Game design tools

For when spreadsheets and flowcharts aren't enough

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What are game design tools?

Game design tools help you solve design problems without having to build playable experiences in order to test out your ideas.

- Conceptual models, notation systems, software tools
- We generally don't use them!
- We've been working on this problem for a while…
  (See "Formal Abstract Design Tools", Doug Church, *Game Developer Magazine*, 1999)

Design tools

- Main goal: support thinking
- Support ambiguous, evolving ideas
- Unresolved conflicts and issues are expected
- Messy, visual
- Support an anarchic, even private process (like a designer's notebook)
- "But how does this help us build the game?" <– wrong question

Production tools

- Main goal: support production
- Create usable, bug free assets
- Technical mistakes and logical errors break things
- Clean, optimal, efficient
- Easy to measure and demonstrate progress and outcomes
- Make sense to programmers and producers

Tools we typically use for game design

- Documenting
  - GDDs, spreadsheets, flowcharts, diagrams
- Prototyping and iterative development
- Player metrics





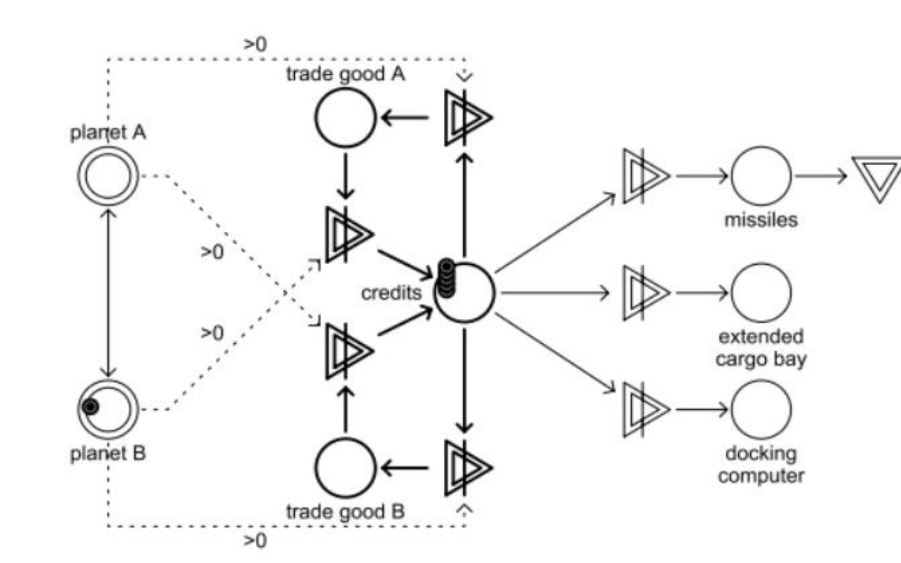
What design tools can help with

- System design and balancing
- Narrative design
- Progression design
- Level and mission design
- Design for procedural content generation

