# TUM Computer Games Laboratory

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*with content from*

ETH Game Programming Laboratory

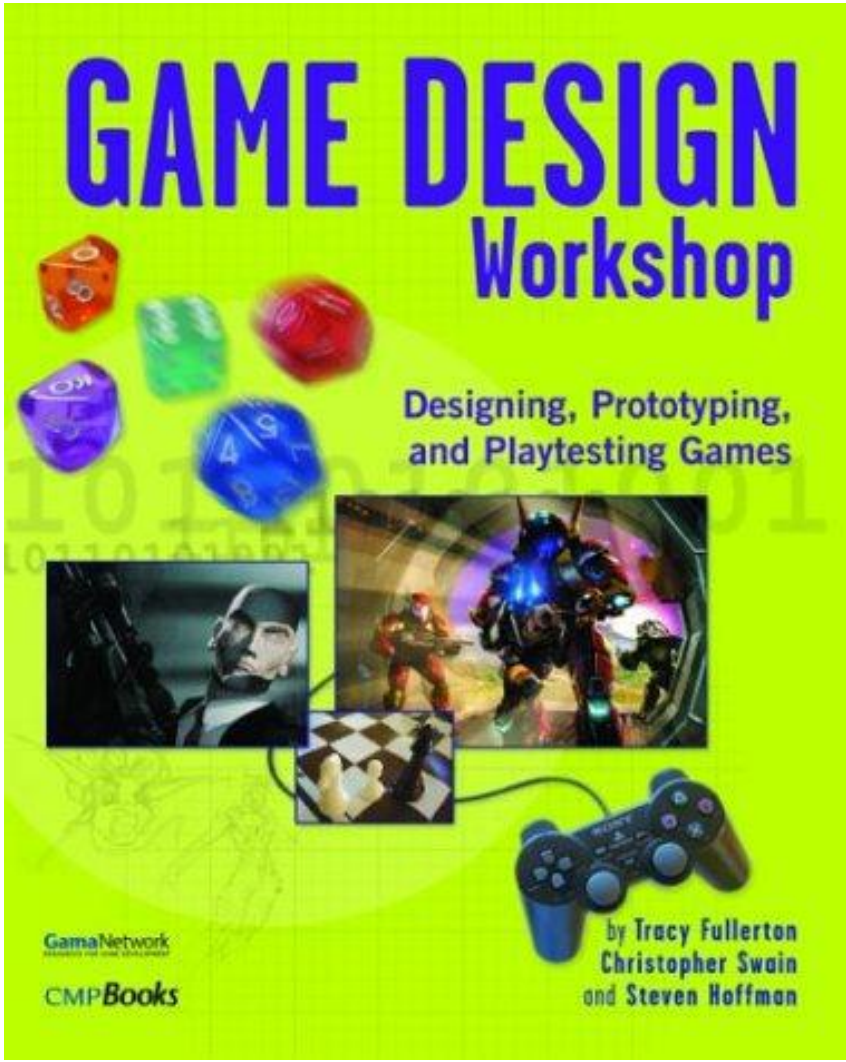
http://chrishecker.com/Advanced_Prototyping

# Prototyping

# Prototyping

Recommended Reading:

