

# Player Agency in Interactive Narrative

## First Year PhD Proposal

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# Motivation 1: Constructivist Learning Environments

- ① Learning should be **active** and **critical**
- ② Learners should construct their own understanding
- ③ Make the learner aware of the Structures and Processes of learning
- ④ Maximise learner freedom & control — **Learner Agency**

# Player Agency in Interactive Narrative

## └ Motivation

### └ Motivation 1: Constructivist Learning Environments

#### Motivation 1: Constructivist Learning Environments

- ➊ Learning should be **active** and **critical**
- ➋ Learners should construct their own understanding
- ➌ Make the learner aware of the Structures and Processes of learning
- ➍ Maximise learner freedom & control — **Learner Agency**

1. Learning should be **active** and **critical**, not **passive** and **receptive**
2. Learners should construct their own understanding, not be led to specific truths by the teacher. Or in Brecht's terms: we should minimise manipulation of the learner for the ends of the teacher.
3. We should make the learner aware of the Structures and Processes of learning. This is an idea from Brecht. The reason for doing this is to minimise manipulation of the learner and maximise critical thought from the learner.
4. Maximise learner freedom & control — **Learner Agency**. A constructivist environment involves some degree of structure in order to achieve learning objectives, but within that should maximise free exploration, interaction, enjoyment, and let the learner arrive at their own understanding. *Learner agency* is the key point here, which links constructivist learning theory to interactive narrative theory.

## Motivation 2: Computer-based narrative as a Constructivist Learning Activity

How can computer-based narrative be used as a Constructivist Learning Activity?

- Look at existing computer-based narrative
- Use **Learner Agency** as a key analytical tool

## Player Agency in Interactive Narrative

### └ Motivation

### └ Motivation 2: Computer-based narrative as a Constructivist Learning Activity

How can computer-based narrative be used as a Constructivist Learning Activity?

- Look at existing computer-based narrative
- Use **Learner Agency** as a key analytical tool

## Why is computer-based narrative interesting?

- Increasingly, computer games and computer-based narrative are used in education
- In schools, in corporate training courses, etc.
- Yet not much is known about the learning effects of computer-based narrative
- In the interactive narrative literature, some theory does exist that can help build a foundation for answering the question: how can we use computer-based interactive narrative as a constructivist learning activity?

I will approach this question by looking at existing approaches to computer-based interactive narrative, and using *learner agency* as a key analytical tool with which to classify the different approaches.

# Motivation 3: New Designs for Interactive Story Environments

- The question of interactive narrative as a constructivist learning activity will inform new designs
- Based on new approaches to **agency and learning**

# Player Agency in Interactive Narrative

## └ Motivation

### └ Motivation 3: New Designs for Interactive Story Environments

- ▼ The question of interactive narrative as a constructivist learning activity will inform new designs
- ▼ Based on new approaches to **agency and learning**

Pursuing the question of Interactive Narrative as a constructivist learning activity will inform new designs for interactive narrative environments, based on new approaches to **agency and learning** in the design of interactive narrative environments.

In particular, new interactive narrative environments that conceive of game-play as constructing interactive stories, player and author as one role, rather than players interacting with stories constructed by authors or designers.



# Motivation: Summary

- ① Development of Constructivist Learning Environments
- ② Computer-based Narrative as a Constructivist Learning Activity
- ③ New Designs for Interactive Story Environments

So... how does learner agency apply to interactive narrative?

# Why is Player Agency Important?

- Crucial to formal nature of interactive narrative medium
- Relates to learner control in theories of education
- Not yet thoroughly defined or understood

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# Player Agency in Interactive Narrative

└ Interactive Narrative

└ Player Agency

└ Why is Player Agency Important?

## Why is Player Agency Important?

- Crucial to formal nature of interactive narrative medium
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- Not yet thoroughly defined or understood

Player agency is the concept that links interactive narrative theory to learner agency in constructivist learning theory.

# Agency — Dictionary Definition

## Definition

**Agency:** “The faculty of acting or of exerting power; the state of being in action; action; instrumentality”

*The Collaborative International Dictionary of English, v.0.48*

# Agency — Murray & Mateas' Definitions

## Definition

**Agency:** “the satisfying power to take meaningful action and see the results of our decisions and choices.”

*Janet Murray, Hamlet on the Holodeck, 1997, p.125*

## Definition

**Agency:** “the feeling of empowerment that comes from being able to take actions in the [virtual] world whose effects relate to the player's intention”

*Michael Mateas, A Preliminary Poetics for Interactive Drama and Games, 2001, p.2*

# Agency — A Phenomenal Category

*“Agency is a phenomenal category, describing what it feels like as a player/interactor to be empowered to take whatever actions you want and get a sensible response.”*

*“[Agency] depend[s] on what’s going on in the interactor’s head, on what’s communicated between the technical system and the person, not only on technical facts like counting the number of system actions that are available at each moment.”*

*Micheal Mateas, Interaction and Agency, 2003, on the blog Grand Text Auto*

# Interactive Narrative — Meadows' Definition

## Definition

"An interactive narrative is a time-based representation of action in which a reader can affect, change, or choose the plot."

*Mark Stephen Meadows, Pause & Effect, 2002, p.62 (emphasis mine)*

# Player Agency in Interactive Narrative

## Interactive Narrative

### What Is Interactive Narrative?

#### Interactive Narrative — Meadows' Definition

**Definition**

"An interactive narrative is a time-based representation of action in which a reader can affect, change, or choose the plot."

Mark Stephen Meadows, *Pause & Effect*, 2002, p.62 (emphasis mine)

The key thing to notice about this definition of interactive narrative is that an 'interactive narrative' is not defined as just interaction and narrative in one experience — player interaction must affect the plot of the narrative.

This definition raises the question — **how do we define plot?** This is discussed in some detail in the proposal. For the purposes of this presentation I just use the following definition:

#### Definition

**Plot:** A series of chronologically ordered, causally-related events.



# Player: Audience, Actor & Author



A **player** in an interactive narrative is:

- *Audience (spectator)*: witness to the dramatic spectacle
- *An actor*: playing the role of a character in the narrative
- *An author*: collaborating to create the narrative experience

# Player Agency in Interactive Narrative

## Interactive Narrative

### Player: Audience, Actor & Author

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I will use these three traditional narrative roles (audience, actor, author) to contrast three different approaches to Interactive Narrative. Each of the three approaches gives a different way of looking at the three roles, and each approach positions *player agency* differently w.r.t. the three roles.