Game design tools you can use now

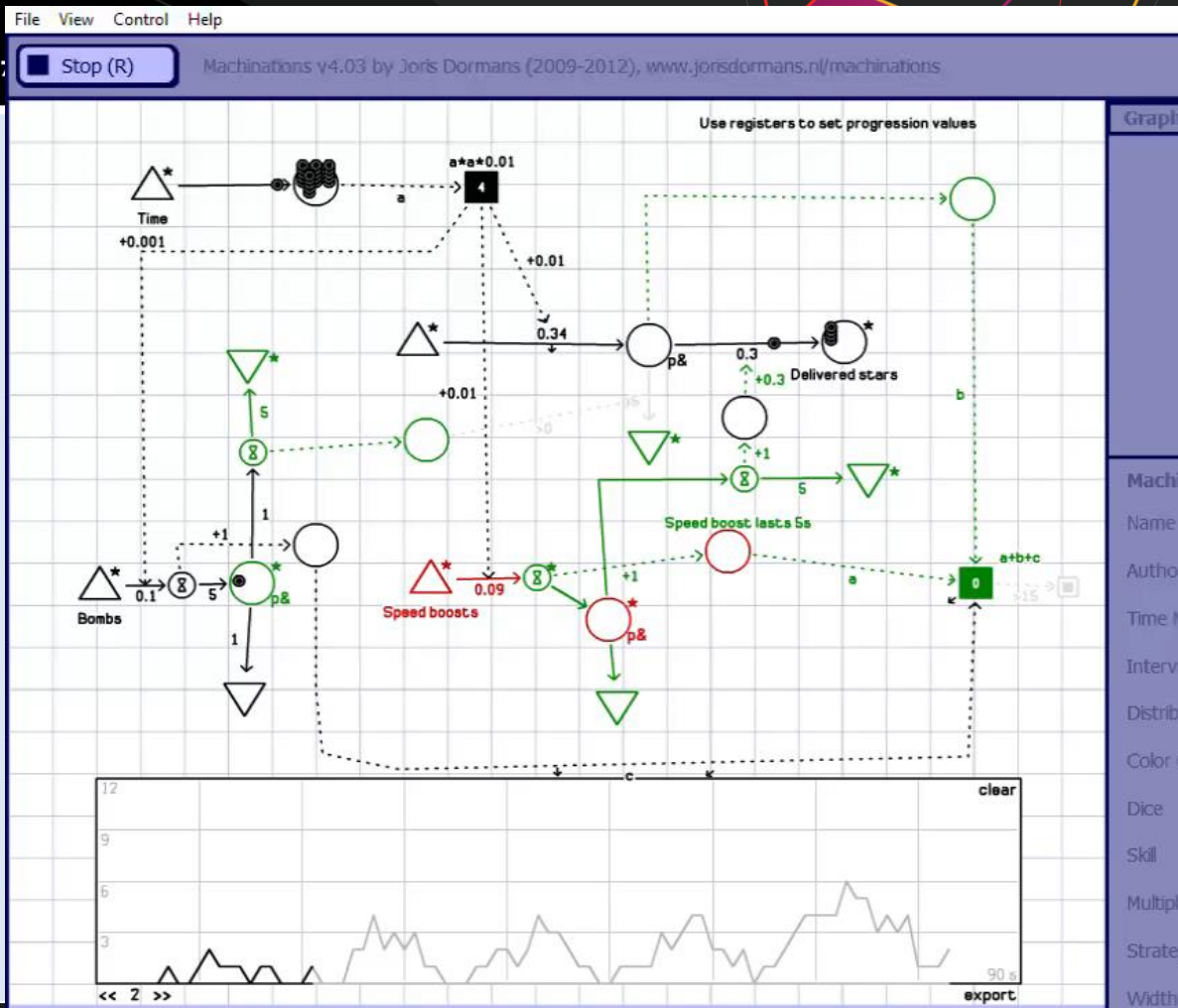
Machinations

- Notation system for modelling game systems
- Models game economies as resource flows
- Provides interactive simulation of game dynamics



Prototype

Machinations model



Machinations is useful for:

- Modelling, balancing systems – especially for games with emergent dynamics
- Quickly sketching out ideas
- Analysing, learning from other games

Limitations:

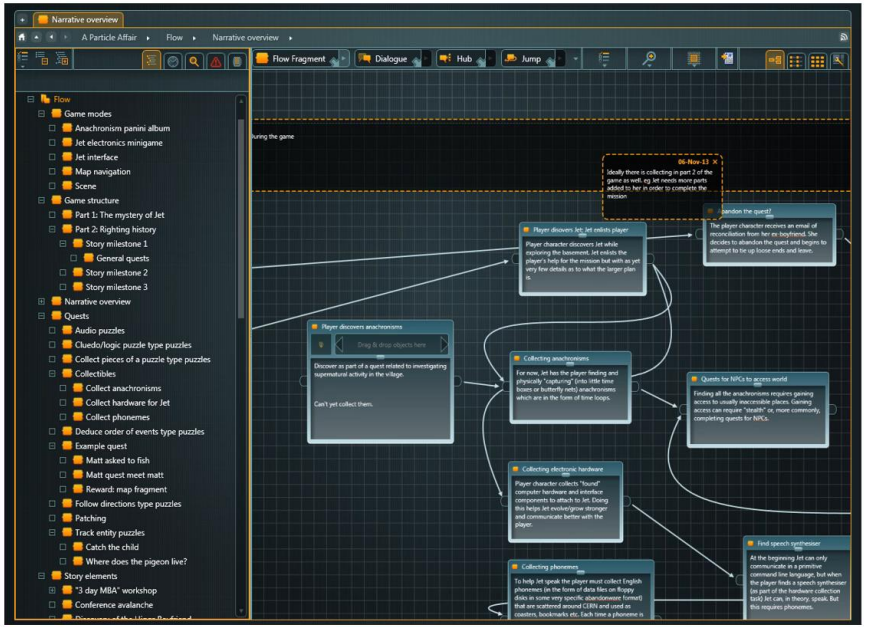
- Not suited to data-heavy, scripted gameplay
- Can’t factor in « game feel » or topography

Where to get it:

- http://www.jorisdormans.nl/machinations/
  Book: “Game Mechanics: Advanced Design”, Adams & Dormans

Articy:Draft

- Narrative design and mission design
- Flow diagram-style interface supports branching, graph-based, nested structures
- Also serves as an authoring tool



Articy:Draft is useful for...