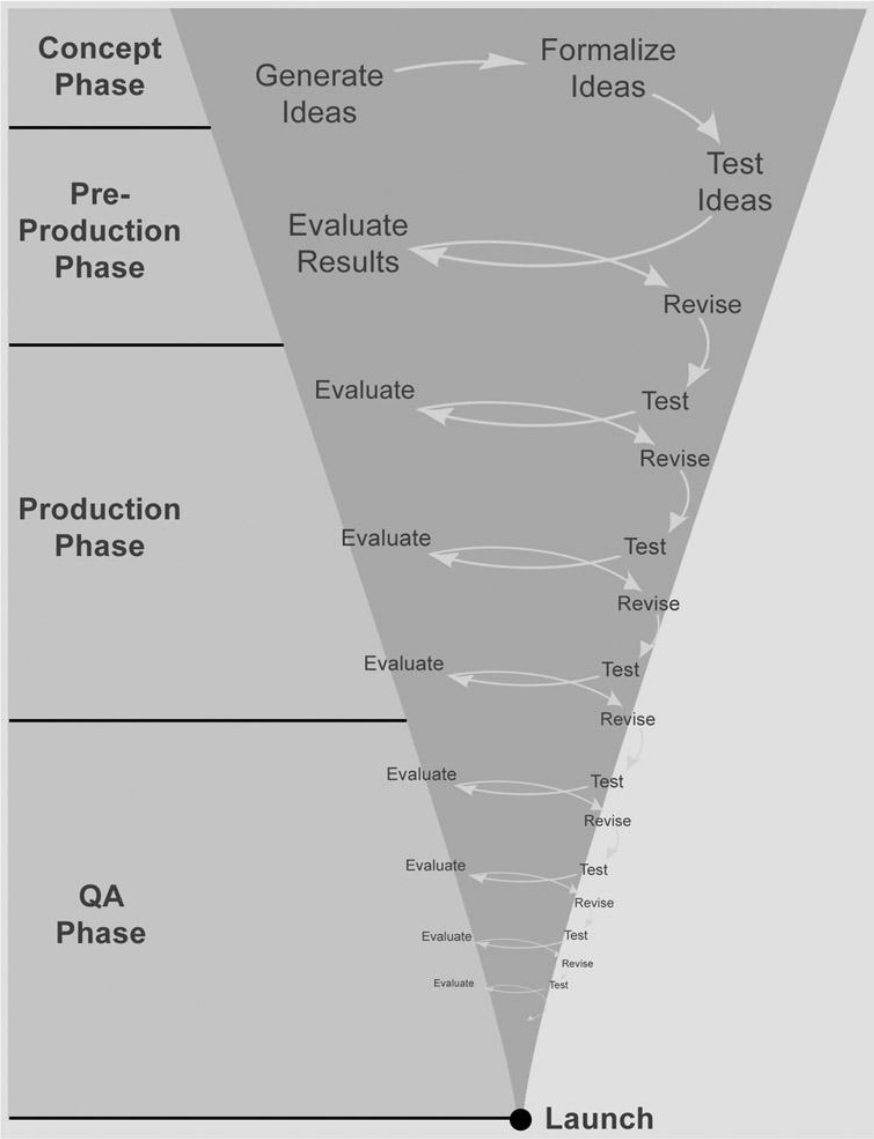
Chapter on Prototyping



# Prototyping

- Why a prototype?
- “Creating a game without a prototype is like shooting a movie without a script.”

- A prototype adds more to a game than a script or doc can do:
  - Interactivity
  - Test and exploration
  - Modification

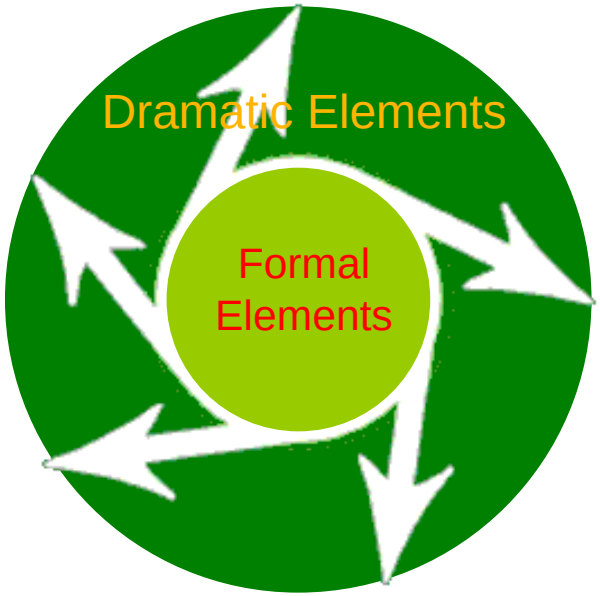


# Prototyping

- Prototype
  - Something fast and cheap that allows you to answer a specific question about your game: “Is your game idea fun?”
    - Not something that eventually morphs into a game
    - Not something using the same technology as the production code
    - Not meant to impress others
    - Rather some form of scientific exploration

# Prototyping

- Prototype
  - Only fundamental mechanics (formal elements)
  - Considers player(s) and the computer
  - Rough approximation of artwork and features
  - Focus on gameplay, abstract from production process
  - Extensible, instrument for radical changes