One way to classify different approaches to interactive narrative is to ask 'how much is the player a spectator? An actor? And an author?' In any given example, the role of the player in an interactive is to some degree similar to each of these three traditional roles ('player agency' can be placed somewhere on the scale shown in the slide, i.e. I am not claiming that the player is positioned exclusively in one of the three roles at any time, rather that the role of the player blurs these three traditional roles).

# Player Agency in Interactive Narrative

## Interactive Narrative

### Player: Audience, Actor & Author

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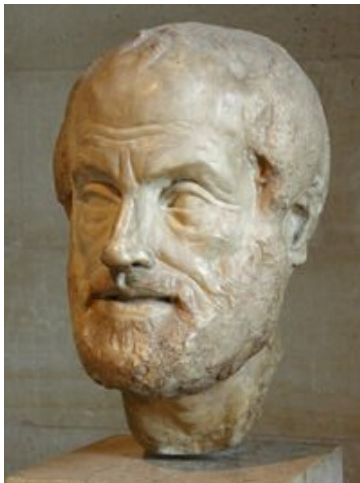
The form of agency experienced by a spectator, an actor, and an author differs:

Spectator can critically analyse the experience (think about it), but has no power to act within the experience.

Actor can act within the experience, but only within the limits and from the perspective of an authored role

Author shapes the narrative from without, in order to express some intended form, opinion or viewpoint, but is limited by the tools at her disposal.

# Aristotle



Ancient Greek philosopher, 384 BC – 322 BC

## Example: Façade,



*Image from <http://interactivestory.net>*

## Player Agency in Interactive Narrative

- └ Three Approaches to Interactive Narrative
  - └ Aristotelian Interactive Narrative
    - └ Example: Façade,

Example: Façade.



Image from <http://interactivestory.net>

The theory behind the application of Aristotle's theory of drama to computer-based interactive narrative is discussed in the proposal (Murray, Laurel, Mateas, Tomaszewski). Here I use an example from an Aristotelian interactive drama to illustrate my point.

The image shown is from an interactive drama called Façade, Mateas and Stern's implemented example of their neo-Aristotelian theoretical approach. Façade is the state of the art in academic interactive narrative. In Façade, the player sees from a first-person view, and communicates with the virtual agents by typing text. The agents communicate by sequencing pre-recorded sound bites.

The premise: You (the player) have been invited over to Trip and Grace (the virtual agents)'s apartment for drinks. It soon becomes obvious that Grace and Trip's marriage is on the rocks. Whether they split up or stay together, and whether they remain friends with you or not, depends on your actions in the next 5-15 minutes which constitute the interactive drama.

# A Façade Transcript

*(Audrey knocks on the front door.)*

*(Trip opens the front door.)*

TRIP: Audrey!!

AUDREY: TRIP I'VE BEEN SHOT!

TRIP: Uh...

TRIP: Well come on in...

TRIP: Uh, I'll – I'll go get Grace...

GRACE: Audrey, Hi! How are you? I'm so happy to see you after so long! – (interrupted)

AUDREY: CALL 911

GRACE: Uh...

GRACE: So, come in, make yourself at home...

AUDREY: OH, F\*\*K THIS

TRIP: Ha ha! Oh I think we're going to need some drinks first if we're going to talk about sex.

*Ernest Adams, A New Vision for Interactive Stories, GDC 2006*

## Player Agency in Interactive Narrative

### └ Three Approaches to Interactive Narrative

#### └ Aristotelian Interactive Narrative

#### └ A Façade Transcript

#### A Façade Transcript

*(Audrey knocks on the front door.)*  
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 AUDREY: TRIP I'VE BEEN SHOT!  
 TRIP: Uh...  
 TRIP: Well come on in...  
 TRIP: Uh, I'll - I'll go get Grace...  
 GRACE: Audrey, hi! How are you? I'm so happy to see you after so long! -- (interrupted)  
 AUDREY: CALL 911  
 GRACE: Uh...  
 GRACE: So, come in, make yourself at home...  
 AUDREY: OH, F\*\*K THIS  
 TRIP: Ha ha! Oh I think we're going to need some drinks first if we're going to talk about sex.

*Ernest Adams, A New Vision for Interactive Stories, GDC 2006*

This is an edited part of a transcript of an interaction with Façade. In the transcript, the player is controlling the character named Audrey, and Grace and Trip are the virtual agents. Things to notice are:

- The agents ignore misunderstood inputs such as “TRIP I'VE BEEN SHOT!” and “CALL 911”. They then try to gloss over the misunderstanding by saying “Uh...” and then carrying on down the previously intended path (“I’ll go get Grace” and “Come in, make yourself at home”).
- The agents respond to keyword triggers: “F\*\*CK” triggers the sex topic. Then what Trip tries to do is divert the player from the sex topic (which is meant to come up later) onto the topic of drinks (which is meant to come up first).

So the tendency is to try to hide the mechanics of the experience from the player, maintain the player’s “suspension of disbelief.”



## Player Agency in Interactive Narrative

### └ Three Approaches to Interactive Narrative

#### └ Aristotelian Interactive Narrative

##### └ A Façade Transcript

#### A Façade Transcript

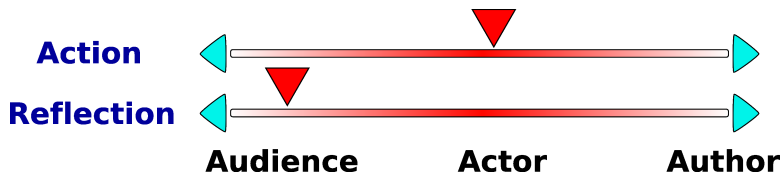
(Audrey knocks on the front door.)  
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 GRACE: Audrey, hi! How are you? I'm so happy to see you after  
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 AUDREY: CALL 911  
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 we're going to talk about sex.