- Writers who want a tool like Scrivener – but for games
- Organising and visualising design and narrative materials
- Narrative-based, dialog-heavy games

Limitations

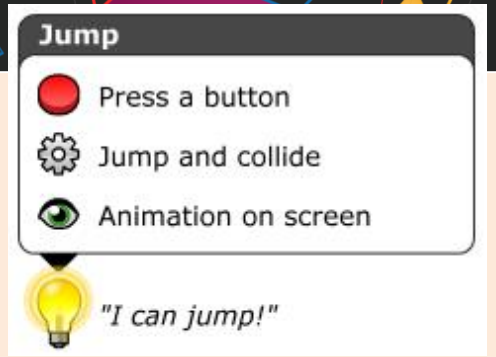
Heavily tailored towards RPGs, adventure games

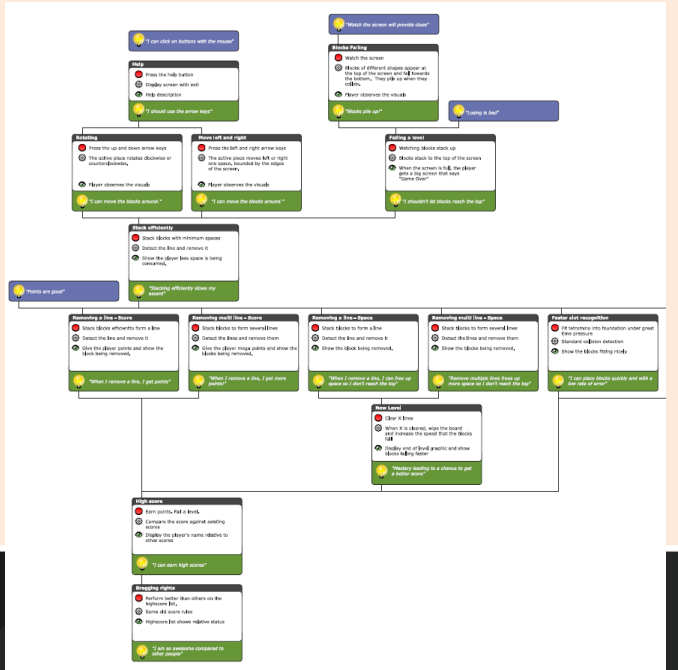
Where to get it

http://www.nevigo.com

Skill atoms

- A diagramming system
- A *skill atom* describes how the player gains a new skill
- A *skill chain* describes the evolution of the player's skill set
- Progression design using the lens of player skills





Skill atoms are useful for…

- Focusing on player experience
- Onboarding/scaffolding

Limitations

- Skill chain graphs can become large, hard to read/use

Where to get it

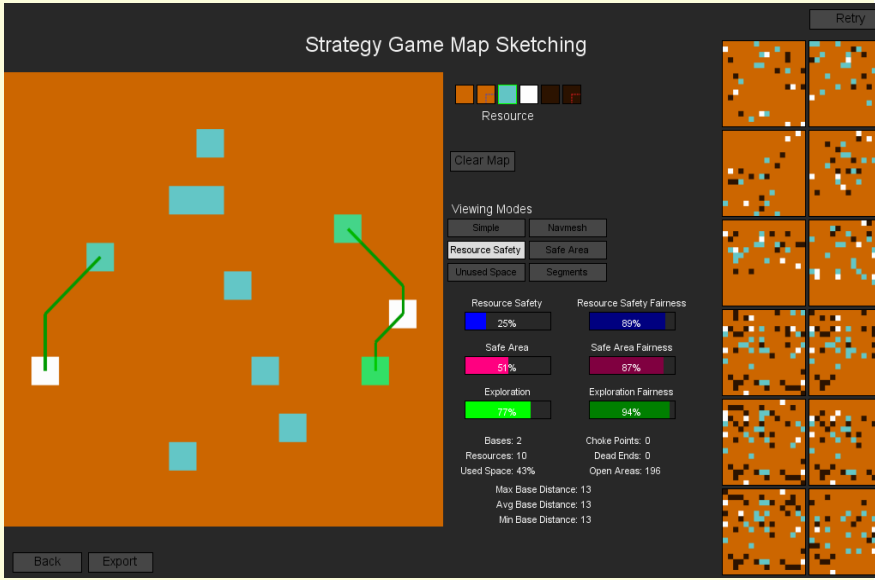
- Read the article here: http://www.gamasutra.com/view/feature/129948/the_chemistry_of_game_design.php