# Prototyping

- The purpose of a prototype
  - Do not create a prototype to show something about the game
    - Rather validate or disprove some concept
  - Do not create a prototype for a game you've already committed to
  - Grab the first idea and prototype; With a good prototype it's easy to see if an idea is worthwhile
  - Prototypes don't generate ideas from scratch, they validate them
  - Find upside and downside
  - Experiment, persuade and inspire

# Prototyping

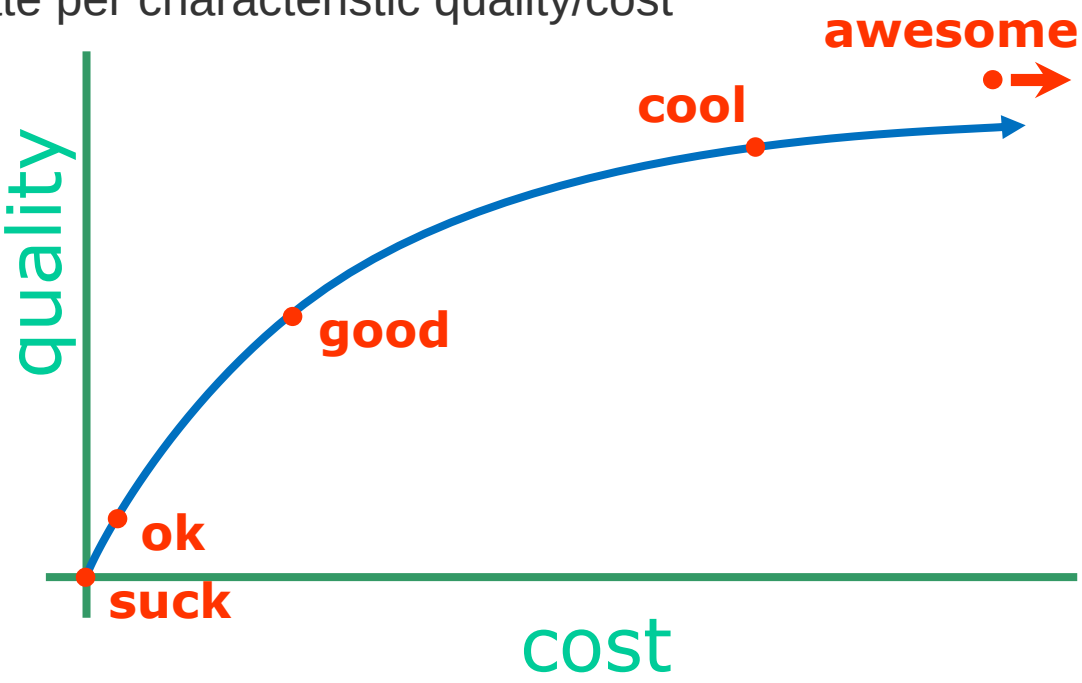
- The purpose of a prototype
  - Define core gameplay in purest form
  - Learn whether core mechanics hold interest of players
  - Test
    - Game mechanics
    - Balance of rules (too restrictive, too loose, too few, too many)
    - User experience
    - Embedded technologies
  - Discover play patterns and emergent behavior specific to your game

# Prototyping

- The question to be answered by the prototype
  - A good question is concise and can be answered in a fairly unambiguous way
  - Ask yourself were you need understanding
  - Can be about game design, but can also be about any other aspect of the game
    - How to make things look heavy by coloring
    - Can I control a pen via my iPhone
    - Does this sound bring me into the mood, etc.
  - Do not try to ask for a good game idea via a prototype
  - You might have to decompose a big problem into smaller tractable ones

# Prototyping

- Measure the quality of a prototype
  - Find relevant characteristics; interactivity, robustness, usability, beauty, performance, agility, and many more
  - Evaluate per characteristic quality/cost



# Prototyping

- How to generate a prototype
  - Look for the cheapest way to get it
  - Steal it or fake it
  - Use available tools