Ernest Adams, *A New Vision for Interactive Stories*, GDC 2006

In Façade the player's role is somewhere between that of a *passive spectator* and that of a *constrained actor*. The system uses drama to try to manipulate the player's behaviour and perceptions in order to keep them within the authored corridor of potential. It tries to use drama to *transport* the player into her fictional character, so that she thinks and acts like the character would be expected to think and act. Although Façade may aim to provide a pleasurable degree of player agency, the balance of power between system designer (author) and player in this approach means that player agency is inevitably limited and the player manipulated to keep player perceptions and actions within a fixed range. The player is expected to act within the role provided for her. R.M. Young's AI-based planning approach does an equivalent thing when the planning system uses 'interventions' and 'accomodations' to deal with unexpected player actions.

Within the Aristotelian approach there is no solution to this problem.

# Aristotle: Role of Player Agency



**Action:** The player acts from within the drama, playing the role of one of the characters in the drama, with a limited range of possible expressions, choices and roles.

**Reflection:** The player is encouraged to think from a perspective *within* the dramatic construct, to think and feel what her character thinks and feels.

# Bertolt Brecht



German socialist dramatist, 1898 – 1956

# Bertolt Brecht: Theatre for Social Change

## Aristotle

- ① **Emotion** as **Identification** with plot and characters
- ② **Transportation** into the fictional world
- ③ Tools: **Empathy**, **Catharsis**, **Illusion**
- ④ Result: **Uncritical** frame of mind

## Brecht

- ① **Reason**
- ② **Distance** — keep the spectator as an *Observer*
- ③ Tools: **Prevent** Empathy or Catharsis, **Break** the Illusion
- ④ Result: **Critical** thinking

# Player Agency in Interactive Narrative

## Three Approaches to Interactive Narrative

### Brechtian Interactive Narrative

#### Bertolt Brecht: Theatre for Social Change

## Aristotle

- Emotion as Identification with plot and characters
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- Result: Uncritical frame of mind

## Brecht

- Reason
- Distance — keep the spectator as an Observer
- Tools: Prevent Empathy or Catharsis, Break the Illusion
- Result: Critical thinking

The Aristotelian approach appeals to *emotion* in the audience as *identification* with the fictional characters of the drama. The aim is to get the audience to *feel what the character feels* and vicariously *do what the character does*.

By contrast, the Brechtian approach appeals to emotions based on *reason* and rational inquiry. The aim is that the audience should observe the play as an artificial representation, with a critical attitude. Note that this is not anti-emotional, it is an appeal to a different sort of emotion. Brecht claimed that the effect of an Aristotelian approach was to make the audience *contentedly hypnotised*. Spectators do not notice the artificiality of the experience, and subconsciously accept the artificial representation as reality. They *stare but don't see* and *listen but don't hear* — they are not seeing and hearing as *activities*, only passively.

# Player Agency in Interactive Narrative

## └ Three Approaches to Interactive Narrative

### └ Brechtian Interactive Narrative

#### └ Bertolt Brecht: Theatre for Social Change

## Aristotle

- Emotion as Identification with plot and characters
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## Brecht

- Reason
- Distance — keep the spectator as an Observer
- Tools: Prevent Empathy or Catharsis, Break the Illusion
- Result: Critical thinking

Brecht claimed that the Aristotelian approach makes it harder for people to understand the real world. So Brecht changes both the aims and the techniques of Aristotelian theatre to address this problem.

Again, the theory behind applying Brecht's theories and techniques to computer-based interactive narrative is discussed in the proposal (in reference to Pinchbeck), in this presentation I use an example to illustrate my point.

# America's Army



<http://www.americasarmy.com/>

## Player Agency in Interactive Narrative

- └ Three Approaches to Interactive Narrative
  - └ Brechtian Interactive Narrative
    - └ America's Army



This is an image of the game America's Army, an off-the-shelf, multiplayer online game. The website describes it like this:

*"America's Army, the Official U.S. Army Game (AA), provides young Americans with a virtual web-based environment in which they can explore Army career opportunities within an entertaining setting that is tailored to their interests and aptitudes."*

America's Army is an example of an Aristotelian approach to interactive narrative, just the sort of thing Brecht might try to subvert.



# Example — Dead In Iraq, 1



*Joseph DeLappe: dead-in-iraq 'online gaming intervention,' 2006*

## Player Agency in Interactive Narrative

### └ Three Approaches to Interactive Narrative

#### └ Brechtian Interactive Narrative

##### └ Example — Dead In Iraq, 1



Joseph DeLappe: dead-in-iraq 'online gaming intervention,' 2006

'Dead in Iraq' is the name of an art project, by Joseph DeLappe, that is carried out within the America's Army game. DeLappe gets an account with the game, but instead of playing, uses the game's built-in text messaging system to type out the names of U.S. soldiers who have been killed in Iraq to other players. DeLappe then collects players' responses via the text-messaging system.

## Example — Dead In Iraq, 2

- i think they are dates of deaths of soldiers are those real people??
- are you enlisted? reserve? have you been to iraq?
- u arent encouraging me to join the services
- bin-lad-en: i am srry
- i dunno ..was thinkin of joinin the army soon
- its propaganda

## Player Agency in Interactive Narrative

### └ Three Approaches to Interactive Narrative

#### └ Brechtian Interactive Narrative

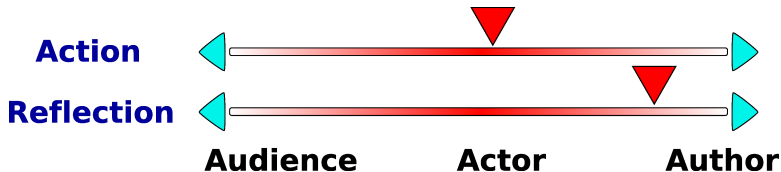
##### └ Example — Dead In Iraq, 2

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‘Dead in Iraq’ is an example of a Brechtian technique: DeLappe is using narration to prevent immersion, to draw attention to the real-world consequences of the fictional actions being represented, and to promote critical discussion. The comments from the players how some degree of success: there is some critical discussion of the real world consequences, and of the artificial representation. But this approach is limited: DeLappe is not changing the game or the medium itself, he is just doing something novel within it. Ultimately this is the limit of the Brechtian approach.