Game design tools of the future:

"Mixed initiative" (procedural content generation and AI-assisted) design tools

The Sentient Sketchbook

- AI-assisted top-down sketching of game levels – particularly strategy game maps
- Place bases, resources, rough collision scene, goals
- Evaluates maps for player balance and gameplay pacing
- Shows navigable paths, choke points
- Fleshes out details and suggests alternative designs while you sketch



The Sentient Sketchbook is useful for…

- The grey-boxing stage of level design
- Strategy games, FPS

Limitations

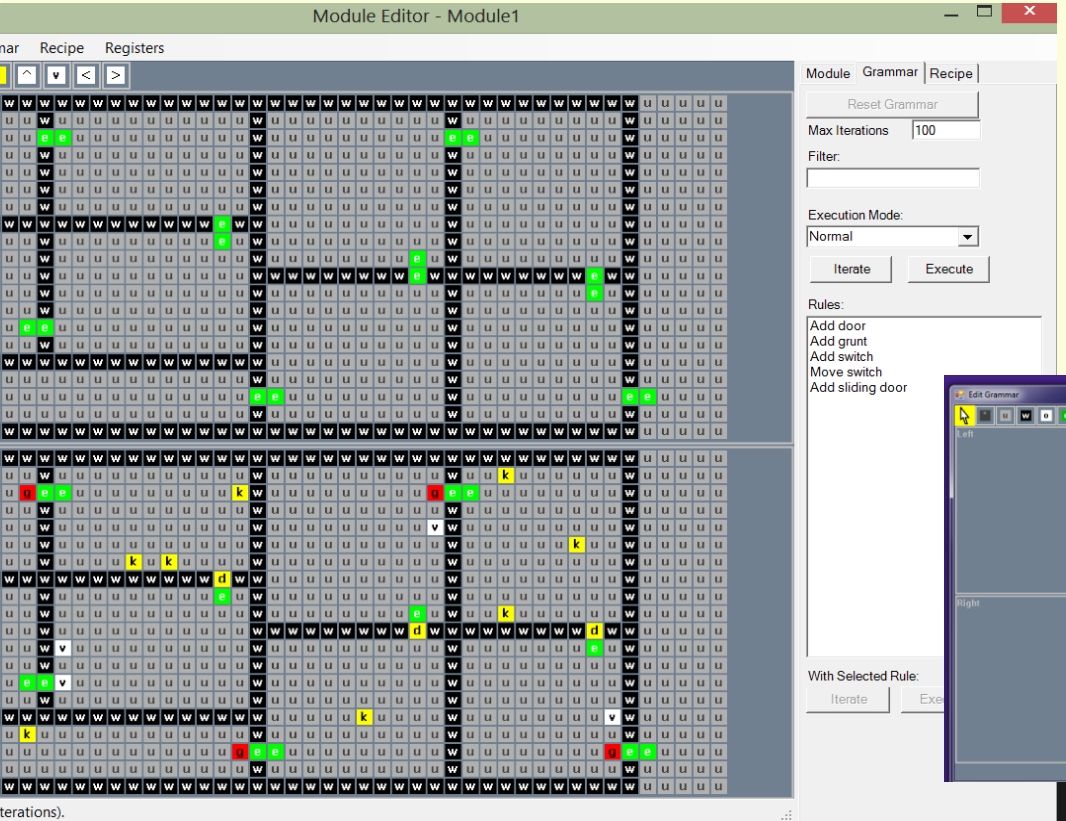
- Quite genre-specific
- Preset map sizes
- High level, approximate

