Conflicts or tensions between characters



For practical reasons all types of emotions are implemented in discrete terms with a value in the range of -3 to +3 (c.f. Dyer 1987)

Dyer, M. G. (1987). Emotions and their computations: Three computer models. *Cognition and Emotion*, Vol.1 (3), pp. 323-347



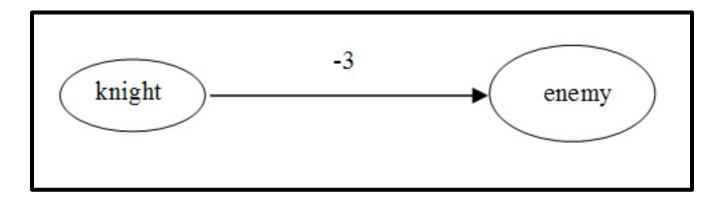
In other words, in MEXICA emotions have a positive, negative or neutral valence, and an intensity that goes from zero to three

There are two types:

Type 1 represents a continuum between love (brotherly love) and hate.

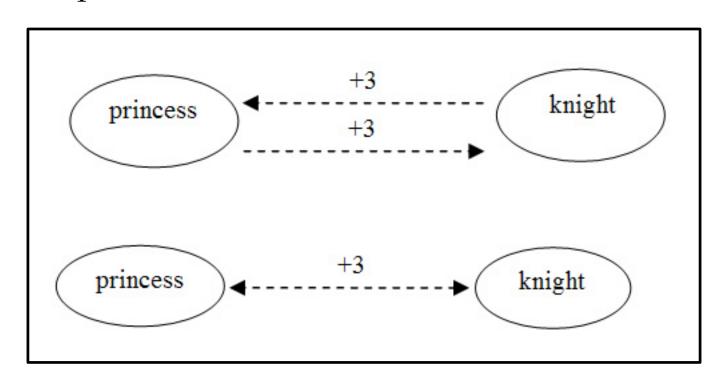
Type 2 represents a continuum between being in love with (amorous love) and feeling hatred towards.

e.g. "The jaguar knight hates the enemy"



Type 1

e.g. The princess loves jaguar knight and jaguar knight loves the princess.



Type 2

Example

[A hates B, i.e. A has an emotional link of type 1 and intensity -3 towards B]

A wounds B

Example

[A hates B, i.e. A has an emotional link of type 1 and intensity -3 towards B]

A wounds B

Example

A falls in love with character B

[A develops an emotional link towards B of type 2 and intensity +3]

Example

A falls in love with character B

[A develops an emotional link towards B of type 2 and intensity +3]

Tensions (conflicts)

The current version of the program divides tensions in three groups:

- Group 1: Tensions triggered by post conditions
- Group 2: Tensions deactivated by post conditions
- Group 3: Tensions triggered automatically

Group 1

- a character is murdered (Ad)
- when the life of a character is at risk (Lr)
- when the health of a character is at risk, e.g. when a character has been wounded (Hr)
- when a character is made a prisoner (Pr)

Group 1

- a character is murdered (Ad)
- when the life of a character is at risk (Lr)
- when the health of a character is at risk, e.g. when a character has been wounded (Hr)
- when a character is made a prisoner (Pr)

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Group 1

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- when the life of a character is at risk (Lr)
- when the health of a character is at risk, e.g. when a character has been wounded (**Hr**)
- when a character is made a prisoner (Pr)

Group 1

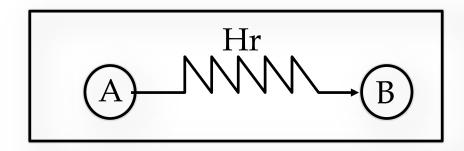
A wounds B

[the health of B is at risk].

Group 1

A wounds B

[the health of B is at risk].



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Group 2

In the same way, tensions can be deactivated through post conditions:

Group 2 Group 1

Health normal (Hn) \longrightarrow Health at risk (Hr)

Life Normal (Ln) \longrightarrow Life at Risk (Lr)

Prisoner free (Pf) \longrightarrow Prisoner (Pr)

Group 2

In the same way, tensions can be deactivated through post conditions:

C cures B

[The tension health at risk is deactivated]

Group 2

In the same way, tensions can be deactivated through post conditions:

C cures B

[The tension "health at risk" (Hr) is deactivated (Hn)]

$$Hr \longrightarrow Hn$$

Group 2

In the same way, tensions can be deactivated through post conditions:

C cures B

[The tension health at risk is deactivated (Hn).

Emotional Link: B is very grateful towards C (E.L. Type 1 intensity +2)]

A has an accident

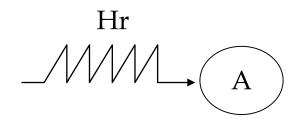
B heals A





A has an accident

(tension Health of A is at risk)



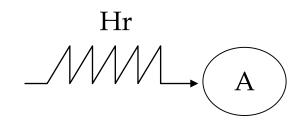
B heals A





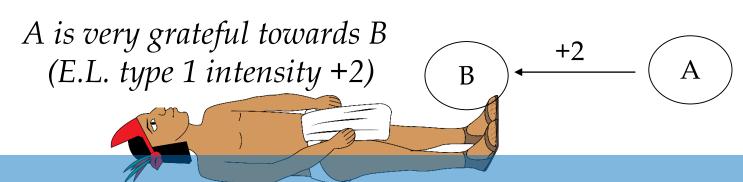
A has an accident

(tension Health of A is at risk)



B heals A

The tension health at risk is deactivated (Hn).



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Group 3

There is a group of three tensions known as inferred tensions:

- 1) Clashing emotions (Ce)
- 2) Love competition (Lc)
- 3) Potential danger (Pd)

Group 3

The

When a character establishes two opposite emotional links towards other character

- 1) Clashing emotions (Ce)
- 2) Love competition (Lc)
- 3) Potential danger (Pd)

Group 3

When two different characters are in love with a third one

There is a known as III.

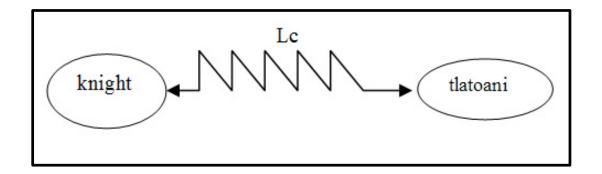
- 1) Clashing emotic 3 (Ce)
- 2) Love competition (Lc)
- 3) Potential danger (Pd)

Group 3

When a character hates another character and both are located in the same place

- 2) Love concetition (Lc)
- 3) Potential danger (Pd)

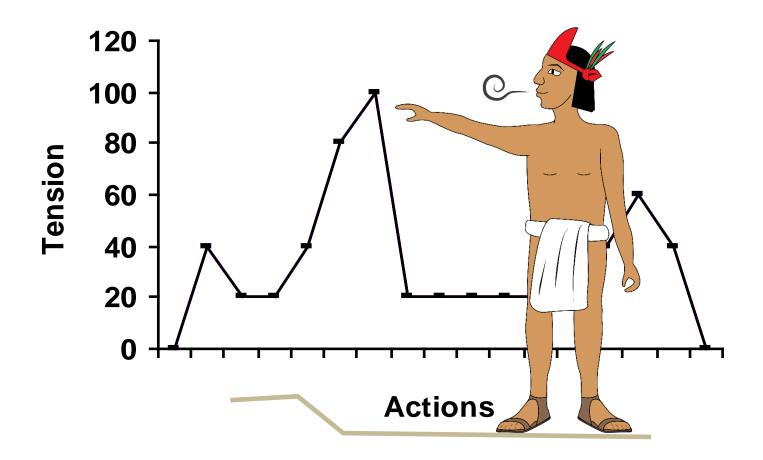
Group 3

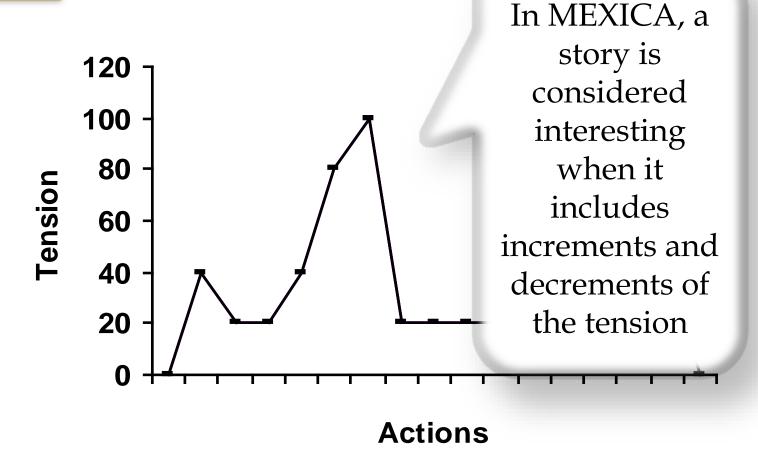


Love competition (Lc) between the knight and the tlatoani

Each tension in MEXICA has associated a value.

The structure Tensional Representation records the different values of the tension over time.





Definition of a Story-Action

A saved the life of B

List of preconditions:

The life of B must be at risk [tension].

List of post conditions:

The life of B is not anymore at risk [deactivation of a tension].

B develops an emotional link of type 1 and intensity +3 towards A.

Alternative Texts

A saved the life of B

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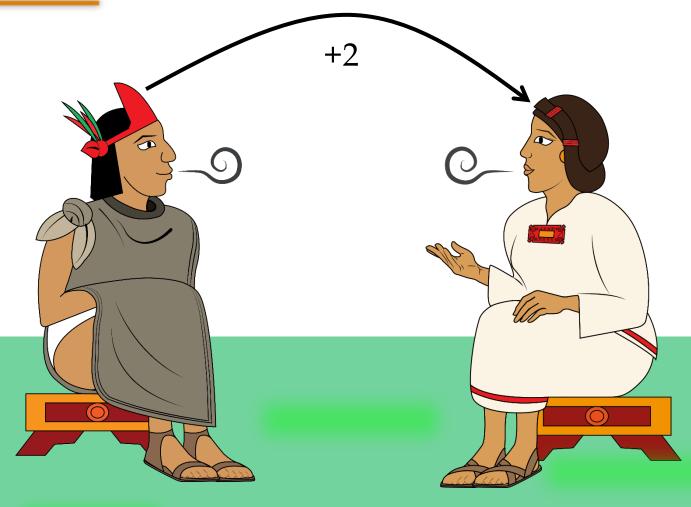
B develops an emotional link of type 1 and intensity +3 towards A.

Alternative Texts

Post conditions might also include:

- Linked characters
- Change of position within the story-world

- Linked characters are family or friends of the characters



- Linked characters can also have emotional responses to the action of other characters.

A cured B

B is very grateful towards A All B's friends and family are grateful towards A

- Change of position within the story-world

- Texcoco lake
- Popocatepetl volcano
- Tlatelolco market
- Palace
- Tenochtitlan City
- Temple
- Jail
- Chapultepec forest
- Uncivilized lands

A saved the life of B

List of preconditions:

The life of B must be at risk [tension].

List of post conditions:

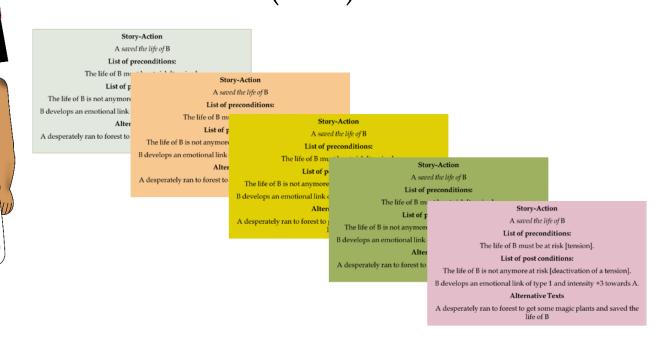
The life of B is not anymore at risk [deactivation of a tension].

B develops an emotional link of type 1 and intensity +3 towards A.

Lb develops an emotional link of type 1 and intensity % towards A.

Alternative Texts

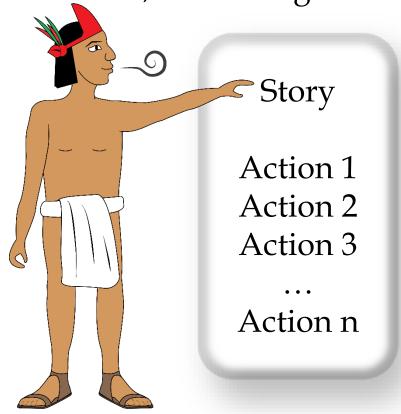
The user defines a Dictionary of Story-Actions (DSA)



Previous Stories

Previous stories

In MEXICA a story is defined as a sequence of story-actions that are coherent, interesting and novel.



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File of Previous Stories (PS)

PS I PS II PS n

Action 1 Action 1 ... Action n1
Action 2 Action 2 Action n2
Action 3 Action 3 Action n3
...
Action n Action n Action nn

File of Previous Stories (PS)

PS I PS II PS n

Action 1 Action 1 Action n1
Action 2 Action 2 Action n2
Action 3 Action 3 Action n3
...
Action n Action n

The system obtains from the Previous Stories common sense knowledge and technical information about narratives

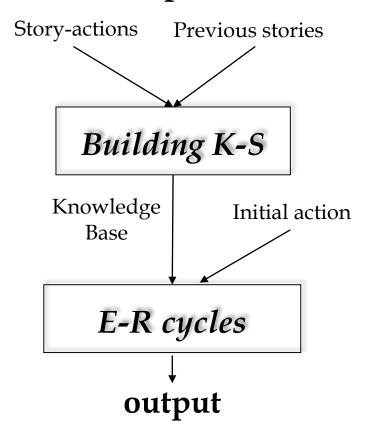
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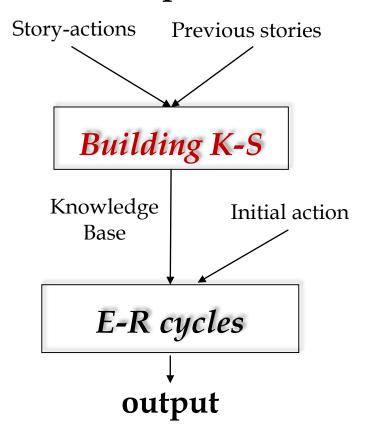
Chapter III: Building the Knowledge Structures