# Brecht: Role of Player Agency



**Action:** The player acts from within the dramatic construct, playing the role of one of the characters of the drama, with a limited range of possible expressions, choices and roles.

**Reflection:** The player is encouraged to think from a perspective *outside of* the dramatic construct — reflecting on the *structures* and *processes* of the experience seen as an *artificial representation*.

## Player Agency in Interactive Narrative

### Three Approaches to Interactive Narrative

#### Brechtian Interactive Narrative

#### Brecht: Role of Player Agency

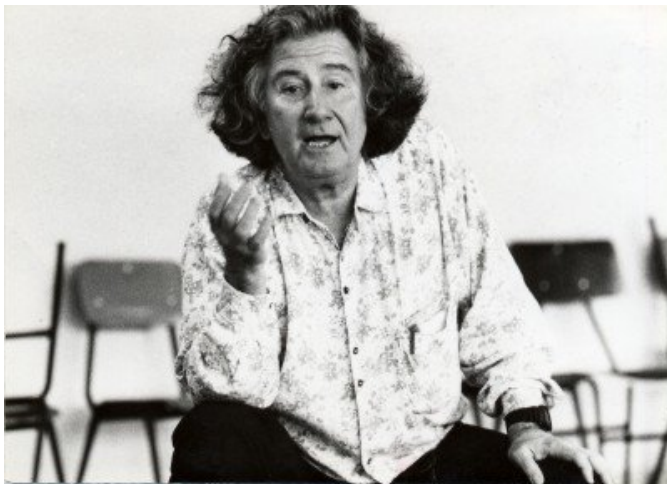


**Action:** The player acts from within the dramatic construct, playing the role of one of the characters of the drama, with a limited range of possible expressions, choices and roles.

**Reflection:** The player is encouraged to think from a perspective outside of the dramatic construct — reflecting on the structures and processes of the experience seen as an artificial representation.

In the Brechtian approach to interactive narrative, the author retains control over player actions as in the Aristotelian approach. But the author tries to get the player to reflect on the interactive narrative as an artificial construct, rather than to accept it as reality.

# Augusto Boal



Brazilian theatrical director, 1931—

# Boal: Theatre of the Oppressed

Aims to change passive spectators into transformers of the dramatic action:

- **Aristotle**: fictional character acts and thinks for the spectator
  - **Brecht**: character acts but spectator thinks for herself
  - **Boal**: spectator assumes the power to think *and act*
- 
- **Aristotle**: spectator has to drag herself back into reality. Her desire for **agency** is subdued.
  - **Brecht**: spectator wants to talk to the other spectators about her opinion. Desire for **agency** is encouraged.
  - **Boal**: spectator wants to repeat the fictional action she has undertaken in her real life. Desire for **agency** is exercised, in a safe, fictional environment, leaving the desire to exercise it in reality.



# Example: Forum Theatre

A model forum theatre: 'It's too late':

- **The Stage:** three desks and a clock on the wall
- **The Oppressors:** a clerk standing behind each desk
- **The Oppressed:** a citizen who must use a document s/he is holding to enact some transaction
- **The Action:**
  - The citizen must visit each clerk in turn and attempt to initiate the desired transaction
  - The clerks must find ways to deny the request because 'It's too late.'

*thanks — Carlo Jaccuci*

## Player Agency in Interactive Narrative

### Three Approaches to Interactive Narrative

#### Boalian Interactive Narrative

##### Example: Forum Theatre

A model forum theatre: 'It's too late':

- ✓ **The Stage:** three desks and a clock on the wall
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- ✓ **The Action:**
  - The citizen must visit each clerk in turn and attempt to initiate the desired transaction
  - The clerks must find ways to deny the request because 'it's too late.'

thanks — Carlo Jaccuci

The theory behind applying a Boalian approach to interactive narrative is discussed in the proposal (in reference to Frasca). Here I illustrate Boal's approach with an example. Later I discuss similarities between my own proposed approach and the Boalian approach.

One of Boal's techniques is the 'Forum Theatre,' of which 'It's Too Late' is a model example. The stage contains three desks and a clock on the wall. Three actors play 'the oppressors' — three clerks each standing behind one of the three desks. A fourth actor plays 'the oppressed,' a citizen who must use a document he or she is holding to enact a transaction with one of the clerks. The forum theatre is a short improvisational drama. In this case the rules of the improvisation are that the citizen must visit each clerk in turn and try to complete the transaction. The clerks must find ways to refuse the transaction based on the idea that 'it's too late.'

## Player Agency in Interactive Narrative

- └ Three Approaches to Interactive Narrative
  - └ Boalian Interactive Narrative
    - └ Example: Forum Theatre

A model forum theatre: 'It's too late':

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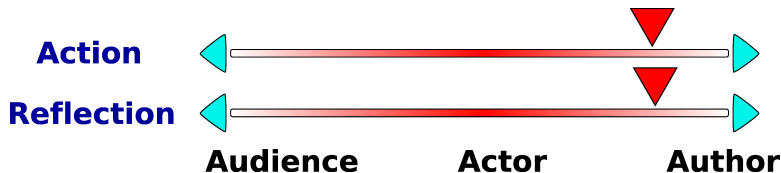
First, actors present a 5-minute scripted version of the play to the audience. This version ends badly, with the oppressed turned away without completing the transaction. The actors then do the play again, but this time any audience member may freeze the play at any time and temporarily replace the actor playing the oppressed in order to enact a potential solution to the problem. Over several iterations of the play, different solutions to the problem are explored in this way.

In this example, some possible solutions for the oppressed are:

- Demand to have your rights
- Try to make friends with the clerk
- Try to bribe the clerk

Forum Theatre is more than just a form of interactive drama. The drama provides *a place of fiction in which learners train themselves to practice change in reality.*

# Boal: Role of Player Agency



**Action:** the player acts from *outside of* the dramatic construct, acting on the *structures* and *processes* of the experience as an *artificial representation*.