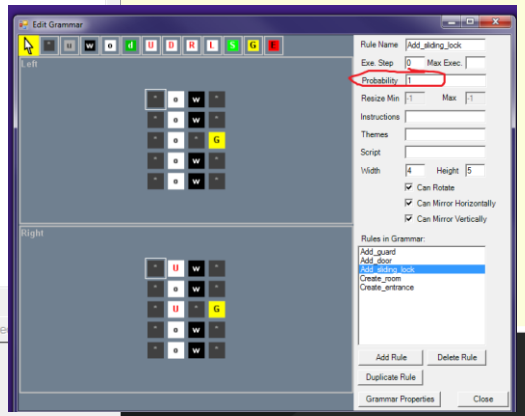
Where to get it

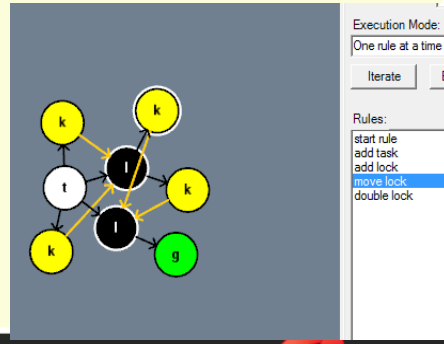
http://www.sentientsketchbook.com/

Ludoscope

- AI-assisted mission and level design
- Design-time procedural generation with designer-friendly approach
- Can transform abstract mission structures into level designs







Ludoscope is useful for:

- Generating or fleshing out level designs
- Devising procedural level generation rules without scripting/code
- Freaky new ways to think about your level design process

Limitations

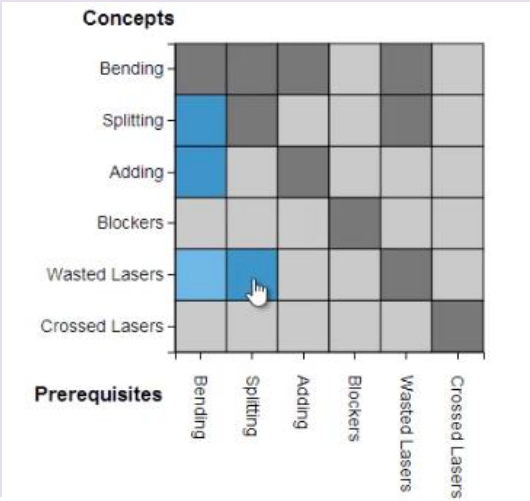
- Requires hard work in abstract thinking
- Can be challenging to figure out what to use it for
- Highly experimental and still in development

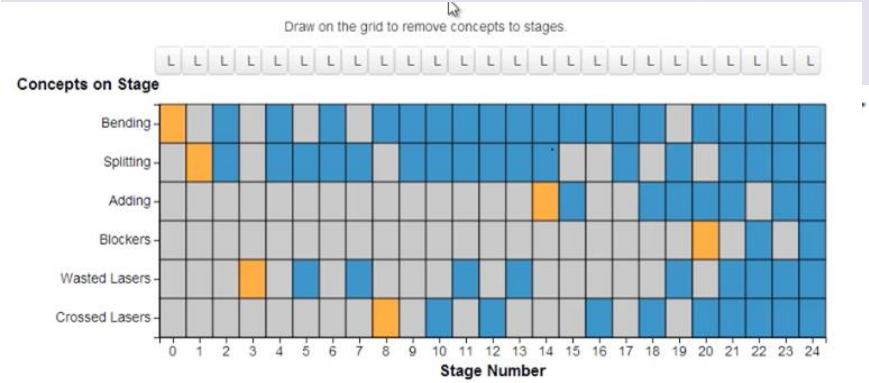
Where to get it

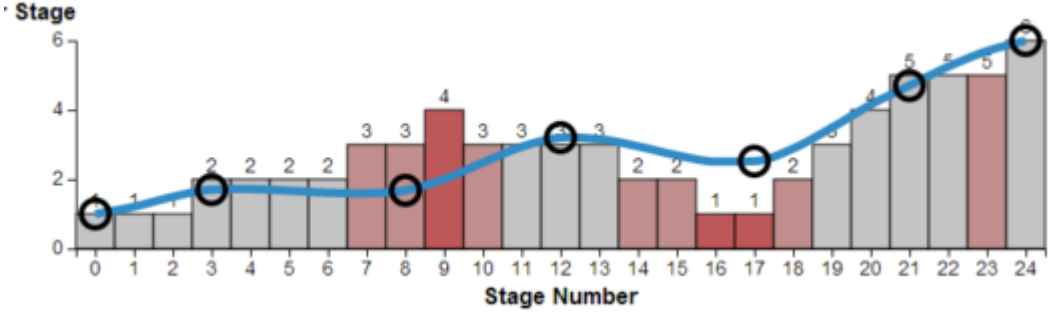
Ask Joris Dormans about beta testing: jd@jorisdormans.nl

PCG-based level editor for the game *Refraction*

- Mixed-initiative design of puzzle game levels
- Computer-aided progression design
- Helps the designer (and the procedural generation) stick to the progression rules and structure they've defined