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input



input



Contextual knowledge structures

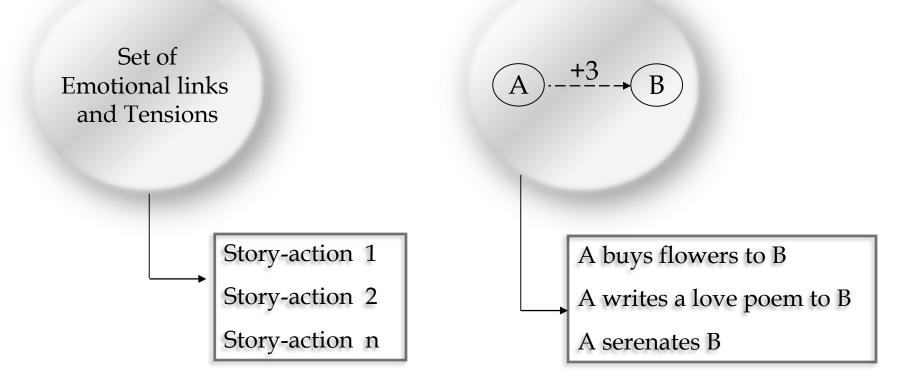
Tensional representation

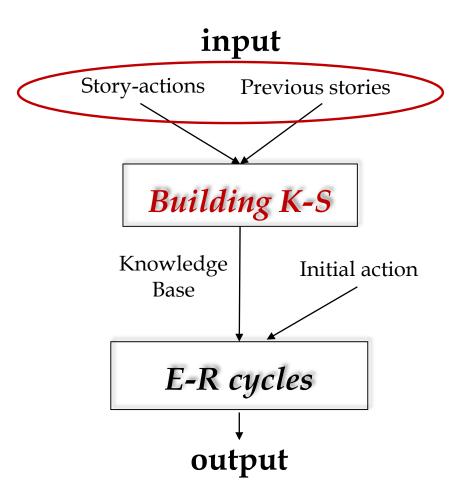
Concrete representation

Contextual knowledge structures

Set of Emotional links and Tensions

Story-action 1
Story-action 2
Story-action n





Jaguar knight has an accident

Princess heals Jaguar knight

Jaguar knight rewards Princess



Jaguar knight has an accident

[Tension: Jaguar knight is injured (Health at risk)]

Princess heals Jaguar Knight

Jaguar Knight rewards Princess



Story-context

Contextual structures

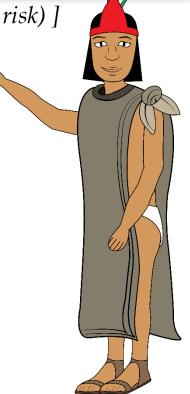
Hr _________jaguar knight

Jaguar knight has an accident

[<u>Tension</u>: Jaguar knight is injured (Health at risk)]

Princess heals Jaguar Knight

Jaguar Knight rewards Princess

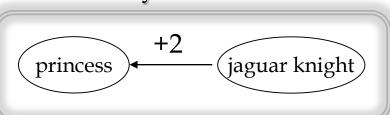


Jaguar knight has an accident

[Tension: Jaguar knight is in]

Princess heals Jaguar knight

Story-context



[Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)]

Jaguar knight rewards Princess

Jaguar knight has an accident

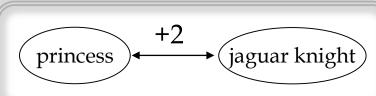
[Tension: Jaguar knight is injured (Health at risk)]

Princess heals Jaguar knight

[Emotional Link: Jaguar knight

Princess (E. L

Story-context



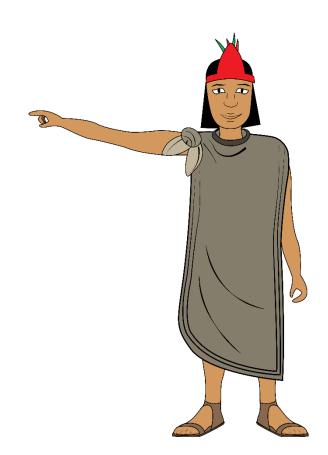
Jaguar knight rewards Princess

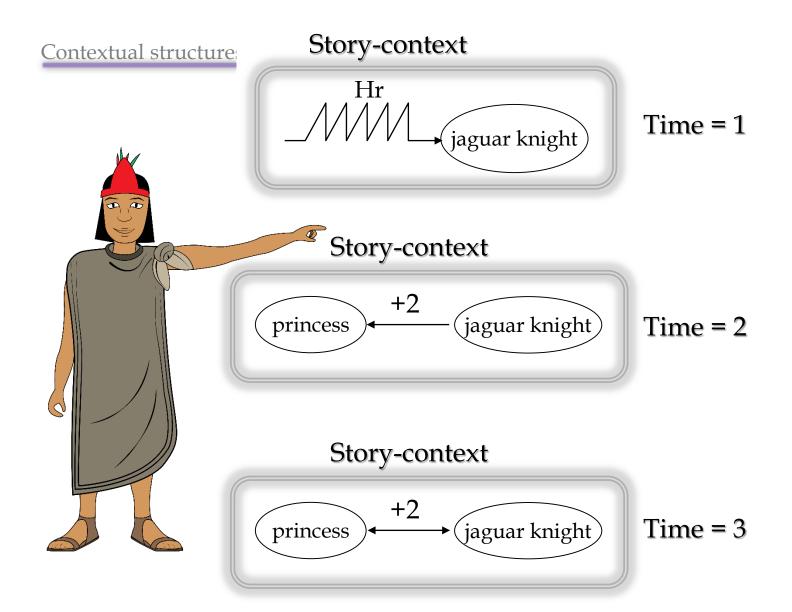
[Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar knight (E. L. T1 +2)]

Jaguar knight has an accident

Princess heals Jaguar Knight

Jaguar Knight rewards Princess





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Jaguar knight has an accident
```

T=1 [<u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

T=2 [Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

T=3 [Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar Knight (E. L. T1 +2)]

Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

[Emotional Link: Jaguar knight is very grateful towards Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

[Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)

Princess is very grateful towards

Jaguar Knight (E. L. T1 +2)]

Jaguar knight has an a

A

T=1 Tension: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

[Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

[Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar Knight (E. L. T1 +2)]

MEMORY

Contextual structures

Jaguar knight has an a

A

T=1 Tension: Jaguar Knight

Princess heals Jaguar Knight

[Emotional Link: Jaguar knig

Princess (E.



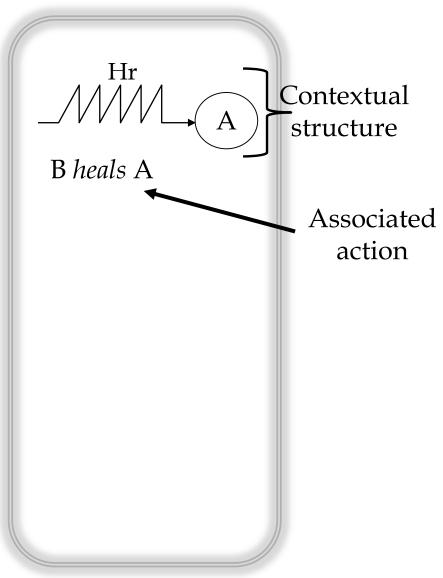
B heals A

Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight

Princess heals Jaguar Knight

[Emotional Link: Jaguar knig Princess (E.



MEMORY

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```
Jaguar knight has an accident
```

T=1 [<u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

T=2 [Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

T=3 [Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar Knight (E. L. T1 +2)]

Jaguar knight has an accident

[Tension: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

T=2 [Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar Knight (E. L. T1 +2)]

Jaguar knight has an accident

[Tension: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

 \mathcal{A}

T=2 [Emotional Link: Jaguar knight is very grateful towards

A

B

Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar Knight (E. L. T1 +2)]

MEMORY

Contextual structures

Jaguar knight has an accident

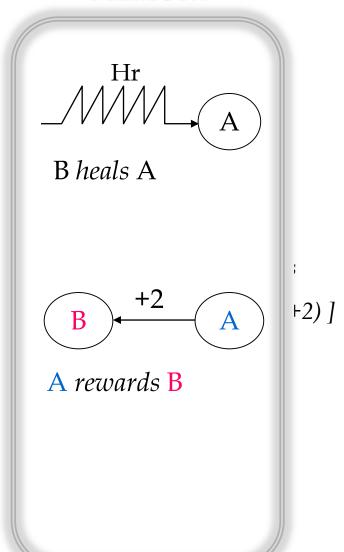
[Tension: Jaguar Knight is in

Princess heals Jaguar Knight

T=2 [Emotional Link: Jaguar]

Jaguar Knight rewards Princess

Emotional Link: Jaguar kn
Prin
Princess is
Jagu

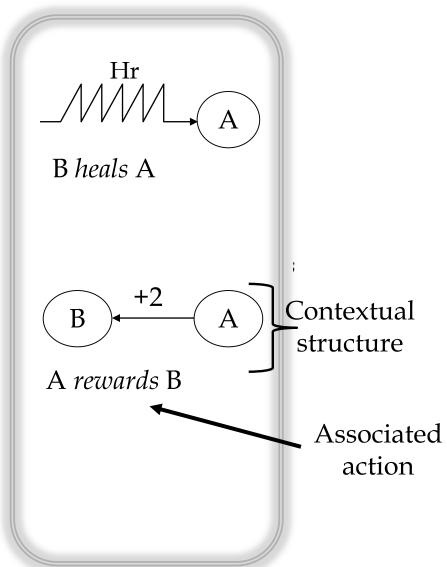


Jaguar knight has an accident

[Tension: Jaguar Knight is in

Princess heals Jaguar Knight

T=2 [Emotional Link: Jaguar]