**Reflection:** the player thinks from *outside of* the dramatic construct, reflecting on the *structures* and *processes* of the experience as an *artificial representation*.

## Player Agency in Interactive Narrative

- └ Three Approaches to Interactive Narrative
  - └ Boalian Interactive Narrative
    - └ Boal: Role of Player Agency



**Action:** the player acts from outside of the dramatic construct, acting on the structures and processes of the experience as an artificial representation.

**Reflection:** the player thinks from outside of the dramatic construct, reflecting on the structures and processes of the experience as an artificial representation.

In Forum Theatre, an audience member can replace any oppressed character at any time and alter that character's actions. She can drop in and out of different characters as she pleases. So a spect-actor is not restricted to acting from the perspective of one character. This is greater than the traditional role of an actor playing one character.

But each spect-actor is constrained, by the facilitator of the drama who must not allow one person to dominate the drama or to enact non-constructive solutions, and by the reactions of other spect-actors to their actions in the drama.

The spect-actors considered as a whole collaboratively reshape the entire drama as a construct, from the outside, in a way similar to the way an author shapes the drama. But even the spect-actors as a whole are limited by the framework of the drama and the characters that they were given to start with. So it is not correct to say that the spect-actors have *authorship* over the drama, rather they have a form of *agency* which has

# Player Agency in Interactive Narrative

## Three Approaches to Interactive Narrative

### Boalian Interactive Narrative

#### Boal: Role of Player Agency

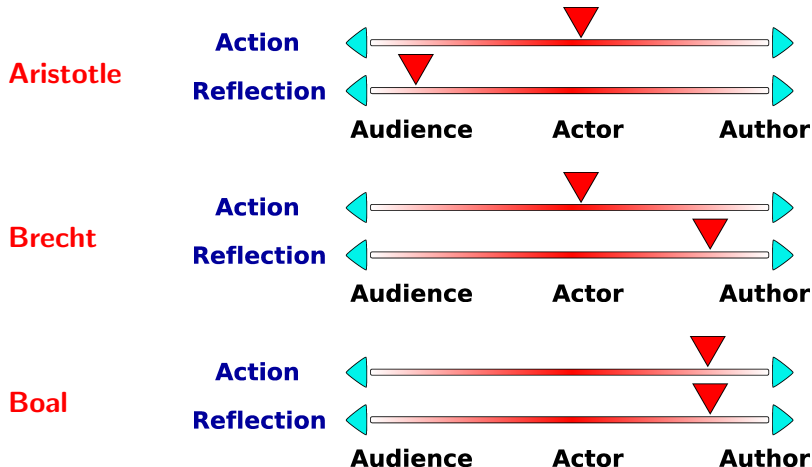


**Action:** the player acts from outside of the dramatic construct, acting on the structures and processes of the experience as an artificial representation.

**Reflection:** the player thinks from outside of the dramatic construct, reflecting on the structures and processes of the experience as an artificial representation.

more in common with authorship than with passive spectating. In fact in practice of Boalian drama, it may be the spect-actors themselves that have designed the forum theatre, as part of a process of drama exercises, so they can be said to have authorship as well as agency over the forum theatre.

# Summary: The Role of Player Agency



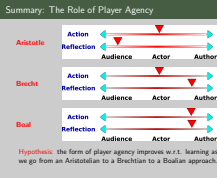
**Hypothesis:** the form of player agency improves w.r.t. learning as we go from an Aristotelian to a Brechtian to a Boalian approach.

# Player Agency in Interactive Narrative

## Three Approaches to Interactive Narrative

### Summary

#### Summary: The Role of Player Agency



Remember: the scales above refer to the Aristotelian, Brechtian and Boalian approaches applied to computer-based interactive narrative, not to traditional drama or theatre.

**Aristotle:** player *acts* from the perspective of a constrained actor within the drama, but is encouraged to *think* from the perspective of a spectator, so that the player acts as the designer wants her to. This disparity between action and reflection is what necessitates using drama to manipulate player perceptions and actions in the Aristotelian approach.

**Brecht:** this is what happens when maintaining the player's 'suspension of disbelief' fails. The Brechtian approach breaks suspension of disbelief intentionally, aiming to highlight (not hide) the artificiality of the experience.

**Boal:** attempts to build on the Brechtian approach, and change the perspective of player action to match that of player reflection.

The argument I am making is that the Boalian approach is the best w.r.t. constructivist learning.



# The Framework

- Player agency & player as audience, author, actor
- Approaches to player agency of Aristotle, Brecht and Boal
- Educational background — Constructivism, constructionism

## Player Agency in Interactive Narrative

- └ Three Approaches to Interactive Narrative
  - └ Summary
    - └ The Framework

- Player agency & player as audience, author, actor
- Approaches to player agency of Aristotle, Brecht and Boal
- Educational background — Constructivism, constructionism

This is the conceptual framework that I want to be the ‘take home’ message from this literature review:

1. The concept of player agency in interactive narrative, and the idea of the player’s role as a combination of the three traditional roles of audience, author and actor.
2. The progression from the common Aristotelian approach to interactive narrative, to a Brechtian approach, and then to a Boalian approach, and the different approaches to player agency demonstrated by the three.
3. The educational background which motivates the framework — the ideas of constructivist learning, particularly learner agency. I will now be focusing on constructionism in particular as my constructivist approach.

# General Research Questions

- ① What can this framework tell us about interactive narrative as a learning experience?
- ② How can this framework help us to empirically define and measure aspects of interactive narrative as a learning experience?
- ③ How can computer-based interactive narrative be used as a constructivist learning activity?

# Research Design (broad outline)

- ① Develop the theoretical background
- ② Construct a prototype interactive story environment
- ③ Find measuring devices
- ④ Derive specific research question(s) that fit with 1,2 & 3.
- ⑤ Design & carry out a study or studies.
- ⑥ Analyse the results, re-assess the argument.

# Player Agency in Interactive Narrative

## Research Design

### Outline

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- ◆ Analyse the results, re-assess the argument.