Refraction's level editor is useful as:

- Proof of concept of how we can embed computational assistance into level editing/world building tools

Limitations

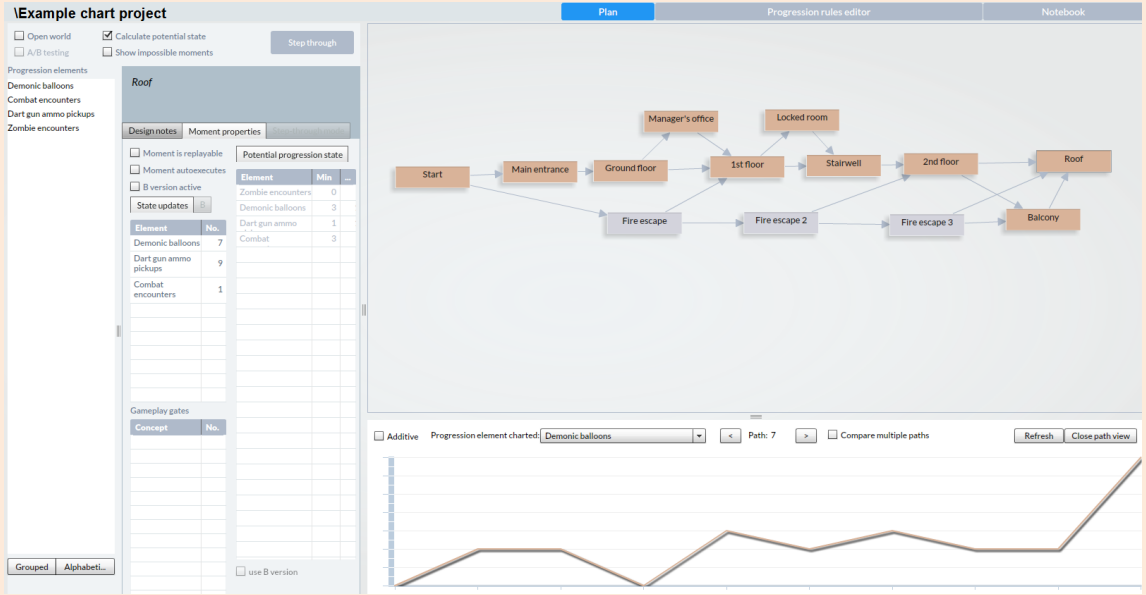
- You can't use it - it's specifically for building Refraction game levels
- Built to handle design for a linear game with a small feature set

Where to read about it

https://adamsmith.as/papers/uist2013_progression.pdf

Let’s make design tools!

Progressimo



- Standalone progression design environment inspired by the *Refraction* tool
- Branching and open-world progression structures
- Calculates game state, mission unlocking
- (Disclosure: I made this tool!)

Progressimo is useful for:

- Progression-heavy games e.g. levels and missions, game-as-a-service, adventure games, action RPGs, open world games
- Visualising and walking through missions and how they fit together in the game
- High-level content planning for procedural generation

Limitations

- Not suitable for games where progression is driven primarily by emergent system dynamics

Where to get it

- Contact me about joining the beta: katharine.neil@gmail.com

Benefits of using game design tools

- Adds structure to a design process and makes design visible
- Can provide a safe space in which to attempt ambitious, complex designs
- Lessens design's reliance on production
- Learn new ways of thinking that impact the way you design even when you're *not* using tools

Limitations and pitfalls

- Can take a while to learn and be hard to use
- Hard to tell what fun looks like in abstract form
- Not great for modelling game feel and interaction
- A tool acts like a filter on your ideas. It has its own agenda!
- False positives, false negatives (fun in the tool but not in the game & vice versa)