MEMORY

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```
Jaguar knight has an accident
```

T=1 [<u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Princess heals Jaguar Knight

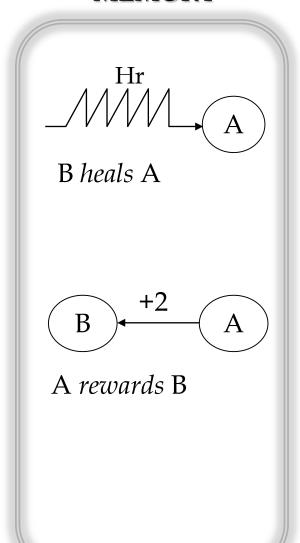
T=2 [Emotional Link: Jaguar knight is very grateful towards

Princess (E. L. T1 +2)]

Jaguar Knight rewards Princess

T=3 [Emotional Link: Jaguar knight is very grateful towards
Princess (E. L. T1 +2)
Princess is very grateful towards
Jaguar Knight (E. L. T1 +2)]

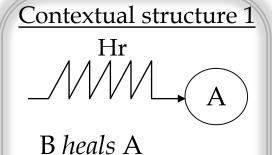
MEMORY



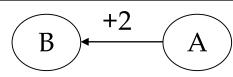
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CONTEXTUAL MEMORY





Contextual structure 2



A rewards B

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Jaguar knight has an accident

Warrior mugs Jaguar Knight

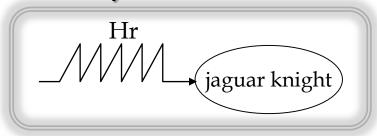
Jaguar Knight insults Warrior

Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Warrior mugs Jaguar Knight

Story-context

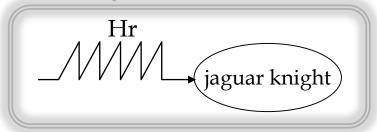


Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight

Warrior mugs Jaguar Knight

Story-context



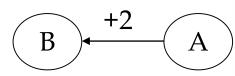
CONTEXTUAL MEMORY





B heals A

Contextual structure 2



A rewards B

Jaguar knight has an accident

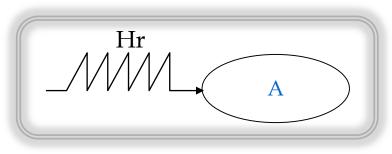
T=1 [<u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Warrior mugs Jaguar Knight

Jaguar knight has an accident

T=1 <u>Tension</u>: Jaguar Knight is injured (Health at risk)]

Warrior mugs Jaguar Knight



B mugs A

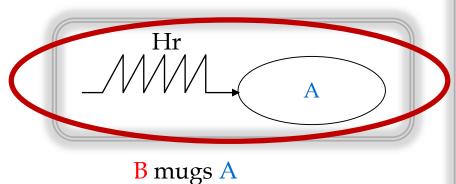
CONTEXTUAL MEMORY

Contextual structures

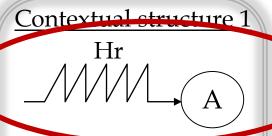
Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight

Warrior mugs Jaguar Knight

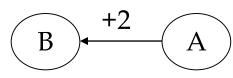


•••



B heals A

Contextual structure 2



A rewards B

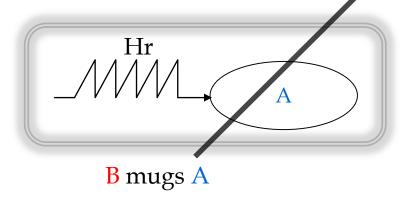
CONTEXTUAL MEMORY

Contextual structures

Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight

Warrior mugs Jaguar Knight

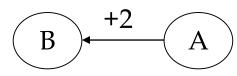


Contextual structure 1



B heals A

Contextual structure 2



A rewards B

CONTEXTUAL MEMORY

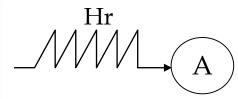
Contextual structures

Jaguar knight has an accident

T=1 [<u>Tension</u>: Jaguar Knight

Warrior mugs Jaguar Knight

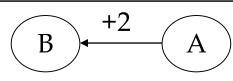
Contextual structure 1



B heals A

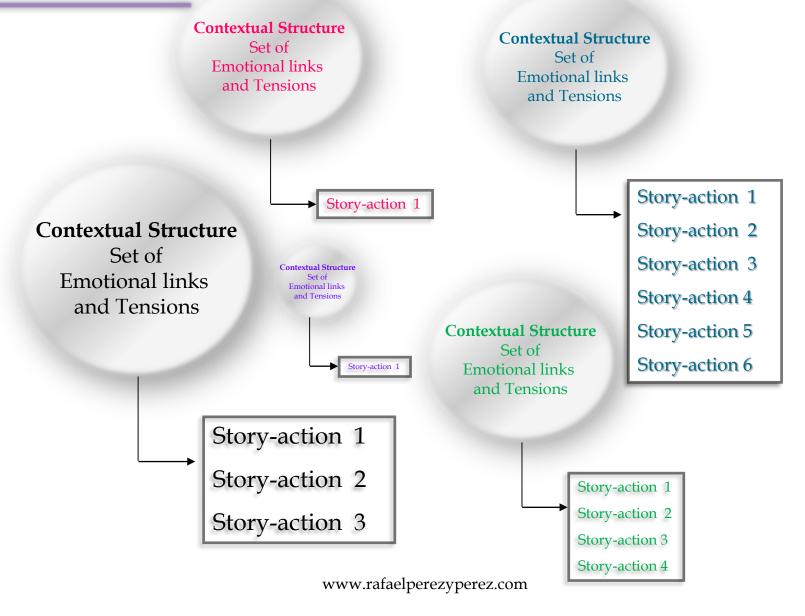
B mugs A

Contextual structure 2



A rewards B

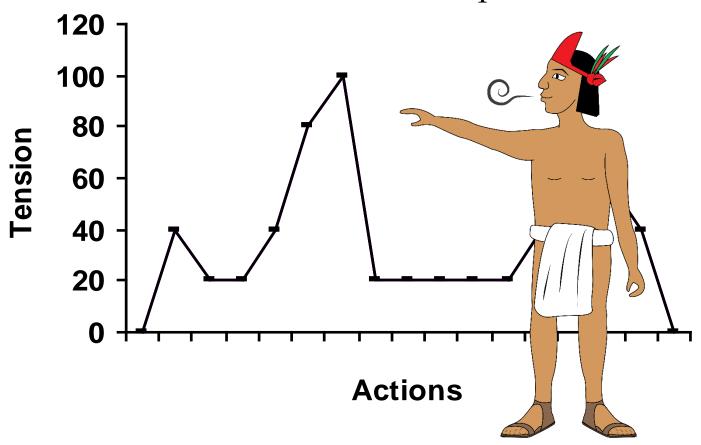
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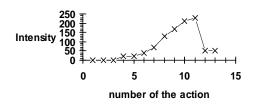
Tensional representation

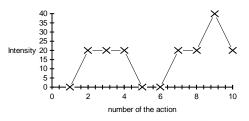
Tensions

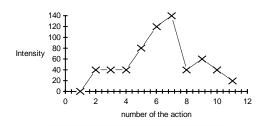
The second important knowledge structure is the set of Tensional Representations



Tensional Representations







PS I

Action 1 Action 2 Action 3

Action n

PS II

Action 1 Action 2 Action 3

Action n

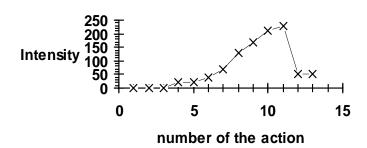
PS_n

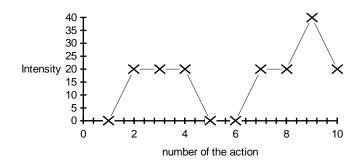
Action n1 Action n2 Action n3

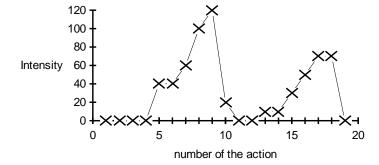
Action nn

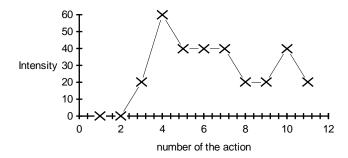
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Tensional Representations

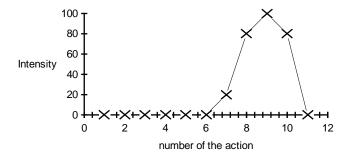


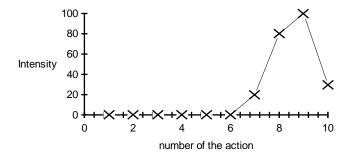


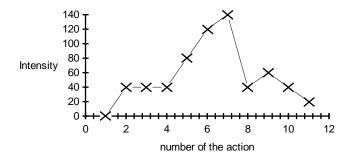




Tensional Representations







Concrete representation

Concrete Representation

The third knowledge representation is formed by a copy of:

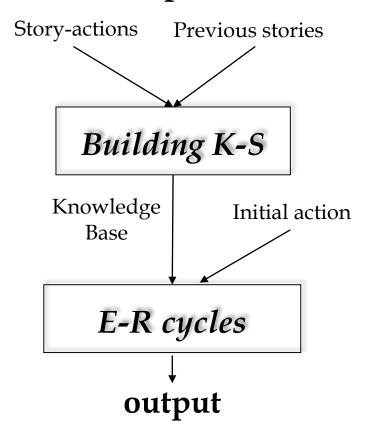
- The set of the Previous Stories
- The Dictionary of story-actions



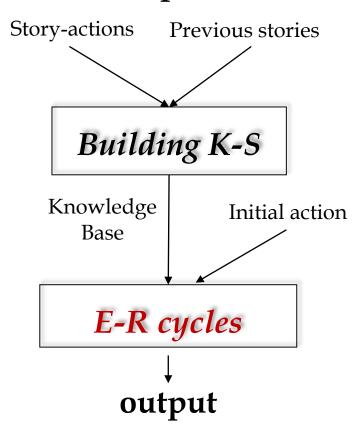
Chapter IV: Generation of Narratives

Rafael Pérez y Pérez www.rafaelperezyperez.com

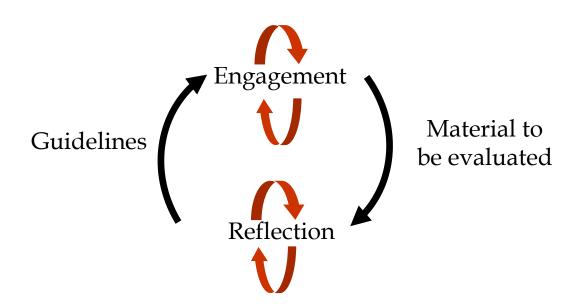
input



input

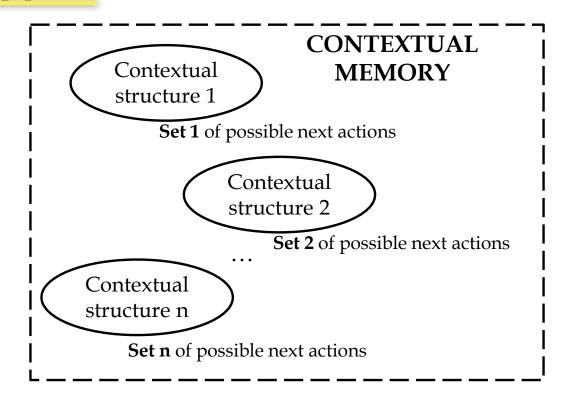


The process of developing new stories consists of a cycle between the Engaged and Reflective States

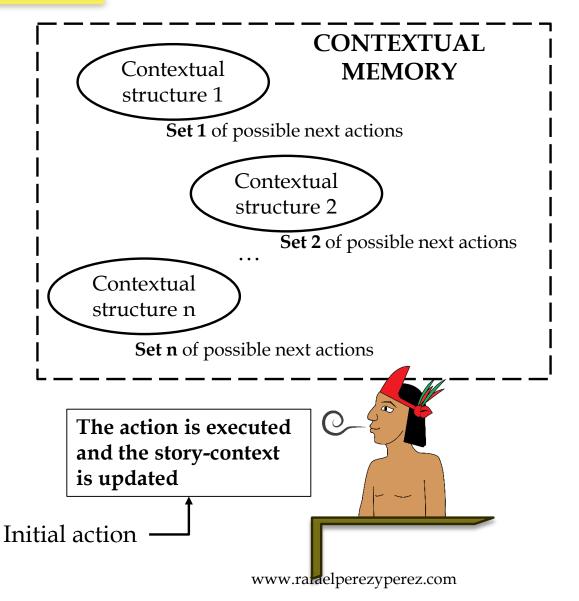


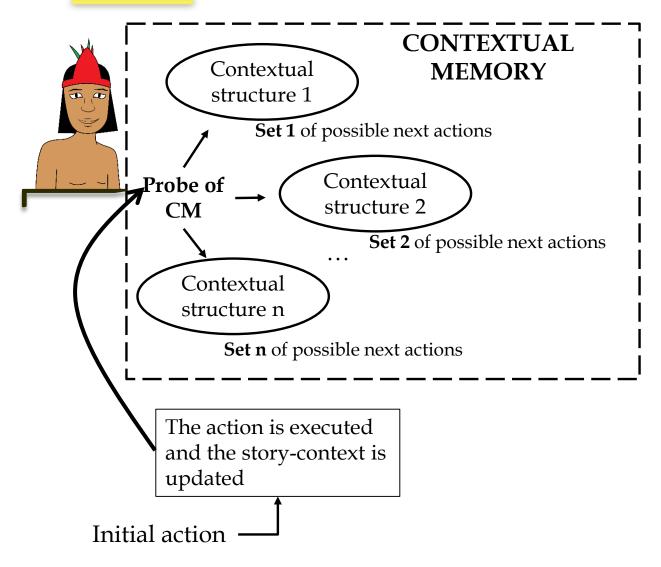
Reflection

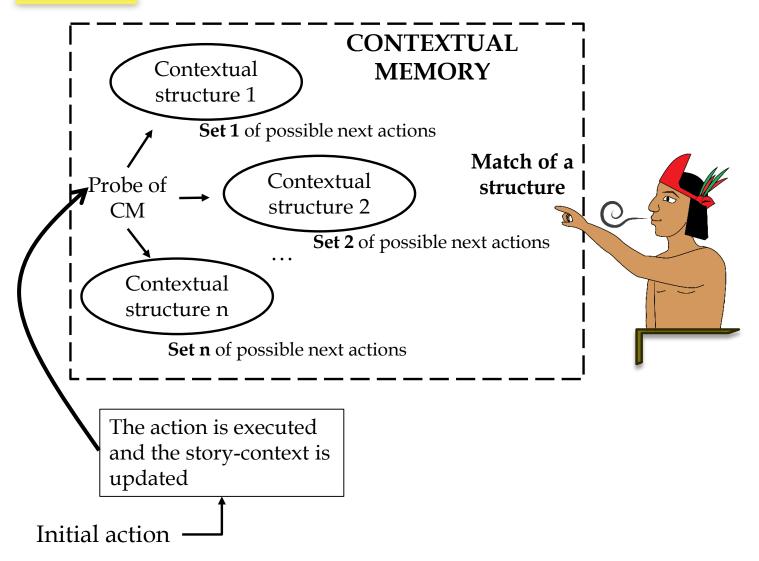
Ending the narrative

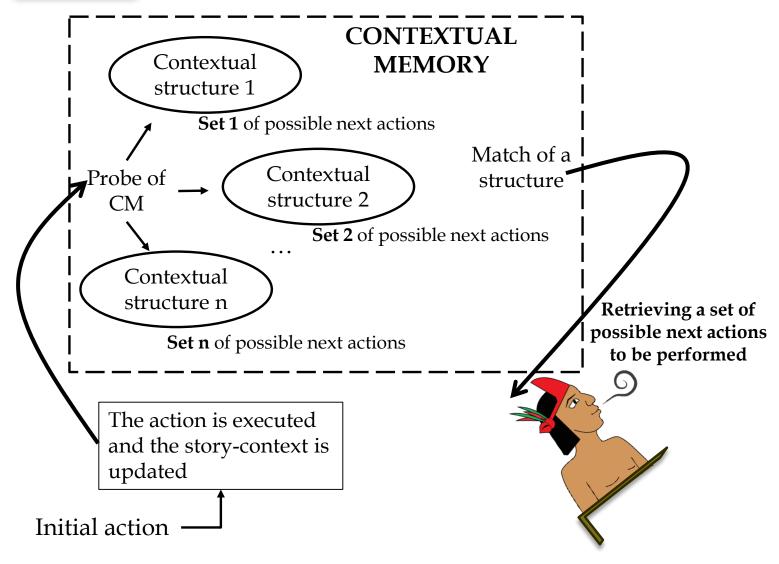


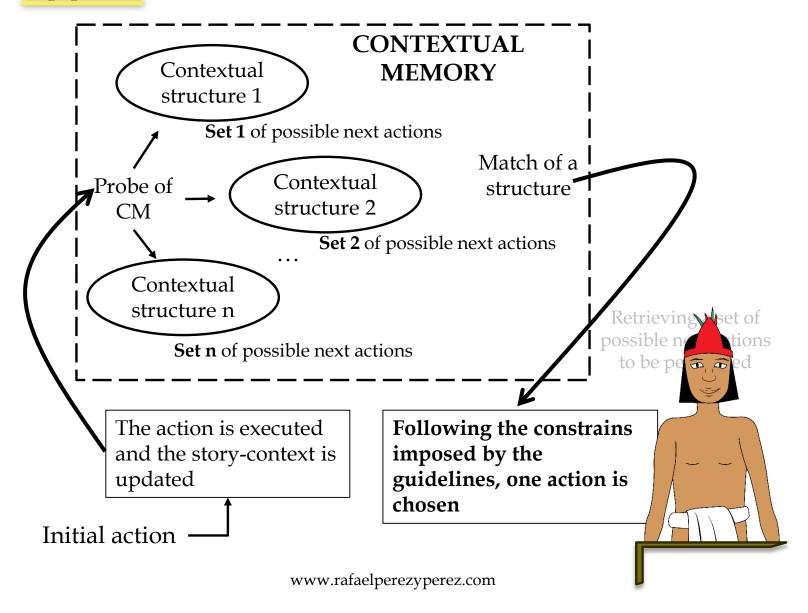


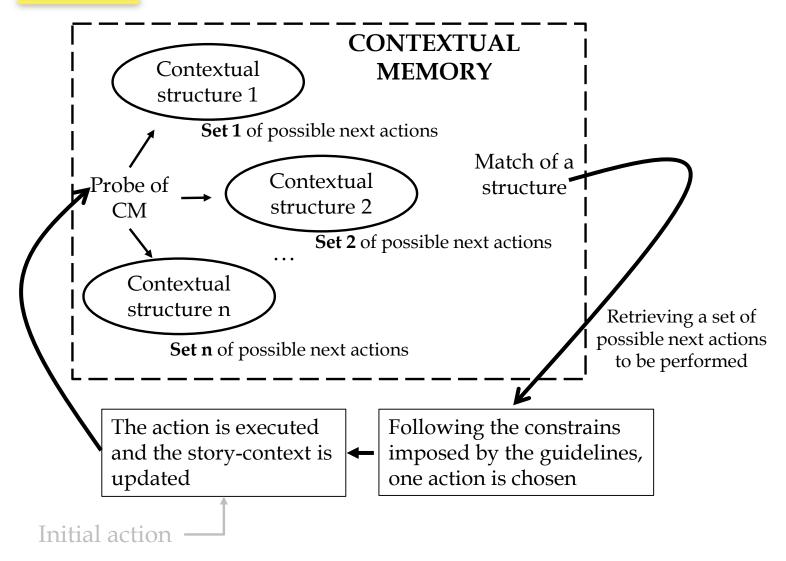


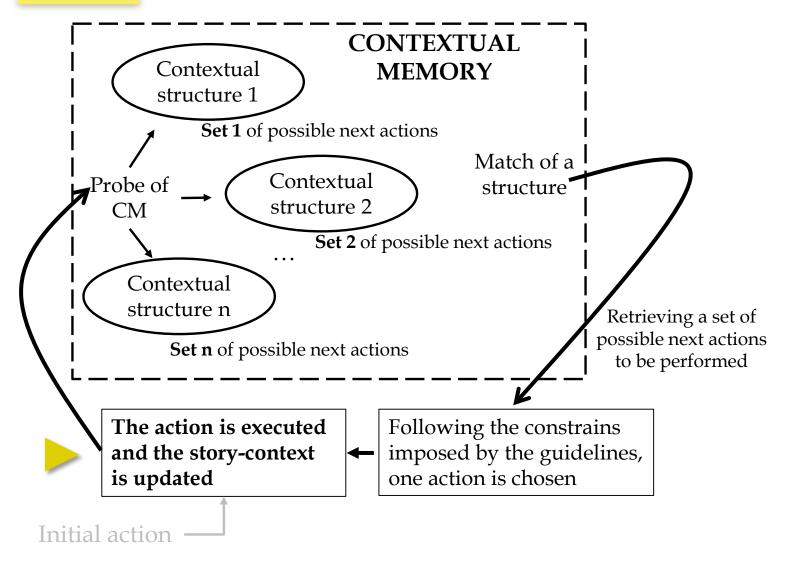


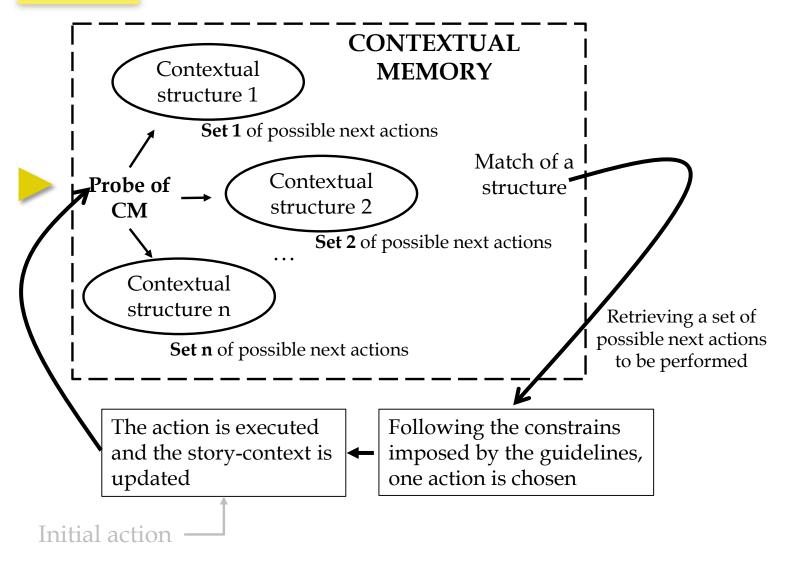