The proposed research proceeds in six overlapping steps:

1. Develop the theoretical background. This corresponds to the literature review that I have presented.
2. Construct a prototype. The prototype will be used for workshops and studies later. The design of this prototype forms the basis of an answer to general research question 3: how can computer-based interactive narrative be used as a constructivist learning activity?
3. Find measuring devices. The measuring devices are to be used with the prototype in empirical studies. They form the basis of an answer to question 2: how can we empirically define and measure aspects of the experience?
4. Derive specific research questions that develop from the theoretical background, and can be answered using the prototype and measuring instruments available.

# Player Agency in Interactive Narrative

## Research Design

### Outline

#### Research Design (broad outline)

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- ◆ Find measuring devices
- ◆ Derive specific research question(s) that fit with 1,2 & 3.
- ◆ Design & carry out a study or studies.
- ◆ Analyse the results, re-assess the argument.

5. Design and carry out a study. The study will use the implemented prototype and measuring devices. Analysis of the study will form the basis of an answer to question 1: what can the theoretical framework tell us about interactive narrative as a learning experience?

6. Analysis and reassessment.

It's important to note that I only intend to provide some input on the general research questions, not to answer them completely. Specific research questions will be developed for the empirical study, and will be answered directly.

# Implementation Plan, 1

- Based on Kashani, Dynamic Storylines in Interactive Virtual Environments, 2004
- Develop using Panda3D
  - Free, cross-platform
  - Supported by Carnegie Mellon University
  - Fast learning curve and rapid development
  - Python bindings
  - Free 3D models

# Player Agency in Interactive Narrative

## Research Design

### The Prototype

#### Implementation Plan, 1

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The proposed prototype design is based on the design presented in Kashani's MSc thesis. Kashani presents an interactive story system, and a separate application for authoring story experiences for the system. My intention is to combine the two into one game-play experience: so that authoring the interactive story *is* the game.

The prototype will be developed using the Panda3D game engine. Panda3D is Free as in freedom: free to download, redistribute and modify, full source code is available. It is cross-platform. It is actively supported and developed by a team at Carnegie Mellon University's Entertainment Technology Centre. It has a particular emphasis on a fast learning curve and rapid development: it is used in Carnegie Mellon's Building Virtual World's class in which teams of students have two weeks to implement a game. To this end, full Panda3D bindings are provided for the Python scripting language. Lastly, a collection of free 3D models is available with Panda3D.



# Panda3D: Free Game Engine



<http://panda3d.org/>

# Implementation Plan, 2

- Start with *Roaming Ralph*:
  - Navigable 3D virtual world
  - Animated 3D avatar, keyboard controls
  - Runs around, up and down hills, collide with obstacles
  - 3rd person camera
- Add computer-controlled agents with their own avatars
- Interface for conversations and story authoring
- Story authoring, drama manager and plot actions

## Player Agency in Interactive Narrative

## └ Research Design

## └ The Prototype

## └ Implementation Plan, 2

## Implementation Plan, 2

- Start with Roaming Ralph:
  - Navigable 3D virtual world
  - Animated 3D avatar, keyboard controls
  - Runs around, up and down hills, collide with obstacles
  - 3rd person camera
- ◆ Add computer-controlled agents with their own avatars
- ◆ Interface for conversations and story authoring
- ◆ Story authoring, drama manager and plot actions

The plan is to start with 'Roaming Ralph,' an example with source code that is provided with Panda3D. Roaming Ralph provides a navigable 3D world, an animated keyboard-controlled avatar, the basic physics and collision detection needed, and a 3rd person camera. The three main phases of implementation building on Roaming Ralph will be:

1. To implement computer-controlled agents with their own avatars. These agents will share much of the Roaming Ralph code, but will require simple steering and pathfinding behaviours and will follow scripts from the story engine.
2. To implement a user interface for story conversations and story authoring, using Panda3D's DirectGUI module.
3. To add the underlying story authoring and story engine code. Stories and the current state of the world will be represented in XML schema which drive real-time story manager and agent behaviours.

# Roaming Ralph

[ESC]: Quit  
[Left Arrow]: Rotate Ralph Left  
[Right Arrow]: Rotate Ralph Right  
[Up Arrow]: Run Ralph Forward

[A]: Rotate Camera Left  
[S]: Rotate Camera Right



Panda3D Tutorial: Roaming Ralph (Walking on Uneven Terrain)

# Gameplay — Mockup



## Player Agency in Interactive Narrative

└ Research Design

└ Mockups

└ Gameplay — Mockup



This is a mockup of what game-play looks like. The player has a first-person view of the 3D world, and is looking at one of the virtual agents, and has some 2D user interface widgets overlayed on the world. I will actually probably implement a third person view as it may be less immersive.

The player moves around the world by controlling her avatar. The interactive story consists of the player moving around the world and interacting with story objects and agents. Text is overlayed on the world when conversations with characters occur, or for narration. The mockup shows a conversation with an agent, in which the player has two response choices to the agent's dialog.

The authoring UI is also overlayed on the world, accessible via the Objects, Characters and Plot buttons on the right hand side. The player jumps as seamlessly as possible between playing the interactive story and modifying the interactive story as author by clicking on these buttons.

# Constructing the Plot — Propp's Morphology

- Described folktales by their small component parts and the relationships between these parts
- Identified 31 plot **functions**: *actions of characters defined from the p.o.v. of their significance to the plot*
- Example functions: the hero is told to make sure he does something or does not do something; an act of villainy is committed against the hero; the hero defeats the villain.