# Prototyping

- How to generate a prototype
  - Let the designer set the problem, let the programmer understand the goal, work together to solve the problem
  - Which prototyping technique? Paper, storyboard, physical, software
  - Code is expensive, use content by default (a physical prototype often works)
  - Only spend code where you need understanding;
  - Don’t restrict your mental capabilities by code
  - Don’t’ care about robustness, code optimality, software engineering
  - If software, choose between rapid prototype and using a real engine

# Prototyping

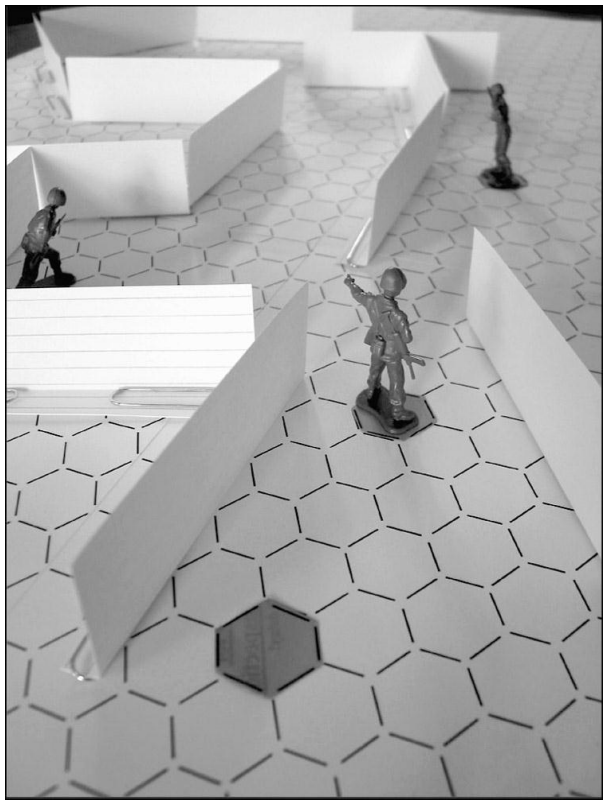
- Prototyping techniques
  - Paper prototypes
    - Good for testing game mechanics, quick to produce, but cannot convey game experience and action
  - Storyboard and animatics
    - Captures user experience, useful for communicating ideas
  - Software prototypes
  - Physical prototypes

# Prototyping

- Physical prototypes - Step 1: Foundation
  - Design the basic game objects and mechanics
    - Cards, paper, pens, toys etc.
  - Test your game idea
  - Restrict yourself to the fundamentals; Don’t try to be too detailed

# Prototyping

- Physical prototypes - Step 1: Foundation
  - Example: first-person shooter
  - Core gameplay: simultaneous action
  - Accomplish with action cards



# Prototyping

- Physical prototypes - Step 2: Skeleton
  - Prioritize what is most essential and refine
    - Number of spaces player can move
    - Procedures for turning
    - Hit and miss rules for shooting
  - Build upon foundation with structure to support essential parts of game
    - Scoring system
    - Hit points

# Prototyping

- Physical prototypes - Step 3: Formal Details
  - Add rules and features for a fully functional fun game
  - Focus on most important formal elements
    - Is objective interesting and achievable
    - Is player interaction ideal
    - Are there missing rules
  - Test each rule individually to determine if it is critical or not
    - Hit percentage, health scoring,…

# Prototyping

- Physical prototypes - Step 4: Refinement
  - You have a playable system
  - Play, tweak, play, tweak, play, tweak,…
  - Question smaller and smaller details
  - Especially: Is the game fun?
  - Add new features one at a time

# Prototyping

- Demo your prototype
  - Be quiet, watch the users first reaction
  - Do not try to convince them how cool it is; Find out how cool it is
  - Observe, do not suggest

# Final game pitch and prototype presentation

- Make your presentation exciting, energetic, visual, professional, and clear
  - Describe the essential design elements and back up your descriptions with sketches, storyboards, and other visuals
  - Motivate the design decisions with respect to the game theme
  - Show your "Big Idea Bullseye"
  - Convince us that your game idea will be a fantastic game!
  - Demonstrate the gameplay using your physical prototype
  - The prototype should support your game pitch by highlighting the core game mechanics and proving that it is a fun, playable game
  - Plan for a 10 minute presentation and practice ahead of time