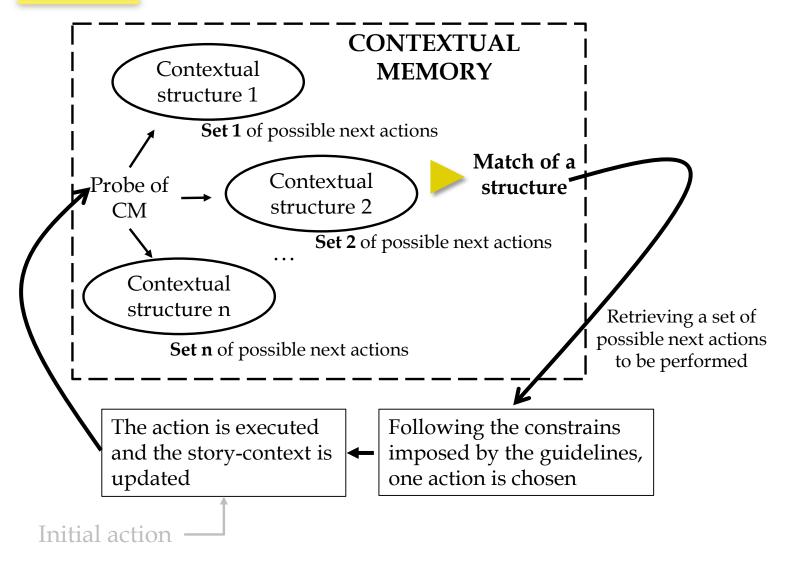


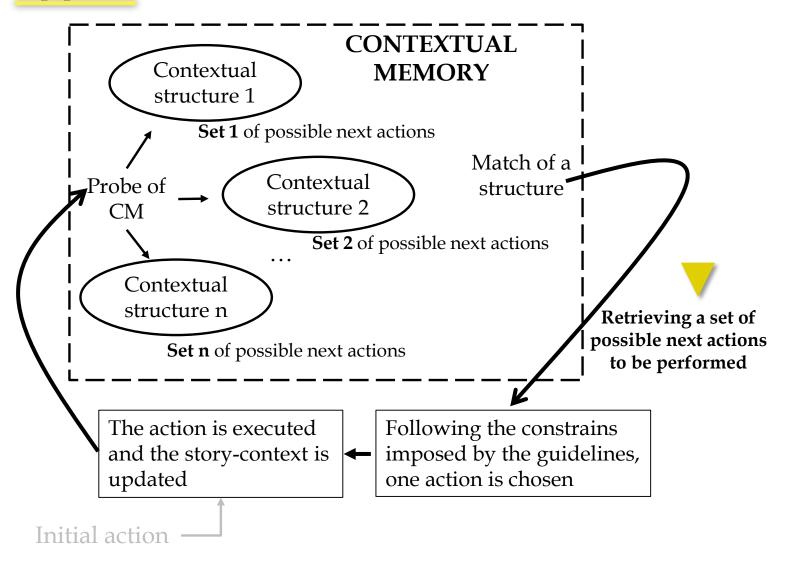


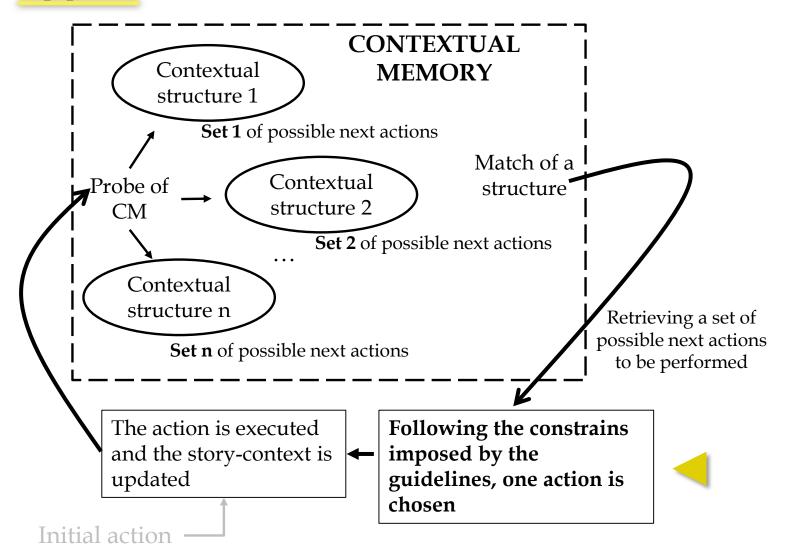


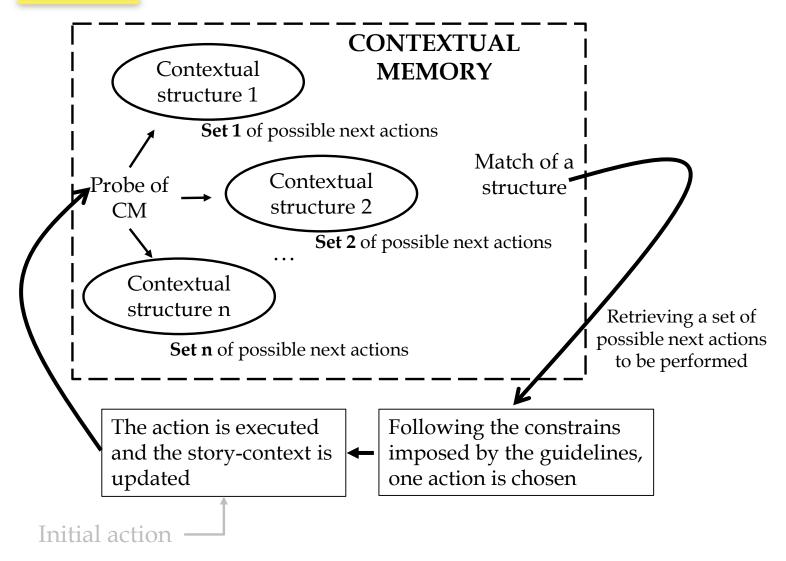


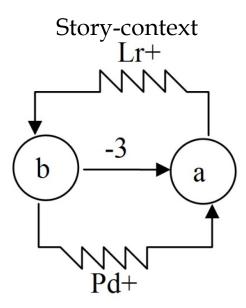


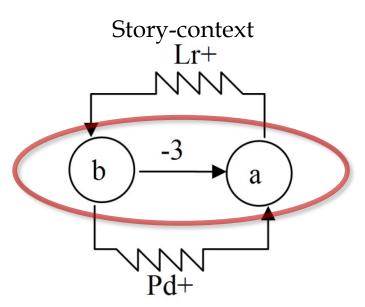


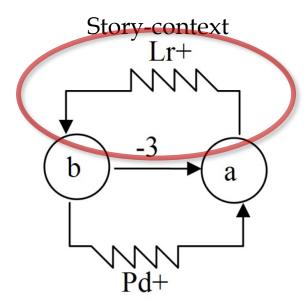


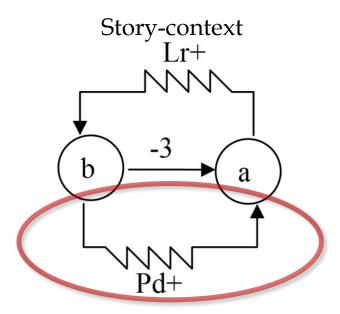


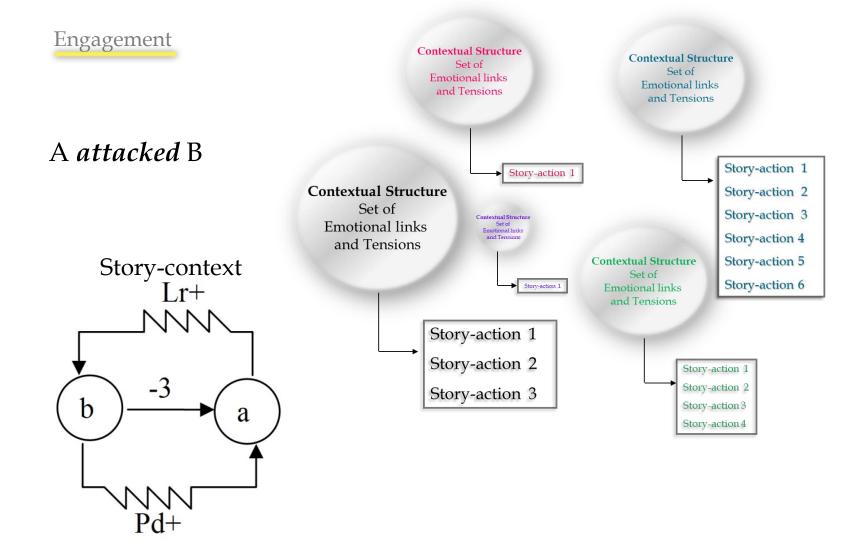




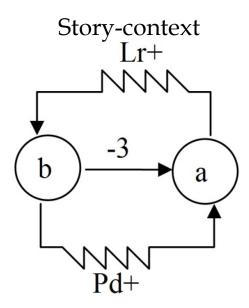




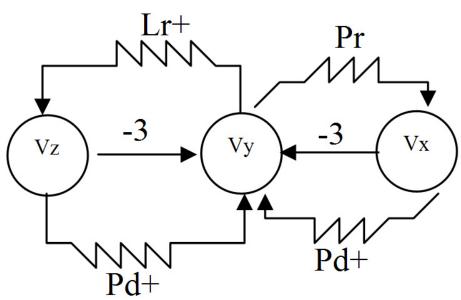




A attacked B

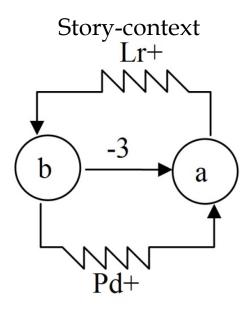


Contextual Structure

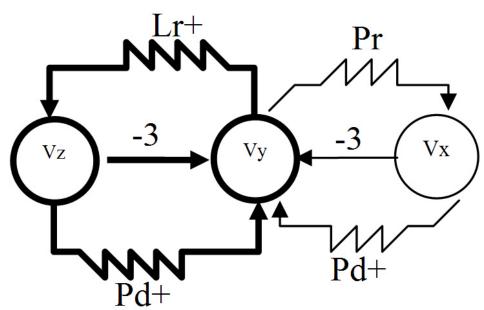


Vz fought Vy

A attacked B

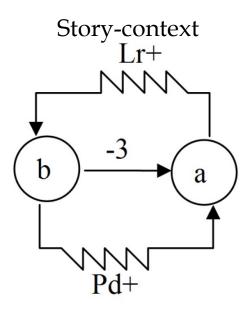


Contextual Structure

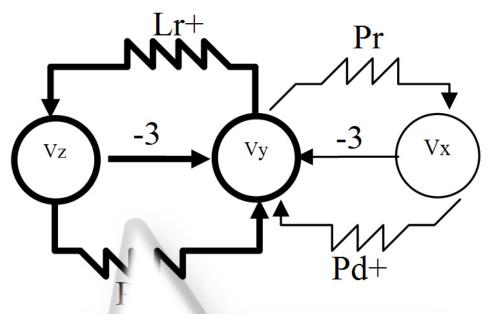


Vz fought Vy

A attacked B



Contextual Structure



The story-context is 50% of the Contextual-structure. This is a parameter of the system

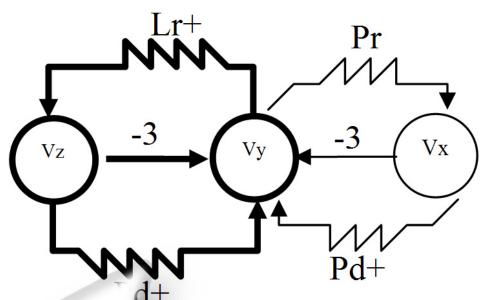


Story-context
Lr+

b

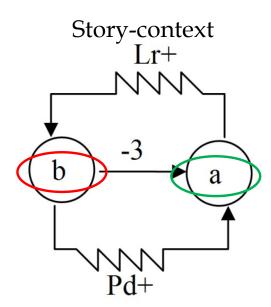
-3

Pd+

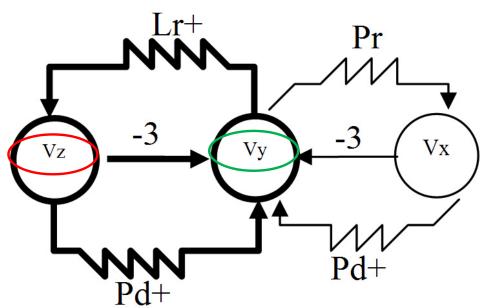


This parameter is referred to as ACAS-Constant; its value is defined by the user

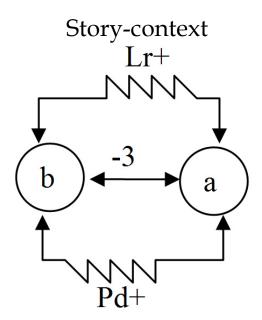
A attacked B

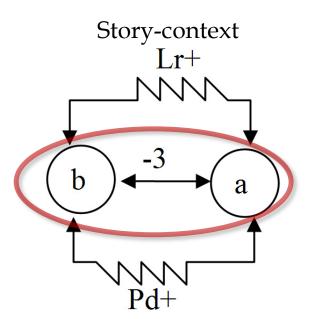


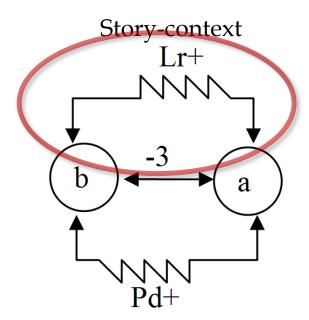
Contextual Structure

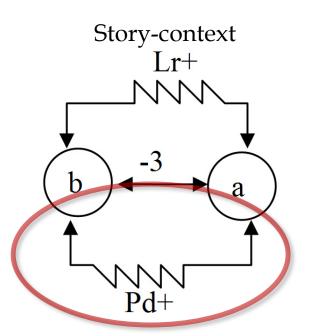


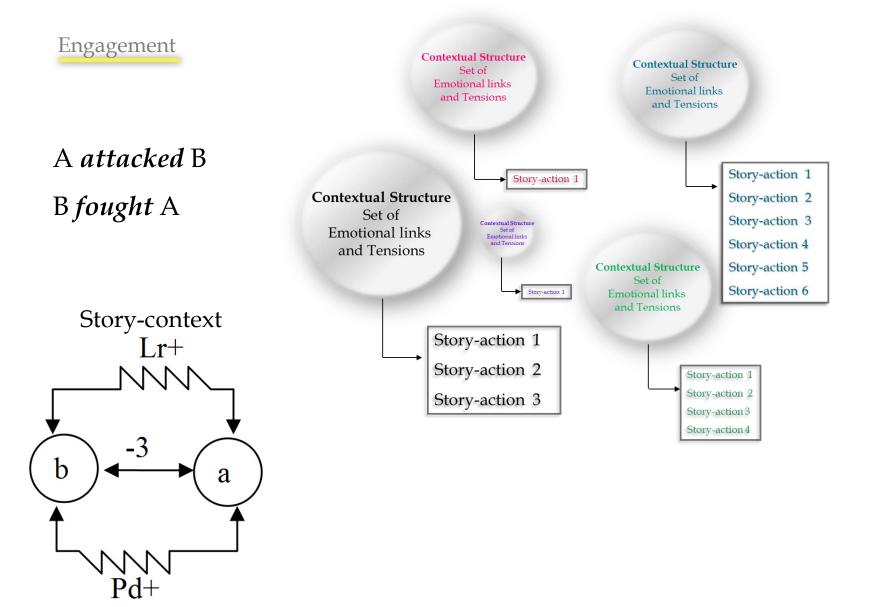
Vz fought Vy



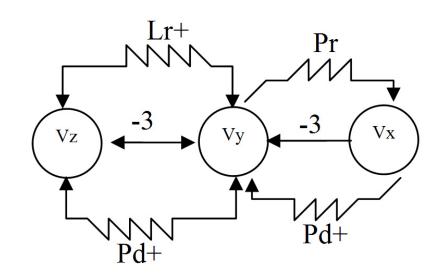




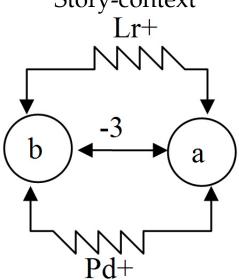




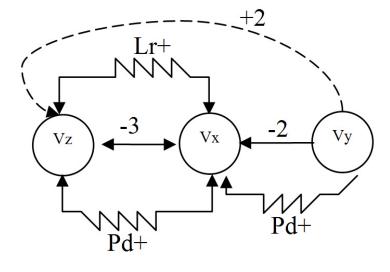
A attacked B B fought A



Story-context



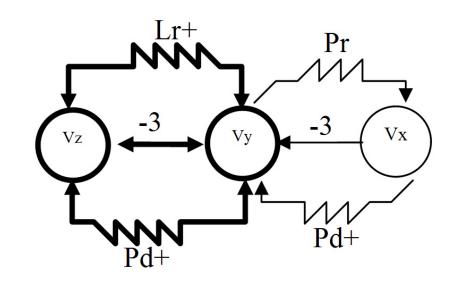
Vy wounded Vz



Vz killed Vx

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A attacked B B fought A



Story-context

Lr+

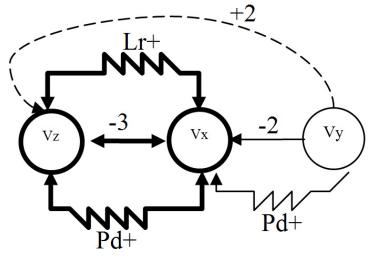
b

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a

Pd+

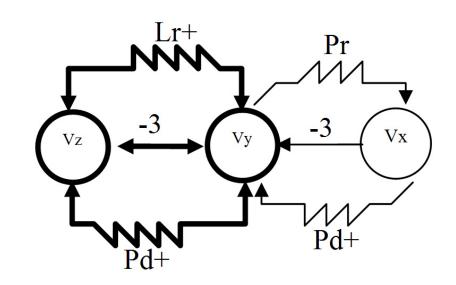
Vy wounded Vz



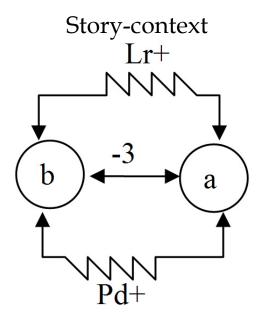
Vz killed Vx

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A attacked B B fought A



Vy wounded Vz



A attacked B

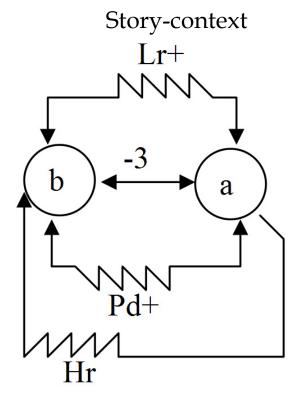
B fought A

A wounded B

A attacked B

B fought A

A wounded B

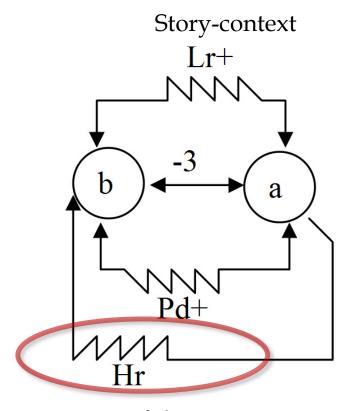


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A attacked B

B fought A

A wounded B



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A attacked B

B fought A

A wounded B

A ran away

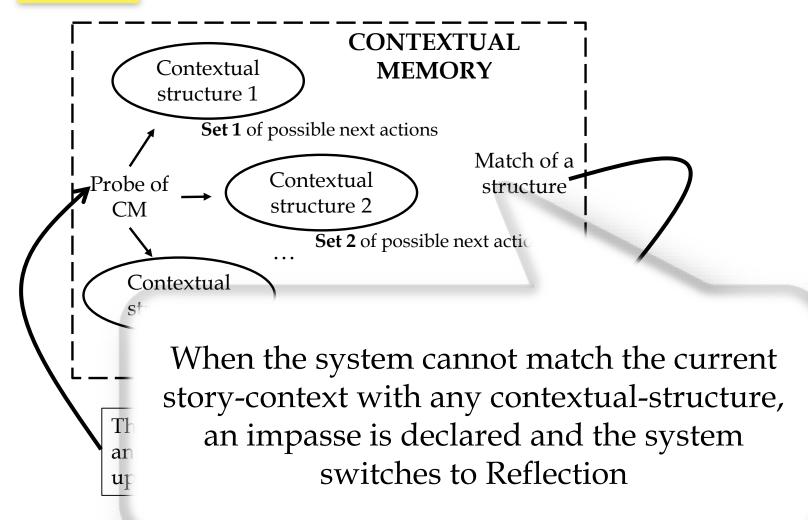
A attacked B

B fought A

A wounded B

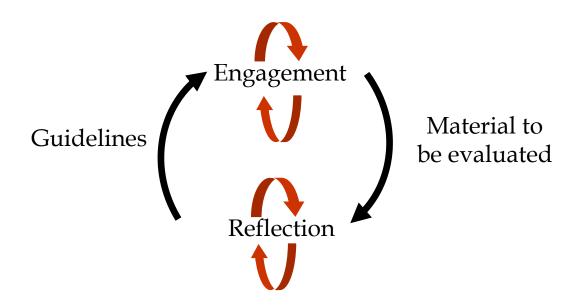
A ran away

3 story-actions



Initial action

The process of developing new stories consists of a cycle between the Engaged and Reflective States









If necessary, the system breaks impasses





MEXICA evaluates the interestingness of the story in progress









If necessary, the system breaks impasses





MEXICA evaluates the interestingness of the story in progress









MEXICA evaluates the interestingness of the story in progress

If necessary breaks i

Notice that during engagement preconditions are not checked.

If it is necessary, the system inserts one or more actions to satisfy preconditions







The system breaks impasses



MEXICA evaluates the interestingness of the story in progress







MEXICA verifies that all actions' preconditions are satisfied



The system breaks impasses



MEXICA evaluates the interestingness of the story in progress







Ţ

MEXICA verifies tha actions' precondition are satisfied



The system breaks impasses



MEXICA tries to break an impasse by "copying" the way similar situations have been solved in the Previous Stories (in the Concrete Representation)









The system breaks impasses



MEXICA evaluates the interestingness of the story in progress







MEXICA verifies that all actions' preconditions are satisfied



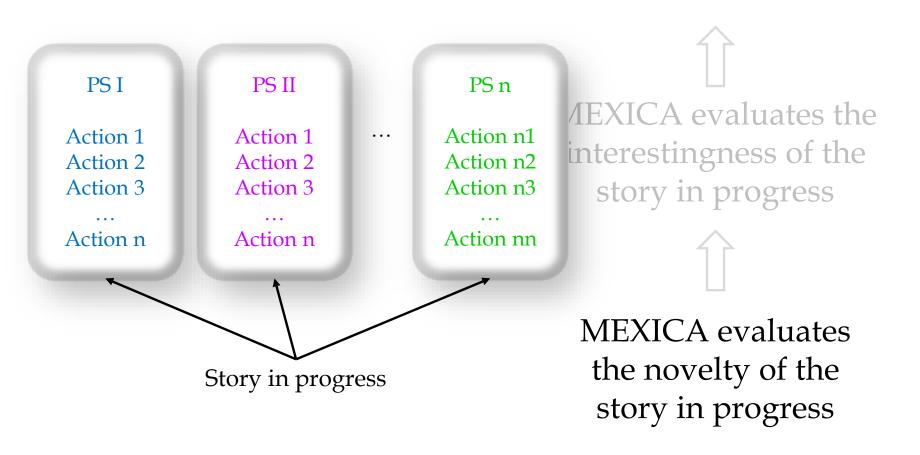
The system breaks impasses

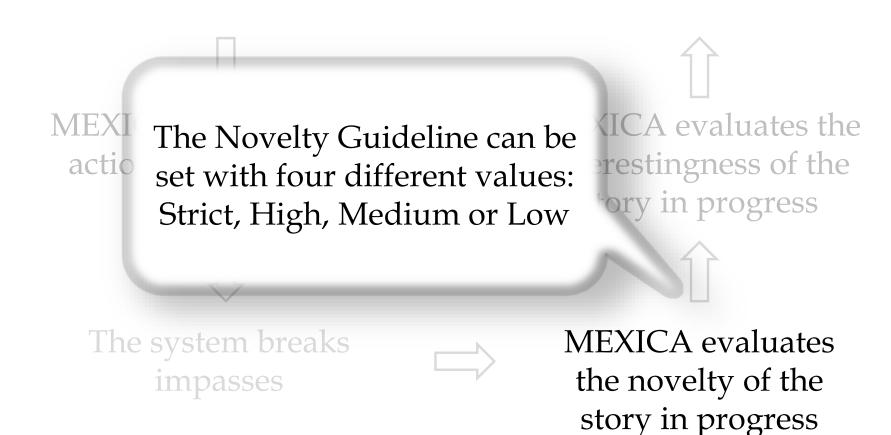


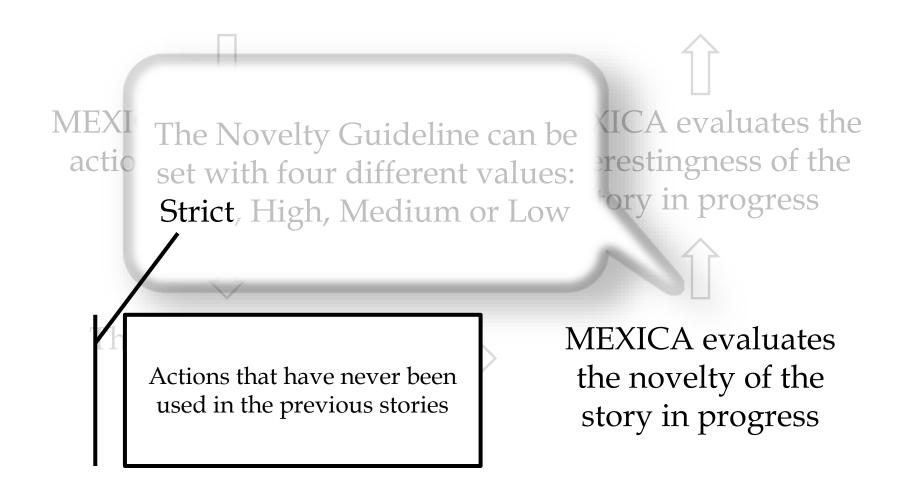
MEXICA evaluates the interestingness of the story in progress

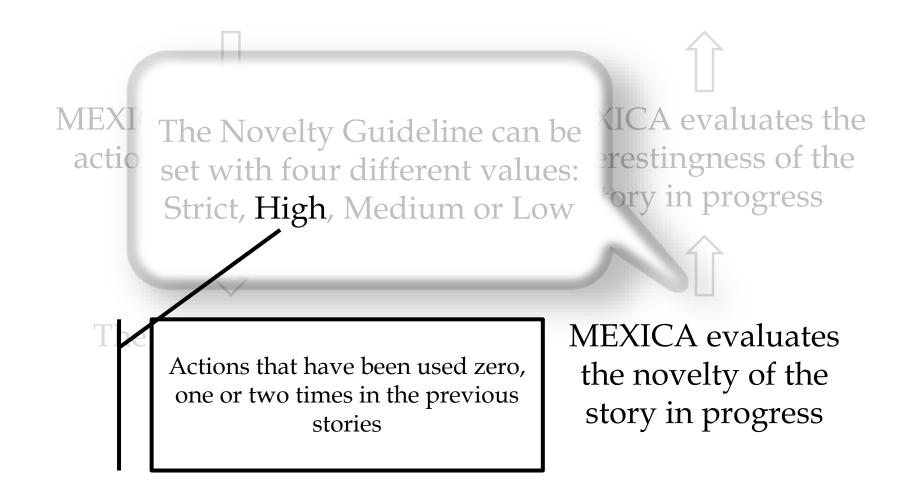


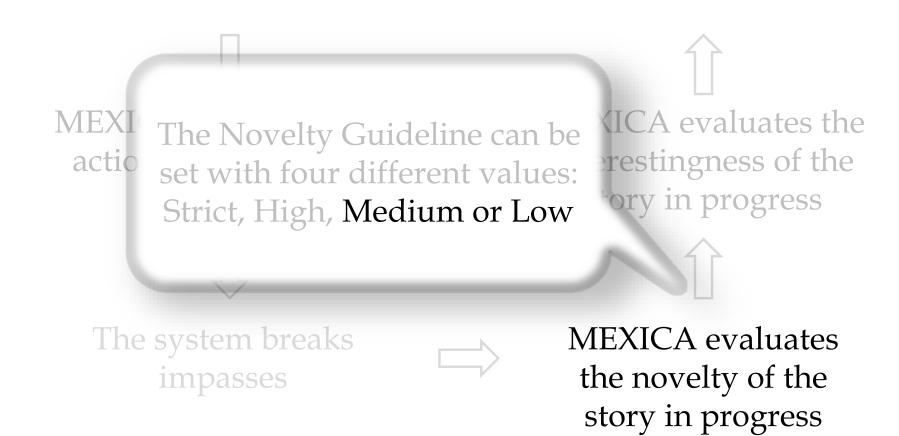


















The system breaks impasses



MEXICA evaluates the interestingness of the story in progress











The system breaks impasses