# Player Agency in Interactive Narrative

Research Design

Mockups

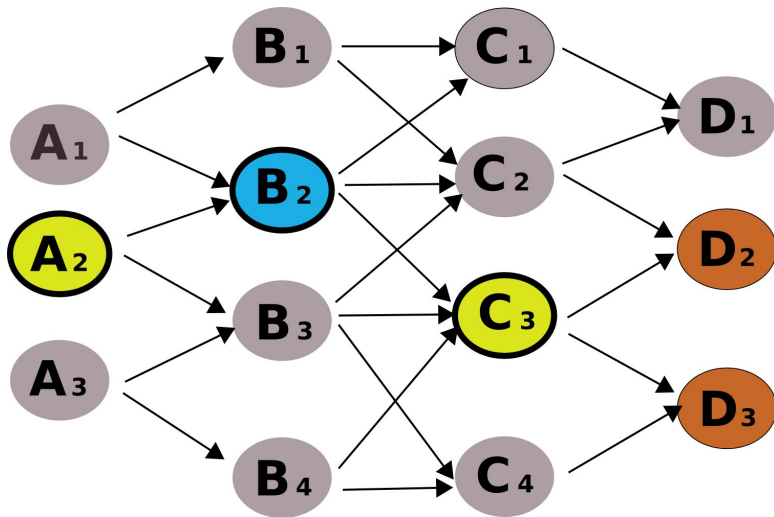
Constructing the Plot — Propp's Morphology

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The story engine and story authoring tools are based on Propp's *Morphology of the Folktale*. The key elements from which stories are constructed are Propp's plot functions. Propp also provides character roles. In the system, narration, character dialog and character actions in a story are attached to the abstract plot functions that correspond to the 'scenes' of the story. Both the story engine and agent scripts that drive the real-time executing of an interactive story, and the story authoring system that allows a player to construct an interactive story, use this Propp-based model.



# Constructing the Plot — Mockup

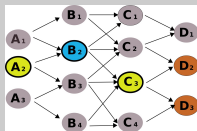


## Player Agency in Interactive Narrative

└ Research Design

└ Mockups

└ Constructing the Plot — Mockup



This visual graph of plot functions and connections between them is overlaid on the world when the player presses the 'plot' button.

The player can click on functions to add them to the currently instantiated plot in order to construct a plot as a path through the graph from start to finish (the player can choose one A, one B, one C and one D).

# Adding Characters & Objects to the World — Mockup



**Name**

**Description**

**Personality Settings...**



**Name**

**Description**

**Personality Settings...**



**Name**

**Description**

**Personality Settings...**



**Name**

**Description**

**Personality Settings...**



**Name**

**Description**

**Personality Settings...**

**Add a new character...**

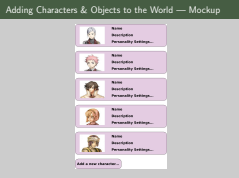
2006-11-29

## Player Agency in Interactive Narrative

Research Design

Mockups

Adding Characters & Objects to the World — Mockup



This interface is overlaid when the player presses the 'Characters' button, it shows details about the characters currently present in the virtual world. Characters can be added or removed from the story world here, and the player specifies the name and appearance of each character. There is a similar interface for adding and removing story objects — those objects which may have significance to plot functions.

# 'Casting' Characters into Roles — Mockup

**Scene 5, the final scene: The heroine and her helper defeat the evil villain.**



**Role: Hero**

**Description: In this scene the hero...**

**Personality Settings...**



**Role: Helper**

**Description: In this scene the helper...**

**Personality Settings...**



**Role: Villain**

**Description: In this scene the villain...**

**Personality Settings...**

## Player Agency in Interactive Narrative

Research Design

Mockups

'Casting' Characters into Roles — Mockup

'Casting' Characters into Roles — Mockup

Scene 5, the final scene: The heroine and her helper defeat the evil villain.

Role: Hero  
Description: In this scene the hero...  
Personality Settings...Role: Helper  
Description: In this scene the helper...  
Personality Settings...Role: Villain  
Description: In this scene the villain...  
Personality Settings...

This interface appears when the user edits a plot function. Following Propp's morphology, each function requires one or more abstract 'roles' to be filled: hero, helper, villain, etc.

With this interface, the player decides which character from the story world will fulfill each role of the plot function being edited (the player 'casts' characters into roles).

In some scenes characters will be automatically cast into roles for consistency because they filled the same role in a previous scene. The interface will reflect this, and other context-consistency considerations.

# Adding Dialog to Scenes — Mockup

**Scene 3: The villain commits an act of villainy against the heroine.**



**Role: Villain**

**Description: In this scene the villain...**

**Personality Settings...**

**First line of text spoken by the villain.**

**1. First dialog option for the player.**

**The villain's response.**

**2. Second dialog option for the player.**

**The villain's second response.**

**3. Third dialog option for the player.**

**The villain's third response.**

**1. Another dialog option for the player.**

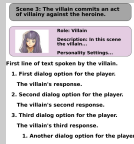
**...**

## Player Agency in Interactive Narrative

└ Research Design

└ Mockups

└ Adding Dialog to Scenes — Mockup



Finally, this interface allows the player to assign dialog to a character/role for a plot function. The mockup shows the plot function being edited, the character/role being edited, and the dialog attached. The dialog takes the form of a simple interactive dialog tree, seen in many examples of interactive narrative: the agent utters a line of dialog, the player chooses from a set selection of responses, depending on the player's choice the agent gives a response...



# Gameplay — Mockup



## Player Agency in Interactive Narrative

└ Research Design

└ Mockups

└ Gameplay — Mockup



Interaction with the system involves the player switching seamlessly between *playing* the interactive story — moving their character around the story world, interacting with other characters and story objects, the story playing out around the player — and *authoring* the interactive story — interacting with various overlaid interfaces, editing the underlying story model that drives the virtual agents and background story engine process.

With the plot editor interface, the player selects one function to be the currently active plot function. When a function is activated, the agents run to the location in the story world around which the function occurs, and assume the dialog and actions assigned to them for that function. The player can then experience the plot function, and can edit it.

This approach is non-immersive, and emphasises the artificial, constructed nature of the interactive narrative, and focusses player agency on the underlying structures and processes of the interactive narrative.

## Player Agency in Interactive Narrative

└ Research Design

└ Mockups

└ Gameplay — Mockup

Gameplay — Mockup



This is a constructionist approach to interactive narrative: players are learning about stories, particularly the underlying structures and processes of interactive stories and the authoring process, by constructing stories. This constructionist aspect will likely be the focus of my study.

A constructionist use of the system might be to give players an empty story world with no characters and no instantiated plot, and allow them to add characters and construct a story using the system.

This is also an attempt to move interactive narrative towards a Boalian approach: the roles of audience/actor/author are blurred into one, the player able to drop in and out of different roles, as in forum theatre.

A Boalian use of the system might be to give players a story world with an instantiated story and characters that presents a problem – the player's character, the protagonist or the oppressed, faces a problem that ends badly in the story. The player can then explore the problem by implementing different solutions to it through the authoring interface.