Suggested approaches

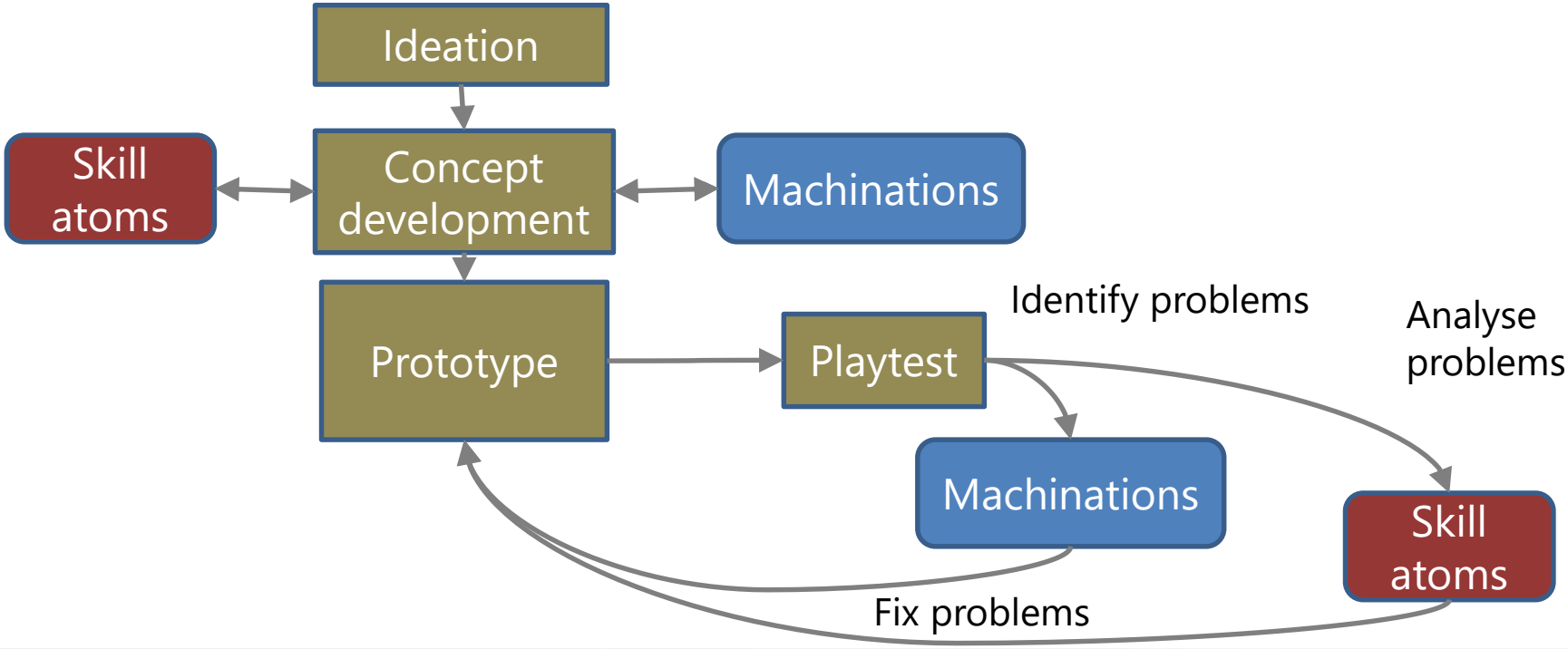
Use a “toolbox” approach

- Have a range of tools to hand (no “one tool to rule them all”)

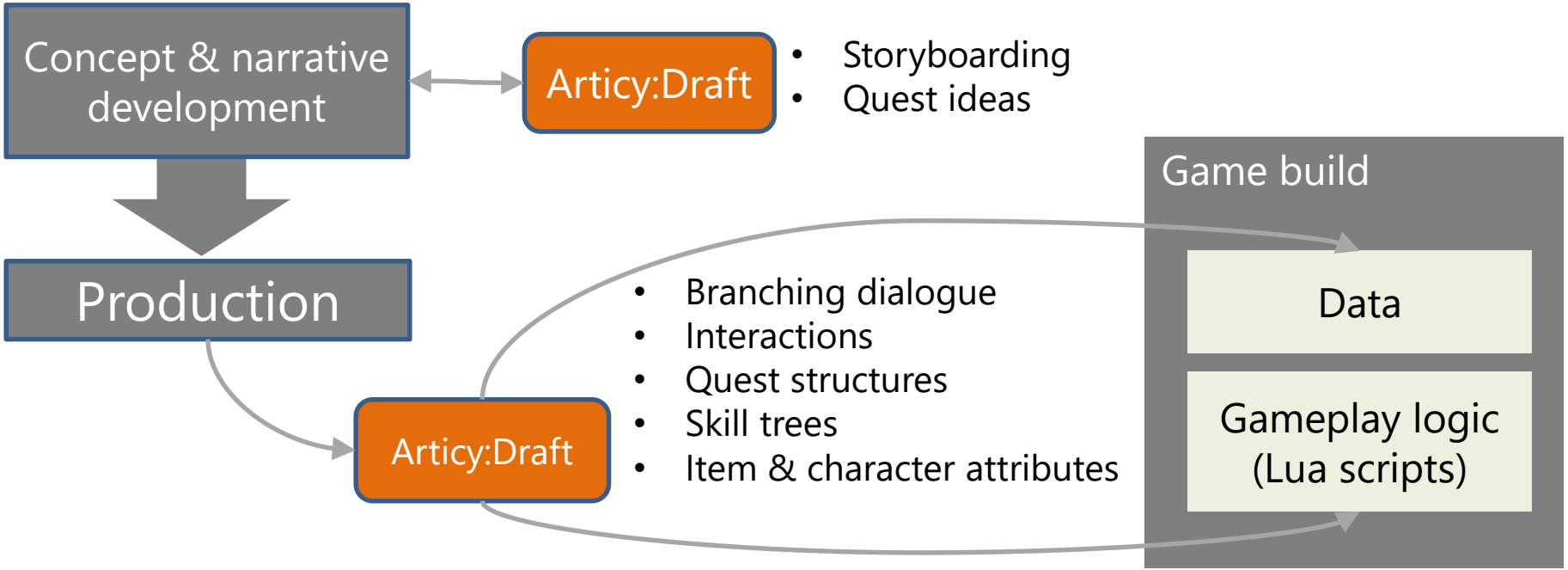
Use game design tools to complement other methods