MEXICA evaluates the interestingness of the story in progress







MEXICA verifies that all actions' preconditions

The possible values for the Tension Guideline are: tendency-up, tendency-down, neutral

breaks Impasses



MEXICA evaluates the interestingness of the story in progress





MEXICA verifies that all actions' preconditions

The possible values for the Tension Guideline are: tendency-up, tendency-down, neutral

oreaks Impasses



MEXICA evaluates the interestingness of the story in progress





MEXICA verifies that all actions' preconditions

The possible values for the Tension Guideline are: tendency-up, tendency-down, neutral

Dreaks IIII passes



MEXICA evaluates the interestingness of the story in progress





MEXICA verifies that all actions' preconditions

The possible values for the Tension Guideline are: tendency-up, tendency-down, neutral

Meaks IIII passes



MEXICA evaluates the interestingness of the story in progress







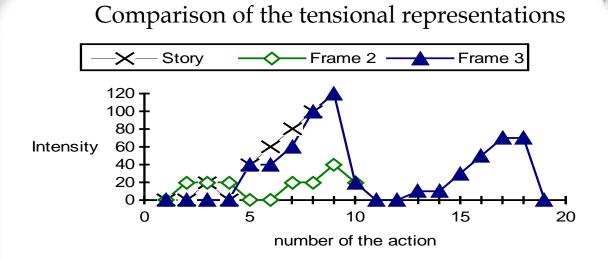
MEXICA verifies that all



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A evaluates velty of the n progress



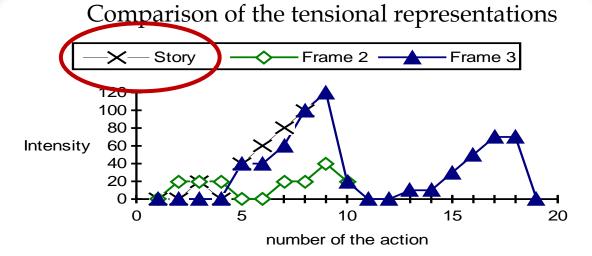
MEXICA verifies that all



MEXICA evaluates the

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A evaluates relty of the n progress





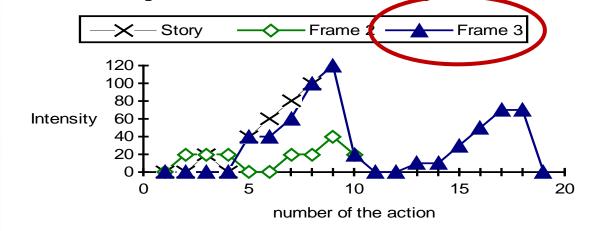
MEXICA verifies that all



MEXICA evaluates the

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Comparison of the tensional representations

A evaluates velty of the n progress





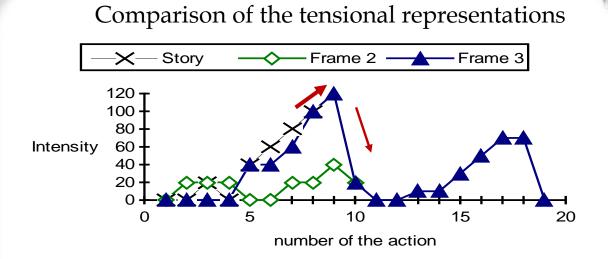
MEXICA verifies that all



MEXICA evaluates the

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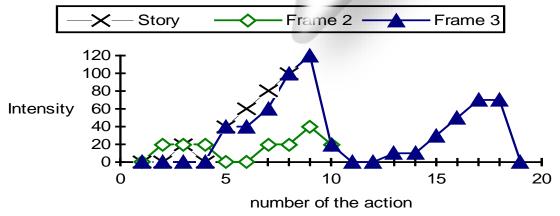
A evaluates relty of the n progress

Tension Guideline = tendency-up



MEXICA verifies that all

MEXICA evaluates the ingness of the ogress



A evaluates relty of the n progress







The system breaks impasses

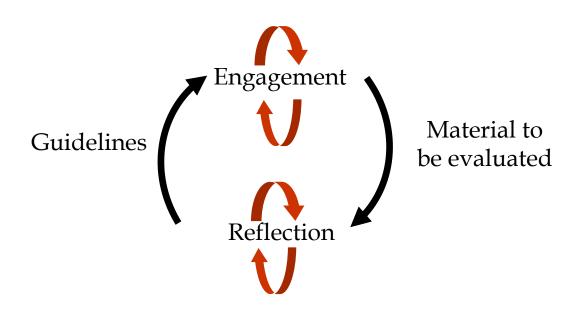


MEXICA evaluates the interestingness of the story in progress



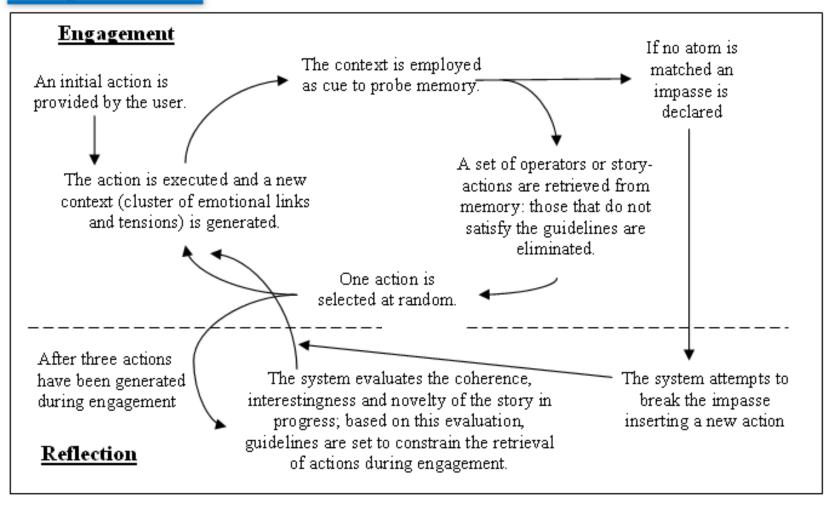


The process of developing new stories consists of a cycle between the Engaged and Reflective States



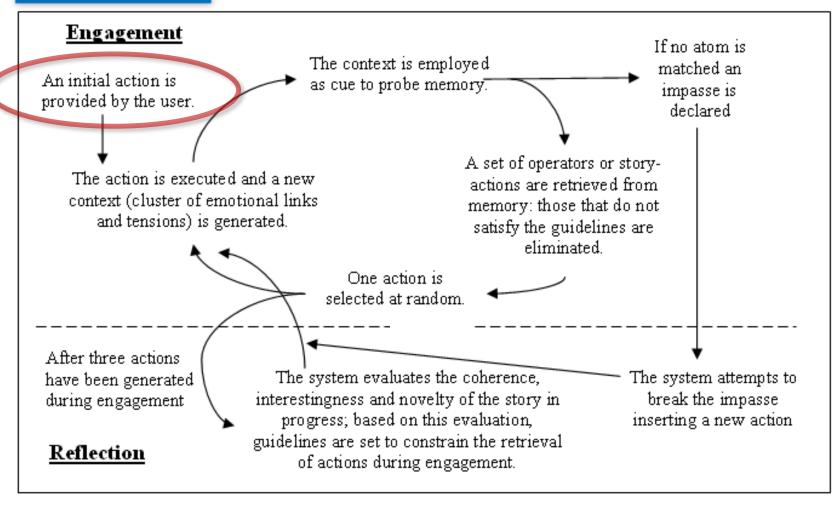
Ending the narrative

Ending the narrative

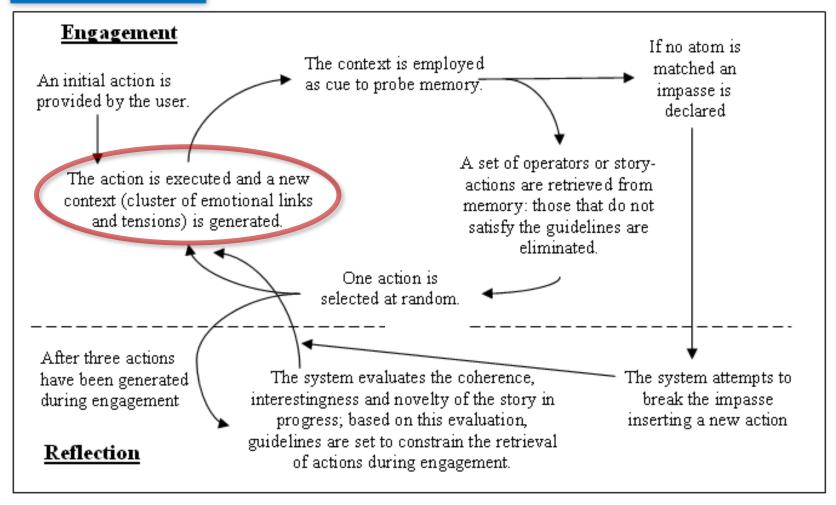


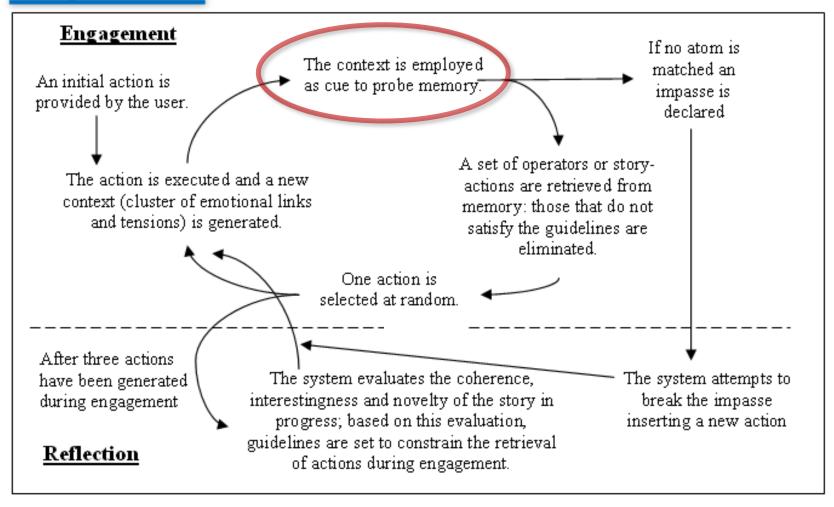
Pérez y Pérez, R. (2007). Employing Emotions to Drive Plot Generation in a Computer-Based Storyteller. Cognitive Systems Research. Vol. 8, number 2, pp. 89-109.

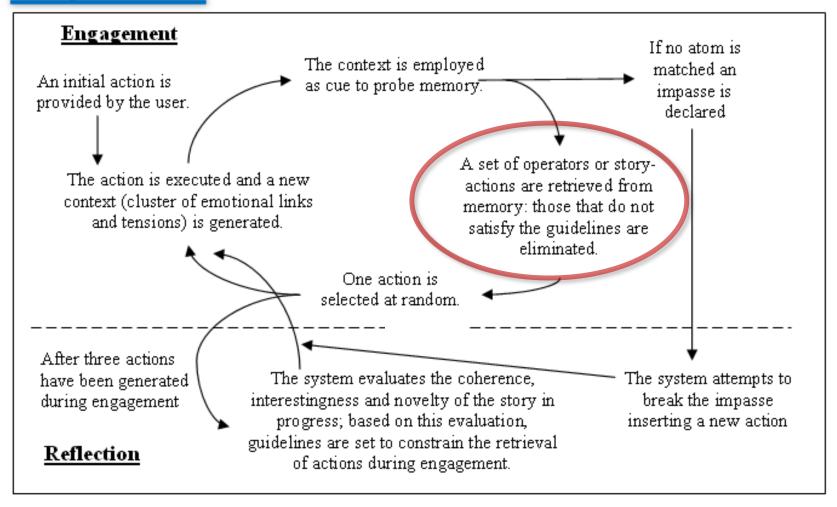
Ending the narrative

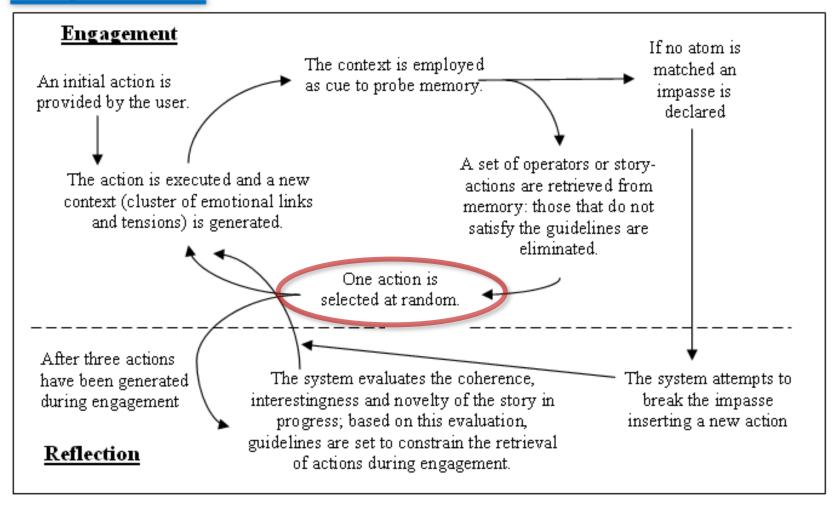


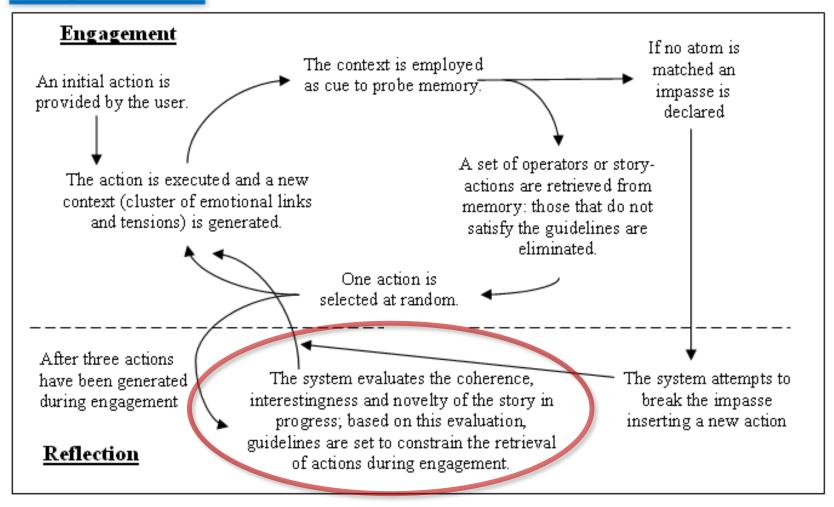
Pérez y Pérez, R. (2007). Employing Emotions to Drive Plot Generation in a Computer-Based Storyteller. Cognitive Systems Research. Vol. 8, number 2, pp. 89-109.

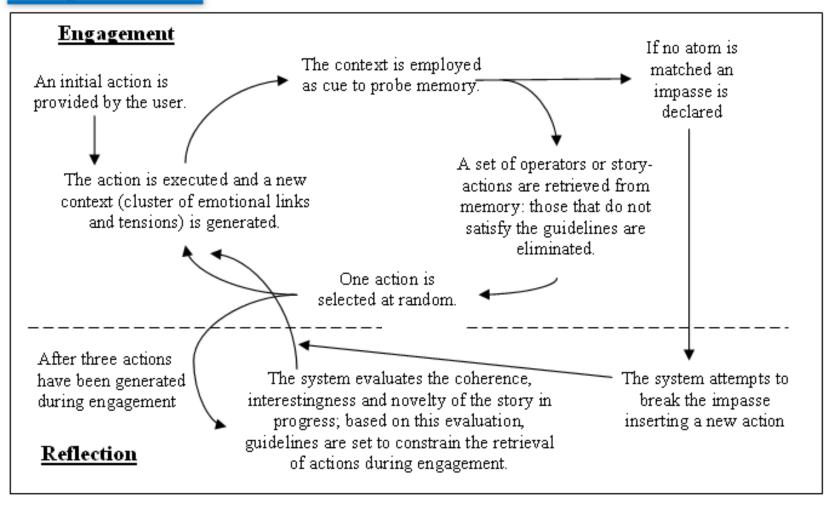


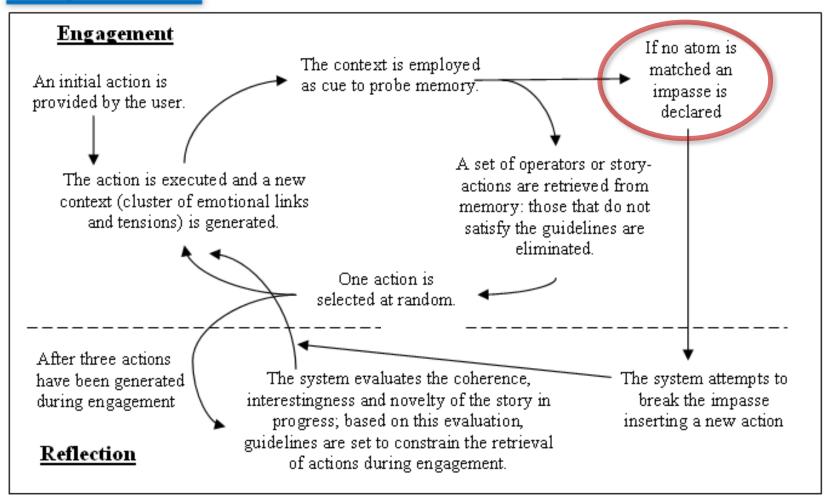


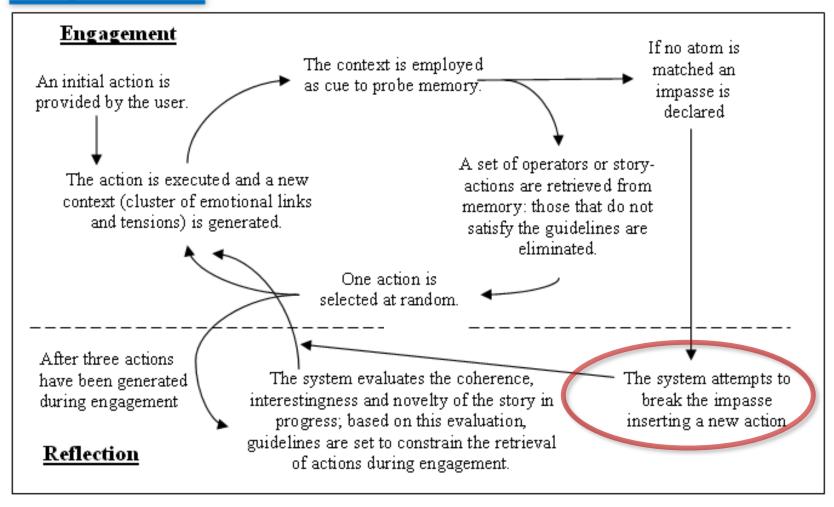


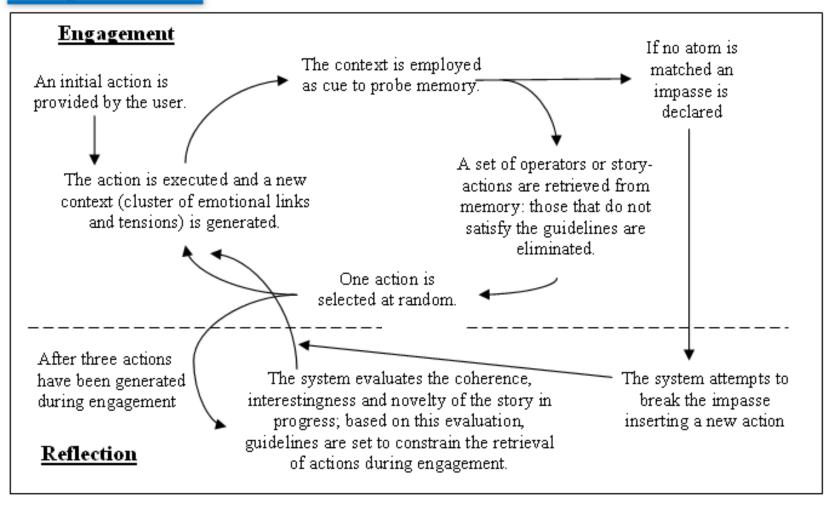












- All characters in the story are dead
- When an unbreakable impasse is declared.
- When the maximum number of actions allowed in a story is reached

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- •When the maximum number of actions allowed in a story is reached



The final analysis

Once a story is finished, MEXICA revises the material produced to add a few finishing touches to the story.

The final analysis

For instance, the system analyses the tale and inserts in the right position story-actions that make explicit some of the characters' emotions (e.g. "the princess hated and loved the jaguar knight").



Chapter V: An Example of how a Narrative is Generated

Rafael Pérez y Pérez www.rafaelperezyperez.com

The Kidnapped Tlatoani

*** NEW STORY:

*** NEW STORY: 0 The tlatoani liberated himself (0)

The first action is given by the user

*** NEW STORY: O The tlatoani liberated himself (0)

Story-time

This action was produced at time = 0

0 The tlatoani liberated himself (0)

Value of the Tension

By default, when new characters appear in the story they are located in Tenochtitlan City

*** NEW STORY:



*** NEW STORY:

0 The tlatoani liberated himself (0)

an impasse is declared and the system switches to reflection to try to break the impasse.







1 The tlatoani lived in Tenochtitlan (0)