# The Study

A workshop-style session in which learners are shown how to play the game and create their own stories.

Based on:

- Korte & Webb — A Film Plot Generator: A workshop for 11-13 year olds, 2006
- Robertson & Good — Story Creation in Virtual Game Worlds, 2005
  - ① Pencil & paper workshop constructing plots from set elements
  - ② Introduction to the system, demonstration & training
  - ③ Learners use the system to create their own stories
  - ④ Post-test interviews with the learners

## Player Agency in Interactive Narrative

## └ Research Design

## └ The Study

## └ The Study

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**Korte & Webb:** this is a paper & pencil workshop for 11-13 year olds, in which the children learn how to algorithmically generate 'movie plots' from collections of fixed plot elements, objects and characters. To generate plots, they use computer science concepts such as sequencing, branching, looping and recursion. These concepts are the learning aim of the workshop (this differs from the learning aim of my research). The workshop is part of the Transferable Skills program's Research Communication in Action course. For the course, I will be developing the workshop using concepts from my PhD: the concepts of abstract plot functions and roles based on Propp's morphology, and the process of constructing stories out of these abstract, modular, reusable components. I will be doing 2-3 workshops between now and February. These will be short (one hour) pencil and paper workshops. From them I will gain experience in doing story authoring workshops with 11-13 year olds,

# Player Agency in Interactive Narrative

## Research Design

### The Study

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gain contacts for carrying out future workshops, and establish that 11-13 year olds can grasp the abstractions of Propp functions and roles and the process of constructing stories with them.

**Robertson & Good:** this workshop is the template for an empirical study later in my research. Robertson & Good used the off-the-shelf Neverwinter Nights toolkit for story authoring workshops with children. I will follow the basic format for the workshops shown on the slide.

Possible data-recording methods include: screen capture, think-aloud/cooperative evaluation, post-task walkthrough, partially structured, focused interviews designed based on analysis of screen capture and/or think-aloud data. Interview seems the most promising approach, and was used in Robertson & Good. Hycner 1985's phenomenological analysis procedure seems promising.

# Specific Research Questions

- Do players learn about the structures and processes of interactive stories?
- Do players learn about the story authoring process? Does it effect their approaches to story writing or thinking about story writing?
- What are user perceptions of the story authoring process?
- How does the experience of constructing stories effect story comprehension?
- How is player agency important?

# Player Agency in Interactive Narrative

## Research Design

### The Study

#### Specific Research Questions

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- Do players learn about the structures and processes of interactive stories? That is, the abstract concepts of plot functions, character roles, the relations between them and the authoring process.
- Do players learn about the story authoring process? Does it effect their approaches to story writing or thinking about story writing? Constructing a story with this system is very different from writing a story linearly from start to finish as paper or a word processor encourages, but constructing one iteratively from components at different levels of abstraction.
- What are user perceptions of the story authoring process?



# Player Agency in Interactive Narrative

## Research Design

### The Study

#### Specific Research Questions

#### Specific Research Questions

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- How is player agency important?

- How does the experience of constructing stories effect story comprehension? Players could be asked questions after playing stories such as 'what enabled character X to do action Y?,' 'how did character X do action Y?,' 'why did character X do action Y?' The questions focus on causal elements of the story. The relations between story construction elements in Propp's morphology correspond to causal relations at different levels.
- How is player agency important? For example how does audience or actor-like agency differ from author-like agency?

# Player Agency in Interactive Narrative

## Research Design

### The Study

#### Specific Research Questions

#### Specific Research Questions

- Do players learn about the structures and processes of interactive stories?
- Do players learn about the story authoring process? Does it effect their approaches to story writing or thinking about story writing?
- What are user perceptions of the story authoring process?
- How does the experience of constructing stories effect story comprehension?
- How is player agency important?

An experimental design might use a control group of children who play interactive stories (with the authoring interface disabled), and another group who use the system to construct stories. Both groups are then asked questions about the structures and processes underlying the interactive story system, about how they would approach the authoring process, or about story comprehension, or are asked to write stories and have their story writing approaches observed. The aim would be to detect a difference between the two groups.

# Contributions of Research

- 1 Conceptual framework
- 2 Prototype design
- 3 Measuring devices
- 4 Describing & understanding a new approach to interactive narrative

# Player Agency in Interactive Narrative

## Research Design

### The Study

#### Contributions of Research

#### Contributions of Research

- ✔ Conceptual framework
- ✔ Prototype design
- ✔ Measuring devices
- ✔ Describing & understanding a new approach to interactive narrative

1. Development of a conceptual framework with which to classify the experience of learning through computer-based interactive narrative. This framework will be a useful tool with which to approach the three general research questions.
2. Construction of a prototype demonstrating an approach to computer-based interactive narrative based on the above conceptual framework. This prototype will form the basis of an answer to the 3rd general research question: How can computer-based interactive narrative be used as a constructivist learning activity?

- ◆ Conceptual framework
- ◆ Prototype design
- ◆ Measuring devices
- ◆ Describing & understanding a new approach to interactive narrative

3. Definition and verification of measuring devices which can be used to measure aspects of computer-based interactive narrative as a learning experience. These measuring devices will form the basis of an answer to the 2nd general research question: How can this framework help us to empirically define and measure aspects of interactive narrative as a learning experience?

4. The research should go some way toward describing a new approach to computer-based interactive narrative for learning based on the conceptual framework, and through workshops and empirical studies, toward understanding the approach. This should begin to answer the first general research question: What can this framework tell us about interactive narrative as a learning experience?

# Conclusion & Timetable

- **Motivation:** A Constructionist approach to interactive narrative. Key concept: **learner agency**.
- Looked at **player agency** in three approaches to interactive narrative: Aristotle, Brecht & Boal
- Boalian approach — player as author — seems best w.r.t. constructionist learning
- Six-step broad research plan, two main phases:
  - ① Develop a **prototype** story authoring system inspired by Boal & Papert, based on Propp & Kashani
  - ② Do **workshop(s)** based on Robertson & Good and Korte & Webb

# Timetable