- For example, alongside prototyping (to tell you things a prototype can’t tell you)

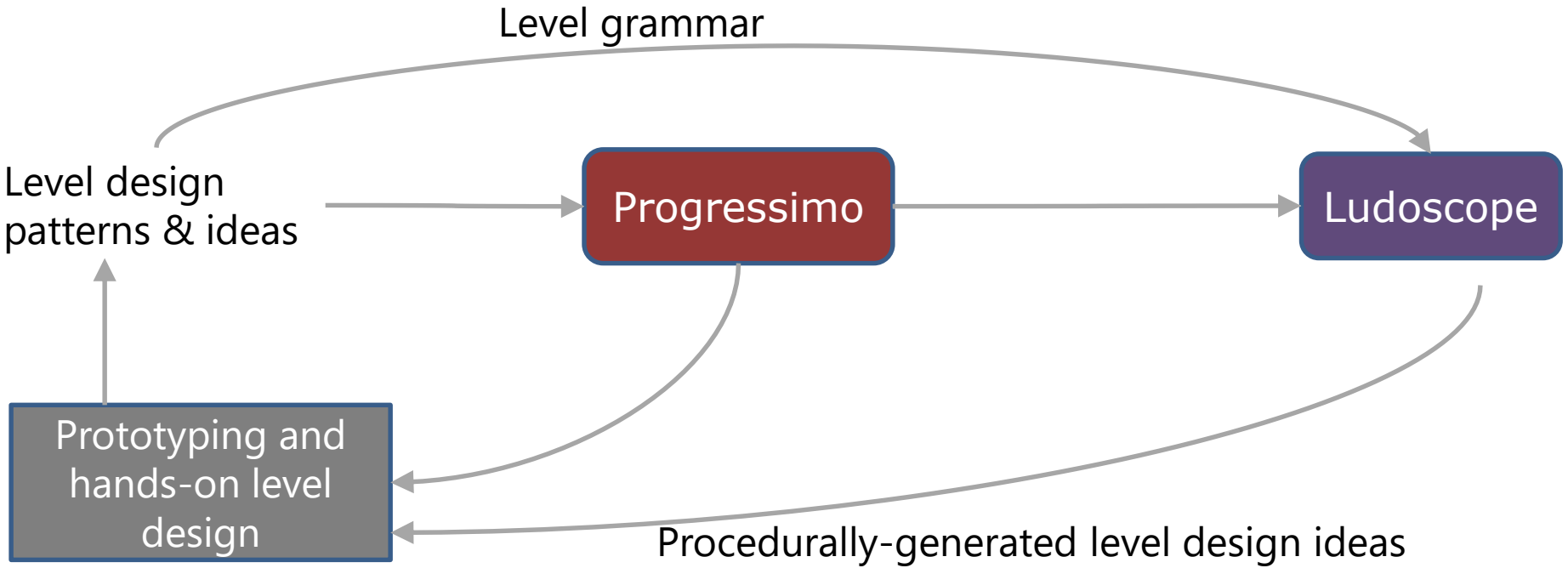
Example: Dan Cook's design workflow



Example: Design workflow for platformer/RPG *Wanderer*



Example: Workflow for my top-down shooter



Thanks for listening!

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