1 The tlatoani lived in Tenochtitlan (0)



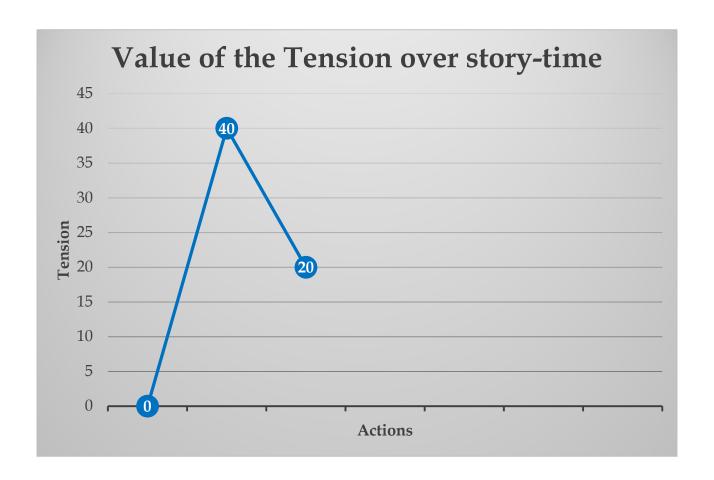
2 The priest kidnapped tlatoani (40)



1 The tlatoani lived in Tenochtitlan (0)



2 The priest kidnapped tlatoani (40) (Chapultepec Forest)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)



- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 3 The priest attacked the tlatoani (40)
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- 5 The priest wounded the tlatoani (100)

*** NEW STORY:

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)



5 The priest wounded the tlatoani (100)

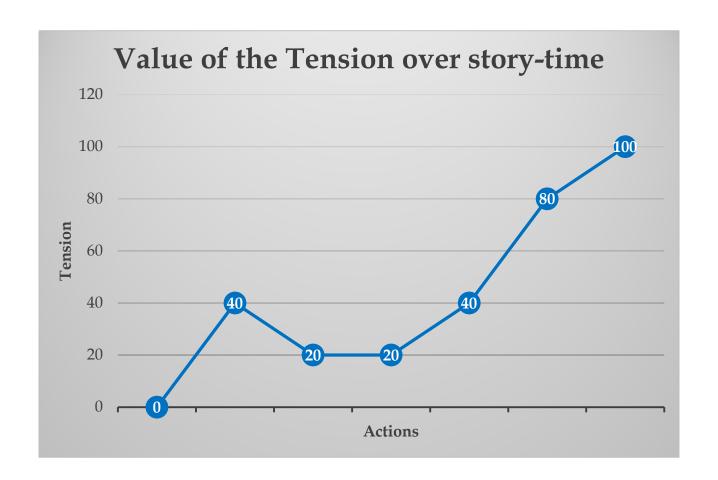
- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The pries Highest tension in the story
- 3 The priest attacked the tlatoan
- 4 The tlatoani and the priest fought 30)
- 5 The priest wounded the tlatoani (100)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)



- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)



- 7 The priest ran away (20)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)

Engagement

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The priest ran away (20)



- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)

Engagement

*** NEW STORY:

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The priest ran away (20)
- 8 The prince decided not to cure the tlatoani (60)



9 The prince went back to Tenochtitlan City (40)

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- ² The prior attacked the tlatoani (40)

New character i and the priest fought (80)

- nest wounded the tlatoani (100)
- 7 The priest ran away (20)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)

Engagement

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoar Why did the new character
- 3 The priest not want to cure the
- 4 The tlatoan Tlatoani?
- 5 The priest wounded oani (100)
- 7 The priest ran away (20
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The priest ran away (20)



- 10 The prince lived in Tenochtitlan (20)
- 11 The prince decided to go to the forest (20)
- 12 The prince realised that the priest wounded the tlatoani (20)
- 13 The tlatoani affronted the prince (40)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The priest ran away (20)
- 10 The prince lived in Tenochtitlan (20)



- 11 The prince decided to go to the forest (20)
- 12 The prince realised that the priest wounded the tlatoani (20)
- 13 The tlatoani affronted the prince (40)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
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- 6 The tlatoani affronted the priest (20)
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- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The priest ran away (20)
- 10 The prince lived in Tenochtitlan (20)
- 11 The prince decided to go to the forest (20)



- 12 The prince realised that the priest wounded the tlatoani (20)
- 13 The tlatoani affronted the prince (40)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)



- 1 The tlatoani lived in Tenochtitlan (0)
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- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The priest ran away (20)
- 10 The prince lived in Tenochtitlan (20)
- 11 The prince decided to go to the forest (20)
- 12 The prince realised that the priest wounded the tlatoani (20)



- 13 The tlatoani affronted the prince (40)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)

Reflection

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest (20)
- 3 The priest attacked the tlatoani (40)
- 4 The tlatoani and the priest fought (80)
- 5 The priest wounded the tlatoani (100)
- 7 The

New preconditions that require to be fulfilled

11 Th

10 Th

- 12 The prince realised that the priest wounded the tlatoani (20)
- 13 The tlatoani affronted the prince (40)
- 8 The prince decided not to cure the tlatoani (60)
- 9 The prince went back to Tenochtitlan City (40)



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest 20
- 3 The priest attacked the tlatoani 40
- 4 The tlatoani and the priest fought 80
- 5 The priest wounded the tlatoani 100
- 7 The priest ran away 20
- 10 The prince lived in Tenochtitlan
- 11 The prince decided to go to the forest
- 12 The prince realised that the priest wounded the tlatoani
- 15 The tlatoani was fond of the prince



- 14 The prince attempted to take advantage of the tlatoani 40
- 13 The tlatoani affronted the prince 40
- 8 The prince decided not to cure the tlatoani 60
- 9 The prince went back to Tenochtitlan City 40



- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest 20
- 3 The priest attacked the tlatoani 40
- 4 The tlatoani and the priest fought 80
- 5 The priest wounded the tlatoani 100
- 7 The priest ran away 20
- 10 The prince lived in Tenochtitlan
- 11 The prince decided to go to the forest
- 12 The prince realised that the priest wounded the tlatoani



- 15 The tlatoani was fond of the prince
- 14 The prince attempted to take advantage of the tlatoani 40
- 13 The tlatoani affronted the prince 40
- 8 The prince decided not to cure the tlatoani 60
- 9 The prince went back to Tenochtitlan City 40

1 The tlatoani lived in Tenochtitlan (0)

Engagement

2 The priest kidnapped tlatoani (40)

0 The tlatoani liberated himself (20)

Switches back to engagement and an impasse is triggered.

7 The priest ran away 20

10 The prince lived in Tenochtitlan

11 The prince decided to go to the forest

12 The prince realised that the priest wounded the tla

15 The tlatoani was fond of the prince

14 The prince attempted to take advantage of the

40

13 The tlatoani affronted the prince 40

8 The prince decided not to cure the tlatoani 60

9 The prince went back to Tenochtitlan City 40



- 1 The tlatoani lived in Tenochtitlan (0)
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- 10 The prince lived in Tenochtitlan
- 11 The prince decided to go to the forest
- 12 The prince realised that the priest wounded the tlatoani
- 15 The tlatoani was fond of the prince
- 14 The prince attempted to take advantage of the tlatoani 40
- 13 The tlatoani affronted the prince 40
- 8 The prince decided not to cure the tlatoani 60
- 9 The prince went back to Tenochtitlan City 40



16 The tlatoani died due to his injuries 0

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest 20
- 3 The priest attacked the tlatoani 40
- 4 The tlatoani and the priest fought 80
- 5 The priest wounded the tlatoani 100

7 The priest r

10 The prince Switches back to engagement: a new impasse is triggered.

12 The prince

15 The tlatoani was fond of the prince

14 The prince attempted to take advantage of the tlatoani 40

B The tlatoani affronted the prince 40

8 The prince decided not to cure the tlatoani 60

9 The prince went back to Tenochtitlan City 40

16 The tlatoani died due to his injuries 0

- 1 The tlatoani lived in Tenochtitlan (0)
- 2 The priest kidnapped tlatoani (40)
- 0 The tlatoani liberated himself (20)
- 6 The tlatoani affronted the priest 20
- 3 The priest attacked the tlatoani 40
- 4 The tlatoa
- 5 The pri
- Switches back to reflection but the impasse cannot be broken.
- 11 The
- 12 The So, the story ends. A the tlatoani
- 15 The mount was joined of the pr
- 14 The prince attempted to take advantage of the tlatoani 40
- 23 The tlatoani affronted the prince 40
- 8 The prince decided not to cure the tlatoani 60
- 9 The prince went back to Tenochtitlan City 40
- 16 The tlatoani died due to his injuries 0

- 1 The tlatoani lived in Tenochtitlan (0)
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- 6 The tlatoani affronted the priest 20
- 3 The priest attacked the tlatoani 40
- 4 The tlatoani and the priest fought 80
- 5 The priest wounded the tlatoani 100
- 7 The priest ran away 20
- 10 The prince lived in Tenochtitlan
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- 12 The prince realised that the priest wounded the tlatoani
- 15 The tlatoani was fond of the prince
- 14 The prince attempted to take advantage of the tlatoani 40
- 13 The tlatoani affronted the prince 40
- 8 The prince decided not to cure the tlatoani 60
- 9 The prince went back to Tenochtitlan City 40
- 16 The tlatoani died due to his injuries 0

TLATOANI ACTOR PRIEST KIDNAPPED TLATOANI TLATOANI BECAME FREE TLATOANI AFFRONTED PRIEST PRIEST ATTACKED TLATOANI TLATOANI FOUGHT PRIEST PRIEST WOUNDED TLATOANI PRIEST RAN AWAY PRINCE ACTOR PRINCE WENT_FOREST PRINCE REALISED PRIEST WOUNDED TLATOANI TLATOANI WAS_FOND_OF PRINCE PRINCE ATTEMPTED_TO_TAKE_ADVANTAGE_OF TLATOANI TLATOANI AFFRONTED PRINCE PRINCE DID_NOT_CURE TLATOANI PRINCE WENT_TENOCHTITLAN_CITY TLATOANI DIED_BY_INJURIES

```
TLATOANI ACTOR
PRIEST KIDNA
                 TLATOANI
TLATOANI BECA
TLATO
PRIEST
        The tlatoani was an inhabitant of the Great Tenochtitlan.
TLATO
PRIEST
PRIEST RAN_AWAY
PRINCE ACTOR
PRINCE WENT_FOREST
PRINCE REALISED PRIEST WOUNDED TLATOANI
TLATOANI WAS_FOND_OF PRINCE
PRINCE ATTEMPTED_TO_TAKE_ADVANTAGE_OF TLATOANI
TLATOANI AFFRONTED PRINCE
PRINCE DID_NOT_CURE TLATOANI
PRINCE WENT_TENOCHTITLAN_CITY
TLATOANI DIED_BY_INJURIES
```

The tlatoani was an inhabitant of the Great Tenochtitlan. PRIEST KIDNAPPED TLATOANI TLATOANI BEC. TE FREE TLATOANI AFFR D PRIEST ANI PRIEST ATTACKE TLATOAN The priest kidnapped the tlatoani and went PRIEST WO to the Chapultepec Forest. PRIEST RA PRINCE ACTOR PRINCE WENT_FOREST PRINCE REALISED PRIEST WOUNDED TLATOANI TLATOANI WAS_FOND_OF PRINCE PRINCE ATTEMPTED_TO_TAKE_ADVANTAGE_OF TLATOANI TLATOANI AFFRONTED PRINCE PRINCE DID_NOT_CURE TLATOANI PRINCE WENT_TENOCHTITLAN_CITY TLATOANI DIED_BY_INJURIES

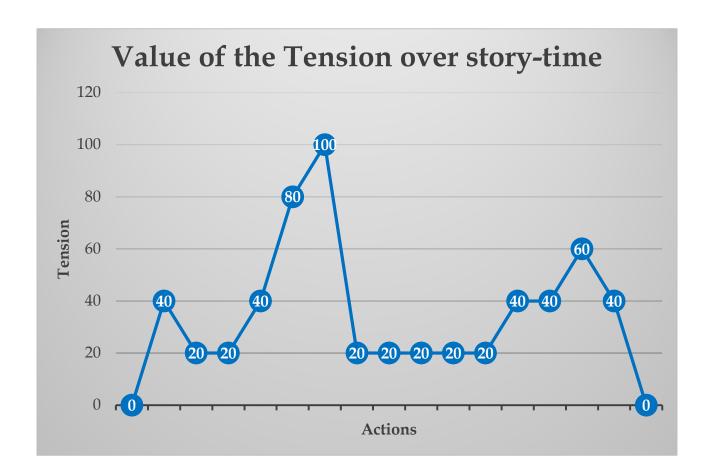
Tlatoani was an inhabitant of the Great Tenochtitlan. The priest kidnapped the tlatoani and went to the Chapultepec Forest. TLATOANI BECAME FREE TLATOANI AFFRONTED PRIEST PRIEST ATTACKED TLATOANI TLATOANI FOUGHT PRIEST PRIEST WOUNDED TLATOANI PRIEST RAN_AWAY PRINCE ACTOR PRINCE WENT_FOREST PRINCE REALISED PRIEST WOUNDED TLATOANI TLATOANI WAS_FOND_OF PRINCE PRINCE ATTEMPTED_TO_TAKE_ADVANTAGE_OF TLATOANI TLATOANI AFFRONTED PRINCE PRINCE DID_NOT_CURE TLATOANI PRINCE WENT_TENOCHTITLAN_CITY TLATOANI DIED_BY_INJURIES

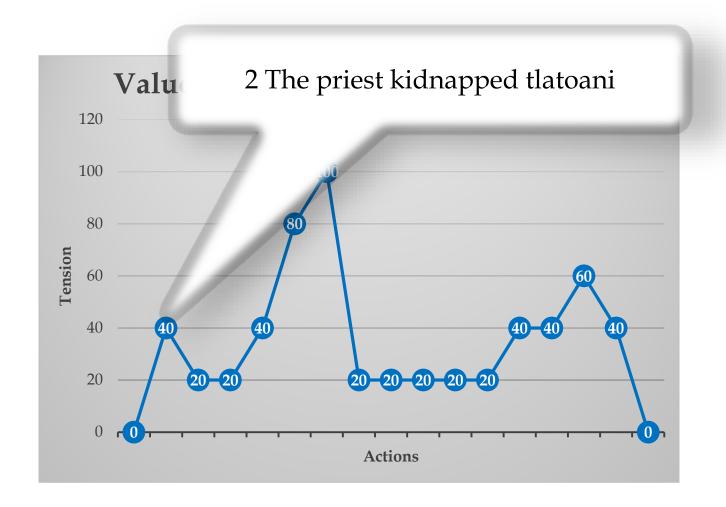
The Kidnapped Tlatoani

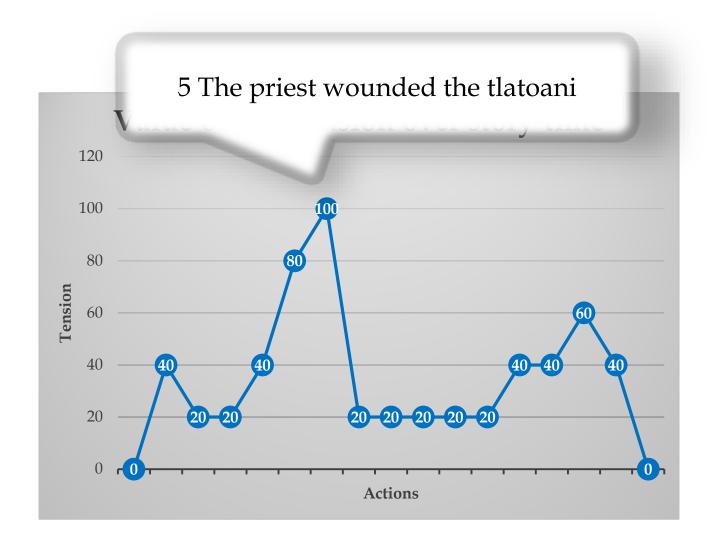
The tlatoani was an inhabitant of the Great Tenochtitlan. The priest kidnapped the tlatoani and went to the Chapultepec Forest. With a hidden knife the tlatoani was able to cut all the ropes and escape. The tlatoani was really angry for what had happened and affronted the priest. The priest thoroughly observed the tlatoani. Then, took a dagger and attacked the tlatoani. Suddenly, the tlatoani and the priest were involved in a violent fight. In a fast movement, the priest wounded the tlatoani. An intense haemorrhage arouse which weakened the tlatoani. The priest felt panic and ran away.

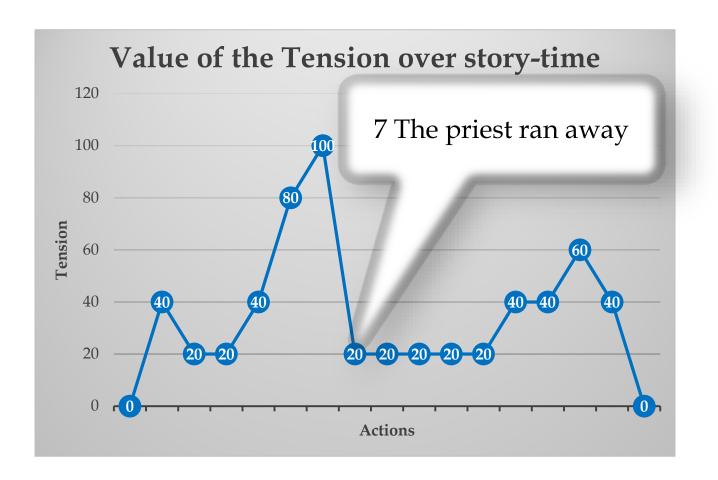
The prince was an inhabitant of the Great Tenochtitlan. Early, in the morning, the prince went to the Chapultepec Forest. Suddenly, the prince realized that the priest wounded the tlatoani. The tlatoani always felt a special affection for the prince. The prince attempted to take advantage of the situation of the tlatoani. The tlatoani was really angry for what had happened and affronted the prince. The prince, knowing that the tlatoani's life was at risk, resolved not to cure the tlatoani. The prince decided to go back to the Great Tenochtitlan City. The injuries that the tlatoani received were very serious. So, the tlatoani died.

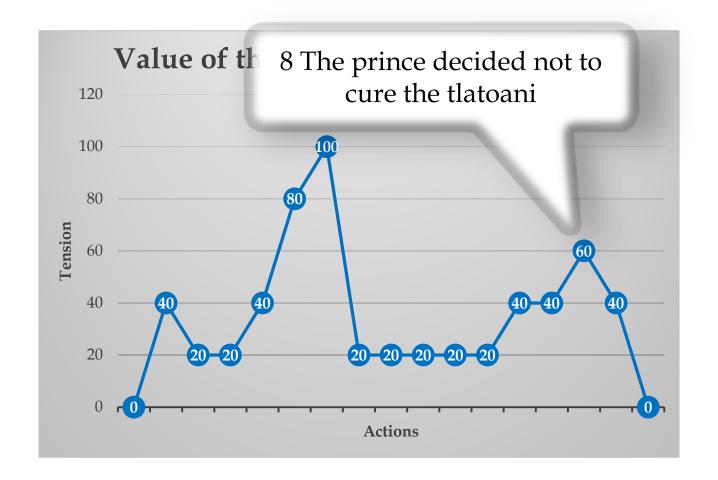
The End

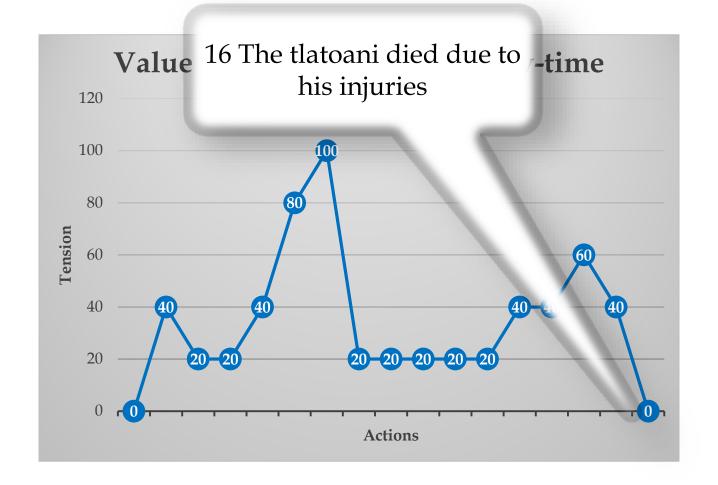


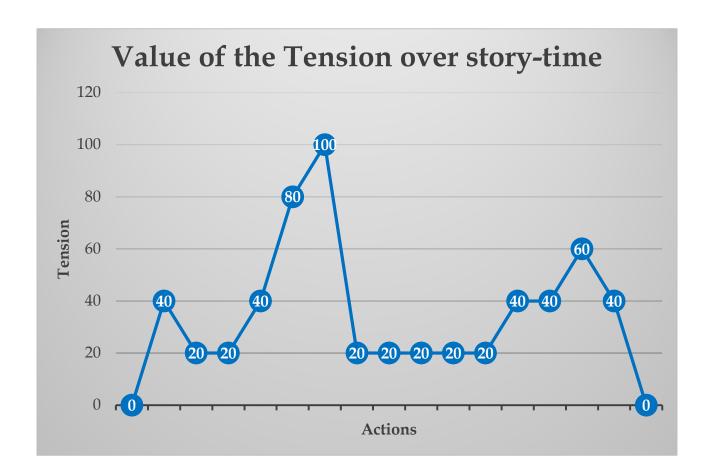














Produced by

Rafael Pérez y Pérez

Thanks to:

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Víctor Ochoa Lorenzo

Ana Paulina Anaya Escudero

México City 2018